



**TOWN OF JUPITER DEPARTMENT OF ENGINEERING & PUBLIC WORKS  
ENGINEERING DIVISION**

**CONTRACT EPW 2024-24  
BID DOCUMENTS**

**TOWN HALL – PHASE II**

**MAY 2024**

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**TOWN OF JUPITER, FLORIDA  
INVITATION TO BID**

**SUBMIT BID TO:**

TOWN CLERK  
210 MILITARY TRAIL  
JUPITER, FLORIDA 33458

**SEALED BIDS:** All bid forms must be submitted and executed, as required, and included with the bid in a sealed envelope. Bids must be submitted in hard copy and compact disk. The face of the envelope shall contain the above address, the date and time of Bid opening, the Bid title and Bid number. All Bids are subject to the conditions specified herein. Bids not submitted with the completed attached Bid Form(s) may be rejected. Bidders which do not comply with these conditions are subject to rejection of their bid by the TOWN.

**BID TITLE: Town Hall – Phase II**

**BID NO.: EPW 2024-24 BIDS WILL BE OPENED 3:00 P.M. (EST),** June 18, 2024 in the Town of Jupiter Community Room, Room 108 of the Town Hall, at the address noted above, and may not be withdrawn during the 90 calendar days following such date and time.

**Project Manager: Roger Held, Director of Construction Services**

**Project Description:** The Town Hall - Phase II scope of work consists of clearing, grubbing site demolition and demolition of the old Town Hall buildings, site excavation and embankment improvements, new Town Hall canopy and entrance feature construction, paving and drainage improvements, sidewalk and curb construction, and landscape and irrigation improvements, located at 210 Military Trail, Jupiter Florida 33458.

**Plans and specifications:** Plans may be obtained beginning May 21, 2024 in the Engineering Division of Town Hall at the address above. The plans will be distributed in an electronic PDF format and there will be no charge for the electronic plans and specifications. Plans may also be downloaded through Demand Star.

**Pre-Bid Conference:** The Town will hold mandatory pre-bid conference to answer any questions on May 29, 2024 at 1:00 p.m. in the Town of Jupiter Community Room, Room 108. The pre-bid conference and bid opening are public meetings.

**Bid Bond –** In accordance with Section 12.1 of the Invitation to Bid, each bid must be accompanied by a Bid Bond acceptable to the Town and be in an amount equal to five percent (5%) of the bid amount.

**Payment and Performance Bonds:** The firm awarded the Contract must submit a 100% Payment Bond and 100% Performance Bond that are acceptable to the Town and meet the requirements of the contract documents.

**Federal Funding:** This Project is not funded by grants from the Federal Government.

In accordance with Section 15.1 of the Invitation to Bid, the TOWN reserves the right to reject any and all Bids, to waive any and all informalities, irregularities and technicalities not involving price, time or changes in the commodities and/or services, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional Bids.



## **INSTRUCTIONS TO BIDDERS**

**THESE INSTRUCTIONS ARE STANDARD FOR ALL BIDS FOR COMMODITIES/SERVICES ISSUED BY THE TOWN OF JUPITER. THE TOWN OF JUPITER MAY DELETE, SUPERSEDE OR MODIFY ANY OF THESE STANDARD INSTRUCTIONS FOR A PARTICULAR CONTRACT BY INDICATING SUCH CHANGE AND/OR INCLUDING ANY ADDITIONAL FORMS IN THE SUPPLEMENTAL CONDITIONS AND/OR BY ADDENDA. ANY AND ALL SUPPLEMENTAL CONDITIONS OR CHANGES BY ADDENDA THAT MAY VARY FROM THE INSTRUCTIONS TO BIDDERS SHALL HAVE PRECEDENCE. BIDDER AGREES THAT THE PROVISIONS INCLUDED WITHIN THIS INVITATION FOR BID SHALL PREVAIL OVER ANY CONFLICTING PROVISION WITHIN ANY STANDARD FORM CONTRACT OF THE BIDDER REGARDLESS OF ANY LANGUAGE IN BIDDER'S CONTRACT TO THE CONTRARY.**

### **1. DEFINITIONS**

The term "TOWN" refers to the TOWN OF JUPITER, a municipal corporation of the State of Florida. The term "Bid Documents" includes the Invitation to Bid, Instructions to Bidders, Special Conditions, Bid Form, Non-Collusive Affidavit, Certificate(s) of Insurance, Payment and Performance Bonds, Corporate Resolution, Bid Security, and the proposed Contract Documents, including all Addenda issued prior to receipt of Bids.

### **2. COPIES OF BIDDING DOCUMENTS**

Complete sets of Bid Documents must be used in preparing Bids. TOWN does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents. TOWN, in making copies of Bid Documents available does so only for the purpose of obtaining Bids and does not confer a license or grant for any other use.

### **3. QUALIFICATIONS OF BIDDERS**

- 3.1 No Bid will be accepted from, nor will any contract be awarded to any person who is in arrears to the TOWN, upon any debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to TOWN, or any other governmental agency or entity, or who is deemed responsible or unreliable by the TOWN.
- 3.2 As part of the Bid evaluation process, TOWN may conduct a background investigation including a record check by the Jupiter Police Department and/or the Palm Beach Sheriff's Office. Bidder's submission of a Bid constitutes acknowledgment of the process and consent to such investigation. TOWN shall be the sole judge in determining Bidder's qualifications.
- 3.3 Each Bid shall include a copy of the qualifier's State or County (as applicable) contracting license. Other information, including, but not limited to, references, financial data, and evidence to conduct business in the jurisdiction where the project is located shall be provided upon specific request by the TOWN.

### **4. EXAMINATION OF BID DOCUMENTS**

- 4.1 Before submitting a Bid, each Bidder must (a) examine the Bid Documents thoroughly; (b) consider federal, state and local laws, ordinances, rules and regulations that may in

any manner affect cost, progress, performance, or provision of the commodities and/or services;(c) study and carefully correlate Bidder's observations with the Bid Documents, and (d) notify the TOWN of all conflicts, errors and discrepancies in the Bid Documents.

- 4.2 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of these Instructions, that without exception, the Bid is premised upon performing the services and/or furnishing the commodities and materials and such means, methods, techniques, sequences or procedures as may be indicated in or required by the Bid Documents, and that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions of performance and furnishing of the goods and/or services.

5. DATE AND PLACE OF BID OPENING

Sealed bids will be received by the Town Clerk, Town of Jupiter, 210 Military Trail, Jupiter, Florida 33458, at the time set forth in the "Invitation to Bid "(ITB)". Bids will be publicly opened and read. A Contract if awarded, will be awarded as soon as is practical after the Bid Opening.

6. INTERPRETATIONS AND ADDENDA

- 6.1 To ensure fair consideration for all Bidders, the TOWN prohibits communication to or with any department, officer, or employee of the TOWN during the submission process except as provided in this Paragraph.
- 6.2 If a Bidder is in doubt as to the meaning of any of the Bid Documents, or is of the opinion that the plans and/or specifications contain errors, contradictions, or reflect omissions, the Bidder shall submit a written request (by U.S. mail, overnight courier service, i.e. FedEx, UPS, DHL, etc. or facsimile) directed to:

Town of Jupiter  
Director of Construction Services  
210 Military Trail  
Jupiter, Florida 33458  
Phone No. (561) 741-2669  
Fax No. (561) 741-0911

In order for any such request to be given consideration, the written request must be received by the Director of Engineering and Public Works at least ten (10) calendar days prior to the date fixed for the opening of Bids. Interpretations or clarifications deemed necessary by the TOWN will be issued in the form of written addenda, which will be mailed to all parties recorded by the TOWN as having received the bid documents, no later than five (5) calendar days prior to the date fixed for the opening of Bids. The Town's Engineering Division publishes invitations to bid on Demand Star, along with any associated documents. In addition, all addenda are published on Demand Star. If a bidder obtains the Invitation to Bid from Demand Star, addenda will not be mailed to those bidders. It shall be the bidder's responsibility to obtain the addenda from Demand Star and acknowledge receipt of addenda in the bid forms.

- 6.3 Bidders must acknowledge receipt of the addenda in their Bid. Failure of any Bidder to receive, or to acknowledge receipt of any such addenda shall not relieve such Bidder

from any obligation under its Bid as submitted, provided, however, that failure to so acknowledge receipt of any such addenda may render a Bid non-responsive and result in its rejection. Bidders are advised to contact the TOWN prior to submitting Bids to satisfy themselves as to the existence and number of all such addenda.

7. PREPARATION OF BIDS

- 7.1 Bids must be typed or printed in ink. Use of erasable ink is not permitted. All blanks on the Bid Form must be completed. Names must be typed or printed below the signature. Facsimile Bids will not be accepted.
- 7.2 In accordance with Chapter 119 of the Florida Statutes (Public Records Law), and except as may be provided by other applicable state and federal law, all Bidders should be aware that the Invitation to Bid and the responses thereto are in the public domain. However, the Bidders are requested to identify specifically any information contained in their Bids which they consider confidential and/or proprietary and which they believe to be exempt from disclosure, citing specifically the applicable exempting law.
- 7.3 All Bids received from Bidders in response to the Invitation to Bid will become the property of the TOWN and will not be returned to the Bidders. In the event of contract award, all documentation produced as part of the contract shall become the exclusive property of the TOWN.
- 7.4 The submitted Bid shall constitute a firm offer on the part of the Bidder to furnish the commodities and/or services requested.
- 7.5 Bids shall be submitted on the Bid Forms furnished, or upon an exact copy thereof, and must be signed by an authorized representative of the firm submitting the Bid. Bidders must quote on all items listed and failure to do so may disqualify the Bid. The intent of the Bid Forms is to secure a price for the work described in the Contract Documents.
- 7.6 Bidders shall examine the Contract Documents and the site of the proposed work carefully before submitting a Bid for the work contemplated, and must investigate the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished and all other requirements of the Contract Documents.
- 7.7 By submission of a Bid, the Bidder acknowledges that he has investigated and correlated his observations with the requirements of the Contract Documents and satisfied himself as to the conditions affecting the work. These conditions include, but are not restricted to, those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electrical power, roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, permit conditions, and the character of equipment and facilities needed preliminary to and during prosecution of the work.
- 7.8 By submission of a Bid, the Bidder further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the TOWN, as well as from information presented by the plans and specifications made a part of this Contract. Any failure by the Bidder to acquaint himself with the available information will not relieve

the Bidder from responsibility for estimating properly the difficulty or cost of successfully performing the work. The TOWN assumes no responsibility for any conclusions or interpretations made by the Bidder on the basis of the information made available by the TOWN, its officers or employees prior to the execution of the Contract, unless such information has been stated expressly in the Contract Documents.

- 7.9. If provided in the plans or in a written report, the TOWN does not guarantee the details pertaining to borings, as shown on the plans or contained within the written report, to be more than a general indication of the materials likely to be found adjacent to holes bored at the site of the work, approximately at the locations indicated. If the water table is indicated on soil borings or other reports furnished by the Town, the Bidder shall take into consideration the seasonal and tidal fluctuations of the water table and shall not rely on this elevation to be certain. The Bidder shall examine boring data, where available, and make his own interpretation of the subsoil investigations and other preliminary data, and shall base his Bid on his own opinion of the conditions likely to be encountered. The Bidder's submission of a Bid is prima facie evidence that the Bidder has made the examinations as described in this Paragraph.
- 7.10. If provided in the plans or in a written report, the TOWN does not guarantee the details or elevations shown on bathymetric surveys and is provided only for general information. The Bidder shall make his own interpretation of this and other preliminary data, and conduct any additional surveys that the Bidder deems necessary and shall base his Bid on his own opinion of the conditions likely to be encountered. The Bidder's submission of a Bid is prima facie evidence that the Bidder has made the examinations as described in this Paragraph.

## 8. DETERMINATION OF ESTIMATED QUANTITIES

- 8.1. Lump Sum Contracts: The Bidder is responsible for the determination of the quantities for those items constructed within the authorized plan limits or dimensions. The TOWN does not assume any responsibility for any incidental information in Bid documents that may be construed as a quantity of work and/or materials.
- 8.2. Contracts other than Lump Sum: For those items constructed within authorized plan limits or dimensions, use the quantities shown in the plans and in the Bid Form as the basis of the Bid. The TOWN will also use these quantities for final payment as limited by the provisions for the field conditions, use and measurement, the quantities shown in the plans and in the proposal form are approximate and provide only a basis for calculating the bid upon which the TOWN will award the Contract. Where items are listed for payment as lump sum units, the Bidder is solely responsible for his own estimates of such quantities and of the work to be performed.
- 8.3. The TOWN reserves the right to make changes to the estimated quantities, at any time prior to or during the progress of the work, such increases, decreases, or alterations to the estimated quantities of work to be done or materials to be furnished which materially increases or decreases the cost or time of performance. Such increases, decreases, or alterations shall not constitute a breach of contract, shall not invalidate the contract, nor release the Surety from any liability arising out of this Contract or the Surety bond. The bidder agrees to perform the work, as altered, the same as if it had been a part of the original Contract.

9. PRICES BID

- 9.1 Prices shall be shown in unit amounts, both written in words and written numerical figures, and extensions whenever applicable. In the event of discrepancies existing between unit amounts and extension or totals, the written unit amounts in words shall govern.
- 9.2 Discrepancies in the multiplication of units of work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.
- 9.3 All applicable discounts shall be included in the Bid price for materials and services and will be considered as determining factors in recommending an award in case of tie Bids. Discounts extended to TOWN shall include but not be limited to those discounts normally extended to governmental agencies as well as the private sector.
- 9.4 Chain discounts are not acceptable and will not be considered in determining an award. Bidders may bid only one (1) discount for each item on the Bid Form. Firm discounts and prices are to be quoted for the term of the Contract.
- 9.5 Bidder warrants by virtue of bidding that prices, terms and conditions in the Bid will be firm for acceptance for a period of ninety (90) calendar days from the date of Bid opening unless otherwise stated by the TOWN.
- 9.6 The Bid price shall include all permit fees, royalties, license fees and other costs arising from the use of such design, device or materials in any way involved in the work and all costs of packaging, transporting and delivery to the designed location within the TOWN.

10. BID FORM

- 10.1 The Bid Form is included with the Bid Documents and must be used by the Bidder. Failure to do so may cause the Bid to be rejected. The forms must be submitted in good order and all blanks must be completed.
- 10.2 The Bid must be signed by one duly authorized to do so and in cases where the Bid is signed by a deputy or subordinate, the principal's proper written authority to such deputy or subordinate must accompany the Bid.
- 10.3 Bids by corporations must be executed in the corporate name by the President or other corporate officers accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown below the signature.
- 10.4 Bids by partnerships must be executed in the partnership name and signed by a general partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.
- 10.5 If the Bid involves a joint venture, a copy of the joint venture agreement shall be included with the Bid along with the attached "Statement of Business Organization".

11. PUBLIC ENTITY CRIMES AFFIDAVIT

All Bidders shall submit an affidavit with their Bid affirming that the Bidder is not in violation of the Public Entity Crime Statute, Section 287.133, Florida Statutes. If it is determined that the Bidder is in violation of the Public Entity Crime Statute, the Bid Bond will be forfeited to the Town (affidavit form enclosed).

12. BID SECURITY

12.1 Each Bid must be accompanied by a Bid Bond acceptable to the TOWN, prepared on a standard form similar to the Bid Bond Form attached hereto, duly executed by the Bidder as Principal. The Bid Bond shall have a satisfactory surety company, admitted and authorized to do business in the State of Florida, and be in an amount equal to five (5%) percent of the Bid amount. Cash, certificate of deposit, cashier's check, treasurer's check or bank draft of any national or state bank in the State of Florida, may be tendered in lieu of the Bid Bond. Certificates of deposit, checks and bank drafts shall be made payable to the TOWN.

12.2 Such cash, certificate of deposit, check, bank draft or Bid Bonds will be returned to all Bidders, with the exception of the two (2) lowest Bidders, within thirty (30) calendar days after the opening of the Bids. Cash, certificates of deposit, check, bank draft or bid bonds of the two (2) lowest Bidders will be returned to them promptly after the TOWN and the successful Bidder have (i) executed the Contract for the work, and (ii) the Contractor (successful Bidder) has secured and tendered to the TOWN valid and acceptable Performance and Payment Bonds as required under the provisions of the Contract. Failure of the TOWN to execute the Contract within ninety (90) calendar days after the date of the Bid opening shall initiate release of the cash, certificate of deposit, check, bank draft or Bid Bonds of the lowest and second lowest Bidders unless mutually agreed otherwise.

12.3 Attorneys-In-Fact who sign Bid Bonds and/or Payment and Performance Bonds, must file with such Bond a certified copy of their power of attorney to sign the Bond.

13. DELIVERY OF BIDS

13.1 The original, plus one (1) electronic copy of the Bid, shall be submitted to the TOWN at or before the time and place indicated in this Invitation to Bid, and shall be submitted in a sealed envelope. The envelope must be clearly marked on the exterior with the name and address of the Bidder, the title of the proposed work as stated in the Invitation to Bid, and the Contract number. If forwarded by regular mail or express mail, the sealed envelope containing the Bid and marked as directed above, shall be enclosed in another envelope addressed to:

**Town Clerk  
Town of Jupiter  
210 Military Trail  
Jupiter, Florida 33458**

**No responsibility will attach to the TOWN for the premature opening of a Bid not**

**properly addressed and identified.**

- 13.2 If forwarded by overnight courier service (other than United States Postal Service Express Mail), the sealed envelope containing the bid and marked as directed above, shall be enclosed in another envelope.
- 13.3 Bids may be hand-delivered to the Town Clerk, First Floor, Town Hall Building. The TOWN cautions Bidders to assure actual delivery of mailed or hand-delivered bids directly to the Town Clerk. Telephone confirmation of timely receipt of the Bid may be made by calling (561) 746-5134 before bid opening time. Bids received after the established deadline will be returned unopened to the Bidder.

14. MODIFICATION AND WITHDRAWAL OF BIDS

- 14.1 Bids may be modified or withdrawn by an appropriate document duly executed in the manner that a Bid must be executed and delivered to the place where Bids are to be submitted at any time prior to the deadline for submitting Bids. A request for withdrawal or a modification must be in writing and signed by person duly authorized to do so and, in a case where signed by a deputy or subordinate, the principal's proper written authority to such deputy or subordinate must accompany the request for withdrawal or modification. Withdrawal of a Bid will not prejudice the rights of a Bidder to submit a new Bid prior to the Bid date and time. After expiration of the period for receiving Bids, no Bid may be withdrawn or modified.
- 14.2 If, within twenty-four (24) hours after Bids are opened, any Bidder files a duly signed written notice with TOWN and within five (5) calendar days thereafter demonstrates to the reasonable satisfaction of TOWN by clear and convincing evidence that there was a material and substantial mistake in the preparation of its Bid, or that the mistake is clearly evident on the face of the Bid, then Bidder may withdraw its Bid and the Bid Security will be returned.

15. REJECTION OF BIDS

- 15.1 To the extent permitted by applicable state and federal laws and regulations, the TOWN reserves the right to reject any and all Bids, to waive any and all informalities, irregularities and technicalities not involving price, time or changes in the commodities and/or services, and the right to disregard all nonconforming, non-responsive, unbalanced or conditional Bids. Bids will be considered irregular and may be rejected if they show serious omissions, alterations in form, additions not called for, conditions or unauthorized alterations or irregularities of any kind.
- 15.2 TOWN reserves the right to reject the Bid of any Bidder, if the TOWN believes that it would not be in the best interest of TOWN to make an award to that Bidder, whether because the Bid is not responsive, or the Bidder is unqualified or of doubtful financial ability, or fails to meet any other pertinent standard or criteria established by TOWN.
- 15.3 More than one Bid received for the same work from an individual, firm, partnership, corporation or association under the same or different names will not be considered. Reasonable grounds for believing that any Bidder is interested in more than one Bid for the same work will cause the rejection of such Bids in which the Bidder is interested. If

there are reasonable grounds for believing that collusion exists among the Bidders, the Bids of the participants in such collusion will not be considered.

15.4 The foregoing reasons for rejection of Bids are not intended to be exhaustive.

16. OPENING OF BIDS

16.1 Bids will be opened publicly on the date and at the location and time specified in the Invitation to Bid. Bids will be read aloud and an abstract of the amount of the base Bids will be made available after the opening of the Bid.

16.2 Tentative bid tabulations will be posted for review by interested parties at the Engineering Division offices within two (2) working days of the Bid opening. After completion of the review of the Bids, a final Bid tabulation will be posted for a period of not less than seventy-two (72) hours. Interested parties may inquire by telephone or visit the TOWN for information as to the intended award.

17. BIDS TO REMAIN OPEN

17.1 All Bids shall remain open for ninety (90) calendar days after the day of the Bid opening, but TOWN may, at its sole discretion, release any Bid and return the Bid Security prior to that date.

17.2 Extensions of time when Bids shall remain open beyond the ninety (90) day period may be made only by mutual written agreement between the TOWN, the successful Bidder and the surety, if any, for the successful Bidder.

18. AWARD OF CONTRACT

18.1 If the Contract is to be awarded, it will be awarded to the most responsible and responsive Bidder for the base Bid whose evaluation by TOWN indicates to TOWN that the award will be in the best interests of the TOWN and not necessarily to the lowest Bidder.

18.2 Criteria utilized by TOWN for determining the most responsible and responsive Bidder includes, but is not limited to the following: (a) Ability of Bidder to meet published specifications; (b) Bidder's experience and references including, but not limited to, the reputation, integrity, character, efficiency, experience, skill, ability and business judgment of the Bidder, the quality of performance of Bidder under previous contracts, any subcontractors, and other persons providing labor or materials to Bidder; (c) Bidder's qualifications and capabilities, including but not limited to, the size, financial history, strength and stability of the business to perform the work of the Contract, the possession of necessary facilities and equipment and the quality, availability and adaptability thereof to the particular use(s) required; (d) Whether Bidder can perform the Contract promptly or within the time specified without delay or interference; (e) Previous and existing compliance by Bidder with laws, ordinances and regulations relating to the commodities or services; and (f) Price.

18.3 The Bidder understands that this ITB does not constitute a Contract with the Bidder. An official Contract does not exist until a Contract has been executed by both parties. The successful Bidder shall execute the Contract and return it to the TOWN, together with the required performance and payment bonds and certificates of insurance, within fifteen (15)



calendar days from receipt of the Contract. If the successful Bidder fails to execute the Contract and/or provide the bonds and certificate of insurance within fifteen (15) calendar days, the TOWN shall have just cause to annul the Contract award and the successful Bidder shall forfeit its Bid Security to the TOWN. The TOWN may then award the Contract to the next lowest, responsible, and responsive Bidder, or the work may be re-advertised at the TOWN's sole discretion.

19. OPEN-END CONTRACT

- 19.1 No guarantee is expressed or implied as to the total quantity of commodities/services to be purchased under any open end Contract. Estimated quantities will be used for Bid comparison purposes only. The TOWN reserves the right to issue purchase orders as and when required, or, issues a blanket purchase order for individual agencies and release partial quantities or any combination of the proceeding
- 19.2 The TOWN reserves the right to purchase commodities/services specified herein through contracts established by other governmental agencies or through separate procurement actions due to unique or special needs. If an urgent delivery is required within a short period than the delivery time specified in the Contract, and if the seller is unable to comply therewith, the TOWN reserves the right to obtain such delivery from others without penalty or prejudice to the TOWN or to the Bidder.
- 19.3 The initial Contract period shall start with the of date of award or Notice to Proceed Date, whichever is latest, and shall terminate One (1) year from that date, unless another Contract term is provided in the Bid Documents and Contract. The TOWN may renew this Contract for two (2) additional one (1) year or Contract Term periods subject to Bidder acceptance, satisfactory performance and determination that renewal will be in the best interest of the TOWN. All prices, terms and conditions shall remain firm for the initial period of the Contract and for any renewal period unless subject to price adjustment and included as a Supplemental Condition.

20. INSURANCE

The insurance requirements contained in this Bid represent the minimal protection necessary for the TOWN as determined by the TOWN Manager. The successful Bidder shall be required to provide proper proof of issuance to the Engineer prior to award. No award will be recommended until a written determination is made by Engineer that the proof of insurance submitted by the Bidder is acceptable from a risk management perspective. Further modification of the requirements for proof of insurance may be made at the sole discretion of the TOWN if circumstances warrant.

21. TAXES

The successful Bidder shall pay all applicable sales, consumer use and other similar taxes required by law.

22. PLANS AND SPECIFICATIONS

- 22.1 The apparent silence of the specifications as to any detail, or the apparent omission from the Specifications of a detailed description concerning any point, shall be regarded as meaning that only the best commercial practice is to prevail and that only material and workmanship of the finest quality are to be used. All interpretations of the specifications

shall be made on the basis of this statement.

- 22.2 For the purpose of evaluation, the Bidder must indicate any variance or exceptions to the stated specifications no matter how slight. Deviations should be explained in detail. Absence of variations and/or corrections will be interpreted to mean that the Bidder meets all the specifications in every respect.
- 22.3 Any manufacturers' names, trade names, brand names, information and/or catalog numbers used herein are for the purpose of describing and establishing a general standard of quality, performance and characteristics and are not intended to limit or restrict competition. The Bidder may offer any brand which meets or exceeds the specifications for any item(s). If Bids are based on equivalent products, indicate on the Bid Form the manufacturer's name and catalog number. Bidder shall submit with his Bid complete and descriptive literature and/or specifications. The Bidder should also explain in detail the reason(s) why and submit proof that the proposed equivalent will meet the specifications and not be considered an exception thereto. The determination of equivalency shall rest solely with the TOWN. If Bidder fails to name a substitute, it will be assumed that Bidder is bidding on and will be required to furnish commodities identical to Bid standards.
- 22.4 A Contract, if awarded, will be on the basis of material and equipment described in the plans and the technical specifications without consideration of possible substitute or an "or equal" item. Whenever it is indicated that a substitute or an "or equal" item of material or equipment may be furnished or used by the Bidder if acceptable to the TOWN Engineer, application for such acceptance will not be considered by the TOWN Engineer until after the date of execution of the Contract. In all cases, the low Bidder shall be determined on the basis of the base bid which shall reflect the costs for the materials and equipment specified. Bidders unable to provide the specified materials and equipment shall be determined unresponsive.
- 22.5 Plans and specifications will be provided free of charge to the successful bidder upon contract award. These plans and specifications will be in an electronic format, compact disk. If the successful bidder requests hard copies of plans and specifications, they will be provided and charged to the successful bidder at the Town's cost to print and reproduce them. The Town will not provide anything but complete plan sets. No individual plan sheets or specification sheets will be made.

23. EQUAL OPPORTUNITY

The Town of Jupiter recognizes fair and open competition as a basic tenet of public procurement. Contractors doing business with the Town are prohibited from discriminating on the basis of race, color, creed, national origin, handicap, age or sex.

24. OCCUPATIONAL HEALTH & SAFETY

- 24.1 In compliance with Chapter 442, Florida Statutes, any toxic substance listed in Section 38F-41.03 of the Florida Administrative Code delivered as a result of this Bid must be accompanied by a Material Safety Data Sheet ("MSDS") which may be obtained from the manufacturer. The MSDS must include the following information:

- 24.1.1 The chemical name and the common name of the toxic substance.

- 24.1.2 The hazards or other risks in the use of the toxic substance including: a) The potential for fire, explosion, corrosivity and reactivity; b) The known acute and chronic health effects of risk from exposure including the medical conditions which are generally recognized as being aggravated by exposure to the toxic substance; and c) The primary routes of entry and symptoms of over exposure.
- 24.1.3 The proper precautions, handling practices, necessary personal protection equipment and other safety precautions in the use of or exposure to the toxic substances, including appropriate emergency treatment in case of exposure.
- 24.1.4 The emergency procedure for spills, fire, disposal and first aid.
- 24.1.5 A description in lay terms of the known specific potential health risks posed by the toxic substance intended to alert any person reading this information.
- 24.1.6 The year and month, if available, that the information was compiled and the name, address, and emergency telephone number of the manufacturer responsible for preparing the information.

## 25. AUDIT RIGHTS AND PUBLIC RECORDS

- 25.1 The TOWN reserves the right to audit the records of the successful Bidder for the commodities and/or services provided under the Contract at any time during the performance and term of the Contract and for a period of five (5) years after completion and acceptance by the TOWN. If required by the TOWN, the successful Bidder agrees to submit to an audit by an independent certified public accountant selected by the TOWN. The successful Bidder shall allow the TOWN to inspect, examine and review the records of the successful Bidder in relation to this contract at any and all times during normal business hours during the term of the Contract.
- 25.2 The Inspector General of Palm Beach County has the authority to investigate and audit matters relating to the negotiation and performance of this Contract and infurtherance thereof may demand and obtain records and testimony from the Contractor and its subcontractors and lower tier subcontractors. The Contractor understands and agrees that in addition to other remedies and consequences provided by law, the failure of the Contractor or its subcontractors or lower tier subcontractors to fully cooperate with the Office of Inspector General of Palm Beach County when requested may be deemed by the municipality to be material breach of this contract justifying its termination. The Office of Inspector General in Palm Beach County is established by Palm Beach County Code Section 2-421-2-440. Failure to cooperate with the Inspector General of Palm Beach County shall be in violation of Palm Beach Code, Section 2-421-2-440, and be punished pursuant to Section 125.69, Florida Statutes, in the same manner as a second degree misdemeanor.
- 25.3 The CONTRACTOR shall comply with public records laws Chapter 119, Florida Statutes, specifically to: Keep and maintain public records that ordinarily and necessarily would be required by the TOWN in order to perform the service; Provide the public with access to public records on the same terms and conditions that the TOWN would provide the records and at a cost that does not exceed the cost provided in Chapter 119, F.S. or as otherwise provided by law; Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed exempt as

authorized by law; Meet all requirements for retaining public records and transfer, at no cost, to the TOWN all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt of confidential and exempt from public disclosure requirements. All records stored electronically must be provided to the TOWN in a format that is compatible with the information technology systems of the TOWN. If the CONTRACTOR does not comply with a public records request, the public agency shall enforce the contract provisions in accordance with the contract.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT (561) 741-2379, [Lilianc@jupiter.fl.us](mailto:Lilianc@jupiter.fl.us)

Lilian Cain, Building Revenue & Budget Administrator  
Town of Jupiter  
210 Military Trail  
Jupiter, FL 33458

26. CONFLICT OF INTEREST

The award hereunder is subject to the provisions of Chapter 112, Florida Statutes. Bidders must disclose with their Bid the name of any officer, director, partner, proprietor, associate or agent who is also a public officer or employee of the TOWN or any of its agencies. Further, all Bidders must disclose the name of any public officer or employee of the TOWN who owns, directly or indirectly, an interest of five percent (5%) or more in the Bidder's firm or any of its branches or affiliate companies.

27. NON-COLLUSIVE AFFIDAVIT

Each Bidder shall complete the Non-Collusive Affidavit and include it with the Bid Form and shall submit this Form with the Bid. Failure of the Bidder to submit these documents may be cause for rejection of the Bid.

28. ETHICS REQUIREMENTS

No Proposer may employ, directly or indirectly, the mayor, any member of the Town Council or any director or department head of the Town. The Town Code prohibits any employee, or member or their immediate family or close personal relation to receive a substantial benefit or profit from any contract entered into with the Town, either directly or through any firm of which they are a member, or any corporation of which they are a stockholder or any business entity in which they have a controlling financial interest. Any affected Town employee may seek a conflict of interest opinion from the Town ethics officer prior to the submittal of a Proposal. Additionally, any employee may seek a legal opinion from the State of Florida Ethics Commission regarding state law conflict of interest provisions.

29. LOBBYING

Respondent(s) are advised that the “Palm Beach County Lobbyist Registration Ordinance” prohibits a respondent or anyone representing the respondent from communicating with any Town Council members, Town Council’s Staff, or any employee authorized to act on behalf of the Town to award a particular contract regarding its request for Pre-Qualification, i.e., a “Cone of Silence”.

The “Cone of Silence” is in effect from the date/time of the deadline for submission of the request for Pre-Qualification, and terminates at the time that the Town Council or a Town Department authorized to act on their behalf, awards or approved a contract, rejects all requests for Pre-Qualifications, or otherwise takes action which ends the solicitation process. Respondent(s) may, however contact any Town Council member. Town Council’s Staff, or any employee authorized to act on behalf of the Town Council to award a particular contract, via written communication i.e., facsimile, email or U. S. mail.

Violations of the “Cone of Silence” are punishable by a fine of \$250.00 per violation.

30. SUMMARY OF DOCUMENTS TO BE SUBMITTED BY BIDDERS

The following is a summary of documents, copies of which may be included in the Bid documents, which are to be completed and submitted by Bidders:

- (a) Bidder’s Certification
- (b) Trench Safety Act
- (c) Bid Form
- (d) Non-Collusive Affidavit
- (e) Certificate as to Corporate Principal
- (f) Bid Bond
- (g) Sworn Statement Under 287.133(3)(A)
- (h) Debarment Certification
- (i) Certified Resolution or other duly executed document evidencing authority to sign on behalf of the Bidder.
- (j) Certification of Non-Segregated Facilities, if required by the ITB
- (k) Qualification Statement, if required by the ITB.
- (l) Foreign (non-Florida Corporations)
- (m) References

**DIVISION I**  
**GENERAL CONDITIONS**

## **SECTION 1**

### **GENERAL**

#### **1.0 GENERAL**

Portions of these General Conditions and Town Modified Standard Specifications are written in the active voice writing style as further described below. These General Conditions are written to the Bidder, prior to award of the Contract and to the Contractor. Within these General Conditions, sentences that direct the Contractor to perform work are written in the active voice-imperative mood. These directions to the Contractor are written as commands. In the imperative mood, the subject “the Bidder” or “the Contractor” is understood. Sentences written in the active voice identify the party responsible for performing the action. For example, “The Engineer will determine the density of the compacted material.” Certain requirements of the Contractor may also be written in the active voice, rather than active voice-imperative mood.

## **SECTION 2**

### **DEFINITIONS AND TERMS**

- 2.0 **ABBREVIATIONS:** The following abbreviations, when used in the contract documents, represent the full text shown.

**AAN** American Association of Nurserymen, Inc.  
**AASHTO** American Association of State Highway and Transportation Officials  
**ACI** American Concrete Institute  
**AGC** The Associated General Contractors of America, Inc.  
**AGMA** American Gear Manufacturers Association  
**AIA** American Institute of Architects  
**AISI** American Iron and Steel Institute  
**ANSI** American National Standards Institute, Inc.  
**AREA** American Railway Engineering Association  
**ASCE** American Society of Civil Engineers  
**ASME** American Society of Mechanical Engineers  
**ASTM** American Society for Testing and Materials  
**AWG** American Wire Gauge  
**AWPA** American Wood Preservers Association  
**AWS** American Welding Society  
**AWWA** American Water Works Association  
**CRSI** Concrete Reinforcing Steel Institute  
**EASA** Electrical Apparatus Service Association  
**EPA** Environmental Protection Agency of the United States Government  
**FDOT** Florida Department of Transportation  
**FHWA** Federal Highway Administration  
**FSS** Federal Specifications and Standards  
**IEEE** Institute of Electrical and Electronics Engineers  
**IES** Illuminating Engineering Society  
**IPCEA** Insulated Power Cable Engineers Association  
**ISO** International Organization for Standards  
**MSTCSD** Minimum Specifications for Traffic Control Signals and Devices  
**MUTCD** Manual on Uniform Traffic Control Devices  
**NEC** National Electrical Code  
**NEMA** National Electrical Manufacturers Association  
**NFPA** National Fire Protection Association  
**NIST** National Institute for Standards and Technology  
**NOAA** National Oceanic and Atmospheric Administration  
**OSHA** Occupational Safety and Health Administration  
**SAE** Society of Automotive Engineers  
**SI** International System of Units  
**SSPC** Society of Protective Coatings  
**UL** Underwriters' Laboratories

Each of the above abbreviations, when followed by a number or letter designation, or combination of numbers and letters, designates a specification, test method, or other code or recommendation of the particular authority or organization shown. Use standards, specifications, test methods, or other codes as specified in the current edition at the time of the Bid opening.



## 2.1 **DEFINITIONS AND TERMS**

**ADVERTISEMENT:** The public announcement, as required by law, inviting bids for work to be performed or materials to be furnished, usually issued as “Notice to Contractors,” or “Notice to Bidders.”

**APPROVED PRODUCTS LIST (APL):** Any reference to the Approved Products List or APL is a reference to products that have been approved for use by the Florida Department of Transportation (FDOT) for use on State and Federal Highways and Town Roads. The required materials and products are listed in the Plans, Town Modified Specification, Standard Specifications or Standard Plans and which identify the product usage or material requirements. Where applicable, cross-references are provided so that usage and material requirements are easily identified.

**ARCHITECT:** The Architect as defined in s.481.203 (3) Florida Statutes.

**ARCHITECT OF RECORD:** The Architect or Architectural Firm registered in the State of Florida that performs services for the Town in connection with the design and construction of buildings.

**ARCHITECTURE:** The practice of architecture as defined in s.481.203 (6) Florida Statutes.

**ARTICLE:** The numbered prime subdivision of a Section of these Specifications.

**BID SECURITY:** The security furnished by the Bidder as guaranty that the Bidder will enter into the Contract for the work if the Town accepts the Bid.

**BRIDGE:** A structure, including supports, erected over a depression or over an obstruction such as water, highway or railway, or for elevated roadway, for carrying traffic or other moving loads, and having a length, measured along the center of the roadway, of more than 20 feet between the inside faces of end supports. A multiple-span box culvert is considered a bridge, where the length between the extreme ends of the openings exceeds 20 feet.

**BUILDING:** Any structure that enclosed a space used for sheltering any occupancy. Each portion of a building separated from other portions by a fire wall shall be considered as a separate building.

**CONSULTANT:** The Professional Engineer or Engineering Firm, or the Architect or Architectural Firm, registered in the State of Florida and under contract to the Town to perform professional services. The consultant may be the Engineer or Architect of Record or may provide services through and be subcontracted to the Engineer or Architect of Record.

**CONTRACT:** The documents containing and describing the mutual understanding between the Town and the Contractor.

**CONTRACT CLAIM (CLAIM):** A written demand submitted to the Town by the Contractor in compliance with 4.17 seeking additional monetary compensation, time, or other adjustments to the Contract, the entitlement or impact of which is disputed by the Town.

**CONTRACTOR:** Any individual, firm, partnership, joint venture or corporation entering into a Contract to perform the work specified herein.

**CONTRACT TIME:** The number of calendar days allowed for completion of the Contract work, including authorized time extensions.

**CONTRACTOR:** The individual, firm, joint venture, or company contracting with the Town to perform the work.

**CONTROLLING WORK ITEMS:** The activity or work item on the critical path having the least amount of total float. The controlling item of work will also be referred to as a Critical Activity.

**CULVERTS:** Any structure not classified as a bridge that provides an opening under the roadway.

**DAY:** A calendar day. Every day shown on the calendar, ending and beginning at midnight.

**DELAY:** Any unanticipated event, action, force or factor which extends the Contractor's time of performance of any controlling work item under the Contract. The term "delay" is intended to cover all such events, actions, forces or factors, whether styled "delay", "disruption", "interference", "impedance", "hindrance", or otherwise, which are beyond the control of and not caused by the Contractor, or the Contractor's subcontractors, material men, suppliers or other agents. This term does not include "extra work".

**DIVISION III MATERIALS:** Any reference to Division III Materials shall refer to Division III of the current edition of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. Division III Materials, Sections 900 through 999, is incorporated by reference into the Town's Modified Standard Specifications. The current edition shall either be the year indicated in the Plans or the calendar year in which the project is advertised for bidding.

**ENGINEER:** The Director of Engineering, Parks & Public Works for the Town, acting directly or through duly authorized representatives; such representatives acting within the scope of the duties and authority assigned to them.

**ENGINEER OF RECORD:** The Professional Engineer or Engineering Firm registered in the State of Florida that develops the criteria and concept for the project, performs the analysis, and is responsible for the preparation of the Contract Documents. The Engineer of Record may be Town in-house staff or a consultant retained by the Town. The Contractor shall not employ the Engineer of Record for any work related to the contract work; however, this does not apply to a design build project.

**EQUIPMENT:** The machinery and equipment, together with the necessary supplies for upkeep and maintenance thereof, and all other tools and apparatus necessary for the construction and acceptable completion of the work.

**EXTRA WORK:** Any "work" which is required by the Engineer to be performed and which is not otherwise covered or included in the project by the existing Contract Documents, whether it be in the nature of additional work, altered work, deleted work, work due to differing site conditions, or otherwise. This term does not include a "delay".

**FLORIDA BUILDING CODE:** A group of codes which establish the minimum construction

requirements to safe guard the public health, safety and general welfare in the built environment. The Florida Legislature in Chapter 553, Florida Statutes, mandates the establishment of Building Construction Standards which are adopted and updated every three years by the Florida Building Commission. The Florida Building Code is based on national building codes and national consensus standards which are amended where necessary for Florida's specific needs.

**HIGHWAY, STREET, OR ROAD:** A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.

**INSPECTOR:** An authorized representative of the Engineer, assigned to make official inspections of the materials furnished and of the work performed by the Contractor.

**LABORATORY:** The official testing laboratory used by the Town of Jupiter.

**MAJOR ITEM OF WORK:** Any item of work having an original Contract value in excess of 5% of the original Contract amount.

**MATERIALS:** Any substances to be incorporated in the work under the Contract.

**MEDIAN:** The portion of a divided highway or street separating the traveled ways for traffic moving in opposite directions.

**PAYMENT AND PERFORMANCE BONDS:** The security furnished by the Contractor and the surety as a guaranty that the Contractor shall fulfill the terms of the Contract and pays all legal debts pertaining to the construction of the project.

**PLANS:** Plans, working drawings, and supplements approved by the Town, including reproductions thereof, showing the location, character, dimensions and details of the work to be done.

**PROPOSAL (BID, BID PROPOSAL):** The offer of a Bidder, on the prescribed form, to perform the work and to furnish the labor and materials at the prices quoted.

**RESPONSIBLE BIDDER:** A responsible Bidder is one who is not only financially responsible, but one who is possessed of a judgment, experience, skill, ability, capability and integrity requisite and necessary to perform the Contract according to its terms.

**RESPONSIVE BIDDER:** A responsive Bid is one in which the Bidder has complied with all of the instructions as required in the Invitation to Bid, without modifying or qualifying the work proposed or the forms supplied to be submitted. This includes, but is not limited to, bonds, licenses, certificates of insurance.

**RIGHT-OF-WAY:** The land that the Town has title to, or right of use, for the road and its structures and appurtenances.

**ROADBED:** The portion of the roadway occupied by the subgrade and shoulders.

**ROADWAY:** The portion of a street within the limits of construction.

**SECTION:** A numbered prime division of these General Conditions, Town Modified Standard Specifications or reference to a Section of the Florida Department of Transportation Standard

Specifications for Road and Bridge Construction.

**SHOULDER:** The paved or unpaved portion of the roadbed outside the edges of the traveled way or back of curb, and extending to the top of front slopes.

**SPECIFICATIONS:** The directions, provisions, and requirements contained herein, together with all stipulations contained in the Contract setting out or relating to the method and manner of performing the work, or the quantities and qualities of materials and labor to be furnished under the Contract. Specifications include the following documents:

- Supplemental Conditions
- Technical Special Provisions
- Technical Specifications
- General Conditions
- Town Modified Standard Specifications
- FDOT Standard Specifications for Road and Bridge Construction

**STANDARD PLANS:** The edition current at the time of advertisement or the edition indicated in the plans of the Florida Department of Transportation Standard Plans for Road and Bridge Construction. If the term Standard Index is used, it would refer to an earlier version of the FDOT Design Standards. Unless stated otherwise in the plans or Specifications, the reference would be to the FY 2017-2018 Design Standards.

**STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION:** The edition current at the time of advertisement or the edition indicated in the plans of Divisions II and III of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction. Any references to Method of Measurement, and/or Basis of Payment and/or any Pay Items not listed on the Bid Form, regardless of where those references are contained in these Standard Specifications, shall not apply. Pay adjustments, as referenced in the Standard Specifications, shall not apply, except as provided for in General Conditions Sub-Article 3.2.2.

**STATE:** State of Florida.

**SUBARTICLE:** A headed and numbered subdivision of an Article of a Section of these Specifications.

**SUBCONTRACTOR:** Any individual, firm, partnership or corporation furnishing labor, services or material required under the Contract to the Contractor.

**SUBGRADE:** The portion of the roadbed immediately below the base course or pavement, including below the curb and gutter, valley gutter, shoulder and driveway pavement. The subgrade limits ordinarily include those portions of the roadbed shown in the plans to be constructed to a design bearing value or to be otherwise specially treated. Where no limits are shown in the plans, the subgrade section extends to a depth of 12 inches below the bottom of the base or pavement and outward to 6 inches beyond the base, pavement, or curb and gutter.

**SUBSTANTIAL COMPLETION:** The point in the project where the Contractor has completed 95% of the contract as a percentage of the original contract including the value of any approved supplemental agreements, and with the exception of punch list work, the project is ready for the Town's occupancy and use.

**SUPERINTENDENT**: The Contractor's authorized representative in responsible charge of the work.

**SUPPLEMENTAL AGREEMENT**: A written agreement between the Contractor and the Town, and signed by the surety, modifying the Contract within the limitations set forth in these Specifications.

**SURETY**: The corporate body that is bound by the Payment and Performance Bonds with and for the Contractor and responsible for the performance of the Contract and for payment of all legal debts pertaining thereto.

**TOWN**: The Town of Jupiter, a public corporation of the State of Florida, 210 Military Trail, Jupiter, Florida 33458.

**TOWN OF JUPITER UTILITY POTABLE AND STORMWATER CONSTRUCTION REQUIREMENTS**: The Town's Water and Stormwater requirements are provided in the "Guide for Development Design and Construction Standards Water and Stormwater;" <http://www.jupiter.fl.us/DocumentCenter/View/11852>

**TRAVELED WAY**: The portion of the roadway providing for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

**UNILATERAL PAYMENT**: A payment of money made to the Contractor by the Town, for sums the Town determines to be due to the Contractor for work performed on the project, and whereby the Contractor by acceptance of such payment does not waive any rights the Contractor may otherwise have against the Town for payment of any additional sums the Contractor claims are due for the work.

**WORK**: All labor, equipment, materials, tools and incidentals required to execute and complete the requirements of the Contract including superintendence and all costs, services and responsibilities prescribed or implied; and which are required for a complete and functional Project.

**WORKING DAY**: Any calendar day on which the Contractor works or is expected to work in accordance with the approved work progress schedule.

## SECTION 3

### SCOPE OF WORK

#### 3.0 INTENT OF CONTRACT

The intent of the Contract is to provide for the construction and completion in every detail of the work, including but not limited to, all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the Contract Documents.

#### 3.1 WORK NOT COVERED BY GENERAL CONDITIONS

Proposed construction and any contractual requirements not covered by these General Conditions may be covered by Contract plan notes or by Supplemental Conditions, Technical Special Provisions, Technical Specifications, and Town Modified Standard Specifications for the Contract, and all requirements of such Supplemental Conditions, Technical Special Provisions, Technical Specifications, and Town Modified Specifications shall be considered as a part of these Conditions.

#### 3.2 ALTERATION OF PLANS OR OF CHARACTER OF WORK

3.2.1 **General:** The Engineer reserves the right to make, at any time prior to or during the progress of the work, such increases or decreases in quantities, whether a significant change or not, and such alterations in the details of construction, whether a substantial change or not, including but not limited to alterations in the grade or alignment of the road or structure or both, as may be found necessary or desirable by the Engineer. Such increases, decreases or alterations shall not constitute a breach of Contract, shall not invalidate the Contract, nor release the Surety from any liability arising out of this Contract or the Surety bond. The Contractor agrees to perform the work, as altered, the same as if it had been a part of the original Contract.

The term “significant change” applies only when:

- (a) The Engineer determines that the character of the work as altered differs materially in kind or nature from that involved or included in the original proposed construction, or;
- (b) a major item of work, as defined in 2.1, is increased in excess of 125% or decreased below 75% of the original Contract quantity. The Town will apply any price adjustment for an increase in quantity only to that portion in excess of 125% of the original Contract item quantity, or in case of a decrease below 75% to the actual amount of work performed such allowance to be determined in accordance with 3.3.2, below.

In the instance of (a) above, the determination by the Engineer shall be conclusive and shall not subject to challenge by the Contractor in any forum, except upon the Contractor establishing by clear and convincing proof that the determination by the Engineer was without any reasonable and good faith basis.

3.2.2 **Increase, Decrease or Alteration in the Work:** The Engineer reserves the right to make alterations in the character of the work which involve a substantial change in the nature

of the design or in the type of construction or which materially increases or decreases the cost or time of performance. Such alteration shall not constitute a breach of Contract, shall not invalidate the Contract or release the Surety. Notwithstanding that the Contractor shall have no formal right whatsoever to any extra compensation or Contract Time Extension deemed due by the Contractor for any cause unless and until the Contractor follows the procedures set forth in 4.17.2 for preservation, presentation and resolution of the claim, the Contractor may at any time, after having otherwise timely provided a notice of intent to claim or preliminary Contract Time Extension request pursuant to 4.17.2 and 7.10.2, submit to the Town a request for equitable adjustment of compensation or time or other dispute resolution proposal. The Contractor shall in any request for equitable adjustment of compensation, time, or other dispute resolution proposal certify under oath and in writing, in accordance with the formalities required by Florida law, that the request is made in good faith, that any supportive data provided are accurate and complete to the Contractor's best knowledge and belief, and that the amount of the request accurately reflects what the Contractor in good faith believes to be the Town's responsibility. Such certification must be made by an officer or director of the Contractor with the authority to bind the Contractor. Any such certified statements of entitlement and costs shall be subject to the audit provisions set forth in 4.17.2. While the submittal or review of a duly certified request for equitable adjustment shall neither create, modify, nor activate any legal rights or obligations as to the Contractor or the Town, the Town will review the content of any duly certified request for equitable adjustment or other dispute resolution proposal, with any further action or inaction by the Town thereafter being in its sole discretion. Any request for equitable adjustment that fails to fully comply with the certification requirements will not be reviewed by the Town.

3.2.3 The monetary compensation provided for below constitutes full and complete payment for such additional work and the Contractor shall have no right to any additional monetary compensation for any direct or indirect costs or profit for any such additional work beyond that expressly provided below. The Contractor shall be entitled to a Contract Time Extension only to the extent that the performance of any portion of the additional work is a controlling work item and the performance of such controlling work item actually extends completion of the project due to no fault of the Contractor. All time related costs for actual performance of such additional work are included in the compensation already provided below and any Contract Time Extension entitlement hereunder will be without additional monetary compensation.

3.2.4 The Contractor shall have no right to any monetary compensation or damages whatsoever for any direct or indirect delay to a controlling work item arising out of or in any way related to the circumstances leading up to or resulting from additional work (but not relating to the actual performance of the additional work, which is paid for as otherwise provided herein), except only as provided for under 4.17.9.2.

3.2.4.1 **Allowable Costs for Extra Work:** The Engineer may direct in writing that extra work be done and, at the Engineer's sole discretion, the Contractor will be paid pursuant to an agreed Supplemental Agreement or in the following manner:

- (a) Labor and Burden: The Contractor will receive payment for actual costs of direct labor and burden for the additional or unforeseen work. Labor includes foremen actually engaged in the work; and will not include project supervisory personnel nor necessary on-site clerical staff, except

when the additional or unforeseen work is a controlling work item and the performance of such controlling work item actually extends completion of the project due to no fault of the Contractor. Compensation for project supervisory personnel, but in no case higher than a Project Manager's position, shall only be for the pro-rata time such supervisory personnel spent on the contract. In no case shall an officer or director of the Company, nor those persons who own more than 1% of the Company, be considered as project supervisory personnel, direct labor or foremen hereunder. Payment for burden shall be limited solely to the following:

- FICA: Rate established by Law
- FUTA/SUTA: Rate established by Law
- Medical Insurance: Actual
- Holidays, Sick & Vacation benefits: Actual
- Retirement benefits: Actual
- Workers Compensation: Rates based on the National Council on Compensation Insurance basic rate tables adjusted by Contractor's actual experience modification factor in effect at the time of the additional work or unforeseen work
- Per Diem: Actual but not to exceed State of Florida's rate
- Insurance\*: Actual

\*Compensation for Insurance is limited solely to General Liability Coverage and does not include any other insurance coverage (such as, but not limited to, Umbrella Coverage, Automobile Insurance, etc.).

At the Pre-construction conference, the Contractor shall certify to the Engineer the following:

- A listing of on-site clerical staff, supervisory personnel and their pro-rated time assigned to the contract
- Actual Rate for items listed above
- Existence of employee benefit plan for Holiday, Sick and Vacation benefits and a Retirement Plan, and;
- Payment of Per Diem is a company practice for instances when compensation for Per Diem is requested.

Such certification must be made by an officer or director of the Contractor with authority to bind the Contractor. Timely certification is a condition precedent to any right of the Contractor to recover compensations for such costs, and failure to timely submit the certification will constitute a full, complete, absolute and irrevocable waiver by the Contractor of any right to recover such costs. Any subsequent changes shall be certified to the Engineer as part of the cost proposal or seven calendar days in advance of performing such extra work.

- (b) Materials and Supplies: For materials accepted by the Engineer and used



on the project, the Contractor will receive the actual cost of such materials incorporated into the work, including Contractor paid transportation charges (exclusive of equipment as hereinafter set forth). For supplies reasonably needed for performing the work, the Contractor will receive the actual cost of such supplies.

- (c) Equipment: For any machinery or special equipment (other than small tools), including fuel and lubricant, the Contractor will receive 50% of the "Rental Rate Blue Book" for the actual time that such equipment is in operation on the work, and 25% of the "Rental Rate Blue Book" for the time the equipment is directed to standby and remain on the project site, to be calculated as indicated below. The equipment rates will be based on the latest edition (as of the date the work to be performed begins) of the "Rental Rate Blue Book for Construction Equipment" or the "Rental Rate Blue Book for Older Construction Equipment," whichever is applicable, as published by Machinery information Division of PRIMEDIA Information, Inc. (version current at the time of Bid), using all instructions and adjustments contained therein and as modified below. On all projects, the Engineer will adjust the rates using regional adjustments and Rate Adjustment Tables according to the instructions in the Blue Book.

Allowable Equipment Rates will be established as set out below:

- (1) Allowable Hourly Equipment Rate = Monthly Rate/176 x Adjustment Factors x 50%
- (2) Allowable Hourly Operating Cost = Hourly Operating Cost x 100%.
- (3) Allowable Rate Per Hour = Allowable Hourly Equipment Rate + Allowable Hourly Operating Cost
- (4) Standby Rate = Allowable Hourly Equipment Rate x 50%.

The Monthly Rate is The Basic Machine Rate Plus Any Attachments. Standby rates will only apply when equipment is not in operation and is directed by the Engineer to standby at the project site when needed again to complete work and the cost of moving the equipment will exceed the accumulated standby cost. Standby rates will not apply on any day the equipment operates for eight hours or more. Standby payment will be limited to only that number of hours which, when added to the operating time for that day equals eight hours. Standby payment will not be made on days that are not normally considered work days on the project.

- (d) Indirect Costs, Expenses, and Profit: Compensation for all indirect costs, expenses, and profit of the Contractor, including but not limited to overhead of any kind, whether jobsite, field office, division office, regional office, home office, or otherwise, is expressly limited to the following:

- (1) Solely the payments in (a) through (c), above, and a mark-up of 17.5% thereon.

- (i) Bond: The Contractor will receive compensation for any premium for acquiring a bond for such additional or unforeseen work; provided, however, that such payment for additional bond will only be paid upon presentment to the Town of clear and convincing proof that the Contractor has actually provided and paid for separate bond premiums for such additional or unforeseen work in such amount.
- (ii) The Contractor will be allowed a markup of 10% on the first \$50,000 and a markup of 5% on any amount over \$50,000 on any subcontract directly related to the additional or unforeseen work. Any such subcontractor mark-up will be allowed only by the prime Contractor and a first tier subcontractor, and the Contractor must elect the markup for any eligible first tier subcontractor to do so.

**3.2.5 Subcontracted Work:** For work performed by a subcontractor, compensation for the additional or unforeseen work shall be solely limited to as provided for in 3.2.4.1(d)(1), with the exception of, in the instance of subcontractor performed work only, the subcontractor may receive compensation for any premium for acquiring a bond for the additional or unforeseen work; provided, however, that such payment for additional subcontractor bond will only be paid upon presentment to the Town of clear and convincing proof that the subcontractor has actually provided and paid for separate bond premiums for such additional or unforeseen work in such amount.

The Contractor shall require the subcontractor to provide a certification, in accordance with 3.2.4.1(a), as part of the cost proposal and provide such to the Engineer. Such certification must be made by an officer or director of the subcontractor with authority to bind the subcontractor. Timely certification is a condition precedent to any right of the Contractor to recover compensation for such subcontractor costs, and failure to timely submit the certification will constitute a full, complete, absolute and irrevocable waiver by the Contractor of any right to recover such subcontractor costs.

**3.2.6 Conditions Requiring a Supplemental Agreement or Unilateral Payment:** A Supplemental Agreement or Unilateral Payment will be used to clarify the plans and specifications of the Contract; for extra work; to document quantity overruns that exceed 5% of the original Contract amount; to provide for unforeseen work, grade changes, or alterations in plans which could not reasonably have been contemplated or foreseen in the original plans and specifications; to change the limits of construction to meet field conditions; to provide a safe and functional connection to an existing pavement; to settle documented Contract claims; to make the project functionally operational in accordance with the intent of the original Contract and subsequent amendments thereto.

The Contractor shall not perform any work to be covered by a Supplemental Agreement or Unilateral Payment before written authorization is received from the Engineer. The Engineer's written authorization will set forth sufficient work information to allow the work to begin. The work activities, terms and conditions will be reduced to written Supplemental Agreement or Unilateral Payment form promptly thereafter. No payment will be made on a Supplemental Agreement or Unilateral Payment prior to the Town's

approval of the document.

3.2.6.1 Notwithstanding any other provision contained herein to the contrary, the TOWN has unilateral authority to pay the CONTRACTOR the sums the TOWN determines to be due to the contractor for work performed on a project. This unilateral authority to pay by the TOWN does not preclude or limit the rights of the TOWN and the CONTRACTOR to negotiate and agree to the amounts to be paid to the CONTRACTOR. By acceptance of any such unilateral payment, the CONTRACTOR does not waive any rights the CONTRACTOR may have against the TOWN for payment of any additional sums the CONTRACTOR claims are due for the work.

3.2.7 **Extra Work:** Extra work authorized in writing by the Engineer will be paid in accordance with the formula in 3.2.2. Such payment will be the full extent of all monetary compensation entitlement due to the Contractor for such extra work. Any entitlement to a Contract Time Extension due to extra work will be limited solely to that provided for in 3.2.2 for additional work.

3.2.8 **Connections to Existing Pavement, Drives and Walks:** The Contractor shall generally adhere to the limits of construction at the beginning and end of the Project as detailed in the plans. However, if the Engineer determines that it is necessary to extend the construction in order to make suitable connections to existing pavement, the Engineer will authorize such a change in writing. For necessary connections to existing walks and drives that are not indicated on the plans, the Engineer will provide direction regarding the proper connections in accordance with the Standard Plans.

3.2.9 **Differing Site Conditions:** During the progress of the work, if subsurface or latent physical conditions are encountered at the site differing materially from those indicated in the Contract Documents, or if unknown physical conditions of an unusual nature differing materially from those ordinarily encountered and generally recognized as inherent in the work provided for in the Contract Documents are encountered at the site, the party discovering such conditions shall promptly notify the other party in writing of the specific differing conditions before the Contractor disturbs the conditions or performs the affected work. Upon receipt of written notification of differing site conditions from the Contractor, the Engineer will investigate the conditions, and if it is determined that the conditions materially differ and cause an increase or decrease in the cost or time required for the performance of any work under the Contract, an adjustment will be made, excluding loss of anticipated profits, and the Contract will be modified in writing accordingly. The Engineer will notify the Contractor whether or not an adjustment of the Contract is warranted. The Engineer will not allow a Contract adjustment, Contract Time Extension or additional compensation, for a differing site condition unless the Contractor has provided the required written notice. The Engineer will not allow a Contract adjustment under this clause for any effects caused to any other Town or non-Town projects on which the Contractor may be working.

3.2.10 **Changes Affecting Utilities:** The Contractor shall be responsible for identifying and assessing any potential impacts to a utility that may be caused by the changes proposed by the Contractor, and the Contractor shall at the time of making the request for a change notify the Town in writing of any such potential impacts to utilities. Town approval of a Contractor proposed change does not relieve the Contractor of sole responsibility for all utility impacts, costs, delays or damages, whether direct or indirect, resulting from

Contractor initiated changes in the design or construction activities from those in the original Contract Specifications, design plans (including traffic control plans) or other Contract Documents and which effect a change in utility work different from that shown in the utility plans, joint project agreements or utility relocation schedules.

### 3.3 VALUE ENGINEERING

3.3.1 **General.** The Contractor is encouraged to develop, prepare, and submit Value Engineering Proposals (VEPs) voluntarily. The Contractor shall share in any contract savings realized from accepted VEPs in accordance with paragraphs below.

3.3.2 VEP preparation. As a minimum, the Contractor shall include in each VEP the information described in subarticle below:

3.3.2.1 A description of the difference between the existing contract requirement and that proposed the comparative advantages and disadvantages of each, a justification when an item's function or characteristics are being altered, and the effect of the change on the end item's performance.

3.3.2.2 A list and analysis of the contract requirements that must be changed if the VEP is accepted, including any suggested specification revisions.

3.3.2.3 A separate, detailed cost estimate for: 1) the affected portions of the existing contract requirement, and 2) the VEP. The cost reduction associated with the VEP shall take into account the Contractor's costs, including any amount attributable to subcontracts under paragraph (f) below.

3.3.2.4 A description and estimate of costs that the Town may incur in implementing the VEP, such as test and evaluation, operating, maintenance and support costs.

3.3.2.5 A prediction of any effects the proposed change would have on the operating costs of the Town.

3.3.2.6 A statement of the time by which a Contract amendment accepting the VEP must be issued in order to achieve the maximum cost reduction, noting any effect on the Contract completion time.

3.3.2.7 Identification of any previous submissions of the VEP, including the dates submitted, the Contract numbers involved, and previous Town actions.

3.3.2.8 Any design change to the plans and specifications must be prepared under the supervision of a Professional Engineer in the State of Florida at the Contractor's expense. Such changes must be approved by the Engineer.

### 3.4 SUBMISSION:

The Contractor shall submit VEP's to the Engineer.

### 3.5 TOWN ACTION:

- 3.5.1 The Engineer shall notify the Contractor of the status of the VEP within fourteen (14) calendar days after Engineer receives it. If additional time is required, the Engineer shall provide the reason for the delay and the expected date of the decision. The Town will process VEP's expeditiously; however, it shall not be liable for any delay in acting upon a VEP.
- 3.5.2 If the VEP is not accepted, the Engineer shall notify the Contractor in writing, explaining the reasons for rejection. The Contractor may withdraw any VEP, in whole or in part, at any time before it is accepted by the Town. The Engineer may require that the Contractor provide written notification before undertaking significant expenditures for VEP effort.
- 3.5.3 Any VEP may be accepted, in whole or in part, by the Town's execution of an amendment to this Contract citing this clause: The Town may accept the VEP, even though an agreement on price reduction has not been reached, by issuing the Contractor a notice to proceed with the change. Until a notice to proceed is issued or a Contract amendment applies a VEP to this Contract, the Contractor shall perform in accordance with the existing Contract. The Town's decision to accept or reject all or part of any VEP, shall be final and not subject to dispute resolution or otherwise subject to litigation.

### 3.6 SHARING:

- 3.6.1 Rates. The Contractor's share of savings is determined by subtracting Town costs (listed in paragraph 3.3.2.4 above) from Contract savings (listed in paragraph 3.3.2.3) and multiplying the result by fifty percent (50%) for fixed-price contracts.
- 3.6.2 Payment. Payment of any share due the Contractor for use of a VEP on this Contract shall be authorized by an amendment to this Contract to:
  - 3.6.2.1 Accept the VEP;
  - 3.6.2.2 Reduce the Contract price or estimated cost by the amount of Contract savings;  
and
  - 3.6.2.3 Provide the Contractor's share of savings by adding the amount calculated under subparagraph 3.6.1 above to the Contract price or fee.

### 3.7 SUBCONTRACTS:

- 3.7.1 The Contractor is encouraged to include an appropriate value engineering clause any subcontract and to share any cost savings with its subcontractors.
- 3.7.2 Substitution of materials and/or equipment in lieu of that specified shall not necessarily be considered a VEP. To be considered as a VEP, the substitution must involve cost savings other than a simple reduction in price of the equipment or materials.

3.8 RIGHTS IN, AND USE OF, MATERIALS FOUND ON THE SITE OF THE WORK:

Ownership and disposal of existing materials: Take ownership and dispose of all materials that are not designated as the property of other parties, in both roadway and structures, found on the right-of-way, and all material in structures designated for removal. Such materials do not include earth or other excavated material required for the construction of the project. During construction, the Contractor may use materials from existing structures that are required to be removed and that are designated to remain the property of the Town. The Contractor shall not cut or otherwise damage such material during removal unless the Engineer gives permission to do so. The Contractor shall not store material in an accessible location as the Engineer directs. The Town is not responsible for the quality or quantity of any material salvaged.

3.9 UNFORESEEABLE WORK

When the Town requires work that is not covered by a price in the Contract and such work does not constitute a “Significant Change” as defined in 3.2.1, and the Town finds that such work is essential to the satisfactory completion of the Contract within its intended scope, the Town will make an adjustment to the Contract. The Engineer will determine the basis of payment for such an adjustment in a fair and equitable amount.

3.10 FINAL CLEANING UP OF RIGHT-OF-WAY:

Upon completion of the work, and before the Town accepts the work and makes final payment, the Contractor shall remove from the right-of-way and adjacent property all falsework, equipment, surplus and discarded materials, rubbish and temporary structures; restore in an acceptable manner all property, both public and private, that has been damaged during the prosecution of the work; and leave the waterways unobstructed and the roadway in a neat and presentable condition throughout the entire length of the work under Contract. The Contractor shall not dispose of materials of any character, rubbish or equipment, on abutting property, with or without the consent of the property owners. The Engineer will allow the Contractor to temporarily store equipment, surplus materials, usable forms, etc., on a well-kept site owned or leased by the Contractor, adjacent to the project, but the Contractor shall not place or store discarded equipment, materials, or rubbish on such a site. At the Contractor’s expense, the Contractor shall shape and dress areas adjacent to the project right-of-way that were used as plant sites, materials storage areas or equipment yards when they are no longer needed for such purposes, and grass these areas when the Engineer directs.

## SECTION 4

### CONTROL OF THE WORK

#### 4.1 TOWN'S PLANS

The Town's plans consist of general drawings showing such details as are necessary to give a comprehensive idea of the construction contemplated. In general, roadway plans will show alignment, profile grades, typical cross-sections and general cross-sections. For minor shoulder widening and sidewalk projects, the Town may omit profile grades and general cross-sections from the plans. In general, structure plans will show in detail all dimensions of the work contemplated. When the structure plans do not show the dimensions in detail, they will show general features and such details as are necessary to give a comprehensive idea of the structure.

Grades shown are finished grades, and B.M. Datum is North American Vertical Datum 1988 (NAVD-1988) National Geodetic Vertical Datum of 1929 (NGVD-1929) or other datum as noted in the plans.

#### 4.2 ALTERATIONS IN PLANS

The Engineer will issue, in writing, all authorized alterations affecting the requirements and information given on the approved plans.

#### 4.3 REUSE OF PLANS AND SPECIFICATIONS

The Town retains all rights to the plans and specifications prepared for the Town by an Engineer or Architect. The Contractor shall not reuse the plans and specifications without the written consent of the Town, and the Engineer and/or Architect.

#### 4.4 SHOP DRAWINGS AND SUBMITTALS

In general, the Town requires shop drawings, erection drawings, associated trade literature, calculations, schedules, manuals and similar documents submitted by the Contractor to define some portion of the project work. The type of work includes both permanent and temporary works as appropriate to the project for items of work not fully detailed in the plans which require additional drawings and coordination prior to constructing the item, including but not limited to:

1. Bridge components not fully detailed in the plans, i.e. pre-stressed elements, steel girder details, post-tensioning details, handrails, etc.
2. Retaining Wall Systems;
3. Pre-cast Box Culverts;
4. Lighting, signalization and signing structures and components;
5. Building structures;
6. Drainage structures, attenuators, and other nonstructural items;
7. Design and structural details furnished by the Contractor in compliance with the Contract;
8. Temporary Works affecting public safety.

4.4.1 The Contractor shall prepare and submit a schedule of submittals that identifies the work for which shop drawings apply. For each planned submittal, the Contractor shall define the type, and approximate number of drawings or other documents that are included and the planned submittal date, considering the processing requirements herein. The

Contractor shall submit the schedule of submittals to the Town's Engineer within 21 days of the start of the Contract, and prior to the submission of any shop drawings. The Contractor shall coordinate subsequent submittals with construction schedules to allow sufficient time for review, approval, and re-submittal as necessary.

- 4.4.2 The Contractor shall furnish two clearly legible photographic or xerographic copies of all shop drawings that are necessary to complete the structure in compliance with the design shown on the plans. The Contractor shall prepare all shop drawings using the same units of measure as those used in the Town's plans. The Contractor shall use sheets no larger than 24 by 36 inches. Consecutively number each sheet in the submittal series, and indicate the total number in the series (i.e., 1 of 12, 2 of 12, 12 of 12). The Contractor shall include on each sheet the following items as a minimum requirement: the complete Town Contract Number, drawing title and number, a title block showing the names of the fabricator or producer and the Contractor for which the work is being done, the initials of the person(s) responsible for the drawing, the date on which the drawing was prepared, the location of the item(s) within the project, the Contractor's approval stamp with date and initials, and, when applicable, the signature and embossed seal of the Specialty Engineer. A re-submittal will be requested when any of the required information is not included.
- 4.4.3 The Contractor shall schedule the submission of shop drawings to allow for a 30-day review period. The review period commences upon the Engineer's receipt of the valid submittal or resubmittal and terminates upon the transmittal of the submittal back to the Contractor. A valid submittal includes all the minimum requirements outlined in above. Allow 20-day review time shall be allowed for resubmittals. Failure by the Contractor to make timely submission of required submittals is not a valid reason for a Time Extension.
- 4.4.4 The Engineer's review of shop drawings, submittals or samples is only for conformance with the contract documents. The Engineer's approval does not relieve the Contractor of the responsibility for any deviation from the requirements of the contract documents nor from responsibility for errors and omissions in the shop drawings, submittals or samples. The Contractor shall determine and verify all field measurements, field construction criteria, quantities, materials, catalog numbers, and similar data.

#### 4.5 COORDINATION OF CONTRACT DOCUMENTS

- 4.5.1 The plans, specifications and other Contract Documents are intended to be complimentary and to describe and depict a complete project.
- 4.5.2 The Contractor shall check all plans and specifications furnished to him immediately upon their receipt and shall promptly notify the Town of all errors, inconsistencies, omissions and discrepancies.
- 4.5.3 Standard references used in the Specifications shall be the latest revision or edition of that reference. Any such referenced paragraph or section revised shall apply to the work.
- 4.5.4 Computed dimensions govern over scaled dimensions. In cases of discrepancy, the most stringent condition will apply with the governing order of the Contract Documents as follows:

##### 1. Supplemental Agreements and Unilateral Payments



2. Addenda
3. Supplemental Conditions
4. CONTRACT
5. Invitation to Bid and Instructions to Bidders
6. Technical Specifications
7. Technical Special Provisions
8. Plans
9. General Conditions
10. Town Modified Standard Specifications
11. FDOT Standard Specifications for Road and Bridge Construction
12. Town Standard Details
13. FDOT Standard Plans for Road and Bridge Construction

4.5.5 The Contractor's attention is drawn to the fact that the reproduction process may have altered the scale of the plans.

#### 4.6 CONFORMITY OF THE WORK WITH THE CONTRACT DOCUMENTS

The Contractor shall perform all work and furnish all materials in reasonably close conformity with the lines, grades, cross-sections, dimensions, and material requirements, including tolerances, as specified in the Contract Documents. In the event that the Engineer finds that the Contractor has used material or produced a finished product that is not in reasonably close conformity with the Contract Documents, but that the Contractor has produced reasonably acceptable work, the Engineer will determine if the Town will accept the work in place. In this event, the Engineer will document the basis of acceptance by Contract modification, which provides for an appropriate reduction in the Contract price for such work or materials included in the accepted work as deemed necessary to conform to the determination based on engineering judgment. In the event that the Engineer finds that the Contractor has used material or produced a finished product that is not in reasonably close conformity with the Contract Documents, and that the Contractor has produced an inferior or unsatisfactory product, the Contractor shall remove and replace or otherwise correct the work or materials at no expense to the Town. For base and surface courses, the Town will allow the finished grade to vary as much as 0.08 Foot from the grade shown in the plans, provided that the Contractor's work meets all templates and straightedge requirements and contains suitable transitions.

#### 4.7 CORRECTIONS FOR CONSTRUCTION ERRORS

4.7.1 For work that the Contractor constructs incorrectly or does not meet the requirements of the Contract Documents, the Contractor has the prerogative to submit an acceptance proposal to the Engineer for review and disposition. The acceptance proposal shall describe the error or defect and either describe remedial action for its correction or propose a method for its acceptance. In either case, the acceptance proposal shall address structural integrity, aesthetics, maintainability, and the effect on Contract Time. The Town will judge any such proposal for its effect on these criteria and also for its effect on Contract Administration. When the Engineer judges that a proposal infringes on the structural integrity or maintainability of the structure, engage a Specialty Engineer to perform a technical assessment and submit it to the Engineer for approval. The cost of all specialty engineering or additional testing required by the Engineer will be at no additional expense to the Town. The Contractor shall carry out all approved corrective construction measures at no expense to the Town. Notwithstanding any disposition of the compensation aspects of the defective work, the Engineer's decision on the technical

merits of a proposal is final.

- 4.7.2 **Errors or Omissions in the Contract Documents:** The Contractor shall not take advantage of any apparent error or omission discovered in the Contract Documents, but shall immediately notify the Engineer of such discovery. The Engineer will then make such corrections and interpretations as necessary to reflect the actual spirit and intent of the Contract Documents.

4.8 **AUTHORITY OF THE ENGINEER**

Perform all work to the satisfaction of the Engineer. The Engineer will decide all questions, difficulties, and disputes, of whatever nature, which may arise relative to the interpretation of the plans, construction, prosecution, and fulfillment of the Contract, and as to the character, quality, amount, and value of any work done, and materials furnished, under or by reason of the Contract.

4.9 **AUTHORITY AND DUTIES OF ENGINEER'S ASSISTANTS**

The Engineer may appoint such assistants and representatives desired. These assistants and representatives are authorized to inspect all work done and all materials furnished. Such inspection may extend to all or any part of the work and to the manufacture, preparation, or fabrication of the materials to be used. Such assistants and representatives are not authorized to revoke, alter, or waive any requirement of these Specifications. Rather, they are authorized to call to the attention of the Contractor any failure of the work or materials to meet the Contract Documents, and have the authority to reject materials or suspend the work until any questions at issue can be referred to and decided by the Engineer. The Engineer will immediately notify the Contractor in writing of any such suspension of the work, stating in detail the reasons for the suspension. The presence of the inspector or other assistant in no way lessens the responsibility of the Contractor.

4.10 **ENGINEERING AND LAYOUT**

- 4.10.1 **Survey:** The Contractor shall obtain the services of a Florida licensed surveyor to provide all necessary survey control points to establish lines and grades, including all necessary construction staking, which provide information to sufficiently and accurately carryout the work described by the contract documents for the entire project. The contractor shall be solely responsible for the accuracy of the lines and grades, alignments, locations, elevations and dimensions that either the plans show, or the Engineer provides for compatibility with existing conditions, for all elements of the work within the Project limits. It shall be the contractor's responsibility to preserve this staking for the entire duration of the project. At the completion of the project, the contractor shall provide to the Town two (2) signed and sealed copies of the as-built drawings of the project and an electronic AutoCAD (DWG) file of the project as-built drawing.

The cost of this work shall be included, on a proportionate basis, as a part of the individual items of work and the Town will make no separate measurement or payment for this work.

- 4.10.2 **Furnishing of Stake Materials:** The Contractor shall furnish all stakes, templates, and other materials necessary for establishing and maintaining the lines and grades necessary for control and construction of the work.

4.10.3 **Specific Staking Requirements:** When performing new base construction as part of the Project, the Contractor shall set stakes to establish lines and grades for subgrade, base, curb, and related items at intervals along the line of the work no greater than 50 feet on tangents and 25 feet on curves. The Contractor shall set grade stakes at locations that the Engineer directs to facilitate checking of subgrade, base, and pavement elevations in crossovers, intersections, and irregular shaped areas. For bridge construction stakes and other control, the Contractor shall set references at sufficiently frequent intervals to ensure construction of all components of a structure in accordance with the lines and grades shown in the plans. For projects where the plans do not show a centerline or other survey control line for construction of the work (resurfacing, safety modifications, etc.), the Contractor shall provide only such stakes as necessary for horizontal and vertical control of work items. For resurfacing and resurfacing-widening type projects, the Contractor shall establish horizontal controls adequate to ensure that the asphalt mix added matches with the existing pavement. In tangent sections, the Contractor shall set horizontal control points at 100-foot intervals by an instrument survey. In curve sections, set horizontal control points at 25-foot intervals by locating and referencing the centerline of the existing pavement. The Contractor shall establish by an instrument survey, and mark on the surface of the finished pavement at 25-foot intervals, the points necessary for striping of the finished roadway. As an exception, for resurfacing and resurfacing/widening projects, the Contractor shall establish these points in the same manner as used for horizontal control of paving operations. The Contractor shall mark the pavement with white paint. If performing striping, the Engineer may approve an alternate method for layout of striping provided that the Contractor achieves an alignment equal to or better than the alignment that would be achieved using an instrument survey. For projects that include temporary or permanent striping of "no passing zones", the Contractor shall provide the location and length of these zones as shown in the plans, except projects where the vertical or horizontal alignment is new or altered from preconstruction alignment. For projects that consist of new or altered vertical or horizontal alignment, the Town will provide the location and length of the "no passing zones" during construction. For these projects, notify the Engineer not less than 21 calendar days prior to beginning striping. For all projects, set a station identification stake at each right-of-way line at 100-foot intervals and at all locations where a change in right-of-way width occurs. The Contractor shall mark each of these stakes with painted numerals, of a size readable from the roadway, corresponding to the project station at which it is located. As an exception to the above, for projects where plans do not show right-of-way lines, the Contractor shall set station identification stakes at locations and intervals appropriate to the type of work being done. For resurfacing and resurfacing/widening projects, the Contractor shall set station identification stakes at 200-foot intervals.

4.10.4 **Personnel, Equipment, and Record Requirements:** The Contractor shall employ only competent personnel and use only suitable equipment in performing layout work. The Contractor shall not engage the services of any person or persons in the employ of the Town for performance of layout work. The Contractor shall keep adequate field notes and records while performing as layout work. The Contractor shall make these field notes and records available for the Engineer's review as the work progresses, and furnish copies to the Engineer at the time of completion of the project. The Engineer's inspection, checking, or acceptance of the Contractor's field notes or layout work does not relieve the Contractor of his responsibility to achieve the lines, grades, and dimensions shown in the Contract Documents. Prior to final acceptance of the project, the Contractor shall mark, in a permanent manner on the surface of the completed work, all horizontal control points

originally furnished by the Town.

- 4.10.5 **Payment:** The Contractor shall include the cost of performing layout work as described above in the Contract unit prices for the various items of work that require layout.

#### 4.11 SUPERVISION BY CONTRACTOR

- 4.11.1 The Contractor, at all times during performance and until the work is completed and accepted, shall maintain a competent superintendent (“Project Manager or Project Supervisor”) at the Site while work is in progress to act as the Contractor’s agent. The Project Manager shall be fully capable of properly interpreting the Contract Documents and must be thoroughly experienced in the type of work being performed. The Project Manager shall have the full authority to receive instructions from the Town and to execute the orders or directions of the Town, including promptly supplying any materials, tools, equipment, labor, and incidentals that may be required. The superintendent must speak and understand English fluently. The Contractor shall also maintain at least one other responsible person who speaks and understands English, at the Site during all working hours. The Contractor shall submit, prior to the start of work, the phone numbers and names of all personnel designated to be Project Managers or Supervisors to the Town at the pre-construction conference.
- 4.11.2 Whenever the Engineer determines that any person employed by the Contractor is incompetent, unfaithful, intemperate, disorderly, or insubordinate, the Engineer will provide written notice and the Contractor shall discharge the person from the work. The Contractor shall not employ any discharged person on the project without the written consent of the Engineer. If the Contractor fails to remove such person or persons, the Engineer may withhold all estimates that are or may become due, or suspend the work until the Contractor complies with such orders. Protect, defend, indemnify, and hold the Town, its agents, officials, and employees harmless from all claims, actions, or suite arising from such removal, discharge, or suspension of employees.

#### 4.12 SUPERVISOR DESIGNATED BY CONTRACTOR FOR EMERGENCIES

In addition to the Project Manager, provided for in Paragraph 4 herein, the Contractor shall provide an emergency contact person, who speaks and understands English fluently, and who is available at or reasonably near the Site on a 24-hour basis, seven days a week. The Contractor shall designate this person as the point of contact for emergencies and in cases that require immediate action to maintain traffic or to resolve any other problem that might arise. The Contractor shall submit, prior to the start of work, the phone numbers and names of personnel designated to be contacted in cases of emergencies, to the Town for distribution to local law enforcement agencies.

#### 4.13 GENERAL INSPECTION REQUIREMENTS

- 4.13.1 **Cooperation by Contractor:** The Contractor shall not perform work or furnish materials without obtaining inspection by the Engineer or his representative. The Contractor shall furnish the Engineer with every reasonable facility for ascertaining whether the work performed and materials used are in accordance with the requirements and intent of the Contract Documents. If the Engineer so requests at any time before final acceptance of the work, the Contractor shall remove or uncover such portions of the finished work as directed. After examination, the Contractor shall restore the uncovered portions of the

work to the standard required by the Contract Documents. If the Engineer determines that the work so exposed or examined is unacceptable, the Contractor shall perform the uncovering or removal, and the replacing of the covering or making good of the parts removed, at no expense to the Town. However, if the Engineer determines that the work thus exposed or examined is acceptable, the Town will pay for the uncovering or removing, and the replacing of the covering or making good of the parts removed in accordance with 3.2.2.

**4.13.2 Failure of Engineer to Reject Work During Construction:** If, during or prior to construction operations, the Engineer fails to reject defective work or materials, whether from lack of discovery of such defect or for any other reason, such initial failure to reject in no way prevents the later rejection when such defect is discovered, or obligates the Town to final acceptance. The Town is not responsible for losses suffered due to any necessary removals or repairs of such defects.

**4.13.3 Failure to Remove and Renew Defective Materials and Work:** If the Contractor fails or refuses to remove and renew any defective materials used or work performed, or to make any necessary repairs in an acceptable manner and in accordance with the requirements of the Contract within the time indicated in writing, the Engineer has the authority to repair, remove, or renew the unacceptable or defective materials or work as necessary, all at the Contractor's expense. The Town will obtain payment for any expense it incurs in making these repairs, removals, or renewals, that the Contractor fails or refuses to make, by deducting such expenses from any moneys due or which may become due the Contractor, or by charging such amounts against the Contract bond.

**4.13.4 Maintenance until Acceptance:** The Contractor shall maintain all Work until the Engineer has given final acceptance in accordance with 4.15.

**4.13.5 Inspection for Acceptance:** Upon notification that all Contract Work, or all Contract Work on the portion of the Contract scheduled for acceptance, has been completed, the Engineer will make an inspection for acceptance. The inspection will be made within seven (7) days of the notification. If the Engineer finds that all work has been satisfactorily completed, the Town will consider such inspection as the final inspection. If any or all of the Work is found to be unsatisfactory, the Engineer will detail the remedial work required to achieve acceptance. Immediately perform such remedial work. Subsequent inspections will be made on the remedial work until the Engineer accepts all Work. Upon satisfactory completion of the Work, the Town will provide written notice of acceptance, either partial, conditional or final, to the Contractor. Until final acceptance in accordance with 4.15, the Contractor shall replace or repair any damage to the accepted Work at no additional cost to the Town.

**4.13.6** When the United States Government pays a portion of the cost of construction, its representatives may inspect the construction work as they deem necessary. However, such inspection will in no way make the Federal Government a party to the Contract.

#### **4.14 USE AND POSSESSION PRIOR TO ACCEPTANCE**

The Town shall have the right to take possession of or use any completed or partially completed part of the work. Such possession or use shall not be deemed an acceptance of any work under the Contract.

#### 4.15 FINAL ACCEPTANCE

- 4.15.1 When the Contractor has reached substantial completion, as defined in Section 2.0, the Engineer will schedule an inspection of the project with the Contractor's Project Manager. The purpose of this inspection will be to develop a final list of incomplete or deficient work, and the necessary completion of which will render complete, satisfactory, and acceptable the construction services purchased by the Town. This list of incomplete or deficient work is herein after referred to as "punch list work." The Contractor's Project Manager shall schedule the attendance of any required representatives of subcontractors or suppliers providing materials and services on the Project. The failure to include any corrective work or pending items not yet completed on the punch list does not alter the responsibility of the Contractor to complete all of the construction services pursuant to the Contract. All items that require correction under the Contract and that are identified after the preparation of the punch list remain the obligation of the Contractor as defined by the Contract.
- 4.15.2 For construction projects having an estimated cost of less than \$10 million, the punch list will be completed within 30 calendar days of substantial completion as defined in Section 2.0.
- 4.15.3 For construction projects having an estimated cost of \$10 million or more, the punch list will be completed within 30 calendar days of substantial completion as defined in Section 2.0, unless extended by contract not to exceed 60 calendar days.
- 4.15.4 In the event the Project Manager or any required representatives of subcontractor or suppliers fail to attend the scheduled punch list inspection, the Engineer will continue the scheduled inspection and develop the punch list. The Contractor will be provided a copy of the punch list at the address provided for written notice.
- 4.15.5 The determination by the Engineer as to the items identified in the punch list shall be conclusive and shall not subject to challenge by the Contractor in any forum, except upon the Contractor establishing by clear and convincing proof that the determination by the Engineer was without any reasonable and good faith basis.
- 4.15.5 When, upon completion of the final construction inspection of the entire Project, the Engineer determines that the Contractor has satisfactorily completed the work and all punch list work identified during the punch list inspection, the Engineer will give the Contractor written Certificate of Final Acceptance. The final acceptance date will be the date that which warranty provisions and the time limitations for latent defects commence.
- 4.15.6 Section 4.15 and its subsections do not apply to any construction services purchased by the Town which are paid for, in whole or in part, with Federal funds and are subject to Federal grantor laws and regulations, or requirements that are contrary to any provision of the Florida Local Government Prompt Payment Act, Section 218.735, et. seq., Fla. Stat. The provisions of this section 4.15 and its subsections, do not apply to construction services purchased by the Town, if the total cost of the construction services as identified in the Contract is \$200,000 or less.

#### 4.16 WARRANTIES OF CONTRACTOR

- 4.16.1 The Contractor warrants to the Town that all materials and equipment furnished under

this Contract will be new and that all work will be of good quality free from faults and defects and is in conformance with the Contract. All work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. If required by the Town, the Contractor shall furnish satisfactory evidence as to the kind and quality of the materials and equipment. All work, equipment and materials furnished as part of the Contract shall be warranted for a minimum of two years, with additional warranty periods (**ADDITIONAL WARRANTY PERIOD IF APPLICABLE**). Warranty periods shall begin at the date of final written acceptance of the Project by the Town. If any work, materials or equipment is determined to not be in conformance with the Contract requirements during this warranty period, or is otherwise found to be defective, such items shall be corrected or replaced, at Contractor's expense.

**4.16.2 Warranty of Title:** The Contractor warrants to the Town that all goods and materials furnished under the CONTRACT will be new unless otherwise specified, and that CONTRACTOR possess good, clear, and marketable title to said goods and there are no pending liens, claims or encumbrances whatsoever against said goods. All work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.

**4.16.3 Warranty of Specifications:** The Contractor warrants that all goods, materials and workmanship furnished, whether furnished by the Contractor or its sub-contractors and suppliers, will comply with the specifications, drawings and other descriptions supplied or adopted.

**4.16.4 Warranty of Fitness for Particular Purpose:** The Contractor warrants the goods shall be fit for and sufficient for the purposes(s) intended. The purpose(s) for which the goods covered by the Contract are intended is:

(ENTER PURPOSE GOODS COVERED)

The Contractor understands and agrees that the Town is purchasing the goods in reliance upon the skill of the Contractor in furnishing the goods suitable for the above-stated purpose. If the goods cannot be used in the manner stated in this Paragraph, then, the Town, at its sole discretion, may return the goods to the Contractor for a full refund of any and all moneys paid for the goods.

**4.16.5 Warranty of Performance:** The Contractor warrants that the material shall meet the following performance requirements:

(ENTER PERFORMANCE REQUIREMENTS)

If properly operated, the materials are warranted to be capable of doing the same or better quality work than other goods of equal value operated under the same conditions.

**4.16.6 Warranty of Material and Workmanship:** The Contractor warrants all material and workmanship for a minimum of two (2) years from date of completion and final acceptance by the Town. If within two (2) years after acceptance by the Town, or within such larger period of time as may be prescribed by law, any of the work is found to be defective or not in accordance with the Contract Documents, the Contractor shall, after receipt of a written notice from the Town to do so, promptly correct the work unless the Town has previously given the Contractor a written acceptance of such condition.

- 4.16.7 The Contractor warrants to the Town that it will comply with all applicable federal, state and local laws, regulations and orders in carrying out its obligations under the Contract.
- 4.16.8 The Contractor warrants to the Town that it is not insolvent, it is not in bankruptcy proceedings or receivership, nor is it engaged in or threatened with any litigation, arbitration or other legal or administrative proceedings or investigations of any kind, which would have an adverse effect on its ability to perform its obligations under the Contract.
- 4.16.9 The Contractor warrants to the Town that the consummation of the work provided for in the Contract Documents will not result in the breach of any term of provision of, or constitute a default under any indenture, mortgage, contract, or agreement to which the Contractor is a party.
- 4.16.10 The Contractor warrants that there has been no violation of copyrights or patent rights, either in the United States of America or in foreign countries in connection with the work of the Contract.
- 4.16.11 All warranties made by the Contractor, together with service warranties and guarantees, shall run to the Town, and the successors and assigns of the Town.

#### 4.17 CLAIMS BY CONTRACTOR

**General:** In the event, the Contractor deems that extra compensation or a Contract Time Extension is, or may be, necessary beyond that agreed to by the Engineer, whether due to, additional work, altered work, differing site conditions, breach of contract, or for any other cause except for delay, the Contractor shall follow the procedures set forth herein for the preservation, presentation and resolution of the Contractor's claim.

##### 4.17.1 **Notice of Claim:**

4.17.2 **Claims For Extra Work:** When the Contractor deems that additional compensation or a Contract Time Extension is required for work or materials not expressly provided for in the Contract or which is by written directive expressly ordered by the Engineer pursuant to section 3.2, the Contractor shall give written notice to the Engineer of the Contractor's intention to make a claim for additional compensation before beginning any work on which the claim for additional compensation is to be based. If the Contractor is seeking a Contract Time Extension, either alone or in addition to a request for additional compensation, the Contractor shall submit a written preliminary request for extension of time in accordance with section 7.10.2, within ten (10) calendar days after the Contractor first becomes aware that an extension of time may be required.

4.17.3 If either or both of the notices required in section 4.17.2 above are not given and the Engineer is not given the opportunity to maintain an actual account of all labor, material, equipment, and time, the Contractor shall be deemed to have permanently waived the Contractor's claim for additional compensation or a Contract Time Extension. Such notice by the Contractor, and the fact that the Engineer has kept account of the labor, materials and equipment, and time, shall not in any way be construed as establishing the validity of the claim or method for computing any compensation or time extension to such claim.



- 4.17.4 For projects with an original Contract amount of \$3,000,000 or less within 90 calendar days after final acceptance of the project in accordance with 4.15, and on projects with an original Contract amount greater than \$3,000,000 within 180 calendar days after final acceptance of the project in accordance with section 4.15, the Contractor shall submit full and complete claim documentation as described in section 4.17.6. However, for any claim or part of a claim that pertains solely to final estimate quantities disputes the Contractor shall submit complete claim documentation as described in section 4.17.6, as to the final estimate claim dispute issues, within 90 or 180 calendar days, respectively, of the Contractor's receipt of the Town's final estimate.
- 4.17.5 The submission of: (1) a timely notice of intent to file a claim, (2) a preliminary request for a Contract Time Extension, (3) the actual claim, and (4) the complete claim documentation, are each a condition precedent to the Contractor bringing any legal proceeding against the Town in a court of competent jurisdiction, for the additional compensation or additional time set forth in the Contractor's written claim. The failure of the Contractor to submit the four (4) sets of the afore-stated required documents shall constitute an irrevocable waiver by the Contractor of any right to seek additional compensation and/or an extension of time.
- 4.17.6 **Content of Written Claim:** As a condition precedent to entitlement by the Contractor to additional compensation or a Contract Time Extension, the Contractor shall submit a written claim to the Town, which will include for each individual claim, at a minimum, the following information:
1. a detailed factual statement of the claim providing all necessary dates, locations, and items of work affected and included in each claim;
  2. the date or dates on which actions resulting in the claim occurred or conditions resulting in the claim became evident;
  3. identification of all pertinent documents and the substance of any material oral communications relating to such claim and the name of the persons making such material oral communications;
  4. identification of the provisions of the Contract which support the claim and a statement of the reasons why such provisions support the claim, or alternatively, the provisions of the Contract which allegedly have been breached and the actions constituting such breach;
  5. a detailed compilation of the amount of additional compensation sought and a breakdown of the amount sought as follows:
  6. documented additional job site labor expenses;
  7. documented additional cost of materials and supplies;
  8. a list of additional equipment costs claimed, including each piece of equipment and the rental rate claimed for each;
  9. any other additional direct costs or damages and the documents in support thereof;
  10. any additional indirect costs or damages and all documentation in support thereof.
  11. a detailed compilation of the specific dates and the exact number of calendar days sought for a Contract Time Extension, the basis for entitlement to time for each day, and a breakout of the number of days claimed for each identified event, circumstance or occurrence.

The Contractor shall be prohibited from amending either the bases of entitlement or the amount of any compensation or time stated for any and all issues claimed in the Contractor's written claim submitted hereunder, in any legal or administrative proceeding

for the formal resolution of the claim, and the Contractor's claims shall be limited solely to the basis for entitlement and the amount of any compensation or additional time stated in the Contractor's written claim.. This shall not, however, preclude a Contractor from withdrawing or reducing any of the basis for entitlement and the amount of any compensation or additional time stated for the issues claimed in the Contractor's written claim at any time.

**4.17.7 Action on Written Claim:** The Engineer will respond on projects with an original Contract amount of \$3,000,000 or less, within 90 calendar days of receipt of a complete claim submitted by a Contractor in compliance with Section 4.17.6, and on projects with an original Contract amount greater than \$3,000,000, within 120 calendar days of receipt of a complete claim submitted by a Contractor in compliance with Section 4.17.6. Failure by the Engineer to respond to a claim within 90 or 120 days, respectively, after receipt of a complete claim in compliance with Section 4.17.6 shall constitute a denial of the claim by the Engineer even if a written notice of denial is not issued by the Engineer. If the Engineer finds the claim or any part thereof to be valid, the partial or whole claim will be allowed and paid for, to the extent the claim is deemed valid and any Contract Time Extension granted, if applicable, as provided in the Contract. No legal proceedings may be filed until after final acceptance in accordance with Section 4.15 of all Contract work by the Town or denial hereunder, whichever occurs last.

**4.17.8 Settlement and Pre-Judgment Interest:** Entitlement to any pre-settlement or prejudgment interest on any claim amount determined to be valid subsequent to the Town's receipt of a certified written claim in full compliance with 4.17.6, whether determined by a settlement or a final ruling in formal proceedings, the Town shall pay to the Contractor simple interest calculated at the Rate of 7.0% (Seven Percent Per Year), such interest to accrue beginning 60 calendar days following the Town's receipt of a certified written claim in full compliance with 4.17.6 and ending on the date of final settlement or formal ruling.

**4.17.9 Compensation for Extra Work or Delay:**

**4.17.9.1 Compensation for Extra Work:** Notwithstanding anything to the contrary contained in the Contract Documents, the Contractor shall not be entitled to any compensation beyond that provided for in 3.2.2.

**4.17.9.2 No Recovery of Damages for Delay:** Notwithstanding anything to the contrary in the Contract Documents, a time extension, to the extent permitted under the Contract Documents, is the sole remedy of the Contractor for any (i) delay in the commencement, prosecution, or completion of the Work, (ii) hindrance or obstruction in the performance of the Work, (iii) loss of productivity, or (iv) other similar claims, collectively referred to as delay, whether or not such delay is foreseeable, unless the delay is caused by acts of the Town constituting active interference with the Contractor's performance of the Work, and only to the extent such acts continue after the Contractor furnishes the Town with notice of such interference. The Contractor is not entitled to any compensation or recovery of any damages, in connection with any delay, lost opportunity costs, impact damages or other similar remuneration. The Town's exercise of any of its rights or remedies under the Contract Documents, including without limitation, ordering changes in the Work, or directing suspension, rescheduling or correcting of the Work, regardless of the extent or frequency of Town's exercise of such

rights or remedies, is not to be construed as active interference with the Contractor's performance of the Work.

The parties anticipate that delays may be caused by, or arise from, any number of events during the term of the Contract, including, but not limited to, work performed, work deleted, change orders, supplemental agreements, disruptions, differing site conditions, utility conflicts, design changes or defects, time extensions, extra work, right-of-way issues, inspection delays, inspection staffing, permitting issues, actions of suppliers, subcontractors or other contractors, actions by third parties, suspensions of work by the Engineer to the extent permitted in the Contract Documents, shop drawing approval process delays, expansion of the physical limits of the project to make it functional, weather, weekends, holidays, special events, suspension of Contract time, or other events, forces or factors sometimes experienced in construction work. Such delays or events and their potential impacts on the performance by the Contractor are specifically contemplated and acknowledged by the parties in entering into this Contract, and shall not be deemed to constitute active interference with the Contractor's performance of the Work.

**4.17.10 Mandatory Claim Records:** After providing the Engineer a written notice of intent to file a claim for additional compensation caused by extra work or active interference by the Town causing delay, the Contractor must keep daily records of all labor, material and equipment costs incurred for operations affected by the extra work or the wrongful delay. These daily records must identify each operation affected by the extra work or delay and the specific locations where work is affected by the extra work or delay, as nearly as possible. The Engineer may also keep records of all labor, material and equipment used on the operations affected by the extra work or delay. The Contractor shall, once a written notice of intent to claim has been timely filed, and not less than weekly thereafter and as long as appropriate, provide the Engineer with a copy of the Contractor's daily records likewise the Contractor shall be entitled to receive a copy of the Town's daily records upon written request to the Engineer. The copies of daily records to be provided hereunder shall be provided at no cost to the recipient.

**4.17.11 Claims for Acceleration:** The Town shall have no liability for any constructive acceleration of the work, nor shall the Contractor have any right to make any claim for constructive acceleration or include the same as an element of any claim the Contractor may otherwise submit under this Contract. If the Engineer gives express written direction for the Contractor to accelerate its efforts, such written direction will set forth the prices and other pertinent information and will be reduced to a written Contract document promptly. No payment will be made on a Supplemental Agreement for acceleration prior to the Town's approval of the documents.

**4.17.12 Certificate of Claim:** When submitting any claim, the Contractor shall certify under oath and in writing, in accordance with the formalities required by Florida law, that the claim is made in good faith, that the supportive data are accurate and complete to the Contractor's best knowledge and belief, and that the amount of the claim accurately reflects what the Contractor in good faith believes to be the Town's liability. Such certification must be made by an officer or director of the Contractor with the authority to bind the Contractor.

**4.17.13 Non-Recoverable Items:** The parties agree that for any claim the Town will not have

liability for the following items of damages or expense:

- A. loss of profit, incentives or bonuses;
- B. any claim other than extra work or a Contract Time Extension for Town-caused delays
- C. consequential damages of any kind (foreseen or unforeseen), including, but not limited to, loss of bonding capacity, loss of bidding opportunities, loss of credit standing, cost of financing, interest paid, loss of other work or insolvency;
- D. acceleration costs and expenses, except where the Town has expressly and specifically directed the Contractor in writing "to accelerate at the Town's expense"; nor
- E. attorney fees, costs and expenses incurred in preparation for or contemplation of litigation.

4.17.14 **Exclusive Remedies:** Notwithstanding any other provision of this Contract, the parties agree that the Town shall have no liability to the Contractor for expenses, costs, or items of damages other than those which are specifically identified as payable under section 4.17. In the event any legal action for additional compensation, whether on account of delay, acceleration, breach of contract, or otherwise, the Contractor agrees that the Town's liability will be limited to those items which are specifically identified as payable in section 4.17.

4.17.15 **Settlement Discussions:** The content of any discussions or meetings held between the Town and the Contractor to settle or resolve any claims submitted by the Contractor against the Town shall be inadmissible in any legal, equitable, arbitration or administrative proceedings brought by the Contractor against the Town for payment of such claim.

4.17.16 **No Personal Liability of Public Officials:** In carrying out any of the provisions of the Contract or in exercising any power or authority granted to the Town Manager, Engineer or any of their respective employees or agents, there shall be no liability on behalf of any employee, officer or official of the Town for which such individual is responsible, either personally or as officials or representatives of the Town. It is understood that in all such matters such individuals act solely as agents and representatives of the Town.

4.17.17 **Auditing of Claims:** All claims filed against the Town shall be subject to audit at any time following the filing of the claim, whether or not such claim is part of a suit pending in the courts of this State. The audit may be performed, at the Town's sole discretion, by employees of the Town or by any independent auditor appointed by the Town, or both. The audit may begin after ten days written notice to the Contractor, subcontractor, or supplier. The Contractor, subcontractor, or supplier shall, the Contractor, subcontractor, or supplier must retain sufficient records, and provide full and reasonable access to such records, to allow the Town's auditors to verify the claim and failure to retain sufficient records of the claim or failure to provide full and reasonable access to such records shall constitute a waiver of that portion of such claim that cannot be verified and shall bar recovery there under. Further, and in addition to such audit access, upon the Contractor submitting a written claim, the Town shall have the right to request and receive, and the Contractor shall have the affirmative obligation to provide to the Town, copies of any and all documents in the possession of the Contractor or its subcontractors, materialmen or suppliers which are deemed relevant by the Town in its review of the basis, validity or value of the Contractor's claim. Without limiting the generality of the foregoing, the Contractor shall upon written request of the Town, make available to the Town's

auditors, or the Town copies of any or all of the following documents:

- Daily time sheets and foreman's daily reports and diaries;
- Baseline and Progress Schedules;
- Insurance, welfare and benefits records;
- Payroll register;
- Earnings records;
- Payroll tax return;
- Material invoices, purchase orders, and all material and supply acquisition contracts;
- Material cost distribution worksheet;
- Equipment records (list of company owned, rented or other equipment used);
- Vendor rental agreements and subcontractor invoices;
- Subcontractor payment certificates;
- Canceled checks for the project, including, payroll and vendors;
- Job cost report;
- Job payroll ledger;
- General ledger, general journal, (if used) and all subsidiary ledgers and journals together with all supporting documentation pertinent to entries made in these ledgers and journals;
- Cash disbursements journal;
- Financial statements for all years reflecting the operations on this project;
- Income tax returns for all years reflecting the operations on this project;
- All documents which reflect the Contractor's actual profit and overhead during the years this Contract was being performed and for each of the five years prior to the commencement of this Contract;
- All documents related to the preparation of the Contractor's bid including the final calculations on which the bid was based;
- All documents which relate to each and every claim together with all documents which support the amount of damages as to each claim;
- Worksheets used to prepare the claim establishing the cost components for items of the claim including, but not limited to, labor, benefits and insurance, materials, equipment, subcontractors, and all documents that establish which time periods and individuals were involved, and the hours and rates for such individuals.

4.18 RECOVERY RIGHTS, SUBSEQUENT TO FINAL PAYMENT:

The Town reserves the right, if it discovers an error in the partial or final estimates, or if it discovers that the Contractor performed defective work or used defective materials, after the final payment has been made, to make a claim against and recover from the Contractor or his surety, or both, by process of law, such sums as may be sufficient to correct the error or make good the defects in the work and materials. Retain all records pertaining to the project for a period of three (3) years from the date of the Engineer's final acceptance of the project. Upon request, the Contractor shall make all such records available to the Town or its representative within a reasonable time of the receipt of such request. For the purpose of this Article, records include all books of account, supporting documents, and papers that the Town deems necessary to ensure compliance with the Contract provisions.

## SECTION 5

### MATERIAL AND WORKMANSHIP

#### 5.1 MATERIAL AND WORKMANSHIP

- 5.1.1 Unless otherwise specifically provided in this Contract, all equipment, material and articles incorporated in the work covered by this Contract are to be new and of the most suitable grade for the purpose intended. Unless otherwise specifically provided in this Contract, reference to any equipment, material, article or patented process, by trade name, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and the Contractor may, at his option, use any equipment, material, article or process which, in the judgment of the Town, is equal to that named. The Contractor shall furnish to the Town, for its approval, the name of the manufacturer, the model number and other identifying data and information respecting the performance, capacity, nature, and rating of the machinery and mechanical and other equipment which the Contractor contemplates incorporating in the work. The Contractor shall furnish the Town, for approval, full information concerning the material or articles which he contemplates incorporating in the work. When so directed, samples shall be submitted for approval at the Contractor's expense. Machinery, equipment, material, and articles installed or used without required approval shall be at the risk of subsequent rejection. All work under this Contract shall be performed in a skillful and workmanlike manner. The Town may, in writing, require the Contractor to remove from the work any employee that the Town deems incompetent, careless or otherwise objectionable.
- 5.1.2 The Contractor shall store materials in such a manner as to preserve their qualities and fitness for the work, to facilitate prompt inspection and to minimize noise impacts on sensitive receivers. The Town may reject improperly stored material.
- 5.1.3 The Contractor shall be responsible for all cutting and patching necessary for the installation of temporary or permanent materials, equipment and incidentals. The Contractor shall schedule and sequence work to avoid cutting and patching permanent finished work. The Contractor shall not cut or patch permanent work without the prior written approval of the Engineer. The costs associated with any necessary cutting and patching are considered incidental to the work and will not be measured or paid for separately.

#### 5.2 DESIGNATION OF A SPECIFIC PRODUCT AS A CRITERION ("OR EQUAL" CLAUSE)

Reference in the Contract Documents to any proprietary article, device, product, material or fixture, or any form or type of construction, by name, make, or catalog number, with or without the words "or equal," establishes a standard of quality and is not intended to limit competition. The Contractor may use any article, device, product, material or fixture, or any form or type of construction provided and expressed in writing, that, in the sole judgment of the Engineer, is equal, for the purpose intended, to that named.

#### 5.3 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

- 5.3.1 **Only Approved Materials to be Used:** The Contractor shall use only materials in the work that meet the requirements of these Specifications, and have the Engineer's approval. The Engineer may inspect or test any materials proposed for use at any time

during their preparation and use. The Contractor shall not use any material that, after approval, has in any way become unfit for use in the work. The Contractor shall not use materials containing asbestos.

- 5.3.2 **Notification of Placing Order:** The Contractor shall give sufficient notification prior to placing orders for materials, and order materials sufficiently in advance of their incorporation in the work to allow time for sampling and testing.

5.3.2.1 **Notification of Quality Assurance Inspection Arrangements for Fabrication of Critical Items:** The Contractor shall submit to the Engineer a fabrication schedule for all items requiring commercial inspection, before or at the pre-construction meeting. These items include, but is not limited to steel bridge components, overhead cantilevered sign supports with cantilevered arms exceeding 45 feet or any other item identified as an item requiring commercial inspection in the Contract Documents.

- 5.3.3 **Approval of Source of Supply:** Before delivering material, the Contractor shall obtain the Engineer's approval of the source of supply. The Contractor shall submit for examination representative preliminary samples, of the character and quantity prescribed. The Town will test the samples in accordance with the method referred to under 5.5. If, after trial, the Town determines that an approved source of supply does not contain a uniform, acceptable product, or the product from any source is unacceptable at any time, the Contractor shall furnish material from other approved sources.

- 5.3.4 **Source of Supply-Steel (Federal-Aid – Federally Funded Contracts Only):** For Federal-aid Contracts, only use steel and iron produced in the United States, in accordance with the Buy America provisions of 23 CFR 635.410, as amended. Ensure that all manufacturing processes for this material occur in the United States. As used in this specification, a manufacturing process is any process that modifies the chemical content, physical shape or size, or final finish of a product, beginning with the initial melding and mixing and continuing through the bending and coating stages. A manufactured steel or iron product is complete only when all grinding, drilling, welding, finishing and coating have been completed. If a domestic product is taken outside the United States for any process, it becomes foreign source material. When using steel and iron as a component of any manufactured product incorporated into the project (e.g., concrete pipe, prestressed beams, corrugated steel pipe, etc.), these same provisions apply, except that the manufacturer may use minimal quantities of foreign steel and iron when the cost of such foreign materials does not exceed 0.1% of the total Contract amount or \$2,500, whichever is greater. These requirements are applicable to all steel and iron materials incorporated into the finished work, but are not applicable to steel and iron items that the Contractor uses but does not incorporate into the finished work. Provide a certification from the producer of steel or iron, or any product containing steel or iron as a component, stating that all steel or iron furnished or incorporated into the furnished product was manufactured in the United States in accordance with the requirements of this specification and the Buy America provisions of 23 CFR 635.410, as amended. Such certification shall also include (1) a statement that the product was produced entirely within the United States, or (2) a statement that the product was produced within the United States except for minimal quantities of foreign steel and iron valued at \$ (actual value). Furnish each such certification to the Engineer prior to incorporating the material into the project. When FHWA allows the use of foreign steel on a project, furnish invoices to document the cost of such material, and obtain the Engineer's written

approval prior to incorporating the material into the project.

#### 5.4 INSPECTION AND TESTS AT SOURCE OF SUPPLY

- 5.4.1 **General:** If the volume, progress of the work, and other considerations warrant, the Engineer may inspect the materials at the source of supply.
- 5.4.2 **Cooperation by Contractor:** The Contractor shall provide the Engineer with free entry at all times to such parts of the plant that concern the manufacture or production of the materials ordered, and bear all costs incurred in providing all reasonable facilities to assist the Engineer in determining whether the material furnished meets the requirements of these Specifications.
- 5.4.3 **Town Not Obligated to Make Inspection at Source:** The Town is not obligated to make an inspection of materials at the source of supply. The Contractor is fully responsible for supplying satisfactory materials.
- 5.4.4 **Retest of Materials:** The Town may retest materials that it has tested and accepted at the source of supply, after they have been delivered to the project. The Town will reject all materials that, when retested, do not meet the requirements of these Specifications.

#### 5.5 CONTROL BY SAMPLES AND TESTS

- 5.5.1 **Materials to be Tested, Samples:** The Engineer may test materials by means of samples, or otherwise, at production points and after delivery. The Town will perform and pay for such tests. Afford such facilities as the Engineer requires for collecting and forwarding samples, and do not make use of, or incorporate in the work, any materials represented by the samples until the Engineer tests and finds the materials acceptable. The Contractor shall furnish and deliver the required material necessary to take samples, to the point that the Engineer designates, at no expense to the Town. The Town will furnish boxes for shipping concrete cylinders.
- 5.5.2 **Pavement Samples:** For both base course and surface course pavements, the Contractor shall furnish samples taken from the completed work at any location that the Engineer indicates, and immediately replace the areas so removed with materials and construction that meet the requirements of these Specifications and to the line and grade of the immediate surrounding pavement surface. The Town will not allow additional compensation for furnishing such samples and replacing the areas with new pavement.
- 5.5.3 **Applicable Standards:** The methods of sampling and testing materials shall be in accordance with Florida Department of Transportation's, Florida Methods so far as covered therein. Otherwise, they shall be in accordance with standards of AASHTO, ASTM, or other criteria as specifically designated. Where an AASHTO, ASTM or other non-Florida Method (FM) is designated, and a Florida Method which is similar exists, the Town will require sampling and testing in accordance with the Florida Method. Whenever any Florida, AASHTO, ASTM, or other standards are referenced in these Specifications without identification of the specific time of issuance, use the most current issuance, including interims or addendums thereto, at the time of advertisement for bids for a project.
- 5.5.4 **Soil Bearing Tests:** The Town will determine the bearing value of soils using the Florida



Department of Transportation's Florida Soil Bearing Tests or by the methods required for the Limerock Bearing Ratio Method, whichever is designated in the plans.

- 5.5.5 **Sieves:** The Contractor shall use sieves meeting the requirements of AASHTO M 92.
- 5.5.6 **Acceptance on Tests of Producer's Samples:** The Town, in order to expedite the work, may accept certain materials on the basis of tests made on advance samples taken and submitted by the producer, provided that the Engineer tests a representative number of samples of the material after the material arrives at the worksite and the Town confirms that the material meets the requirements of these Specifications. In the event that the Engineer's tests of these samples do not substantiate those made on the advance samples submitted by the producer, and the Engineer determines that there is evidence that this privilege of expediting the use of the material is being abused, then the Town will no longer extend this privilege to such producer.
- 5.5.7 **Preparation and Shipping of Samples:** The Contractor shall attach a card to each producer's sample, showing the following information: Project designation, intended use of material, name of producer, source of supply, quantity represented by sample, date sampled, and any other information pertinent to the material or work. The Contractor shall use care in preparing and shipping samples. The Contractor shall check that packages are clean before placing material therein. The Contractor shall tie or close and securely wrap the packages.
- 5.5.8 **Inspection at Plants:** The Contractor shall provide the Engineer with access to all parts of all paving or other plants connected with the work to verify weights or proportions and character of materials, and to determine temperatures used in preparing materials and mixtures. The Contractor shall facilitate and assist in the Engineer's verification of the accuracy of all scales, measures, and other devices, and protect such devices from the wind and elements whenever such protection is necessary.
- 5.5.9 **Materials Accepted Based on Producers' Certification:** The Contractor shall identify materials that the Engineer has accepted based on producers' certification by production lot or other acceptable means that shows a direct tie between the certification and the material being used. The Town will use such identification when doing verification testing. The Contractor shall ensure that the certification is signed by a legally responsible person from the producer and is provided on the producer's letterhead.
- 5.5.10 **Materials Accepted Based on Manufacturer's Certification:** The Engineer will accept certain manufactured products for use on Town Contracts upon receipt of a satisfactory certification stating that the product meets the acceptance criteria requirements of the Town's specifications. It is the sole responsibility of the Contractor to obtain, verify completeness and submit the certification to the Engineer before incorporating such manufactured products into the project.

## 5.6 WORK AND STORAGE AREAS

- 5.6.1 All operations of the Contractor, including storage of materials upon Town premises, shall be confined to areas authorized or approved by the Town. Temporary buildings, storage sheds, shops, offices, etc., may be erected by the Contractor only with the approval of the Town and shall be built with labor and materials furnished by the Contractor without expense to the Town. Such temporary buildings and utilities shall

remain the property of the Contractor and shall be removed by him at his expense upon the completion of the work. With the written consent of the Town, such buildings and utilities may be abandoned and need not be removed.

- 5.6.2 If the Engineer allows, the Contractor may use a portion of the right-of-way for storage purposes and for placing the Contractor's plant and equipment. The Contractor shall use only a portion of the right-of-way that is outside the clear zone, which is the portion not required for public vehicular or pedestrian travel. The Contractor shall provide any additional space at no expense to the Town.
- 5.6.3 When it is necessary to cross curbing or sidewalks, protection against damage shall be provided by the Contractor and any damaged roads, curbing or sidewalks shall be repaired by, or at the expense of the Contractor.
- 5.6.4 The Contractor shall not store materials, except those to be incorporated in the work, on the contract site. Portions of completed work and materials incorporated in the work shall be deemed to have become the property of the Town, but if any such materials or parts of the work become lost, damaged or destroyed by any means whatsoever, the Contractor shall satisfactorily repair and replace the same at his/her own cost. The Contractor shall be responsible for any materials of construction stored on the contract site, and shall replace, in kind, any such materials lost, damaged or destroyed at his/her own expense.
- 5.6.5 The Contractor shall maintain, where and when needed, suitable and sufficient guard signs and barriers, and at night, suitable and sufficient lights for the prevention of accidents. Guard signs and lights shall comply with OSHA and FDOT regulations.
- 5.6.6 The Contractor shall clear from within the limits of the Town's work area all objectionable debris necessary to conduct the work operations. The Contractor, at all times, shall keep the premises free from accumulation of waste materials or rubbish caused by the Contractor's operations.
- 5.6.7 At the completion of the work specified herein and before final acceptance and final payment shall be made, the Contractor shall remove from the site all tools, machinery, equipment, surplus and discarded materials, rubbish and temporary structures, and provide a final cleaning returning the space to a condition suitable for use by the Town. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily. Any salvaged material not specified to be disposed of otherwise, shall become the property of the Contractor and shall be removed from the site.

**SECTION 6**  
**LEGAL RESPONSIBILITY**

**6.1     PERFORMANCE BOND AND PAYMENT BOND**

- 6.1.1     Concurrent with the execution of these Contract documents, the Contractor shall tender to the Town a performance bond and a payment bond acceptable to the Town, each in an amount equal to or greater than one hundred percent (100%) of the total Contract price. Cash, certificate of deposit, cashier's check, treasurer's check or bank draft of any national or state bank in the State of Florida may be tendered in lieu of the payment and the performance bond. Certificates of deposit, checks and bank drafts shall be made payable to the Town.
- 6.1.2     All surety bonds tendered must be written by a company duly authorized to do business in the State of Florida, and if furnished through a broker or agent, said broker or agent shall be registered in the State of Florida. If at any time after the execution of this Contract and the surety bonds, the Town shall deem the surety or sureties upon such bonds to be unsatisfactory or, if for any reason such bonds cease to be adequate to cover the requirements of the Contract, the Contractor shall, at its sole expense and within five (5) days after the receipt of notice from the Town, furnish an additional bond in such form and amount and with such surety as shall be satisfactory to the Town. In such event, no further payment to the Contractor shall be deemed to be due under this Contract until such new or additional security shall be furnished in manner and form satisfactory to the Town as to protect the interests of the Town and ensure the payment of persons supplying labor and materials under the Contract.
- 6.1.3     The surety company shall indemnify and provide defense for the Town of Jupiter when called upon to do so for claims or suits against the Town of Jupiter arising out of the Contract. The amount of the Contract price is the sole limitation of this indemnification.

**6.2     INSURANCE REQUIREMENTS**

- 6.2.1     The Contractor shall maintain, or cause to be maintained, the following specified insurance coverage's in the amounts set forth hereafter during the full period of the Contract, which must include the following coverage's and minimum limits of liability:
- 6.2.2     WORKERS' COMPENSATION AND EMPLOYERS' LIABILITY INSURANCE for all employees of the Contractor for Statutory Limits in compliance with the applicable state and federal laws. Notwithstanding the number of employees or any other statutory provisions to the contrary, coverage shall extend to all employees of the Contractor and all subcontractors.
- 6.2.3     COMMERICAL GENERAL LIABILITY - \$2,000,000 General Aggregate - with the minimum limits of \$1,000,000 Per Occurrence, Combined Single Limit for Bodily Injury Liability, Property Damage Liability, Premises and Operations, Independent contractors, Products and Completed Operations, Broad Form Property / Personal Injury, XCU coverage, and a contractual Liability Endorsement.
- 6.2.4     BUSINESS AUTO LIABILITY with minimum limits of \$1,000,000.00, Per Occurrence, Combined Single Limit for Bodily Injury and Property Damage Liability. This shall be

an "any-auto" policy including Owned, Hired, Non-Owned, and Employee Non-Ownership Coverage.

- 6.2.5 The Town shall be included as an Additional Insured under the General Liability and Automobile Liability policies. Current valid insurance policies meeting the requirements herein identified shall be maintained during the duration of the Contract. There shall be a thirty (30) day notification to the Town, in the event of cancellation or modification of any stipulated insurance policy. It shall be the responsibility of the Contractor to ensure that all subcontractors are adequately insured or covered under their policies.
- 6.2.6 All Certificates of Insurance shall be kept on file with the Town, and approved by the Town prior to the commencement of any work activities. The Town may at its discretion, require the Contractor to provide a complete certified copy of the insurance policy(s). If this Contract includes the installation of machinery and/or equipment into an existing structure, the Commercial General Liability policy must include an endorsement covering same, including installation and transit.
- 6.2.7 The required insurance coverage shall be issued by an insurance company duly authorized and licensed to do business in the State of Florida with the following minimum qualifications in accordance with the latest edition of A.M. Best's Insurance Guide: Financial Stability: B+ to A+.
- 6.2.8 All required insurance shall preclude any underwriter's rights of recovery or subrogation against the Town with the express intention of the parties being that the required coverage's protect both parties as the primary insurance for any and all losses covered by the above described insurance.
- 6.2.9 The clauses "Other Insurance Provisions" and "Insured Duties in the Event of an Occurrence, Claim, or Suit" as they appear in any policy of insurance in which the Town is named as an additional named insured shall not apply to Town.
- 6.2.10 Violation of the terms of this Section 6.2 and its sub-parts shall constitute a material breach of the Contract by the Contractor and the Town, at its sole discretion, may cancel the Contract and all rights, title and interest of the Contractor shall thereupon cease and terminate.

### 6.3 RECORDS

- 6.3.1 The Contractor shall maintain records and the Town shall have inspection and audit rights as follows:
- 6.3.2 Maintenance of records: The Contractor shall maintain all financial and non-financial records and reports directly or indirectly related to the negotiation or performance of this Contract including supporting documentation for any service rates, expenses, research or reports. Such records shall be maintained and made available for inspection for a period of five years from completing performance and receiving final payment under this Contract.
- 6.3.3 Examination of records: The Town or its designated agent shall have the right to examine in accordance with generally accepted governmental auditing standards all records directly or indirectly related to this Contract. Such examination may be made

only within five (5) years from the date of final payment under this Contract and upon reasonable notice, time and place. Records which relate to any litigation, appeals or settlements of claims arising from performance under this Contract shall be made available until a final disposition has been made of such litigation, appeals or claims.

- 6.3.4 The contractor is aware that the Inspector General of Palm Beach County has the authority to investigate and audit matters relating to the negotiation and performance of this contract and in furtherance thereof may demand and obtain records and testimony from the contractor and its subcontractors and lower tier subcontractors. The contractor understands and agrees that in addition to all other remedies and consequences provided by law, the failure of the contractor or its subcontractors or lower tier subcontractors to fully cooperate with the Inspector General when requested may be deemed by the municipality to be a material breach of this contract justifying its termination.

#### 6.4 COST AND PRICING DATA:

The Contractor, by executing this Contract, certifies to truth-in-negotiation, specifically, that wage rates and other factual unit costs supporting the consideration are accurate, complete, and current at the time of contracting. The Contractor agrees that the Town may adjust the consideration for this Contract to exclude any significant sums by which the consideration was increased due to inaccurate, incomplete, or non-current wage rates and other actual unit costs. The Town shall make any such adjustment within one (1) year following the termination of this Contract.

#### 6.5 PROJECT RECORD DOCUMENTS

- 6.5.1 The Contractor shall maintain on site, one set of Contract Documents to be utilized for record documents. The Contractor shall record actual revisions to the work. Record information shall be made concurrent with construction progress.
- 6.5.2 Specifications: The Contractor shall legibly mark and record at each Product Section a description of actual products installed.
- 6.5.3 Record Documents and Shop Drawings: The Contractor shall legibly mark each item to record actual construction.
- 6.5.4 The Contractor shall submit Record Documents to the Town with claim for final Application for Payment.

#### 6.6 PERMITS

- 6.6.1 The Contractor shall, without additional expense to the Town, be responsible for obtaining all applicable and required licenses and permits and for complying with any applicable Federal, State and municipal laws, codes, and regulations in connection with the prosecution of the work.
- 6.6.2 The Contractor shall use its best efforts to obtain all necessary permits as soon as possible after the date of Contract commencement. Any delays in obtaining permits must be brought to the attention of the Town without delay. The failure of the Contractor to submit permit applications in a timely manner, or for the delay of an agency issuing a

permit to the Contractor, will not be sufficient cause for a Contract Time Extension.

- 6.6.3 The Contractor shall give all notices and comply with all laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the work. The Town shall not be responsible for monitoring the Contractor's compliance with any laws or regulations.
- 6.6.4 In carrying out the work in the Contract, when under the jurisdiction of any environmental regulatory agency, comply with all regulations issued by such agencies and with all general, special, and particular conditions relating to construction activities of all permits issued to the Town as though such conditions were issued to the Contractor. Post all permit placards in a protected location at the worksite. In case of a discrepancy between any permit condition and other Contract Documents, the more stringent condition shall prevail.
- 6.6.5 All dewatering work performed under the Contract shall be done in accordance with and subject to the limitations and regulations of the South Florida Water Management District. The Contractor shall prepare and submit the necessary permit applications and supporting documents for the purposes of obtaining a dewatering permit from SFWMD and any other required agencies.

#### 6.7 PATENTED DEVICES AND PROCESSES

Include all royalties and costs arising from patents, trademarks, and copyrights, in any way involved in the work in the Contract price. Whenever using any design, device, material, or process covered by letters patent or copyright, obtain the right for such use by suitable legal agreement with the patentee or owner of the copyright. File a copy of such agreement with the Engineer. However, whether or not such agreement is made or filed as noted, the Contractor and the surety in all cases shall indemnify, defend, and save harmless, the Town from all claims for infringement by reason of the use of any such patented design, device, material, or process on work under the Contract, and shall indemnify the Town for all costs, expenses, and damages that it may be obliged to pay by reason of any such infringement, at any time during the prosecution or after the completion of the work.

#### 6.8 PROTECTION OF EXISTING VEGETATION, STRUCTURES, UTILITIES AND OTHER IMPROVEMENTS

- 6.8.1 The Contractor will preserve and protect all existing vegetation such as trees, shrubs, and grass on or adjacent to the site of work which is not to be removed and which does not unreasonably interfere with the construction work. Care will be taken in removing trees authorized for removal to avoid damage to vegetation to remain in place. Any limbs or branches of trees broken during such operations or by the careless operation of equipment, or by workers, shall be trimmed with a clean cut and painted with an approved tree pruning compound as directed by the Town
- 6.8.2 Preserve from damage all property which is in the vicinity of or is in any way affected by the work, the removal or destruction of which is not specified in the plans. This applies to signs, monuments, fences, guardrail, pipe and underground structures, and public highways (except natural wear and tear of highway resulting from legitimate use thereof by the Contractor), etc., Whenever the Contractor's activities damage or injure such

property, immediately restore it to a condition similar or equal to that existing before such damage occurred, at no expense to the Town.

## 6.9 SAFETY AND LOSS CONTROL PROVISIONS

- 6.9.1 The Contractor shall be responsible for providing safe and healthful working conditions for employees of the Contractor, subcontractors, the Town or its invitees. The Contractor shall initiate and maintain an accident prevention program which should include, but is not limited to, the following: Establish and supervise programs for the education and training of employees in the recognition, avoidance, and prevention of unsafe conditions and acts.
- 6.9.2 The Contractor shall be responsible for providing first-aid services and medical care to all employees. The Contractor shall be responsible for development and maintenance of an effective fire protection and prevention program at the job site throughout all the phases of construction, repair, alterations, or demolition work. The Contractor shall establish and maintain good housekeeping practices throughout all phases. The Contractor shall be responsible for requiring the wearing of appropriate personal protective equipment in all operations where there is an exposure to hazardous conditions, including safety belts, lifelines and lanyards.
- 6.9.3 The Town's safety representative or any superior may, but is not required to; order that the work be stopped if a condition of immediate danger exists. Nothing contained herein shall be construed to shift responsibility or risk of loss for injuries or damage sustained as a result of a violation of this section from the Contractor to the Town and the Contractor shall remain solely and exclusively responsible for compliance with all safety requirements and for the safety of all persons and property at the project site. Employees required handling or use toxins, caustics and other harmful substances shall be instructed regarding the safe handling and use, and be made aware of the potential hazards, personal hygiene and personal protective measures required.
- 6.9.4 The Contractor shall take all precautions necessary for the protection of life, health, and general occupational welfare of all persons, including employees of both the Contractor and the Town, until the Contractor has completed the work required under the Contract as provided under Section, Final Acceptance. The Contractor shall comply at all times with applicable Federal, State, and local laws, provisions, and policies governing safety and health, including 29 CFR 1926, including all subsequent revisions and updates the "Trench Safety Act" Section 553.60, Florida Statutes.
- 6.9.5 The Contractor shall provide and maintain, in a neat and sanitary condition, such accommodations for the use of his employees as are necessary to comply with the requirements and regulations of the State and local boards of health. The Contractor shall not commit a public nuisance.

## 6.10 EMERGENCIES

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Town, is obligated to act to prevent threatened damage, injury or loss.

## 6.11 STORM PROCEDURES

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the Contractor, without special instruction or authorization from the Town, is obligated to act to prevent threatened damage, injury or loss. Develop and prepare a hurricane preparedness plan for approval by the Engineer. Submit plan at the preconstruction conference and revise prior to each and every hurricane season. The plan must contain at a minimum, a sequential set of activities leading up to full protection of persons, the Work or property at the site or adjacent thereto, without special instruction or authorization from the Town, to act to prevent threatened damage, injury or loss.

## 6.12 UTILITIES

6.12.1 **Arrangements for Protection or Adjustment:** Do not commence work at points where the construction operations are adjacent to utility facilities or other property, until making arrangements with the utility or property owners to protect against damage that might result in expense, loss, disruption of service, or other undue inconvenience to the public or to the owners. The CONTRACTOR is solely and directly responsible to the owners and operators of such properties for all damages, injuries, expenses, losses, inconveniences, or delays caused by the CONTRACTOR'S operations.

6.12.2 Information shown on the plans as to the location of existing utilities has been prepared from the most reliable current data available to the Engineer. However, this information and the exact location of existing utilities are not guaranteed by the TOWN, and it shall become the CONTRACTOR'S responsibility to investigate and exercise its own due diligence to determine the location, character and depth of all existing utilities and other site conditions which may impact the work of the project. The CONTRACTOR shall assist the utility companies, by all means possible to determine such locations and the locations of any recent additions to the system not indicated on the plans. The CONTRACTOR shall exercise extreme caution to eliminate any possibility of any damage, disruption, or the temporary powering down of any utilities resulting from the CONTRACTOR'S construction activities. The location of all overhead utilities shall be verified in writing by the CONTRACTOR and the Engineer shall be notified in writing by the CONTRACTOR within not less than days after the CONTRACTOR'S discovery of a possible conflict. The CONTRACTOR will determine which poles or underground lines may or will require shoring or support during excavation and installation, and the CONTRACTOR shall provide, at no additional cost, any shoring and/or other support as required for completing the work without damage to existing utilities.

## 6.13 E-VERIFY

6.13.1 The Vendor/Contractor shall utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the Vendor/Contractor during the term of the contract and shall expressly require any subcontractors performing work or providing services pursuant to the state contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the contract term.



## **SECTION 7 PROSECUTION AND PROGRESS**

### **7.1 PERFORMANCE OF WORK BY THE CONTRACTOR**

The Contractor shall, with his own organization, perform work equivalent to at least five percent (5%) of the total amount of the work to be performed under the Contract. Items, if any, identified in the Supplemental Conditions and/or Technical Special Provisions as specialty work will be deducted from the total Contract amount for the purpose of determining the Contractor's percentage of the work.

### **7.2 SUBCONTRACTORS**

7.2.1 The Contractor is as fully responsible to the Town for the acts, coordination and omissions of his subcontractors and of persons either directly or indirectly employed by said subcontractor, as he is for the acts and omissions of persons directly employed by him. The Contractor shall submit the names of the subcontractors proposed for the work for Town acceptance at the pre-construction conference. The Contractor shall not substitute any subcontractor without the prior written consent of the Town. Nothing contained in the Contract shall create any contractual relationship between any subcontractor and the Town.

7.2.2 Prior to subletting work in excess of five percent (5%) of the Contractor's total Bid, the Contractor shall provide a written notice to the Town of the bid items to be sublet. The notice shall include the name, address, and license number(s) of the subcontractor who will perform work or provide services to the Contractor. All subcontractors will be required to obtain a business tax receipt from the Town.

### **7.3 OTHER CONTRACTS**

7.3.1 The Town may undertake or award other contracts for additional work, and the Contractor shall fully cooperate with such other contractors and Town employees and carefully coordinate his own work to such additional work as may be directed by the Town. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractor or by Town employees.

7.3.2 The Contractor shall sequence the work and dispose of materials so as not to interfere with the operations of other Contractors engaged upon adjacent work; join the work to that of others in a proper manner, in accordance with the spirit of the Contract Documents; and perform the work in the proper sequence in relation to that of other contractors; all as may be directed by the Engineer. Each contractor is responsible for any damage done by him or his agents to the work performed by another contractor.

### **7.4 PROSECUTION OF WORK**

7.4.1 Compliance with Time Requirements: The Contractor shall commence work in accordance with the approved working schedule and provide sufficient labor, materials and equipment to complete the work within the time limit(s) set forth in the proposal. Should the Contractor fail to furnish sufficient and suitable equipment, forces, and materials, as necessary to prosecute the work in accordance with the required schedule,

the Engineer may withhold all estimates that are, or may become due, or suspend the work until the Contractor corrects such deficiencies.

- 7.4.2 **Submission of Working Schedule:** Within twenty-one (21) calendar days after Contract award or at the pre-construction conference, whichever is earlier, the Contractor shall submit to the Engineer a work progress schedule for the project. The Engineer will review and respond to the Contractor within fifteen (15) calendar days of receipt. The Contractor shall provide a schedule that shows the various activities of work in sufficient detail to demonstrate a reasonable and workable plan to complete the project within the Contract Time. The Contractor shall show the order and interdependence of activities and the sequence for accomplishing the work. The Contractor shall also show float or slack, the amount of time between the early start date and the late start date, or the early finish date and the late finish date, of any of the activities on the project schedule. The use of float or slack is not exclusive to either the Town or the Contractor, but is “owned” by the project. As necessary, either party may use float or slack, if available.
- 7.4.3 The Contractor shall describe all activities in sufficient detail so that the Engineer can readily identify the work and measure the progress on of each activity. The Contractor shall show each activity with a beginning work date, duration, and a monetary value. The Contractor shall include activities for procurement fabrication, and deliver of materials, plant, and equipment, and review time for shop drawings and submittals. Include milestone activities when milestones are required by the Contract Documents. In a project with more than one phase, the Contractor shall adequately identify each phase and its completion date, and do not allow activities to span more than one phase. The Contractor shall conduct sufficient liaison and provide sufficient information to indicate coordination activities with utility owners that have facilities within the limits of construction have been resolved. The Contractor shall incorporate in the schedule any utility adjustment schedules included in the Contract Documents unless the utility company and the Town mutually agree to changes to the utility schedules shown in the Contract. The Contractor shall submit a working plan with the schedule, consisting of a concise written description of the construction plan. The Engineer will return inadequate schedules to the Contractor for corrections. The Contractor shall resubmit a corrected schedule within fifteen (15) calendar days from the date of the Engineer’s return transmittal. The Contractor shall submit an updated Work Progress Schedule, for Engineer’s acceptance, if there is a significant change in the planned order or duration of an activity. The Engineer will review the corrected schedule and respond within 7 calendar days of receipt.
- 7.4.4 Submit an updated work progress schedule for the Engineer’s acceptance, if there is a significant change in planned order or duration of an activity. The Engineer will review the corrected schedule and respond within seven calendar days of receipt.
- 7.4.5 By acceptance of the schedule, the Engineer does not endorse or otherwise certify the validity or accuracy of the activity durations or sequencing of activities. The Engineer will use the accepted schedule as the baseline against which to measure the progress. If the Contractor fails to finalize either the initial or a revised schedule in the time specified, the Engineer will withhold all Contract payments until the Engineer accepts the schedule.
- 7.4.6 **Progress Meetings:** During the progress of work, the Engineer will hold weekly progress meetings, and the Engineer will determine meeting locations, dates and times. The Contractor’s superintendent and/or Project Manager are required to attend these

meetings.

7.5 BEGINNING WORK:

The Contractor shall notify the Engineer not less than five (5) days in advance of the planned start day of work. Upon the receipt of such notice, the Engineer may give the Contractor a Notice to Proceed, and may designate the point or points to start the work. In the Notice to Proceed, the Engineer may waive the five day advance notice and authorize the Contractor to begin immediately. The Contractor shall notify the Engineer in writing at least two (2) days in advance of the starting date of important features of the work. The Contractor shall not commence work under the Contract until after the Town has issued the Notice to Proceed. The Town will issue the Notice to Proceed within 30 days after execution of the Contract.

7.6 PROVISIONS FOR CONVENIENCE OF PUBLIC:

The Contractor shall schedule construction operations so as to minimize any inconvenience to adjacent businesses or residences. Where necessary, the Engineer may require the Contractor to first construct the work in any areas along the project where inconveniences caused by construction operations would present a more serious impact. In such critical locations, where there is no assurance of continuous effective prosecution of the work once the construction operations are begun, the Engineer may require the Contractor to delay removal of the existing (usable) facilities.

7.7 PRE-CONSTRUCTION CONFERENCE:

Immediately after awarding the Contract but before the Contractor begins work, the Engineer will call a pre-construction conference at a place the Engineer designates to go over the construction aspects of the Project. The Contractor shall attend this meeting, along with the Town and the various utility companies that will be involved with the project construction.

7.8 LIMITATIONS OF OPERATIONS:

7.8.1 **Night Work and Work on Saturdays, Sundays and Holidays:** Nighttime operations are not favored by the Town. Town Ordinances severely limit hours of operation and noise generated by construction activities, power tools and equipment. The Contractor's attention is drawn to these ordinances and, in particular, Town Code, Chapter 13, Section 13-93. Except in the case of urgent necessity in the interest of public health and safety, on which such occasion the Engineer shall be notified as soon as practicable, construction work, including the operation and maintenance of any type of construction equipment, shall not take place on weekdays, Monday through Friday, inclusive, between the hours of 7:00 PM and 7:00 AM. On Saturday(s), construction work, including the operation and maintenance of any type of construction equipment, shall not take place before the hours of 8:00 AM and after 4:00 PM. Construction work, including the operation and maintenance of equipment, shall not be allowed on Sunday(s), and, more particularly, from 4:00 PM on the preceding Saturday until 7:00 AM the following Monday. Unless requested in writing by the Contractor and authorized in writing by the Engineer, no work shall be performed on any legal holiday observed by the Town of Jupiter. At the direction of the Engineer, or as otherwise noted in these contract documents, construction operations may be further limited due to proximity to schools, hospitals, and places of worship.

- 7.8.2. **Nighttime Operations:** Whenever nighttime operations are called for in the plans or approved by the Town, the Contractor shall furnish, place and maintain lighting sufficient to permit proper workmanship and inspection. The Contractor shall use lighting with five-foot (5 ft) cd minimum intensity. The Contractor shall arrange the lighting to prevent interference with traffic or produce undue glare to property owners. The Contractor shall operate such lighting only during active nighttime construction activities. The Contractor shall provide a light meter to demonstrate that the minimum light intensity is being maintained. Lighting may be accomplished by the use of portable floodlights, standard equipment lights, existing street lights, temporary street lights, or other lighting methods approved by the Engineer. The Contractor shall submit a lighting plan at the Pre-construction Conference for review and approval by the Engineer. The Contractor shall submit the plan on standard size plan sheets (not larger than 24 by 36 inch, and on a scale of either 100 or 50 foot to 1 inch). The Contractor shall not start night work prior to the Engineer's approval of the lighting plan. During active nighttime operations, the Contractor shall furnish, place and maintain variable message signs to alert approaching motorists of lighted construction zones ahead. The Contractor shall operate the variable message signs only during active construction activities. The Contractor shall equip all pickups and automobiles used on the project with either amber flashing lights or flashing white lights. The Contractor shall equip all other equipment with a minimum of 4 ft 2 of reflective sheeting, or flashing lights. To avoid distraction to motorists, the Contractor shall not operate the lights on the vehicles or equipment when the vehicles are outside the clear zone or behind traffic control devices. The Contractor shall ensure that all personnel shall wear reflective vests at all times while in the work area. The Contractor shall comply with all applicable regulations governing noise abatement. The Contractor shall have a Certified Worksite Supervisor on site during all nighttime operations to ensure proper Maintenance of Traffic. The Contractor shall include compensation for lighting for night work in the Contract prices for the various items of the Contract. The Contractor shall take ownership of all lighting equipment for night work.
- 7.8.3 **Right of Way Furnished:** Except as otherwise stipulated in the Contract Documents, the Town will furnish all right-of-way necessary for the work. Except as otherwise stipulated in the Contract Documents, the Contractor shall provide and pay for all additional work areas, storage facilities, temporary access roads, lay down areas or any other temporary facilities required for the completion of the work.
- 7.8.4 **Sequence of Operations:** The Contractor shall not open up work to the prejudice of work already started. The Engineer may require the Contractor to finish a section on which work is in progress before starting work on any additional section.
- 7.8.5 **Interference with Traffic:** At all times, the Contractor shall conduct the work in such manner and in such sequence as to ensure the least practicable interference with traffic. The Contractor shall operate all vehicles and other equipment safely and without hindrance to the traveling public. The Contractor shall park all private vehicles outside the clear zone. The Contractor shall place materials stored along the roadway so as to cause no obstruction to the traveling public as possible. Where existing pavement is to be widened and stabilizing is not required, the Contractor shall prevent any open trench from remaining after working hours by scheduling operations to place the full thickness of widened base by the end of each day. The Contractor shall not construct widening strips simultaneously on both sides of the road, except where separated by a distance of at least 1/4 mile along the road and where either the work of excavation has not been started or the base has been completed. Except in the case of an emergency, all lane closures and

detours will require a minimum of seven day advance notice to the Town and written approval from the Engineer.

- 7.8.6 **Traffic Signs, Signal Equipment, Highway Lighting and Guardrail:** Protect all existing roadside signs, signal equipment, highway lighting and guardrail, for which permanent removal is not indicated, against damage or displacement. Whenever such signs, signal equipment, highway lighting or guardrail lie within the limits of construction, or wherever so directed by the Engineer due to urgency of construction operations, take up and properly store the existing roadside signs, signal equipment, highway lighting and guardrail and subsequently reset them at their original locations or, in the case of widened pavement or roadbed, at locations designated by the Engineer.
- 7.8.7 **Overloaded Equipment:** The Contractor shall not operate on any road or street any hauling unit or equipment loaded in excess of (1) the maximum weights specified in the Florida Uniform Traffic Control Law, or (2) lower weights legally established for any section of road or bridge by the State or local authorities. The governmental unit having jurisdiction over a particular road or bridge may provide exceptions by special permit. This restriction applies to all roads and bridges inside and outside the Contract limits as long as these roads and bridges are open for public use.
- 7.8.8 **Drainage:** The Contractor shall conduct the operations and maintain the work in such condition to provide adequate drainage at all times. The Contractor shall not obstruct existing functioning storm sewers, gutters, ditches, and other run-off facilities.
- 7.8.9 **Fire Hydrants:** Keep fire hydrants on or adjacent to the highway accessible to fire apparatus at all times, and do not place any material or obstruction within 15 feet of any fire hydrant.
- 7.8.10 **Protection of Structures:** The Contractor shall not operate heavy equipment close enough to pipe headwalls or other structures to cause their displacement.
- 7.8.11 **Fencing:** The Contractor shall erect permanent fence as a first order of business on all projects that include fencing where the Engineer determines that the fencing is necessary to maintain the security of livestock on adjacent property, or for protection of pedestrians who are likely to gain access to the project from adjacent property.
- 7.8.12 **Temporary Utilities:** The Contractor is responsible for the design, permitting and installation of any temporary utilities, including but not limited to temporary light, power, water, sanitary and storm sewer, necessary to complete the work. The cost of all temporary utilities shall be at the Contractor's sole expense and will not be measured separately for payment. The Town is not responsible for any delays caused by a lack of temporary utilities.
- 7.8.13 **Sanitary Provisions:** The Contractor shall provide and maintain sufficient number and size of portable and temporary lavatories a/k/a/ "porta potties" and/or similar restroom facilities and sinks, which shall be kept clean and sanitary on a daily basis and emptied as required. Such facilities shall be equipped with necessary paper goods, anti-bacterial soap, towels, trash containers, hand dryers or towels, chemical agents for sanitization, and any and all other such materials and reasonable accommodations for the use of his employees. The Contractor shall enforce the maintenance, hygiene, cleanliness, safety and compliance with public health regulations and other applicable rules and regulations,

including but not limited to the State and local boards of health. The Contractor shall be responsible to collect any litter at the project site on a daily basis and dispose of it in suitable containers and its operations, actions and omissions shall not create a public or private nuisance.

7.8.14 **Structures over Navigable Waters.** Where erecting pipe, drainage structures or other structures in, adjacent to, or over, navigable waters, observe all regulations and instructions of Federal and other authorities having control over such waters. Do not obstruct navigation channels without permission from the proper authority, and provide and maintain navigation lights and signals in accordance with the Federal requirements for the protection of the structure, of false work, and of navigation. In the event of accidental blocking of the navigation channel, immediately notify the U.S. Coast Guard of the blockage and upon removal of the blockage. When work platforms are indicated in the permit for construction, submit work platform construction plans to the appropriate Coast Guard District for approval. Obtain approval prior to beginning construction on the platform.

7.8.15 **Maintenance of Channel:** Where the work includes the excavation of a channel or other underwater areas to a required section, maintain the section from shoaling or other encroachment until final acceptance of the project.

7.8.16 **Operations Within Railroad Right-of-Way:**

7.8.16.1 **Notification to the Railroad Company:** In any project requiring landscaping or other work in the railroad right-of-way, notify the representative of the railroad company, as shown on the plans, and the Engineer at least 72 hours before beginning any operation within the limits of the railroad right-of-way.

7.8.16.2 **Contractor's Responsibilities:** Comply with whatever requirements an authorized representative of the railroad company deems necessary in order to safeguard the railroad's property and operations, as the railroad controls and directs all work within the railroad right-of-way. The Contractor is responsible for all damages, delays, or injuries and all suits, actions, or claims brought because of damages or injuries resulting from the Contractor's operations within or adjacent to railroad company right-of-way.

7.8.16.3 **Watchman or Flagging Services:** The railroad company will furnish protective services (i.e., watchman or flagging services) to ensure the safety of railroad operations during certain periods of the project. The Contractor will reimburse the railroad company for the cost thereof. Schedule work that affects railroad operations to minimize the need for protective services by the railroad company.

7.9 **Hazardous or Toxic Waste:** When the construction operations encounter or expose any abnormal condition that may indicate the presence of a hazardous or toxic waste, the Contractor shall discontinue such operations in the vicinity of the abnormal condition and notify the Engineer immediately. The Contractor shall be alert for the presence of tanks or barrels; discolored earth, metal, wood, ground water, etc.; visible fumes; abnormal odors; excessively hot earth; smoke; or other conditions that appear abnormal as possible indicators of hazardous or toxic wastes and treat these conditions with extraordinary caution. The Contractor shall make every effort to minimize the spread of any hazardous or toxic waste into uncontaminated areas. The Contractor shall not resume the construction operations until so directed by the Engineer.

The Contractor shall dispose of the hazardous or toxic waste in accordance with the requirements and regulations of any Local, State, or Federal agency having jurisdiction. Where the Contractor performs work necessary to dispose of hazardous or toxic waste, and the Contract does not include pay items for disposal, the Town will pay for this work as provided for in 3.2.2.

- 7.9.1 **Discovery of an unmarked human burial:** When an unmarked human burial is discovered, the Contractor shall immediately cease all activity that may disturb the unmarked human burial and notify the engineer. The Contractor shall not resume activity until specifically authorized by the engineer.

## 7.10 ADJUSTING CONTRACT TIME

- 7.10.1 **Increased Work:** The Town may grant an extension of Contract Time when it increases the Contract amount due to overruns in original Contract items, adds new work items, or provides for unforeseen work. The Town will base the consideration for granting an extension of Contract Time on the extent that the time normally required to complete the additional designated work delays the Contract completion schedule.

- 7.10.2 **Contract Time Extensions:** The Town may grant an extension of Contract Time when a controlling item of work is delayed by factors not reasonably anticipated or foreseeable at the time of Bid. The Town may allow such extension of time only for delays occurring during the Contract Time period or authorized extensions of the Contract Time period. When failure by the Town to fulfill an obligation under the Contract results in delays to the controlling construction operations, the Town will consider such delays as a basis for granting a Contract Time Extension to the Contract. Whenever the Engineer suspends the Contractor's operations, as provided in 7-11, for reasons other than the fault of the Contractor, the Engineer will grant a Contract Time Extension for any delay to a controlling item of work due to such suspension. The Town will not grant Contract Time Extensions to the Contract for delays due to the fault or negligence of the Contractor. The Town does not include an allowance for delays caused by the effects of inclement weather in establishing Contract Time. The Town will grant Contract Time Extensions, on a day for day basis, for delays caused only by the effects of rains or other inclement weather conditions or related adverse soil conditions prevent the Contractor from productively performing controlling items of work resulting in:

1. the Contractor being unable to work at least fifty percent (50%) of the normal work day on pre-determined controlling work items due to adverse weather conditions; or that;
2. the Contractor must make major repairs to work damaged by weather, provided that the damage is not attributable to the Contractor's failure to perform or neglect; and provided that the Contractor was unable to work at least fifty percent (50%) of the normal workday on pre-determined controlling work items. No additional compensation will be made for delays caused by the effects of inclement weather. The Engineer will continually monitor the effects of weather and, when found justified, grant Contract Time Extensions on either a bimonthly or monthly basis. The Engineer will not require the Contractor to submit a request for additional time due to the effects of weather. The Town will consider the delays in delivery of materials or component equipment that affect progress on a controlling item of work as a basis for granting a Contract Time Extension if such delays are beyond the control of the Contractor or supplier. Such delays

may include an area-wide shortage, an industry-wide strike, or a natural disaster that affects all feasible sources of supply. In such cases, the Contractor shall furnish substantiating letters from a representative number of manufacturers of such materials or equipment clearly confirming that the delays in delivery were the result of an area-wide shortage, an industry-wide strike, etc. The Town will not consider requests for Contract Time Extension due to delay in the delivery of custom manufactured equipment such as traffic signal equipment, highway lighting equipment, etc., unless the Contractor furnishes documentation that he placed the order for such equipment in a timely manner, the delay was caused by factors beyond the manufacturer's control, and the lack of such equipment caused a delay in progress on a controlling item of work. The Town will consider the affect of utility relocation and adjustment work on job progress as the basis for granting a Contract Time Extension only if all the following criteria are met:

- 1) delays are the result of either utility work that was not detailed in the plans, or utility work that was detailed in the plans but was not accomplished in reasonably close accordance with the schedule included in the Contract Documents;
- 2) utility work actually affected progress toward completion of controlling work items;
- 3) the Contractor took all reasonable measures to minimize the effect of utility work on job progress, including cooperative scheduling of the Contractor's operations with the scheduled utility work at the preconstruction conference and providing adequate advance notification to utility companies as to the dates to coordinate their operations with the Contractor's operations to avoid delays.

As a condition precedent to an extension of Contract Time the Contractor must submit to the Engineer:

A preliminary request for an extension of Contract Time in writing to the Engineer within ten (10) calendar days after the commencement of a delay to a controlling item of work. If the Contractor fails to submit this required preliminary request for an extension of Contract Time, the Contractor fully, completely, absolutely and irrevocably waives any entitlement to an extension of Contract Time for that delay. In the case of a continuing delay only a single preliminary request for an extension of Contract Time will be required.

Each such preliminary request for an extension of Contract time shall include as a minimum the commencement date of the delay, the cause of the delay, and the controlling item of work affected by the delay; and further, the Contractor must submit to the Engineer a request for a contract time extension in writing within 30 days after the elimination of the delay to the controlling item of work identified in the preliminary request for a contract time extension. Each request for a contract time extension shall include as a minimum all documentation that the Contractor wishes the Town to consider related to the delay, and the exact number of days requested to be added to Contract Time.

If the Contractor fails to submit this required request for a contract time extension, depriving the Engineer of the timely opportunity to verify the delay the Contractor waives any entitlement to an extension of Contract Time. Upon



timely receipt of the preliminary request for a Contract Time Extension from the Contractor, the Engineer will investigate the conditions, and if it is determined that a controlling item of work is being delayed for reasons beyond the control of the Contractor, the Contractor and Engineer will take appropriate action to mitigate the delay. Upon timely receipt of the request for a Contract Time Extension the Engineer will further investigate the conditions, and if it is determined that there was an increase in the time of the controlling item of work beyond the control of the Contractor, then an adjustment of Contract Time will be made as the sole remedy of the delay beyond the control of the Contractor, and the Contract will be modified in writing accordingly.

The existence of an accepted schedule, including any required update(s), as stated in 7.4.2, is a condition precedent to the Contractor having any right to the granting of an extension of contract time arising out of any delay. The Contractor's failure to have an accepted schedule, including any required update(s), for the period of potential impact, or in the event the currently accepted schedule and applicable updates do not accurately reflect the actual status of the project or fail to accurately show the true controlling or non-controlling work activities for the period of potential impact, will result in any entitlement determination as to time for such period of potential impact being limited solely to the Town's analysis and identification of the actual controlling or non-controlling work activities. In the instance of the contractor's failure to have an approved schedule, the determination by the Engineer shall be conclusive and shall not subject to challenge by the Contractor in any forum, except upon the Contractor establishing by clear and convincing proof that the determination by the Engineer was without any reasonable and good faith basis.

#### 7.11 SUSPENSION OF WORK

The Engineer has the authority to suspend the Contractor's operations, wholly or in part. The Engineer will order or allow such suspensions in writing, giving in detail the reasons for the suspension. Contract Time will be charged during all suspensions of Contractor's operations, or, at the sole discretion of the Engineer, may not charge time for specific projects where the submittal process and/or the procurement and fabrication process are significant. In the later instance, if, in the sole opinion of the Engineer, during such suspension of time, the contractor is not diligently making submittals, procuring and or fabricating elements of the project, this suspension may be rescinded and contract time charge resumed, from the date of the Engineer's written notice. The Town may grant an extension of Contract time when determined appropriate in the Town's sole judgment".

No contract time extension will be granted to the Contractor when the operations are suspended for the following reasons:

- a) The Contractor fails to comply with the Contract Documents.
- b) The Contractor fails to carry out orders given by the Engineer.
- c) The Contractor causes conditions considered unfavorable for continuing the Work.

Immediately comply with any suspension order. Do not resume operations until authorized to do so by the Engineer in writing. Any operations performed by the Contractor, and otherwise constructed in conformance with the provisions of the Contract, after the issuance of the suspension order and prior to the Engineer's authorization to resume operations will be at no cost

to the Town. Further, failure to immediately comply with any suspension order will also constitute an act of default by the Contractor and is deemed sufficient basis in and of itself for the Town to declare the Contractor in default, in accordance with 7.12, with the exception that the Contractor will not have ten calendar days to correct the conditions for which the suspension was ordered.

## 7.12 TERMINATION FOR DEFAULT

7.12.1 The Town may terminate the Contract if the Contractor:

7.12.2 Persistently or repeatedly refuses or fails to supply enough skilled workers or proper materials;

7.12.3 Fails to make payment to Subcontractors for materials or labor in accordance with the respective agreements between the Contractor and the Subcontractors;

7.12.4 Disregards laws, ordinances, or rules, regulations or orders of a public authority having jurisdiction;

7.12.5 Is adjudged bankrupt, or if he makes a general assignment for the benefit of his creditors, or if a receiver is appointed on account of his insolvency;

7.12.6 Otherwise is guilty of substantial breach of a provision of the Contract.

7.12.7 In the event that the Contractor shall default in any of the terms, obligations, restrictions or conditions of the Contract Documents, the Town shall give written notice to the Contractor, by certified mail, return receipt requested that action must be taken to correct the default within ten (10) calendar days thereof, and the default must be corrected to the satisfaction of the Town within ten (10) days of the notice, unless a longer time is specified by the Town. In the event the Contractor has failed to correct the conditions of default, or the default is not remedied to the satisfaction of the Town, the Town shall have all legal remedies available to it, including, but not limited to, the termination of the Contract, in which case, the Contractor shall be liable for all procurement and re-procurement costs, and any and all damages permitted by law arising from the default and breach of the Contract.

7.12.8 The Town has no liability for anticipated profits for unfinished work on a Contract that the Town has determined to be in default.

## 7.13 TERMINATION FOR CONVENIENCE

7.13.1 Upon seven (7) calendar days written notice, delivered by certified mail, return receipt requested to the Contractor, the Town may, without cause and without prejudice to any other right or remedy, terminate the Contract for the Town's convenience whenever the Town determines that such termination is in the best interest of the Town. Where the Contract is terminated for the convenience of the Town, the notice of termination must state that the Contract is being terminated for the convenience of the Town under the termination clause and the extent of the termination. Upon receipt of the notice of termination, the Contractor shall promptly discontinue all work at the time.

7.13.2 When the Town terminates the entire Contract, or any portion thereof, before the

Contractor completes all items of work in the Contract, the Town will make payment for completed work based on the following:

- 7.13.3 If Unit Price on the actual number of units or items of work that the Contractor has completed, at the Contract unit price, or
- 7.13.4 If Lump Sum Price, as a reasonable percentage of the Lump Sum price for completed work and as determined by the Engineer.
- 7.13.5 These payments will constitute full and complete compensation for such work or items. No payment of any kind or amount will be made for items of work not started. The Town will not consider any claim for loss of anticipated profits, or overhead of any kind including home office and jobsite overhead or other indirect impacts.
- 7.13.6 Termination of a Contract or a portion thereof, under the provisions of this section, does not relieve the Contractor or the surety of its responsibilities for the completed portion of the Contract or its obligations for and concerning any just claims arising out of the work performed. All Contractor claims for additional payment, due to the Town's termination of the entire Contract or any portion thereof, must meet the requirements of 4.17.

**SECTION 8**  
**PAYMENT TO CONTRACTOR**

**8.1     PAYMENT TO CONTRACTOR**

- 8.1.1     The Engineer will measure all work completed under the Contract in accordance with the United States Standards Measures.
- 8.1.2     The Engineer will take all measurements horizontally or vertically.
- 8.1.3     When measuring items paid for on the basis of area of finished work, where the pay quantity is designated to be determined by calculation, the Engineer will use lengths and widths in the calculations based on the station to station dimensions shown on the plans; the station to station dimensions actually constructed within the limits designated by the Engineer; or the final dimensions measured along the surface of the completed work within the neat lines shown on the plans or designated by the Engineer. The Engineer will use the method or combination of methods of measurement that reflect, with reasonable accuracy, the actual surface area of the finished work as the Engineer determines.
- 8.1.4     The Engineer will not certify for payment surfaces constructed over a greater area than authorized, or for material that the Contractor has moved from outside of slope stakes and lines shown on the plans, except where the Engineer provides written instruction for the Contractor to perform such work.
- 8.1.5     The Contractor shall provide trucks with numbers and certify that all trucks used have a manufacturer's certification or permanent decal showing the truck capacity rounded to the nearest tenth of a cubic yard placed on both sides of the truck. This capacity will include the truck body only and any side boards added will not be included in the certified truck body capacity. The Contractor shall also ensure the lettering and numbers are legible for identification purposes at all times.
- 8.1.6     When determining the weight of material for payment, the Contractor shall use scales meeting the requirements of Chapter 531 of Florida Statutes, pertaining to specifications, tolerances, and regulations, as administered by the Bureau of Weights and Measures of the Florida Department of Agriculture. The Contractor shall provide the original printed weight tickets to the Town to document the weight of materials for payment.
- 8.1.7     The Contractor shall also place such scales on a substantial horizontal base to provide adequate support and rigidity and to maintain the level of the scales.
- 8.1.8     The Contractor shall maintain all scale parts in proper condition as to level and vertical alignment, and fully protect them against contamination by dust, dirt, and other matter that might affect their operation.
- 8.1.9     The Contractor shall accept the compensation as provided in the Contract as full payment for furnishing all labor, materials, equipment, tools, construction equipment, machinery, water, utilities, temporary facilities, freight and all other incidentals, and for performing all work contemplated and embraced under the Contract; and which amount shall be deemed to include all loss or damage arising out of the nature of the work or from the

action of the elements, or from any unforeseen difficulties or obstructions which may arise or be encountered in the prosecution of the work until its final acceptance; and for all other indirect costs incurred to complete the work including but not limited to; permit fees, impact fees, taxes, bonding, insurance, field overhead, home office overhead, supervision, project management, and profit.

8.1.10 In cases where the basis of payment clause in these specifications relating to any unit price in the bid schedule requires that the unit price cover and be considered compensation for certain work or material essential to the item, the Town of Jupiter will not measure or pay for this same work or material under any other pay item that may appear elsewhere in these specifications.

8.1.11 The Contractor shall submit both an original application for payment and a Town of Jupiter Contractor invoice (invoice) and a Certification Disbursement of Previous Periodic Payment to Subcontractors on a monthly basis to the Town. The first application for payment shall indicate a charge of \$100.00 for indemnification of the Town by the Contractor pursuant to Section 725.06 Florida Statutes. An early payment discount, if offered by the Contractor, shall be clearly indicated on the invoice, including the percentage of the discount and the time period of which the discount is valid. The Town reserves the option to accept such early payment discounts. The acceptance of the invoice by the Town shall constitute the start of the payment process whereby the Town shall pay the full amount of the invoice for the cost of work performed and of the actual cost of materials suitably stored at the site, less five percent (5%) retainage, within twenty-five (25) business days after the date on which the invoice is stamped as received by the Town, provided the Contractor performed the work according to the terms and conditions of the Contract. The Town may reject the Contractor's invoice, in which case the invoice shall be returned as rejected to the Contractor by the Town, within twenty (20) business days after the invoice is stamped as received by the Town. Together with the rejected invoice, the Town must specify the deficiency in the invoice and the action necessary by the Contractor to make the invoice proper. The Contractor may then submit a corrected invoice which corrects the deficiency specified by the Town, which must be paid or rejected by the Town within ten (10) calendar days after the date the corrected invoice is stamped as received by the Town, or the first day after the next regularly scheduled Town Council meeting held after the corrected invoice is stamped as received by the Town. If the Town disputes a portion of an invoice, the undisputed portion of the invoice shall be timely paid within 25 business days after the date on which the invoice is stamped as received by the Town. If the dispute cannot be resolved as set forth in this section, the dispute must be resolved in accordance with the dispute resolution procedure set forth in the Contract, or in any applicable ordinance, or in the absence of a prescribed procedure, by the procedure specified in Section 218.76(2), Fla. Stat.

8.1.11.1 The failure to submit requests for partial payment using the Town's Contractor Invoice, together with the required disbursement certification, in the manner required by this paragraph, may result in non-payment and/or a delay in the payment of the requested partial payment, until the required, fully completed forms and all necessary information are provided to the Town. The Town shall have no legal liability for direct or consequential damages alleged to have been sustained by the Contractor, and/or any other claims, losses and liabilities, interest, penalties, attorney and other professional fees, costs or expenses, of any kind, which may be incurred as a result of the late payment or non-payment of any payment request which failed to comply with the requirements of this

paragraph.

- 8.1.12 After the completion of all items on the Punch List as provided under Subarticle 4.15, the Contractor may submit a payment request for all remaining withheld by the Town. If a good faith dispute exists as to whether one or more items identified on the list have been completed pursuant to the contract, the local governmental entity may continue to withhold up to 150 percent of the total costs to complete such items which are otherwise the subject of a claim or demand by the Town or Contractor.

Section 8.1.12 does not apply to any construction services purchased by the Town which are paid for, in whole or in part, with Federal funds and are subject to Federal grantor laws and regulations, or requirements that are contrary to any provision of the Florida Local Government Prompt Payment Act, Section 218.735, et. seq., Fla. Stat. Further, the provisions of sections 8.1.12, 8.1.12.1 and 8.1.12.2 do not apply to construction services purchased by the Town if the total cost of the construction services as identified in the Contract is \$200,000 or less.

- 8.1.13 The Contractor warrants that title to all work covered by the application for payment will pass to the Town upon payment. The Contractor further warrants that upon submittal of an application for payment, all work for which certificates for payment have been previously issued and payments received from the Town, shall be free and clear of liens, claims, security interests, or encumbrances in favor of the Contractor, subcontractors, material supplies, and other persons or entities making a claim by reason of having provided labor, material, and equipment relating to the work.

**DIVISION IA  
CONTRACT  
AND  
POST AWARD FORMS**

- **Contract**
- **Statutory Payment Bond**
- **Statutory Performance Bond**
- **Contractor's Invoice**
- **Certification Disbursement of Previous Periodic Payment**
- **Contract Supplemental Agreement**
- **Contract Unilateral Agreement**
- **Certificate of Final Acceptance**
- **Contractor's Affidavit and Final Release of Lien**
- **Subcontractors, Materialmen and Laborer's Final Waiver of Lien**
- **E-Verification forms**

EPW 2024-24

CONTRACT  
BETWEEN THE  
TOWN OF JUPITER  
AND  
(CONTRACTOR NAME)

THIS CONTRACT, made this [REDACTED] day of [REDACTED], 20 [REDACTED], by and between the Town of Jupiter, a public corporation of the State of Florida, hereinafter designated as "the TOWN", and (CONTRACTOR NAME), (STREET ADDRESS, CITY, STATE AND ZIP), a (STATE OF INCORPORATION) Corporation, FEID Number (FEID NUMBER) hereinafter designated as "the CONTRACTOR".

WITNESSETH THAT

WHEREAS, the TOWN is a municipality and given those powers and responsibilities enumerated by Chapter 166 Florida Statutes and the Florida Constitution; and

WHEREAS, the TOWN is empowered to enter into contractual arrangements with public agencies, private corporations or other persons, pursuant to Florida Statutes; and

WHEREAS, the TOWN desires the services of a qualified and experienced contractor to provide construction services; and

WHEREAS, the TOWN solicited and received bids on June 18, 2024 for the Construction of Town Hall - Phase II, Palm Beach County, Florida; and

WHEREAS, the CONTRACTOR has responded to the TOWN'S solicitation and the CONTRACTOR is qualified and willing to provide said services; and

WHEREAS, the TOWN has found the CONTRACTOR'S response to be acceptable and wishes to enter into a CONTRACT; and

WHEREAS, the TOWN has budgeted funds in its current fiscal year budget which are available for the funding of this CONTRACT;

NOW, THEREFORE, the TOWN and the CONTRACTOR in consideration of the benefits flowing from each to the other do hereby agree as follows:



1. STATEMENT OF WORK

The CONTRACTOR shall furnish all materials, tools, labor, equipment, and other necessary items for the performance of the work, and shall perform the required work in accordance with the CONTRACT Documents for CONTRACT No. EPW 2024-24 entitled Town Hall - Phase II, Palm Beach County ("Project").

- 1.1. CONTRACTOR shall provide the TOWN with a copy of its license to do business as a General Contractor in the State of Florida, and also shall provide the Town with a copy of its Palm Beach County Local Business Tax Receipt prior to commencing any work under the CONTRACT. In lieu of a Palm Beach County issued Local Business Tax Receipt and in accordance with Florida Statutes 205.065, a current Department of Professional Regulation certificate shall be provided with a copy of the Local Business Tax Receipt of the CONTRACTOR'S permanent business location's county/city.
- 1.2. Examine the CONTRACT Documents and the site of the proposed work carefully before submitting a proposal for the work contemplated. Investigate the conditions to be encountered, as to the character, quality, and quantities of work to be performed and materials to be furnished and as to the requirements of all CONTRACT Documents.

2. CONTRACT TERM, PERIOD OF PERFORMANCE AND LIQUIDATED DAMAGES

- 2.1. Unless extended or terminated, the period of performance of this CONTRACT shall commence upon the effective date of the Notice to Proceed and continue for a period of One Hundred Eighty (180) calendar days. The CONTRACTOR shall not proceed with work under this CONTRACT until a written Notice to Proceed is received from the TOWN.
- 2.2. The parties agree that the TIME IS OF THE ESSENCE, in the performance of each and every obligation under this CONTRACT. The CONTRACT period of performance may only be changed by a supplemental agreement or written time extension.
- 2.3. Failure to complete the Project within the time fixed in this CONTRACT will result in substantial injury to the TOWN. As damages arising from such failure cannot be calculated with any degree of certainty, it is hereby agreed that if the project is not completed with the time fixed or within such further time, if any, as may be authorized in accordance with the CONTRACT documents, the CONTRACTOR shall pay to the TOWN as Liquidated Damages for such delay, and not as a penalty, Seven Hundred Ninety-Four dollars (\$794.00), for each and every calendar day elapsing between the date fixed for completion and the date such completion shall have actually occurred.
- 2.4. This provision of Liquidated Damages for delay shall in no manner affect the TOWN's right to terminate the CONTRACT. The TOWN's exercise of the right to terminate shall not release the CONTRACTOR from his obligation to pay Liquidated Damages. It is further agreed that the TOWN may deduct from the balance of the CONTRACT sum held by the TOWN the Liquidated Damages stipulated herein or such portions as said balance will cover.

3. CONSIDERATION

- 3.1. The consideration for the full and complete performance under this CONTRACT, subject only to such additions and deductions as are agreed to by the parties in writing, shall be an amount not to exceed [REDACTED] (\$ [REDACTED] ).
- 3.2. The aggregate CONTRACT price, as stated above, includes the specific indemnification consideration required under Section 725.06, Florida Statutes. By including such specific consideration in addition to other good and valuable considerations, paid by the TOWN, the receipt of which is acknowledged by the CONTRACTOR, the parties agree that they have complied with the requirements of Section 725.06, Florida Statutes, if applicable, for the indemnification agreement in Paragraph 5 of this CONTRACT.
- 3.3. Pursuant to Section 287.055(5)(a), Florida Statutes, the signature on this CONTRACT by an authorized agent of the CONTRACTOR, serves as the execution of a truth-in-negotiation certificate, stating that wage rates and other factual unit costs supporting the consideration are accurate, complete, and current at the time of contracting. The CONTRACTOR agrees that the TOWN may adjust the consideration of this CONTRACT to exclude any significant sums by which the consideration was increased due to inaccurate, incomplete, or non-current wage rates and other actual unit costs. The TOWN may make any such adjustment within the term of this CONTRACT.

4. CONTRACT DOCUMENTS

The CONTRACT Documents listed below are incorporated herein by reference and shall become a part of this CONTRACT as though physically attached as a part hereof, and all documents in this CONTRACT shall be interpreted together to yield the most consistent results to achieve the purpose of the Project:

- 4.1. This Document and all amendments and addendums thereto.
- 4.2. CONTRACT plans for (Town Hall – Phase II EPW 2024-24) consisting of plans prepared by Song + Associates dated 02/09/2024.
- 4.3. Supplemental Agreements and Unilateral Payments, Addendum, Supplemental Conditions, Technical Special Provisions, Technical Specifications, General Conditions, Town Modified Standard Specifications, FDOT Standard Specifications for Road and Bridge Construction, Town Standard Details, and FDOT Standard Plans for Road and Bridge Construction.
- 4.4. Invitation to Bid, Instructions to Bidders, Bid Forms, and Post Award Forms
- 4.5. Performance and Payment Bonds for CONTRACT work

5. INDEMNIFICATION

- 5.1. For \$100.00 and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged as part of the first payment for services, the CONTRACTOR shall indemnify, defend, and save harmless the TOWN, its elected officials, agents, guests, invitees and employees, from all suits, actions, claims, demands,

damages, losses, expenses, including attorney's fees, costs and judgments of every kind and description to which the TOWN, its agents, guests, invitees, or employees may be subjected by reason of personal injury, bodily injury including death, or property damage, resulting from or growing out of any intentional, negligent, reckless, or careless act of commission, omission, or consequential damage directly or indirectly connected with the CONTRACTOR, its subcontractors, its agents, or employees, and committed in connection with this CONTRACT, CONTRACTOR'S performance hereof, or any work performed hereunder.

- 5.2. The CONTRACTOR shall indemnify, defend, and save harmless the TOWN, its agents, or employees from and against all claims, demands, actions, suits, damages losses, expenses, costs, including attorney's fees, and judgments of every kind and description arising from, based upon, or growing out of the violation of any Federal, State, county or city law, by-law, ordinance of regulation by the CONTRACTOR, its agents, trainees, invitees, servants or employees. The CONTRACTOR further acknowledges that it is solely responsible for ensuring the safety of the premises to protect its employees, subcontractors, invitees, licensees and all other persons during the course of the work, and agrees to hold and save the TOWN harmless against all claims involving alleged negligence by the TOWN in failing to adequately ensure the safety of the site or otherwise ensure compliance with the CONTRACT.
- 5.3. The CONTRACTOR agrees to indemnify, defend, save and hold harmless the TOWN, its officers, agents, and employees, from all claims, damages, losses, liabilities and expenses arising out of any alleged infringement of copyrights, patent rights and/or the unauthorized or unlicensed use of any material, property, or other work in connection with the performance of the CONTRACT.
- 5.4. CONTRACTOR shall pay all losses, claims, liens, settlements, or judgments of any nature whatsoever in connection with the foregoing indemnification, including but not limited to, reasonable attorney's fees (including appellate attorneys' fees and costs).
- 5.5. TOWN reserves the right to select its own counsel to conduct any defense in any such proceedings and all costs and fees associated therewith shall be the responsibility of the CONTRACTOR under the indemnification agreement set forth herein. Nothing contained herein is intended nor shall it be construed to waive TOWN's rights and immunities under the common law or Florida Statute 768.28, as amended from time to time.
- 5.6. Guaranty of Payment for Claims: The CONTRACTOR guarantees the payment of all just claims for materials, supplies, tools, or labor and other just claims against him or any subcontractor, in connection with the CONTRACT. The TOWN'S final acceptance and payment does not release the CONTRACTOR'S bond until all claims are paid or released.

## 6. GRATUITIES

The CONTRACTOR hereby warrants that he has not, during the bidding process or, during the term of this CONTRACT, offered to pay any officer, employee or agent of the TOWN, anything of value including, but not limited to gifts, loans, rewards, promises of future employment, favors or services, based on the understanding that the actions, decision or judgments of such officer, employee, or agent would be influenced thereby. In the event of a breach of this provision, the TOWN may terminate this CONTRACT without liability and, at its sole discretion, deduct or otherwise recover the full amount of such fee, commission, percentage, gift, or other consideration.

## 7. LAW VENUE

The laws of the State of Florida shall govern all aspects of this CONTRACT. In the event it is necessary for either party to initiate legal action regarding this CONTRACT, venue shall be in the Fifteenth Judicial Circuit for claims under state law and in the Southern District of Florida for any claims which are justifiable in federal court.

8. CONTRACT AMENDMENTS

This contract may be amended only with the prior written approval of the parties.

9. NO ASSIGNMENT

The CONTRACTOR shall not assign, delegate, or otherwise transfer its rights and obligations as set forth in this CONTRACT without the prior written consent of the TOWN.

10. ATTORNEY FEES

If either party utilizes legal action, including appeals, to enforce this CONTRACT, the prevailing party shall be entitled to recover its reasonable attorney's fees and costs.

11. INDEPENDENT CONTRACTOR

The CONTRACTOR is an independent contractor and is not an employee or agent of the TOWN. Nothing in this CONTRACT shall be interpreted to establish any relationship other than that of an independent contractor, between the TOWN AND THE CONTRACTOR, its employees, agents, subcontractors, or assigns, during or after the performance of this CONTRACT. The CONTRACTOR is free to provide similar services to others.

12. FUNDING

In the event that sufficient budgeted funds are not available for a new fiscal period, the TOWN shall notify the CONTRACTOR of such occurrence and the CONTRACT shall terminate on the last day of the current fiscal period without penalty or expense to the TOWN.

13. RIGHT TO AUDIT

The TOWN reserves the right to audit the CONTRACTOR's records as such records relate to the services and the CONTRACT between the TOWN and the CONTRACTOR. All records shall be kept in a way so as to permit inspection pursuant to Chapter 119, Florida Statutes. The records of the CONTRACTOR shall be retained for three (3) years from the date of final payment.

14. RISK OF LOSS

The risk of loss or destruction to the project, or any portion and/or element thereof, regardless of the cause of the casualty, shall be borne solely by the Contractor until all goods and materials to be used in the work are incorporated into the Project at the Project site for its intended purpose and use and final inspection, acceptance and payment for the Project has been made by the Town. Title to the goods shall pass to the Town upon delivery and final acceptance of the entire Project by the Town, notwithstanding the fact that periodic payments may have been made during the course of the contract.

15. FORCE MAJEURE

Notwithstanding any provisions of this Contract to the contrary, the parties shall not be held liable if failure or delay in the performance of this Contract arises from fires, floods, strikes, embargoes, acts of the public enemy, unusually severe weather, outbreak of war, restraint of Government, riots, civil commotion, Force Majeure, Act of God, or for any other cause of the same character which is unavoidable through the exercise of due care and beyond the control of the parties.

16. COMPLIANCE WITH LAWS

The CONTRACTOR, its employees, subcontractors or assigns, shall comply with all applicable federal, state, and local laws and regulations relating to the performance of this CONTRACT. The TOWN undertakes no duty to ensure such compliance, but will attempt to advise the CONTRACTOR, upon request as to such laws of which it has present knowledge.

17. APPLICABLE LAWS, ORDINANCES, RULES, CODES AND REGULATIONS

Familiarity with Laws: Notice is hereby given that the CONTRACTOR must be familiar with all Federal, State and Local Laws, ordinances, rules, codes and regulations that may affect the work. Ignorance on the part of the CONTRACTOR will in no way relieve him from the responsibility of compliance therewith.

Non-Segregated Facilities: The CONTRACTOR and each subcontractor shall comply with the Certification of Non-Segregation Facilities.

Nondiscrimination and Equal Opportunity Employment: During the performance of the CONTRACT, the CONTRACTOR agrees as follows:

The CONTRACTOR shall not discriminate against any employee or applicant for employment because of race, religion, color, sex or national origin. The CONTRACTOR shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading; demotion or transfer; rates of pay or other forms of compensation; and selection for training, including apprenticeship.

In the event of the CONTRACTOR'S noncompliance with the nondiscrimination clauses of the CONTRACT, or with any of such rules, regulations, or orders, the CONTRACT may be canceled, terminated, or suspended in whole or in part, without liability to the TOWN.

18. PUBLIC ACCESS

The CONTRACTOR shall comply with public records laws Chapter 119, Florida Statutes, specifically to: Keep and maintain public records that ordinarily and necessarily would be required by the TOWN in order to perform the service; Provide the public with access to public records on the same terms and conditions that the TOWN would provide the records and at a cost that does not exceed the cost provided in Chapter 119, F.S. or as otherwise provided by law; Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed exempt as authorized by law; Meet all requirements for retaining public records and transfer, at no cost, to the TOWN all public records in possession of the contractor upon termination of the contract and destroy any duplicate public records that are exempt of confidential and exempt from public disclosure requirements. All records stored electronically must be provided to the TOWN in a format that is compatible with the information technology systems of the TOWN. If the CONTRACTOR does not comply with a public records request, the public agency shall enforce the contract provisions in accordance with the contract.

19. INTEGRATION

This CONTRACT states the entire understanding between the parties and supersedes any written or oral representations, statements, negotiations, or agreements to the contrary. The CONTRACTOR recognizes that any representations, statements or negotiations made by the TOWN staff do not suffice to legally bind the TOWN in a contractual relationship unless they have been reduced to writing, approved and signed by an authorized TOWN representative. This CONTRACT, once properly executed, shall bind the parties, their assigns, and successors in interest.

20. NON-EXCLUSIVITY

The Award of this CONTRACT shall not impose any obligation on the TOWN to utilize the CONTRACTOR, for all work of this type, which may develop during the CONTRACT period. The TOWN specifically reserves the right to concurrently contract with other companies for similar work if it deems such action to be in the TOWN's best interest.

21. NO WAIVER

Changes made by the Town's Engineer will not be considered to waive any of the provisions of the Contract, nor may the Contractor make any claim for loss of anticipated profits because of the changes, or by reason of any variation between the approximate quantities and the quantities of work actually performed. All work shall be performed as directed by the Town's Director of Engineering and Public Works and in accordance with the Contract Documents.

22. NOTICE

All notices and invoices to the TOWN shall be sent to the following address:

Attention: Town of Jupiter  
Roger Held,  
Director of Construction Services  
210 Military Trail  
Jupiter, FL 33458-5786

All notices and invoices to the CONTRACTOR shall be sent to the following address:

23. SEVERABILITY

Should any part, term or provision of this Agreement be by the courts decided to be invalid, illegal or in conflict with any law of the State, the validity of the remaining portion or provision shall not be affected thereby.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the day, month and year first above written.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals on the day, month and year first above written.

ATTEST

THE TOWN OF JUPITER

By: \_\_\_\_\_  
Laura E. Cahill, Town Clerk

By: \_\_\_\_\_  
Jim Kuretski, P.E., Mayor

(TOWN SEAL)

APPROVED AS TO FORM AND  
LEGAL SUFFICIENCY:

By: \_\_\_\_\_  
Thomas J. Baird, Town Attorney

(CONTRACTOR)

By: \_\_\_\_\_  
Signature

Attested By: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

**STATUTORY PAYMENT BOND REQUIRED BY SECTION 255.05 F.S.**

**KNOW ALL MEN BY THESE PRESENTS:**

That, pursuant to the requirements of Florida Statute Section 255.05, as amended from time to time, We, \_\_\_\_\_ as Principal, hereinafter referred to as “CONTRACTOR”, with is principal business address of \_\_\_\_\_ and its principal business telephone number of: (    ) \_\_\_\_ - \_\_\_\_\_ and, \_\_\_\_\_ as SURETY, with is principal business address of \_\_\_\_\_ and its principal business telephone number of: (    ) \_\_\_\_ - \_\_\_\_\_ are jointly and severally bound to the Town of Jupiter, Florida, as the Obligee and hereinafter referred to as the “OWNER” and which is the fee simple owner of the real property to be improved and is generally located \_\_\_\_\_ in the Town of Jupiter, Florida, and being legally described as follows: \_\_\_\_\_, hereinafter referred to as the “Property”, in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof, the CONTRACTOR and the SURETY hereby bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

**WHEREAS**, the CONTRACTOR has entered into a Contract, Bid/Contract/Project No.: \_\_\_\_\_, awarded the \_\_\_\_ day of \_\_\_\_\_ 20\_\_, with the OWNER for \_\_\_\_\_, in accordance with the bid and contract documents issued by the OWNER, including but not limited to, the drawings, specifications and plans prepared by \_\_\_\_\_, which bid and contract documents are by reference made a part hereof, and all such documents are collectively hereafter referred to herein as the Contract;

**THE CONDITIONS OF THIS PAYMENT BOND ARE THAT IF THE CONTRACTOR:**

1. Performs the Contract dated \_\_\_\_\_, 20\_\_, between the OWNER and the CONTRACTOR for the construction of \_\_\_\_\_, the Contract being made a part of this Bond as if fully incorporated herein, at the times and in the manner prescribed in the Contract;
2. Promptly makes payments to all persons/claimants as defined by Florida Statute Sections 255.05(1), and Section 713.01, as amended who furnish and supply the CONTRACTOR with all labor, services, materials and supplies, used directly or indirectly by the CONTRACTOR in the prosecution of the work provided for in the Contract; then this obligation shall be void; otherwise, it shall remain in full force and effect subject, however, to the following conditions:
  - a. A claimant, except a laborer, who is not in privity with the CONTRACTOR and who has not received payment for his labor, materials, or supplies shall, within forty five (45) days after beginning to furnish labor, materials, or supplies for the prosecution of the work, furnish to the CONTRACTOR a notice that he intends to look to the Bond for protection.
  - b. A claimant who is not in privity with the CONTRACTOR and who has not received payment for his labor, materials, or supplies shall, within ninety (90) days after performance of the labor or after complete delivery of the materials or supplies, deliver to the CONTRACTOR and to the SURETY written notice of the performance of the labor or delivery of the materials or supplies and of the non-payment.
3. Pays the OWNER all losses, damages, expenses, costs, and attorney’s fees, including appellate proceedings, that the OWNER sustains because of the default of the CONTRACTOR under the Contract; and



4. Indemnifies and pays OWNER all losses, damages (specifically including, but not limited to, damages for delay and other consequential damages, caused by or arising out of the acts, omissions or negligence of the CONTRACTOR and its sub-contractors, agents, employees, volunteers, and representatives), expenses, costs and attorney's fees including attorney's fees incurred in appellate proceedings that OWNER sustains because of default by CONTRACTOR under the Contract.

Any action under this Bond must be instituted in accordance with the Notice and Time Limitations provisions prescribed in Section 255.05(2), Florida Statutes. Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes, does not affect the SURETY's obligations under this Bond. The SURETY hereby waives notice of and agrees that any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect SURETY's obligation under this Bond.

Signed and sealed this day \_\_\_\_ of \_\_\_\_\_ 20\_\_ in the presence of.

WITNESSES

**CONTRACTOR (Principal):**

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
By: \_\_\_\_\_

\_\_\_\_\_  
Printed Name and Title:

(AFFIX SEAL)

State of

County of

The forgoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by (Name of Corporate Officer) \_\_\_\_\_, as (Title) \_\_\_\_\_ of (Name of Corporation) \_\_\_\_\_, who is personally known to me or who produced \_\_\_\_\_ as identification and who did / did not take an oath.

(NOTARY SEAL)

\_\_\_\_\_  
Notary Public – State of \_\_\_\_\_

\_\_\_\_\_  
Printed Name

WITNESSES

**SURETY:**

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
By: \_\_\_\_\_

\_\_\_\_\_  
Printed Name and Title:

(AFFIX SEAL)

State of

County of

The forgoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by (Name of Corporate Officer)\_\_\_\_\_, as (Title)\_\_\_\_\_ of (Name of Corporation)\_\_\_\_\_, who is personally known to me or who produced \_\_\_\_\_ as identification and who did / did not take an oath.

(NOTARY SEAL)

\_\_\_\_\_  
Notary Public – State of \_\_\_\_\_

\_\_\_\_\_  
Printed Name

**STATUTORY PERFORMANCE BOND REQUIRED BY SECTION 255.05 F.S.**

**KNOW ALL MEN BY THESE PRESENTS:**

That, pursuant to the requirements of Florida Statute Section 255.05, as amended from time to time, We, \_\_\_\_\_ as Principal, hereinafter referred to as "CONTRACTOR", with its principal business address of \_\_\_\_\_ and its principal business telephone number of: ( ) \_\_\_\_ - \_\_\_\_ and, \_\_\_\_\_ as SURETY, with its principal business address of \_\_\_\_\_ and its principal business telephone number of: ( ) \_\_\_\_ - \_\_\_\_ are jointly and severally bound to the Town of Jupiter, Florida, as the Obligee and hereinafter referred to as the "OWNER" and which is the fee simple owner of the real property to be improved and is generally located at \_\_\_\_\_ in the Town of Jupiter, Florida, and being legally described \_\_\_\_\_ as \_\_\_\_\_ follows: \_\_\_\_\_, hereinafter referred to as the "Property", in the amount of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) for the payment whereof, the CONTRACTOR and the SURETY hereby bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally.

**WHEREAS**, the CONTRACTOR has entered into a Contract, Bid/Contract/Project No.: \_\_\_\_\_ awarded the \_\_\_\_ day of \_\_\_\_\_ 20\_\_, with the OWNER for \_\_\_\_\_, in accordance with the bid and contract documents issued by the OWNER, including but not limited to, the drawings, specifications and plans prepared by \_\_\_\_\_, which bid and contract documents are by reference made a part hereof, and all such documents are collectively hereafter referred to herein as the Contract;

**THE CONDITIONS OF THIS BOND IS THAT IF THE CONTRACTOR:**

1. Fully performs the Contract dated \_\_\_\_\_, 20\_\_, between the OWNER and the CONTRACTOR for the construction of \_\_\_\_\_ within \_\_\_\_\_ ( ) calendar days after the date of contract commencement as specified in the Notice to Proceed, and in the manner prescribed in the Contract, with the Contract being made a part of this Bond as if fully incorporated herein; and
2. Indemnifies and pays OWNER all losses, damages (specifically including, but not limited to, damages for delay and other consequential damages, caused by or arising out of the acts, omissions or negligence of the CONTRACTOR and its sub-contractors, agents, employees, volunteers, and representatives), expenses, costs and attorney's fees including attorney's fees incurred in appellate proceedings, that OWNER sustains because of default by CONTRACTOR under the Contract; and
3. Upon notification by the OWNER, the CONTRACTOR corrects any and all defective or faulty work or materials, which appear within one (1) year after final acceptance of the work; and
4. Performs the guarantee of all work and materials furnished under the Contract for the time specified in the Contract, then this Bond is void, otherwise it remains in full force; and
5. Whenever CONTRACTOR shall be, and declared by OWNER to be, in default under the Contract, the OWNER having performed OWNER'S obligations thereunder, the SURETY may promptly remedy the default, or shall promptly:

- a. Complete the Contract in accordance with its terms and conditions; or

- b. Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by SURETY of the best, lowest, qualified, responsible and responsive Bidder, or, if the OWNER elects, upon determination by the OWNER and SURETY jointly of the best, lowest, qualified, responsible and responsive Bidder, arrange for a contract between such Bidder and OWNER, and make available as work progresses (even though there should be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs and damages for which the SURETY may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract price," as used in this paragraph, shall mean the total amount payable by OWNER to CONTRACTOR under the Contract and any amendments thereto, less the amount properly paid by OWNER to CONTRACTOR. No right of action shall accrue on this Bond to or for the use of any person or corporation other than the OWNER named herein and those persons or corporations provided for in Section 255.05, Florida Statutes, or their heirs, executors, administrators or successors.

Any action under this Bond must be instituted in accordance with the Notice and Time Limitations provisions prescribed in Section 255.05(2), Florida Statutes. The SURETY hereby waives notice of and agrees that any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes do not affect the SURETY's obligation under this Bond. Any changes in or under the Contract Documents and compliance or noncompliance with any formalities connected with the Contract or the changes, does not affect the SURETY's obligations under this Bond.

Signed and sealed this day \_\_\_\_\_ of \_\_\_\_\_, 20\_\_

WITNESSES

CONTRACTOR (Principal):

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
By: \_\_\_\_\_

\_\_\_\_\_  
Printed Name and Title:

State of

County of

The forgoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by (Name of Corporate Officer) \_\_\_\_\_, as (Title) \_\_\_\_\_ of (Name of Corporation) \_\_\_\_\_, who is personally known to me or who produced \_\_\_\_\_ as identification and who did / did not take an oath.

(NOTARY SEAL)

Notary Public – State of \_\_\_\_\_

Printed Name

WITNESSES

SURETY:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ By: \_\_\_\_\_  
Printed Name and Title: \_\_\_\_\_

(AFFIX SEAL)

State of

County of

The forgoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by (Name of Corporate Officer) \_\_\_\_\_, as (Title) \_\_\_\_\_ of (Name of Corporation) \_\_\_\_\_, who is personally known to me or who produced \_\_\_\_\_ as identification and who did / did not take an oath.

\_\_\_\_\_  
Notary Public – State of \_\_\_\_\_  
\_\_\_\_\_  
Printed Name

(NOTARY SEAL)

## TOWN OF JUPITER CONTRACTOR'S PROGRESS/FINAL PAYMENT APPLICATION

PAYEE / VENDOR \_\_\_\_\_ VENDOR NO. \_\_\_\_\_

REMIT TO: \_\_\_\_\_ CONTRACTOR'S INVOICE NO. \_\_\_\_\_

Street: \_\_\_\_\_ CONTRACT NO. \_\_\_\_\_

City: \_\_\_\_\_ PAY APPLICATION NO. \_\_\_\_\_

State: \_\_\_\_\_ Zip Code: \_\_\_\_\_ FOR SERVICES PERFORMED:

FROM \_\_\_\_\_ TO \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_ PROGRESS PAYMENT: \_\_\_\_\_

PROJECT PHASE / TASK \_\_\_\_\_ FINAL PAYMENT: \_\_\_\_\_

1. ORIGINAL CONTRACT AMOUNT \_\_\_\_\_

2. SUPPLEMENTAL AGREEMENTS (SA) AND ADJUSTMENTS TO DATE: (Plus/Minus) \_\_\_\_\_

(FINAL ESTIMATE ONLY )

CONTINGENCY SA BALANCE (Minus)	\$
Unit Price Contract Overruns/Underruns (Plus/Minus)	\$
Total Contract Adjustment (Include on Line 2)	\$

3. ADJUSTED CONTRACT AMOUNT (Item 1 plus/minus Item 2) \_\_\_\_\_

4. PERCENT COMPLETED TO DATE (Attach Pay Application/Estimate Detail) \_\_\_\_\_

5. \$ AMOUNT COMPLETED TO DATE \_\_\_\_\_

6. RETAINAGE (5%) TO DATE \_\_\_\_\_

7. AMOUNT COMPLETED LESS RETAINAGE (Item 5 less Item 6) \_\_\_\_\_

8. CONTRACT BALANCE DUE (Item 3 less Item 7) \_\_\_\_\_

9. TOTAL PREVIOUSLY INVOICED (Item 7 from last Invoice) \_\_\_\_\_

10. AMOUNT OF THIS INVOICE (Item 7 less Item 9) \_\_\_\_\_

PAYEE / VENDOR CERTIFICATION: I hereby certify that the materials or services invoiced herein have been delivered and meet the requirement of the CONTRACT DOCUMENTS, that this Progress/Final Payment Application it is correct and just, and that no part of same has previously been invoiced or paid.

\_\_\_\_\_  
(Contractor Signature)

**(INSERT PAGE 1 OF CONTRACTOR'S INVOICE)**

\_\_\_\_\_  
Title

THIS INVOICE IS APPROVED FOR RECEIPT BY:

\_\_\_\_\_  
Town Project Manager

\_\_\_\_\_  
Date

\_\_\_\_\_  
Director of Engineering & Public Works

\_\_\_\_\_  
Date

Funds Encumbered Under Purchase Order Number \_\_\_\_\_

**TOWN OF JUPITER  
CONTRACT CONTINGENCY SUPPLEMENTAL AGREEMENT NO.**

Contract No: EPW 2024-24

Date:

This agreement entered into on (DATE), such an agreement to be effective on the last date of execution by a party hereto, by and between the Town of Jupiter (Town) and (NAME OF CONTRACTOR) (Contractor), the same being supplementary to Contract by and between the parties aforesaid, dated (CONTRACT DATE), for the construction or improvement of PROJECT, assigned the contract number shown above, in Jupiter, Florida.

1. As a result of a request from the Town, the following additional work shall be performed; (Attach Additional Sheets if Necessary). The total cost of this additional work shall be in the amount of **WRITTEN AMOUNT (\$)**.
2. The quantities to be paid shall be determined on a lump sum basis, as provided in the contract documents and included for payment in the Contract Contingency, Pay Item 999-1.
3. It is further agreed that this supplemental agreement shall not alter or change in any manner the force and effect of the original Contract No., including any previous amendments thereto, except insofar as the same is altered and amended by this supplemental agreement.
4. The Town and the Contractor agree that the contract time adjustment and sum agreed to in the Supplemental Agreement constitute a full and complete settlement of the matters set forth herein, including all direct and indirect costs for equipment, manpower, materials, overhead, profit and delay relating to the issues set forth in the Supplemental Agreement. This settlement is limited to and applies to any claims arising out of or on account of the matters described and set forth in this Supplemental Agreement.

Original Contingency SA Amount Pay Item 1000-1	\$
Less Previously Approved Contingency SA (No.'s X through XX)	(\$ )
Contingency SA No.	(\$ )
Remaining Contingency SA Balance	\$

Granted time this Agreement days:

Approved By:

\_\_\_\_\_  
**CONTRACTOR**

Date: \_\_\_\_\_

Approved By:

\_\_\_\_\_

Date: \_\_\_\_\_

**TOWN OF JUPITER  
CONTRACT SUPPLEMENTAL AGREEMENT**

Contract No: EPW 2024-24

Date: \_\_\_\_\_

This agreement entered into on \_\_\_\_\_, such an agreement to be effective on the last date of execution by a party hereto, by and between the Town of Jupiter (Town) and "Contractor" and "Surety", the same being supplementary to Contract by and between the parties aforesaid, dated \_\_\_\_\_, for the construction or improvement of \_\_\_\_\_, assigned the contract number shown above, in Jupiter, Florida.

1. (Description of work, attach sheets as necessary)

Revised Plan Sheet(s) Nos. \_\_\_\_\_

2. The quantities to be paid shall be determined as provided in the contract documents. The quantities so determined shall be paid at the unit prices stated on the attached sheets.
3. It is further agreed that this supplemental agreement shall not alter or change in any manner the force and effect of the original Contract No., including and previous amendments thereto, except insofar as the same is altered and amended by this supplemental agreement.
4. The Town and the Contractor agree that the contract time adjustment and sum agreed to in the Supplemental Agreement constitute a full and complete settlement of the matters set forth herein, including all direct and indirect costs for equipment, manpower, materials, overhead, profit and delay relating to the issues set forth in the Supplemental Agreement. This settlement is limited to and applies to any claims arising out of or on account of the matters described and set forth in this Supplemental Agreement.

Granted time this Agreement days \_\_\_\_\_

Net change in Contract this Agreement: Increase \$ \_\_\_\_\_ Decrease \$ \_\_\_\_\_

No Change \_\_\_\_\_

Approved By:

\_\_\_\_\_  
Contractor

Date: \_\_\_\_\_

Approved By:

\_\_\_\_\_  
Surety

Date: \_\_\_\_\_

Approved By:

\_\_\_\_\_  
Town of Jupiter

Date: \_\_\_\_\_



**TOWN OF JUPITER  
CERTIFICATION  
DISBURSEMENT OF PREVIOUS PERIODIC PAYMENT TO SUBCONTRACTORS**

Project Title: Town Hall – Phase II

Date \_\_\_\_\_

Contract No. EPW 2024-24

To release Monthly Payment for: \_\_\_\_\_; prime contractor for the above referenced contract, hereby certifies that all subcontractors except for those noted below, having interest in this contract have received their pro-rata share of all previous periodic payments made to date by the Town for all work, materials, and equipment furnished under the contract. The term “subcontractor”, as used herein, shall also include persons or firms furnishing materials, services, or equipment incorporated into the work or stockpiled in the vicinity of the project for which partial payment has been made by the Town and work done under equipment-rental agreements.

**EXCEPTION:**

The following subcontractors have not been paid and a copy of the notification sent to each explaining the good cause why payment has not been made is attached to this form.

<div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Subcontractor Name</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Street Address</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">City, State, Zip Code</div> <p>State of Florida</p> <p>County of _____</p> <p>Sworn to and subscribed before me by means of <input type="checkbox"/> physical presence or <input type="checkbox"/> online notarization, this _____ Day of _____, _____, by</p> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">(Print name of person signing Certification)</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Notary Public</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Commission Expires</div> <p>Personally Known _____ OR Produced Identification _____</p>	<div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Subcontractor Name</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Street Address</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">City, State, Zip Code</div> <p>A false statement or omission made in connection with this certification insufficient cause for suspension, revocation, or denial of qualification to bid, and a determination of non-responsibility, and may subject the person and/or entity making the false statement to any and all civil and criminal penalties available pursuant to applicable Federal and State Law.</p> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Contractor</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">By</div> <div style="border-bottom: 1px solid black; text-align: center; padding: 2px;">Title</div>
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Instructions:

1. Attach copy of the notification good cause sent to each applicable subcontractor
2. List subcontractors which have not been paid the proportionate share of payments received by the contractor and date listed as exception.
3. A separate certification is required for each contract.
4. To be signed by an officer or director of the Contractor with the authority to bind the Contractor and notarized.

**TOWN OF JUPITER  
DEPARTMENT OF ENGINEERING & PUBLIC WORKS  
UNILATERAL PAYMENT**

**PROJECT DESCRIPTION: Town Hall - Phase II**

Contract No: EPW 2024-24

Date of Contract: \_\_\_\_\_

The above shall be referred to as the "Contract".

**PAYMENT INFORMATION:**

1. On or about the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, the Town of Jupiter determined that \_\_\_\_\_ "Contractor" is due additional sums of money for work performed under the Contract and on the project described above, and the Town has elected to make payment to the Contractor pursuant to Section 3.2.6.1 of the General Conditions as set forth and itemized below:

DESCRIPTION OF EACH ITEM OF WORK	AMOUNT

Revised Plan Sheet Number(s): \_\_\_\_\_

Granted Time (Due to delays to controlling items of work shown on approved work schedule): \_\_\_\_\_

Reason(s) for Granted Time: \_\_\_\_\_

2. The quantities to be paid shall be necessary to complete the Contract. The quantities so determined shall be paid at the unit prices stated above and on the attached sheet(s).
3. This unilateral payment does not alter or change in any manner the force and effect of the original Contract Documents, including previous amendments thereto, except insofar as the same is altered and amended by this document.
4. By acceptance of this unilateral payment the Contractor does not waive any rights the Contractor may have against the Town for payment of any additional sums the Contractor claims are due for the described work.
5. All sums paid by the Town hereunder shall be credited against the sums that may be due the Contractor for the itemized work described above in the amounts set forth above. The Contractor shall apply the payment made hereunder to the items described above and in the amount shown above.

Approved By: \_\_\_\_\_

Amount this Payment \$ \_\_\_\_\_

Print Name and Title

Executed By: \_\_\_\_\_

Date of Funds Approval: \_\_\_\_\_

**CERTIFICATE OF FINAL ACCEPTANCE  
TOWN OF JUPITER**

**PROJECT:** TOWN HALL – PHASE II

**CONTRACT:** EPW 2024-24

**CONTRACTOR:** \_\_\_\_\_  
\_\_\_\_\_

**PROJECT OR DESIGNATED PORTION SHALL INCLUDE:**

The Work performed under this contract has been reviewed and found to be complete. The Date of Final Acceptance of the Project or portion thereof designated above is hereby established as \_\_\_\_\_ which is also the date of commencement of applicable warranties required by the Contract Documents, so the Town can occupy or utilize the Work or designated portion thereof for the use for which it is intended, as expressed in the Contract Document.

The final payment application will be processed at such time as all outstanding forms are completed and delivered. The forms include, but are not limited to: Certification of Previous Periodic Payment, Contractor's Affidavit and Final Release of Lien, Subcontractor's and Material Men and Laborer's Final Release of Lien, and Acceptance on Offer of Final Payment.

The Town accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof at \_\_\_\_\_ (time) on \_\_\_\_\_ (date).

<u>TOWN: Director of Engineering and Public Works</u>	<u>BY</u>	<u>DATE</u>
---	-----------	-------------

## Acceptance on Offer of Final Payment

PLEASE RETURN THIS LETTER WITH ATTACHMENTS DIRECTLY TO:

Town of Jupiter , 2025  
Engineering Department  
210 Military Trail  
Jupiter, FL 33458

Project Name: Town Hall – Phase II  
Contract Number: EPW 2024-24  
Financial Project ID: n/a

Dear Sir:

This will acknowledge receipt of your letter dated \_\_\_\_\_, 2025, and copy of  
PAYMENT APPLICATION NUMBER #\_\_\_\_\_.

- 1) We have examined this ESTIMATE in detail and found it to be a correct statement of our account.

We hereby agree to accept the total to date amount paid of \$\_\_\_\_\_ for the full settlement of our account under this contract covering construction and of all claims in connection therewith.

-OR-

- 2) We have examined this Estimate in detail and do not agree that the amount is correct. Our position is that the balance due us is \$\_\_\_\_\_ which includes an additional amount of \$\_\_\_\_\_. This amount is reflected in the breakdown listed below:  
(Note: If further space is needed, please attach additional sheets with breakdown and provide a complete explanation.)

EPW 2024-24	Pay Item	\$ Amount
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

ACCEPTANCE LETTER

Contract Number: EPW 2024-24  
Financial Project ID:  
Page Two

It is also understood that if we fail to submit all Post Award Forms and closeout documents required for final payment within Thirty (30) days after the offer of final payment by the Town, the final payment including any retainage will be delayed.

We recognize that our execution of the letter in no way affects our responsibility to comply with the requirements of the Contract Documents in terms of any final work, maintenance period or warranty periods.

Sincerely,

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

**CONTRACTOR'S  
AFFIDAVIT AND FINAL RELEASE OF LIEN  
STATE OF FLORIDA  
COUNTY OF PALM BEACH  
CONTRACT NO. EPW 2024-24**

BEFORE ME, the undersigned authority personally appeared \_\_\_\_\_, who after being sworn by me first duly sworn, deposes and says that:

1. He/She is \_\_\_\_\_, of \_\_\_\_\_,  
(Title) (Company)

doing business in the State of Florida, (hereinafter called "CONTRACTOR").

2. Contractor, pursuant to Contract dated \_\_\_\_\_, (hereinafter referred to as "CONTRACT") with TOWN OF JUPITER, (hereinafter referred to as "TOWN"), has heretofore furnished or caused to be furnished labor, material and services for the construction of certain improvements as more particularly set forth in the Contract.
3. Contractor represents that all work to be performed under the Contract has been fully completed and that all persons and firms who furnished material, labor and/or services incident to the completion of said work have been paid in full.
4. The Contractor, for and in consideration of final payment in the amount of \$\_\_\_\_\_, and all other previous payments paid by Town to Contractor, does hereby waive, release, remise and relinquish the Contractor's right to claim, demand or impose a lien or liens for work done or materials and/or services furnished or any other class of liens whatsoever, on any of the premises owned by Town on which improvements have been completed in connection with the Contract.
5. The Contractor herein makes this Affidavit and Final Release of Lien for the express purpose of inducing Town to make final disbursement and payment to the Contractor in the amount of \$\_\_\_\_\_. "This Affidavit and Final Release of Lien is conditioned upon payment of the consideration described above, and shall not be effective until said payment is received in paid funds."
6. This Affidavit and Final Release of Lien is made by Contractor with full knowledge of the applicable laws of the State of Florida. In addition to such rights as may be afforded to Town under said applicable laws, Contractor expressly agrees to indemnify and save Town harmless from any and all actual costs and expenses, including reasonable attorney's fees, arising out of claims by laborers, sub-contractors or materialmen who might claim that they have not been paid for services or material furnished by or through the Contractor in connection with the work performed under the Contract.

To the best of CONTRACTOR’s knowledge and belief, the following is a list of all employed under this CONTRACT who have filed a Notice to Owner with the Town of Jupiter:

	NAME	ADDRESS	AMOUNT DUE
1.	_____	_____	_____
2.	_____	_____	_____
3.	_____	_____	_____
4.	_____	_____	_____

(Attached a separate sheet if necessary)

The CONTRACTOR herein does hereby represent that he has authority to execute a full and final release of lien for and in behalf of the CONTRACTOR as set forth above.

(Corporate Seal)

By: \_\_\_\_\_  
(Title)

SWORN TO and subscribed before me by means of ☐ physical presence or ☐ online notarization, this  
\_\_\_\_\_ day of \_\_\_\_\_, 20

(Notary Seal)

\_\_\_\_\_  
(Notary Public)

My Commission Expires: \_\_\_\_\_

**SUBCONTRACTOR'S, MATERIALMEN AND LABORER'S  
FINAL WAIVER OF LIEN  
STATE OF FLORIDA  
COUNTY OF PALM BEACH  
CONTRACT NO. EPW 2024-24**

WHEREAS, the undersigned, \_\_\_\_\_, has been heretofore employed by \_\_\_\_\_ to furnish certain services, materials and/or labor to the Town of Jupiter on property located at:

NOW, THEREFORE, the undersigned, for a good and valuable consideration of \_\_\_\_\_ dollars, the receipt of which is hereby acknowledged, hereby and now waives unto the TOWN OF JUPITER any and all lien, right of lien or claim of whatsoever kind or character on the above described real estate, on account of any and all labor or material, or both, furnished for or incorporated into said real estate by the undersigned; and further certifies that the consideration moving to the undersigned for executing this Waiver of Lien has been mutually given and accepted as absolute cash payment and not as a conditional or part payment or as security for payment.

The undersigned herein does hereby represent that he has authority to execute this Final Release of Lien.

Signed, sealed and delivered this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

(Corporate Seal)

By: \_\_\_\_\_  
(Title)

SWORN TO and subscribed before me by means of ☐ physical presence or ☐ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_

(Notary Seal)

\_\_\_\_\_  
(Notary Public)

My Commission Expires: \_\_\_\_\_



E-Verify Registration and Use.

A. Pursuant to section 448.095, Florida Statutes, beginning January 1, 2021, Contractor shall register with and use the U.S. Department of Homeland Security's E-Verify system, <https://www.e-verify.gov/employers>, to verify the work authorization status of all Contractor employees hired on and after January 1, 2021.

B. Subcontractors

(i) Contractor shall also require all subcontractors performing work under this Agreement to use the E-Verify system for any employees they may hire during the term of this Agreement.

(ii) Contractor shall obtain from all such subcontractors an affidavit stating the subcontractor does not employ, contract with, or subcontract with an unauthorized alien, as defined in section 448.095, Florida Statutes.

(iii) Contractor shall provide a copy of all subcontractor affidavits to the Town upon receipt and shall maintain a copy for the duration of the Agreement.

C. Contractor must provide evidence of compliance with section 448.095, Florida Statutes. Evidence shall consist of an affidavit from the Contractor stating all employees hired on and after January 1, 2021 have had their work authorization status verified through the E-Verify system and a copy of their proof of registration in the E-Verify system.

D. Failure to comply with this provision is a material breach of the Agreement, and shall result in the immediate termination of the Agreement without penalty to the Town. Contractor shall be liable for all costs incurred by the Town to secure a replacement Agreement, including but not limited to, any increased costs for the same services, any costs due to delay, and rebidding costs, if applicable.

## CONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that \_\_\_\_\_ [insert contractor company name] does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with Section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of \_\_\_\_\_ [insert contractor company name] proof of registration in the E-Verify system is attached to this Affidavit.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name/Title

\_\_\_\_\_  
Date

STATE OF FLORIDA

COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of / physical presence or / online notarization, this \_\_\_\_\_ (date) by \_\_\_\_\_ (name of officer or agent, title of officer or agent) of \_\_\_\_\_ (name of contractor company acknowledging), a \_\_\_\_\_ (state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced \_\_\_\_\_ (type of identification) as identification.

Notary Seal

\_\_\_\_\_  
Notary Public

## SUBCONTRACTOR E-VERIFY AFFIDAVIT

I hereby certify that \_\_\_\_\_ [insert subcontractor company name] does not employ, contract with, or subcontract with an unauthorized alien, and is otherwise in full compliance with, section 448.095, Florida Statutes.

All employees hired on or after January 1, 2021 have had their work authorization status verified through the E-Verify system.

A true and correct copy of \_\_\_\_\_ [insert subcontractor company name] proof of registration in the E-Verify system is attached to this Affidavit.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name/Title

\_\_\_\_\_  
Date

STATE OF FLORIDA

COUNTY OF \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of / physical presence or / online notarization, this \_\_\_\_\_ (date) by \_\_\_\_\_ (name of officer or agent, title of officer or agent) of \_\_\_\_\_ (name of contractor company acknowledging), a \_\_\_\_\_ (state or place of incorporation) corporation, on behalf of the corporation. He/she is personally known to me or has produced \_\_\_\_\_ (type of identification) as identification.

Notary Seal

\_\_\_\_\_  
Notary Public

**DIVISION II**  
**TOWN MODIFIED STANDARD SPECIFICATIONS**  
**(to be inserted)**

- **Index of Town Modified Standard Specifications**
- **Town Modified Standard Specifications**

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## **SECTION 100**

### **CONSTRUCTION EQUIPMENT-GENERAL REQUIREMENTS**

#### **100-1 General.**

Unless restricted to a specific type by the Contract Documents, the Contractor may perform the work using equipment, tools, machinery, etc., of his own choosing. Provide, upon submittal of Notice of Intent to Claim or Preliminary Time Extension Request in accordance with the General and Supplemental Conditions, a list showing all equipment (other than small tools) for which the Contractor may request compensation, its Vehicle Identification number with serial number, manufacturer, year manufactured, model and description. Update this list to account for equipment moving to or from the project and provide certification weekly, by close of business on Friday, the equipment and the dates and hours that the equipment was assigned to this project for the proceeding week. No compensation will be made for any equipment used during any time period when the said equipment is not listed in the weekly certification. Failure to provide this information in the time specified may result in the Engineer withholding all Contract Payments until receipt of such information. Note that facilities to be constructed under the Contract are adequate to support only their design loads in their completed construction stage. If the Contractor's equipment or procedures during construction damage any part of the facility, the Contractor will replace or repair it as directed by the Engineer at no expense to the Town.

#### **100-2 Equipment Condition and Approval.**

**100-2.1 Approval:** Provide on-site and in due time prior to its need, in working condition, all equipment to be used in construction of the project, subject to approval or disapproval by the Engineer. Use only factory recommended exhaust mufflers on internal combustion engines. Remove from the job, alter, or repair equipment which is disapproved by the Engineer. Ensure that the number of units, the sizes, etc., of the equipment on hand are adequate to complete the work within the Contract Time.

**100-2.2 Maintenance:** Consistent with public interest, safety and good practice, maintain all equipment, tools, and machinery used in a safe and satisfactory working condition throughout the period they are on the job site. Also, provide adequate equipment maintenance procedures to promote continuous satisfactory working condition and minimize noise pollution caused by construction equipment.

**100-2.3 Stationary Equipment:** Screen all stationary equipment such as pumps, compressors, generators, etc., from noise sensitive receivers if that equipment is to operate beyond normal working hours. If it is feasible, screen this equipment during normal working hours to reduce noise impacts.

#### **100-3 Experimental Equipment.**

**100-3.1 General:** To encourage the development and use of new or improved equipment, the Engineer may grant the Contractor permission to use equipment other than that normally used and currently accepted, upon approval of the Contractor's written request for permission to use such equipment in place of the normally used equipment. The Engineer, before considering or granting such request, may require that the Contractor establish, at his own expense, satisfactory evidence that the proposed equipment will produce work equal in quality to that produced by the specified equipment, and meets any applicable local, state or federal noise abatement laws, by-laws, ordinances and regulation in effect.

**100-3.2 Conditions of Approval:** When the Engineer grants permission for the use of new or improved equipment, understand that the Engineer gives such permission for the purpose of testing the quality of work this equipment actually produces. The Engineer will maintain the right to retract permission for use of the equipment at any time that, in his opinion, the Contractor does not obtain results that are at least equal to the results obtainable with currently accepted equipment. Upon the Engineer's withdrawal of such permission for the use of the equipment, use the equipment currently accepted and normal for the work, and remove and dispose of, or otherwise remedy, at no expense to the Town, any work which the Engineer considers defective or unsatisfactory as a result of the use of such

experimental equipment. If the Engineer approved the use of particular equipment on a particular project, the Engineer's approval does not extend to the use of the particular equipment on any other project. Furthermore, the Contractor is fully responsible for producing finished work of the quality required by the Contract Documents.

**100-4 Basis of Payment.**

**Payment for work specified in this section shall be included in the other bid items for this contract. No additional payment will be made for meeting the requirements in Section 100, Construction Equipment – General Requirements.**

**END OF SECTION 100**

## SECTION 101 MOBILIZATION

### 101.1: Description

Perform preparatory work and operations in mobilizing for beginning work on the project, including, but not limited to, those operations necessary for the movement of personnel, equipment, supplies, and incidentals to the project site and for the establishment of temporary offices, buildings, safety equipment and first aid supplies, sanitary, and other necessary facilities.

Include the costs of bonds, any required insurance, overhead, permits and any other preconstruction expense necessary for the start of the work, excluding the cost of construction materials.

### 102.2: Basis of Payment

**101-2.1 When a Separate Item is Included in the Proposal:** When the proposal includes a separate item of payment for this work, the work and incidental costs specified as being covered under this Section will be paid for at the Contract lump sum price for the item of Mobilization.

**101-2.2 Partial Payments:** When the proposal includes a separate pay item for Mobilization, partial payments will be made therefore in accordance with the following:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for the Item*
5	25
10	50
25	75
50	100
*Partial payments for any project will be limited to 10% of the original Contract amount for that project. Any remaining amount will be paid upon completion of all work on the project.	

The standard retainage, will be applied to these allowances. Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract.

**101-2.3 When No Separate Item is Included in the Proposal:** When the proposal does not include a separate item for mobilization, all work and incidental costs specified as being covered under this Section will be included for payment under the several scheduled items of the overall Contract, and no separate payment will be made for the costs of mobilization.

**101-2.4 Payment Items:** Payment will be made under:  
Item No. 101-1, Mobilization – lump sum

**END OF SECTION 101**



## SECTION 102 MAINTENANCE OF TRAFFIC

### 102-1 Description.

Maintain traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of the work. Construct and maintain detours. Provide facilities for access to residences, businesses, etc., along the project. Furnish, install and maintain traffic control and safety devices during construction. Furnish and install work zone pavement markings for maintenance of traffic in construction areas. Provide any other special requirements for safe and expeditious movement of traffic specified on the plans or in the DS. Maintenance of Traffic includes all facilities, devices, flagmen and operations as required for safety and convenience of the public within the work zone.

With the exception of advance warning signs, do not maintain traffic over those portions of the project where no work is to be accomplished or where construction operations will not affect existing roads. Do not obstruct or create a hazard to any traffic during the performance of the work, and repair any damage to existing pavement open to traffic.

### 102-2 Materials.

Meet the following requirements in the Materials section of these specifications:

Raised Retro-reflective Pavement Markers..... Current FDOT Division III Materials

Bituminous Adhesive..... Current FDOT Division III Materials

Work Zone Pavement Markings ..... Current FDOT Division III Materials

Paint ..... Current FDOT Division III Materials

Removable Tape..... Current FDOT Division III Materials

Glass Sphere..... Current FDOT Division III Materials

Temporary Traffic Control Device Materials..... Current FDOT Division III Materials

**102-2.1 Temporary Traffic Control Devices:** Use only the materials meeting the requirements in Current FDOT Division III Materials, Standard Plans and the Manual on Uniform Traffic Control Devices.

**102-2.2 Detour:** Provide all materials for the construction and maintenance of all detours.

**102-2.3 Commercial Materials for Driveway Maintenance:** Provide materials of the type typically used for base, including reclaimed asphalt pavement (RAP) material, and having stability and drainage properties that will provide a firm surface under wet conditions, maintain the materials, remove and legally dispose of the materials upon completion of the work.

### 102-3 Specific Requirements.

**102-3.1 Beginning Date of Contractor's Responsibility:** Maintain traffic starting the day work begins on the project or on the first day Contract time is charged, whichever is earlier.

**102-3.2 Worksite Traffic Supervisor:** Provide a Worksite Traffic Supervisor who is responsible for initiating, installing, and maintaining all traffic control devices as described in the Contract Documents. Ensure that the Worksite Traffic Supervisor is certified by a Florida Department of Transportation (FDOT) approved training agency, which meets the FDOT's maintenance of traffic training requirement for advanced training. Use approved alternate Worksite Traffic Supervisors when necessary. The Worksite Traffic Supervisor (or alternate) must meet the personnel qualifications specified in Section 105 of the Current FDOT Division I.

Ensure that the Worksite Traffic Supervisor is available on a 24-hour per day basis, participates in all changes to traffic control and reviews the project on a day-to-day basis.

Ensure that the Worksite Traffic Supervisor is present to direct the initial setup of the traffic control

plan and any required or necessary changes. Provide the Worksite Traffic Supervisor with all equipment and materials needed to set up, and maintain traffic control and handle traffic-related situations.

Ensure that the Worksite Traffic Supervisor immediately corrects all safety deficiencies. Do not allow minor deficiencies that are not immediate safety hazards to remain uncorrected for more than 24 hours. Ensure that the Worksite Traffic Supervisor is available within 45 minutes after notification of an emergency situation and is prepared to positively respond to repair the work zone traffic control or to provide alternate traffic arrangements.

The Town may disqualify and remove from the project a Worksite Traffic Supervisor that fails to comply with the provisions of this subarticle. The Town may temporarily suspend all activities, except traffic and erosion control and such other activities that are necessary for project maintenance and safety, for failure to comply with these provisions.

Ensure that the Worksite Traffic Supervisor performs a drive-through inspection and observes traffic flow as soon as the work zone is activated and in each subsequent phase of work as they are opened to traffic. Provide to the Engineer a report, using the current Town's approved form, listing any deficiencies and proposed corrective measures.

Ensure that the Worksite Traffic Supervisor conducts within the limits of the project, daily daytime and weekly night time inspections for projects with predominate daytime work activities and daily nighttime and weekly daytime inspections for projects with predominate nighttime work, of all traffic control devices, traffic flow, pedestrian, bicyclist, and business accommodations.

Advise the project personnel of the schedule of these inspections and give them the opportunity to join in the inspection as is deemed necessary. Submit a comprehensive weekly report, using the current Town's approved form, to the Engineer and include condition of all traffic control devices (including pavement markings) being used. The inspection report will also include assurances that pedestrians are accommodated with a safe travel path around work sites and safely separated from mainline traffic, that existing or detoured bicyclist paths are being maintained satisfactorily throughout the project limits, and that all existing residences and businesses in work areas are being provided with adequate entrances for vehicular and pedestrian traffic during business hours. The Worksite Traffic Supervisor will sign the report and certify that all of the above issues are being handled in accordance with the Contract Documents. If deficiencies are noted, the Worksite Traffic Supervisor is to note such deficiencies and include the proposed corrective actions.

#### **102-4 Traffic Control Plan.**

**102-4-1** If the Contract Documents do not provide a Traffic Control Plan, the Contractor shall develop, or have developed, a Traffic Control Plan (TCP) and submit it to the Engineer. The TCP shall be certified by the Contractor and the Worksite Traffic Supervisor. The TCP shall be prepared in accordance with these specifications, STANDARD PLANS and the MUTCD, be site specific, and be drafted on 11" x 17" plan sheets. Indicate in the plan a TCP for each phase of construction activities. Safely maintain one lane of traffic in each direction at all times in accordance with 102-5.3. Take responsibility for identifying and assessing any potential impacts to a utility that may be caused by the TCP proposed by the Contractor, and notify the Town in writing of any such potential impacts to utilities.

The Engineer's approval of the TCP does not relieve the Contractor of sole responsibility for all utility impacts, costs, delays or damages, whether direct or indirect, resulting from this TCP. Contractor initiated changes in the design or construction activities from those in the original Contract Specifications, design plans or other Contract Documents and which effect a change in utility work different from that shown in the utility plans, joint project agreements or utility relocation schedules.

The Town reserves the right to reject any Traffic Control Plan submitted, which, in the sole opinion of the Engineer, does not protect the safety of the public and/or work force, does not conform to the requisite standards and/or creates undue disruption to the traveling public. Obtain the Engineer's written approval before beginning work using the TCP. The Engineer's written approval is required for all modifications to the TCP. The Engineer will only allow changes to the TCP in an emergency without

the proper documentation. The cost of the preparation of the TCP shall be considered incidental to this work, and no separate payment shall be made for the development and submittal of the TCP.

**102-4-2** If the Contract Documents include a Traffic Control Plan, the Contractor may propose an alternative Traffic Control Plan (TCP) to the plan presented in the Contract Documents. Have a Specialty Engineer sign and seal the alternative plan. Prepare the TCP in conformance with and in the form outlined in the current version of the Roadway Plans Preparation Manual. Indicate in the plan a TCP for each phase of activities. Take responsibility for identifying and assessing any potential impacts to a utility that may be caused by the alternate TCP proposed by the Contractor, and notify the Town in writing of any such potential impacts to utilities. Engineer's approval of the alternate TCP does not relieve the Contractor of sole responsibility for all utility impacts, costs, delays or damages, whether direct or indirect, resulting from Contractor initiated changes in the design or construction activities from those in the original Contract Specifications, design plans (including traffic control plans) or other Contract Documents and which effect a change in utility work different from that shown in the utility plans, joint project agreements or utility relocation schedules.

The Town reserves the right to reject any Alternative Traffic Control Plan. Obtain the Engineer's written approval before beginning work using an alternate TCP. The Engineer's written approval is required for all modifications to the TCP. The Engineer will only allow changes to the TCP in an emergency without the proper documentation

## **102-5 Traffic Control.**

**102-5.1 Standards:** The standards contained in the STANDARD PLANS are the minimum standards for the use in the development of all traffic control plans. The MUTCD Part VI is the minimum national standard for traffic control for highway construction, maintenance, and utility operations. Follow the basic principles and minimum standards contained in these documents for the design, application, installation, maintenance, and removal of all traffic control devices, warning devices and barriers which are necessary to protect the public and workers from hazards within the project limits. When a conflict exists between the Standard Plans and the MUTCD, the most stringent condition(s) will apply.

**102-5.2 Maintenance of Roadway Surfaces:** Maintain all lanes that are being used for the maintenance of traffic, including those on detours and temporary facilities, under all weather conditions. Keep the lanes reasonably free of dust, potholes and rutting. Provide the lanes with the drainage facilities necessary to maintain a smooth and safe riding surface under all weather conditions.

**102-5.3 Number of Traffic Lanes:** At all times, maintain one lane of traffic in each direction. Maintain two lanes of traffic in each direction at existing four (or more) lane cross roads, where necessary to avoid undue traffic congestion. Construct each lane used for maintenance of traffic at least as wide as the traffic lanes existing in the area before commencement of construction. Do not allow traffic control and warning devices to encroach on lanes used for maintenance of traffic.

The Engineer may allow the Contractor to restrict two way traffic to a one-lane operation for short periods of time provided that the Contractor employs adequate means of traffic control and does not unreasonably delay traffic. When a construction activity requires restricting two way traffic to a one-lane operation, locate the flaggers within view of each other when possible. When visual contact between flaggers is not possible, equip them with 2- way radios, official, or pilot vehicle(s), or use traffic signals. Provide additional coordination and flaggers as necessary to control operations at driveways and side streets that are within the one-lane operation limits.

**102-5.4 Crossings and Intersections:** Provide and maintain adequate accommodations for intersecting and crossing traffic. Do not block or unduly restrict any road or street crossing the project unless approved by the Engineer. Maintain all existing actuated or traffic responsive mode signal operations for main and side street movements for the duration of the Contract. Restore any loss of detection within 12 hours. Use only detection technology listed on the Palm Beach County's Approved Products List (APL) and approved by the Engineer to restore detection capabilities. All work on signalization for MOT requires the advance approval of the Palm Beach County Traffic Division.

Contractor or subcontractor must be approved by Palm Beach County for signalization and prior to any signalization work. Submit all requests to the Town for coordination with Palm Beach County. The Town will not adjust contract time for delays caused by the failure of the Contractor to submit a timely notice to the Town and Palm Beach County.

Before beginning any construction, provide the Engineer a plan for maintaining detection devices for each intersection and the name(s) and phone numbers of persons that can be contacted when signal operation malfunctions.

**102-5.5 Access for Residences and Businesses:** Provide continuous access to all residences and all places of business.

**102-5.6 Protection of the Work from Injury by Traffic:** Where traffic would be injurious to a base, surface course, or structure constructed as a part of the work, maintain all traffic outside the limits of such areas until the potential for injury no longer exists.

**102-5.7 Flagger:** Provide trained flaggers to direct traffic where one-way operation in a single lane is in effect and in other situations as required. The Worksite Traffic Supervisor or others as approved by the Town will provide training for flaggers using FDOT approved training materials. All flaggers must meet personnel qualifications specified in Section 105 of the current FDOT Division I.

**102-5.8 Conflicting Pavement Markings:** Where the lane use or where normal vehicle or pedestrian paths are altered during construction, remove all pavement markings (paint, tape, thermoplastic, retroreflective pavement markers, etc.) that will conflict with the adjusted vehicle or pedestrian paths. Use of paint to cover conflicting pavement markings is prohibited. Remove conflicting pavement markings using a method that will not damage the surface texture of the pavement and which will eliminate the previous marking pattern regardless of weather and light conditions. Remove all pavement markings that will be in conflict with “next phase of operation” vehicle pedestrian paths as described above, before opening to vehicle traffic or use.

**102-5.9 Vehicle and Equipment Visibility:** Equip all pickups and automobiles used on the project with a minimum of one Class 2 warning light that meets the Society of Automotive Engineers Recommended Practice SAE J595, dated November 1, 2008, or SAE J845, dated December 1, 2007, and incorporated herein by reference. Existing lights that meet SAE J845, dated March, 1992, or SAE J1318, dated April, 1986, may be used to their end of service life. The warning lights must be a high intensity amber or white rotating, flashing, oscillating or strobe light. Lights must be unobstructed by ancillary vehicle equipment such as ladders, racks or booms and be visible 360 degrees around the vehicle. If the light is obstructed, additional lights will be required. The lights must be operating when the vehicle is in a work area where a potential hazard exists, when operating at less than the average speed for the facility while performing work activities, making frequent stops or called for in the Plans or Standard Plans.

Equip all other vehicles and equipment with a minimum of 4 square feet of retroreflective sheeting or warning lights.

**102-5.10 No Waiver of Liability:** Conduct operations in such a manner that no undue hazard results due to the requirements of this Article. The procedures and policies described herein in no way acts as a waiver of any terms of the liability of the Contractor or his surety.

## **102-6 Detours.**

**102-6.1 General:** Construct and maintain detour facilities wherever it becomes necessary to divert traffic from any existing roadway or bridge, or wherever construction operations block the flow of traffic.

**102-6.2 Construction:** Plan, construct, and maintain detours for the safe passage of traffic in all conditions of weather. Provide the detour with all facilities necessary to meet this requirement.

**102-6.3 Construction Methods:** Select and use construction methods and materials that provide a stable and safe detour facility. Construct the detour facility to have sufficient durability to remain in

good condition, supplemented by maintenance, for the entire period that the detour is required.

**102-6.4 Removal of Detours:** Remove detours when they are no longer needed and before the Contract is completed. Take ownership of all materials from the detour and legally dispose of them, except for materials, which might be on loan from the Town with the stipulation that they are to be returned.

**102-6.5 Detours Over Existing Roads and Streets:** When the Town specifies that traffic is to be detoured over roads or streets outside the project area, maintain such roads or streets for the duration of the detour; maintain all signs and other devices placed for the purpose of the detour.

## **102-8 Driveway Maintenance.**

**102-8.1 General:** Ensure that each residence and/or place of business has safe, stable, and reasonable access.

**102-8.2 Construction Methods:** Place, level, manipulate, compact, and maintain the material, to the extent appropriate for the intended use.

As permanent driveway construction is accomplished at a particular location, the Contractor may salvage and reuse previously placed temporary materials that are suitable for reuse on other temporary driveways.

## **102-9 Temporary Traffic Control Devices.**

**102-9.1 Installation and Maintenance:** Install and maintain adequate traffic control devices, warning devices and barriers to protect the traveling public and workers, and to safeguard the work area. Erect the required traffic control devices, warning devices and barriers to prevent any hazardous conditions and in conjunction with any necessary traffic re-routing. Use only those devices that are included in the Plans, Index 102-600 series of the Standard Plans and when applicable, in accordance with the approved shop drawings and as provided on the Approved Product List (APL). Immediately remove, turnover or cover any devices or barriers that do not apply to existing conditions.

All safety devices must meet the requirements of National Cooperative Highway Research Report 350 (NCHRP 350) or the Manual for Assessing Safety Hardware 2009 (MASH) and current FHWA directives.

Notify the Engineer of any scheduled operation, which will affect traffic patterns or safety, sufficiently in advance of commencing such operation to permit his review of the plan for the proposed installation of traffic control devices, warning devices or barriers.

Ensure an employee is assigned the responsibility of maintaining the position and condition of all traffic control devices, warning devices and barriers throughout the duration of the Contract. Keep the Engineer advised at all times of the identification and means of contacting this employee on a 24-hour basis.

Keep traffic control devices, warning devices, safety devices and barriers in the correct position, properly directed, clearly visible and clean, at all times. Immediately repair, replace or clean damaged, defaced or dirty devices or barriers. Traffic Control devices must not be cleaned while installed/used. Use of warning lights on any temporary traffic control device is prohibited, with the exception of trailer mounted portable regulatory signs. All applicable temporary traffic control devices must meet the classification level of Acceptable as defined in the American Traffic Safety Services Association (ATSSA) Quality Guidelines for Temporary Traffic Control Devices and Features.

**102-9.2 Work Zone Signs:** Provide signs in accordance with the plans or Traffic Control Plan and Standard Plans. Meet the requirements of these specifications. Furnish, install, maintain, remove and relocate signs in accordance with the Plans and Standard Plans, Index No. 102-600. Use signs that meet the material and process requirements of current FDOT Division III Materials. Use Type IV sheeting for fluorescent orange work zone signs. Roll-up signs must meet the requirements of Type VI sheeting. Use Type IV or Type XI sheeting for all other work zone signs. Attach the sign to the sign support using hardware meeting the manufacturer's recommendations on the APL vendor drawings or as specified in the Standard Plans. Use only approved sign supports.

**102-9.3 Business Signs:** Provide and place signs in accordance with the plans and Standard Plans. Meet the sign background sheeting requirements of Section 700. Furnish signs having a Type III reflectorized blue background with a 4 inches series B white legend and a white border. The maximum sign size is 24 by 36 inches.

Use signs meeting the requirements of STANDARD PLANS Index 700-102 unless specific business names signs are requested and approved by the Engineer. In those cases, show specific business names on each sign. Install logos provided by business owners and approved by the Engineer.

**102-9.4 Warning/Channelizing Devices:** Furnish warning/channelizing devices in accordance with the plans and Standard Plans.

**102-9.4.1 Reflective Collars for Traffic Cones:** Use cone collars at night designed to properly fit the taper of the cone when installed and listed on the APL that meet the requirements of Section 990. Place the upper 6 inches collar a uniform 3 1/2 inch distance from the top of the cone and the lower 4 inch collar a uniform 2 inch distance below the bottom of the upper 6 inch collar. Ensure that the collars are capable of being removed for temporary use or attached permanently to the cone in accordance with the manufacturer's recommendations. Provide a white sheeting having a smooth outer surface and that essentially has the property of a retroreflector over its entire surface.

**102-9.5.2 Longitudinal Channelizing Devices (LCDs):** Use LCDs listed and categorized on the APL as vehicular, pedestrian or vehicular/pedestrian. Retroreflective sheeting must meet the requirements of current FDOT Division III materials. LCDs must be interlocked except for the stand-alone unit placed perpendicular to a sidewalk. For LCDs requiring internal ballasting, an indicator that clearly identifies the proper ballast level will be required. For LCDs requiring external ballasting, the ballasting methods must be detailed in the APL drawings including ballasting type and minimum weight. Joints on the pedestrian LCDs must be free of sharp edges and have a maximum offset of 1/8 inch in any plane.

**102-9.4.2 Barrier Wall (Temporary):** Furnish, install, maintain, remove and relocate a temporary barrier wall in accordance with the plans or the Traffic Control Plan. Temporary concrete barrier wall will be in accordance with Standard Plans Index No. 102-100, 102-110, or 102-120. Temporary water filled barrier wall will be in accordance with STANDARD PLANS.

**102-9.4.3 Glare Screen (Temporary):** Furnish, install, maintain, remove and relocate glare screen systems in conjunction with temporary barrier wall at locations identified in the plans or the Traffic Control Plan.

Ensure the anchorage of the glare screen to the barrier is capable of safely resisting an equivalent tensile load of 600 lb/ft of glare screen, with a requirement to use a minimum of three fasteners per barrier section.

When glare screen is utilized on temporary barrier wall, warning lights will not be required.

**102-9.5 Temporary Vehicle Impact Attenuator (Redirect/Inertia):** Furnish, install, maintain and subsequently remove temporary vehicular impact attenuators in accordance with the details and notes shown in the plans or the Traffic Control Plan and the Standard Plans. Maintain the attenuators until their authorized removal. Repair all attachment scars to permanent structures and pavements after attenuator removal. Make necessary repairs due to defective material, work, or Contractor operations at no cost to the Town. Restore attenuators damaged by the traveling public within 24 hours after notification as authorized by the Engineer.

**102-9.6 Guardrail (Temporary):** Furnish guardrail (temporary) in accordance with the plan or the Traffic Control Plan and Standard Plans. Meet the requirements of Section 536, Guardrails.

**102-9.7 Advance Warning Arrow Panel:** Furnish arrow boards that meet the requirements of Section 990 as required by the Plans and Standard Plans to advise approaching traffic of lane closures or shoulder work. Ensure that the arrow board display panel is raised to a minimum mounting height of 7 feet from the bottom of the panel to the edge of the travel way elevation when in the upright position. Type

B arrow boards may be used on low to intermediate speed (0 mph to 50 mph) facilities or for maintenance or moving operations on any speed facility. Type C arrow boards must be used for all other operations on high-speed (50 mph and greater) facilities and may be substituted for Type B arrow boards on any speed facility.

**102-9.8 Portable Changeable (Variable) Message Sign (PCMS):** Furnish changeable (variable) message sign in accordance with the plans and Standard Plans. Furnish PCMSs or truck mounted changeable message signs that meet the requirements of the current FDOT Division III Materials as required by the Plans and Standard Plans to supplement other temporary traffic control devices used in work zones. Ensure that the PCMS display panel is raised to a minimum mounting height of 7 feet from the bottom of the panel to the edge of the travel way elevation when in the upright position.

**102-9.9 Portable Regulatory Signs:** Provide portable regulatory signs in accordance with the plans or the Traffic Control Plan and Standard Plans. Ensure that the PRS sign panel is raised to a minimum mounting height of 7 feet from the bottom of the panel to the edge of the travel way elevation when in the upright position.

This specification establishes the physical display and operational requirements for solar powered portable regulatory signs. Ensure all portable regulatory signs meet the physical display and operational requirements as described in the Federal Highway Administration's MUTCD.

The portable regulatory sign must be activated only during active work activities and deactivated when no work is being performed. Ensure the sign can be activated and deactivated by a dial-up control system to allow operation of the sign from a remote location via cellular phone or standard telephone line. The sign must be protected by a security code.

Manufacturers seeking approval for Portable Regulatory Signs must submit an application, Material Safety Data Sheet (MSDS) and certification in accordance with 6-1.

Manufacturers providing the signs must provide a certified test report to the Engineer indicating that the signs meet these specification requirements.

**102-9.10 Temporary Traffic Control Signals:** Furnish, install and operate temporary traffic control signals as indicated in the plans or the Traffic Control Plan. Temporary traffic control signals will consist of either portable or fixed traffic signals.

Provide certification that the portable traffic signals meet the requirements of the Standard Plans of the Traffic Division of Palm Beach County. The Engineer may approve used signal equipment if it is in acceptable condition.

**102-9.11 Temporary Traffic Detection Technology:** Furnish, install and operate Temporary Traffic Detection Technology approved by the Traffic Division of Palm Beach County and/or approved by the Engineer to restore detection capabilities.

**102-9.12 Trucks and Truck Mounted Impact Attenuators:** Furnish, install and maintain only those attenuators that have been certified as meeting the requirements of NCHRP 350 and have been properly maintained. Include the cost of trucks and truck mounted impact attenuators in MOT.

Use Truck Mounted Attenuators (TMA), when called for in the Standard Plans. Use attenuators listed on the APL.

Use truck mounted attenuator systems designed and installed in accordance with the manufactures recommendations.

Equip the TMA cartridge with lights and reflectors in compliance with applicable Florida motor vehicle laws, including turn signals, dual tail lights, and brake lights. Ensure that lights are visible in both the raised and lowered positions if the unit is capable of being raised.

The trucks and truck mounted impact attenuators will not be paid for separately, but will be included

in the cost of Maintenance of Traffic. Payment includes all costs, including furnishing, maintaining and removal when no longer required, and all materials, labor, tools, equipment and incidentals required for attenuator maintenance.

## **102-10 Work Zone Pavement Marking.**

**102-10.1 Description:** Furnish and install work zone pavement markings for MOT in construction areas and in close conformity with the lines and details shown in the Plans and Standard Plans. Centerlines, lane lines, edge lines, stop bars, standard crosswalks, and turn arrows will be required in work zones prior to opening the road to traffic.

### **102.10.2 Painted Pavement Markings:**

**102-10.2.1 General:** Use painted pavement markings meeting the requirements of Section 710.

**102-10.3.1 General:** Use removable tape listed on the APL as shown in the Plans and meeting the requirements of current FDOT Division III Materials.

**102-10.3.2 Application:** Apply removable tape with a mechanical applicator to provide pavement lines that are neat, accurate and uniform. Equip the mechanical applicator with a film cut-off device and with measuring devices that automatically and accumulatively measure the length of each line placed within an accuracy tolerance of plus or minus 2%. Ensure removable tape adheres to the road surface. Removable tape may be placed by hand on short sections, 500 feet or less, if it is done in a neat accurate manner.

**102-10.3.3 Retroreflectivity:** Apply white and yellow pavement markings that will attain an initial retroreflectivity of not less than 300 mcd/lx·m<sup>2</sup> for white and contrast markings and not less than 250 mcd/lx·m<sup>2</sup> for yellow markings. Black portions of contrast tapes and black masking tapes must be non-reflective and have a reflectance of less than 5 mcd/lx m<sup>2</sup>. At the end of the six month service life, the retroreflectance of white and yellow removable tape shall not be less than 150 mcd/lx·m<sup>2</sup>.

**102-10.3.4 Removability:** Provide removable tape capable of being removed from bituminous concrete and portland cement concrete pavement intact or in substantially large strips, either manually or by a mechanical roll-up device, at temperatures above 40°F, without the use of heat, solvents, grinding or blasting.

**102-10.4 Temporary Retroreflective Pavement Markers (RPM's):** Use Class B RPMs for all locations, except centerline rumble striping operations, where Class D and Class B RPMs are required. All markers must be listed on the APL. Install all markers in accordance with the manufacturer's recommendations and in accordance with Standard Plans, Index Nos. 102-600 series, 711-003, and 706-001, prior to opening the road to traffic. After initial installation, replace markers any time more than three consecutive markers fail or are missing at no expense to the Department.

## **102-11 Basis of Payment.**

**102-11.1 A Separate Lump Sum Item is Included in the Proposal:** When the proposal includes a separate lump sum item of payment for this work, the work and incidental costs specified as being covered under this Section will be paid for at the Contract lump sum price for the item of Maintenance of Traffic.

**102-11.2 When No Direct Payment is Provided:** When no item for Maintenance of Traffic is included in the proposal, the Contractor shall include the cost of any work which is necessary to safely maintain traffic within the limits of the project in the Contract price for the other items of work for which such Maintenance of Traffic is required.

**102-11.3 Lump Sum Partial Payments:** When the proposal includes a separate lump sum pay item for Maintenance of Traffic, partial payments will be made therefore in accordance with the following:

<b>Percent of Original Contract Amount Earned</b>	<b>Allowable Percent of the Lump Sum Price for the Item</b>
25	25



50	50
75	75
100	100

The standard retainage, will be applied to these allowances. Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract.

**102-11.4 Payment Items:**

Payment will be made under:

Item No. 102-1- Maintenance of Traffic – Lump Sum.

**END OF SECTION 102**

## **SECTION 104**

### **PREVENTION, CONTROL, AND ABATEMENT OF EROSION AND WATER POLLUTION**

#### **104-1 Description.**

Provide erosion control measures on the project and in areas outside the right-of-way where work is accomplished in conjunction with the project, so as to prevent pollution of water, detrimental effects to public or private property adjacent to the project right-of-way and damage to work on the project. Construct and maintain temporary erosion control features or, where practical, construct and maintain permanent erosion control features as shown in the plans or as may be directed by the Engineer.

#### **104-2 General.**

Coordinate the installation of temporary erosion control features with the construction of the permanent erosion control features to the extent necessary to ensure economical, effective, and continuous control of erosion and water pollution throughout the life of the Contract.

#### **104-3 Control of Contractor's Operations Which May Result in Water Pollution.**

Prevent pollution of streams, canals, lakes, reservoirs, and other water impoundments with fuels, oils, bitumens, calcium chloride, or other harmful materials. Also, conduct and schedule operations to avoid or otherwise minimize pollution or siltation of such water impoundments, and to avoid interference with movement of migratory fish. Do not dump any residue from dust collectors or washers into any live stream.

Restrict construction operations in rivers, streams, lakes, tidal waters, reservoirs, canals, and other water impoundments to those areas where it is necessary to perform filling or excavation to accomplish the work shown in the plans and to those areas which must be entered to construct temporary or permanent structures. As soon as conditions permit, promptly clear rivers, streams, and impoundments of all obstructions placed therein or caused by construction operations.

Do not frequently ford live streams with construction equipment. Wherever an appreciable number of stream crossings are necessary at any one location, use a temporary bridge or other structure.

Except as necessary for construction, do not deposit excavated material in rivers, streams, canals, or impoundments, or in a position close enough thereto, to be washed away by high water or runoff.

Where pumps are used to remove highly turbid waters from enclosed construction areas such as cofferdams or forms, treat the water by one or more of the following methods prior to discharge into State waters: pumping into grassed swales or appropriate vegetated areas or sediment basins, or confined by an appropriate enclosure such as turbidity barriers when other methods are not considered appropriate.

Do not disturb lands or waters outside the limits of construction as staked, except as authorized by the Engineer.

Obtain the Engineer's approval for the location of, and method of operation in, borrow pits, material pits, and disposal areas furnished for waste material from the project (other than commercially operated sources) such that erosion during and after completion of the work will not result in probability of detrimental siltation or water pollution.

#### **104-4 Materials for Temporary Erosion Control.**

The Engineer will not require testing of materials used in construction of temporary erosion control features other than measuring and inspecting overlaps. Overlaps shall be as specified in the plans, specifications, or, for each particular application. In order to reduce overlaps, the geotextile fabric may be sewn together. Seams of the fabric shall be sewn with thread meeting the chemical requirements and minimum seam strength requirements given for the fabric and application unless such material is to be incorporated into the completed project. When no testing is required, the Engineer will base acceptance on visual inspection.

The Contractor may use new or used materials for the construction of temporary silt fence, staked turbidity barriers, and floating turbidity barrier not to be incorporated into the completed project, subject to the approval of the Engineer.

#### **104-5 Preconstruction Conference.**

At the Preconstruction Conference, provide to the Town a special plan to prevent, control, and reduce erosion and water pollution, meeting the requirements or special conditions of all permits authorizing project construction. If no permits are required or the approved permits do not contain special conditions or specifically address erosion and water pollution, the project erosion control plan will be governed by the Town of Jupiter, Stormwater Pollution Prevention Plan.

When a National Pollutant Discharge Elimination System (NPDES) Permit is issued or approved by the U.S. Environmental Protection Agency (EPA) pursuant to 40 CFR Part 122.26, the Contractor's plan shall be prepared as a part of the Town's Stormwater Pollution Prevention Plan (SWPPP). The SWPPP will include this erosion control plan and all additional measures that will be employed to dispose of, control, or prevent the discharge of solid, hazardous, and sanitary wastes to waters of the U.S. Include procedures to control off-site tracking of soil by vehicles and construction equipment and a procedure for cleanup and reporting of non-storm water discharges, such as contaminated groundwater or accidental spills. The Town will review and approve the Contractor's part of the SWPPP, including required signed certification statements, before soil disturbing activities begin.

Failure to sign any required documents or certification statements will be considered a default of the Contract. Any earth disturbing activities performed without the required signed documents or certification statements may be considered a violation of the Clean Water Act by the EPA

When the SWPPP is required, prepare the erosion control plan in accordance with the sequence of operations and present in the NPDES Stormwater Pollution Prevention Plan required format provided by the Town. The erosion control plan shall describe, but not be limited to, the following items or activities:

- (1) For each phase of construction operations or activities, supply the following information:
  - (a) Locations of all erosion control devices
  - (b) Types of all erosion control devices
  - (c) Estimated time erosion control devices will be in operation
  - (d) Monitoring schedules for maintenance of erosion control devices
  - (e) Methods of maintaining erosion control devices
  - (f) Containment or removal methods for pollutants or hazardous wastes
- (2) The name and telephone number of the person responsible for monitoring and maintaining the erosion control devices.
- (3) Submit for approval the erosion control plans meeting the paragraphs below:
  - (a) Projects permitted by the South Florida Water Management District require the following:
    - i. Obtain the Engineer's approval of the erosion control plan.
    - ii. Do not begin construction activities until the erosion control plan receives written approval from the Engineer.

#### **104-6 Construction Requirements.**

**104-6.1 Limitation of Exposure of Erodible Earth:** The Engineer may limit the surface areas of unprotected erodible earth exposed by the construction operation and may direct the Contractor to provide erosion or pollution control measures to prevent contamination of any river, stream, lake, tidal waters, reservoir, canal, or other water impoundments or to prevent detrimental effects on property outside the project right-of-way or damage to the project. Limit the area in which excavation and filling operations are being performed so that it does not exceed the capacity to keep the finish grading, grassing, sodding, and other such permanent erosion control measures current in accordance with the accepted schedule.

Do not allow the surface area of erodible earth that clearing and grubbing operations or excavation and filling operations expose to exceed 87,120 <sup>2</sup> ft without specific prior approval by the Engineer. This limitation applies separately to clearing and grubbing operations and excavation and filling operations.

The Engineer may increase or decrease the amount of surface area the Contractor may expose at any

one time.

**104-6.2 Incorporation of Erosion Control Features:** Incorporate permanent erosion control features into the project at the earliest practical time. Use approved temporary erosion control features to correct conditions that develop during construction which were not foreseen at the time of design, to control erosion prior to the time it is practical to construct permanent control features, or to provide immediate temporary control of erosion that develops during normal construction operations, which are not associated with permanent erosion control features on the project.

The Engineer may authorize temporary erosion control features when Topsoil is specified in the Contract and the limited availability of that material from the grading operations will prevent scheduled progress of the work or damage the permanent erosion control features.

**104-6.3 Scheduling of Successive Operations:** Schedule operations such that the area of unprotected erodible earth exposed at any one time is not larger than the minimum area necessary for efficient construction operations, and the duration of exposure of uncompleted construction to the elements is as short as practicable.

Schedule and perform clearing and grubbing so that grading operations can follow immediately thereafter. Schedule and perform grading operations so that permanent erosion control features can follow immediately thereafter if conditions on the project permit.

**104-6.4 Details for Temporary Erosion Control Features:**

**104-6.4.1 General:** Use temporary erosion and water pollution control features that consist of, but are not limited to, temporary grassing, temporary sodding, temporary mulching, sandbagging, slope drains, sediment basins, sediment checks, berms, baled hay or straw, floating turbidity barrier, staked turbidity barrier and silt fence. For design details for some of these items, refer to the Water Quality Section of the STANDARD PLANS.

**104-6.4.2 Temporary Grassing:** The Engineer may designate certain areas of grassing constructed in accordance with Section 570 as temporary erosion control features. The Engineer may direct the Contractor to omit permanent type grass seed from grassing and the reduce the specified rate of spread for fertilizer used in conjunction with grassing operations when such work is designated as a temporary erosion control feature.

**104-6.4.3 Temporary Sod:** Furnish and place sod in accordance with Section 575 within areas designated by the Engineer to temporarily control erosion. If the Engineer determines that the sod will be of a temporary nature, he may not require fertilizer and lime. Keep the sod in a moist condition in order to ensure growth.

**104-6.4.4 Temporary Mulching:** Furnish and apply a 2 to 4 inch thick blanket of straw or hay mulch to designated areas, then mix or force the mulch into the top 2 inches of the soil in order to temporarily control erosion. Use only undecayed straw or hay which can readily be cut into the soil. The mulch material shall be dry straw or hay, consisting of oat, rye, or wheat straw, or of pangola, peanut, coastal bermuda or bahia grass, hay or compost; and shall be free from noxious weeds and plants. Any plant officially listed as being noxious or undesirable by any Federal Agency, any agency of the State of Florida or any local jurisdiction in which the project is being constructed shall not be used. Furnish to the Engineer, prior to incorporation onto the project, a certification from the Florida Department of Agriculture and Consumer Services, Division of Plant Industry, stating that the Mulch materials are free of noxious weeds. Any such noxious plant or plant part found to be delivered as mulch will be removed by the Contractor at his expense and in accordance with the law. Only undeteriorated mulch which can readily be cut into the soil shall be used. The air-dry weight (as defined by the Technical Association of the Pulp and Paper Industry, for wood cellulose) shall be marked on each package by the producer. The Contractor may substitute other measures for temporary erosion control, such as hydromulching, chemical adhesive soil stabilizers, etc., for mulching with straw or hay, if approved by the Engineer. When beginning permanent grassing operations, plow under temporary mulch materials in conjunction with preparation of the ground.

**104-6.4.5 Sandbagging:** Furnish and place sandbags in configurations to control erosion and siltation.

**104-6.4.6 Slope Drains:** Construct slope drains in accordance with the details shown in the plans, the Standard plans, or as may be approved as suitable to adequately perform the intended function.

**104-6.4.7 Sediment Basins:** Construct sediment basins in accordance with the details shown in the plans, the Standard plans, or as may be approved as suitable to adequately perform the intended function. Clean out sediment basins as necessary in accordance with the plans or as directed.

**104-6.4.8 Berms:** Construct temporary earth berms to divert the flow of water from an erodible surface.

**104-6.4.9 Baled Hay or Straw:** Provide bales having minimum dimensions of 14 by 18 by 36 inches, at the time of placement. Construct baled hay or straw dams to protect against downstream accumulations of silt. Construct the baled hay or straw dams in accordance with the details shown in the plans or the STANDARD PLANS. The hay shall be dry straw or hay, consisting of oat, rye, or wheat straw, or of pangola, peanut, coastal bermuda or bahia grass, hay or compost; and shall be free from noxious weeds and plants. Any plant officially listed as being noxious or undesirable by any Federal Agency, any agency of the State of Florida or any local jurisdiction in which the project is being constructed shall not be used. Furnish to the Engineer, prior to incorporation onto the project, a certification from the Florida Department of Agriculture and Consumer Services, Division of Plant Industry, stating that the Mulch materials are free of noxious weeds. Any such noxious plant or plant part found to be delivered as mulch will be removed by the Contractor at his expense and in accordance with the law. Only undeteriorated mulch which can readily be cut into the soil shall be used. The air-dry weight (as defined by the Technical Association of the Pulp and Paper Industry, for wood cellulose) shall be marked on each package by the producer.

Place the dam to effectively control silt dispersion under conditions present on this project. The Contractor may use alternate solutions and usage of materials if approved.

**104-6.4.10 Temporary Silt Fences:**

**104-6.4.10.1 General:** Furnish, install, maintain, and remove temporary silt fences, in accordance with the manufacturer's directions, these Specifications, the details as shown on the plans, and the Standard plans.

**104-6.4.10.2 Materials and Installation:** Use a geotextile fabric made from woven or nonwoven fabric consisting of long-chain polymeric filaments or yarns such as polypropylene, polyethylene, polyester, polyamides or polyvinylidene chloride formed into a stable network such that the filaments or yarns retain their relative position to each other. The base plastic shall contain stabilizers and/or inhibitors to make the filaments resistant to deterioration due to ultra-violet light (except for subsurface and stabilization classification), heat exposure and potential chemically damaging environment. The fabric shall be free of any treatment which may significantly alter its physical properties. The edges of the fabric shall be selvaged or otherwise finished to prevent the outer yarn from pulling away from the fabric. The fabric shall conform to the physical requirements of the plans. In addition to the physical requirements, the fabric shall be wrapped in a protective covering which is sufficient to protect it from sunlight, dirt, and other debris during shipment and storage. Choose the type and size of posts, wire mesh reinforcement (if required), and method of installation. Do not use products which have a separate layer of plastic mesh or netting. Provide a durable and effective temporary silt fence that controls sediment comparable to the Design STANDARDS, Index No. 104.

Install all sediment control devices in a timely manner to ensure the control of sediment and the protection of lakes, streams, gulf or ocean waters, or any wetlands associated therewith and to any adjacent property outside the right-of-way as required. At sites where exposure to such sensitive areas is prevalent, complete the installation of any sediment control device prior to the commencement of any earthwork. After installation of sediment control devices, repair portions of any devices damaged at no expense to the Town. Erect temporary silt fence at upland locations across ditchlines and at temporary locations shown on the

plans or approved by the Engineer where continuous construction activities change the natural contour and drainage runoff. Do not attach temporary silt fence to existing trees unless approved by the Engineer.

**104-6.4.10.3 Inspection and Maintenance:** Inspect all temporary silt fences immediately after each rainfall and at least daily during prolonged rainfall. Immediately correct any deficiencies. In addition, make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, install additional silt fences as directed by the Engineer. Remove sediment deposits when the deposit reaches approximately 1/2 of the volume capacity of the temporary silt fence or as directed by the Engineer. Dress any sediment deposits remaining in place after the temporary silt fence is no longer required to conform with the finished grade, and prepare and seed them in accordance with Section 570.

**104-6.4.11 Floating Turbidity Barriers and Staked Turbidity Barriers:** Install, maintain, and remove turbidity barriers to contain turbidity that may occur as the result of dredging, filling, or other construction activities which may cause turbidity to occur in the waters of the State. The Contractor may need to deploy turbidity barriers around isolated areas of concern such as seagrass beds, coral communities, etc. both within as well as outside the right-of-way limits. The Engineer will identify such areas. Place the barriers prior to the commencement of any work that could impact the area of concern. Install the barriers in accordance with the details shown in the plans or as approved by the Engineer. Ensure that the type barrier used and the deployment and maintenance of the barrier will minimize dispersion of turbid waters from the construction site. The Engineer may approve alternate methods or materials.

Operate turbidity barriers in such a manner to avoid or minimize the degradation of the water quality of the surrounding waters.

**104-6.4.12 Rock Bags:** Furnish and place rock bags to control erosion and siltation. Place the bags as shown in the plans, the Standard plans or as directed by the Engineer. Use a fabric material with openings that are clearly visible to minimize clogging yet small enough to prevent rock loss. Use material of sufficient strength to allow removing and relocating bags without breakage. The bag size when filled with rocks shall be approximately 12 by 12 by 4 inch. Use No. 4 or No. 5 coarse aggregate rock.

**104-6.5 Removal of Temporary Erosion Control Features:** In general, remove or incorporate into the soil any temporary erosion control features existing at the time of construction of the permanent erosion control features in an area of the project in such a manner that no detrimental effect will result. The Engineer may direct that temporary features be left in place.

#### **104-7 Maintenance of Erosion Control Features.**

**104-7.1 General:** Provide routine maintenance of permanent and temporary erosion control features, at no expense to the Town, until the project is complete and accepted. If reconstruction of such erosion control features is necessary due to the Contractor's negligence or carelessness or, in the case of temporary erosion control features, failure by the Contractor to install permanent erosion control features as scheduled, the Contractor shall replace such erosion control features at no expense to the Town.

Inspect all erosion control features at least once every seven calendar days and within 24 hours of the end of a storm of 0.25 inches or greater. Maintain all erosion control features as required in the Stormwater Pollution Prevention Plan and as specified in State and/or Federal environmental regulatory permits. Use the inspection form provided by the Engineer to report all inspection findings and to document all corrective actions taken as a result of the inspection. Sign each inspection report and submit it weekly to the Engineer.

**104-7.2 Mowing:** The Engineer may direct mowing of areas within the limits of the project. Mow these designated areas within seven days of receiving such order. Do not mow slopes that are steeper than three horizontal to one vertical.

#### **104-8 Protection During Suspension of Contract Time.**

If it is necessary to suspend the construction operations for any appreciable length of time, shape the top of the earthwork in such a manner to permit runoff of rainwater, and construct earth berms along the top edges of embankments to intercept runoff water. Provide temporary slope drains to carry runoff from cuts and embankments that are in the vicinity of rivers, streams, canals, lakes, and impoundments. Locate slope drains at intervals of approximately 500 feet, and stabilize them by paving or by covering with waterproof materials. Should such preventive measures fail, immediately take such other action as necessary to effectively prevent erosion and siltation. The Engineer may direct the Contractor to perform, during such suspensions of operations, any other erosion control work deemed necessary.

#### **104-9 Method of Measurement.**

When temporary prevention, control and abatement of pollution and erosion are included in the Contract, the quantities to be paid for will be based on a percent of original contract amount earned.

#### **104-10 Basis of Payment**

**104-10.1 Lump Sum Payment for Pollution Prevention, Control and Abatement:** Lump sum payment will be full compensation for all work specified in this Section, including construction and routine maintenance of temporary erosion control features and for mowing. Any additional costs resulting from compliance with the requirements of this Section will be included.

Separate payment will not be made for the cost of constructing temporary earth berms along the edges of the roadways to prevent erosion during grading and subsequent operations. The Contractor shall include these costs in the Contract prices for grading items.

In case of repeated failure on the part of the Contractor to control erosion, pollution, or siltation, the Engineer reserves the right to employ outside assistance or to use the Town's own forces to provide the necessary corrective measures. Any such costs incurred, including engineering costs, will be charged to the Contractor and appropriate deductions made from the monthly progress estimate.

**104-10.2 When No Direct Payment is Provided:** When no item for Prevention, Control, And Abatement of Erosion and Water Pollution is included in the proposal, the Contractor shall include the cost of any work which is necessary to prevent erosion and water pollution within the limits of the project in the Contract price for the other items of work for which such pollution prevention, control and abatement is required.

**104-10.3 Lump Sum Partial Payments:** When the proposal includes a separate pay item for Prevention, Control and Abatement of Pollution and Erosion, partial payments will be made therefore in accordance with the following:

<b>Percent of Original Contract Amount Earned</b>	<b>Allowable Percent of the Lump Sum Price for the Item</b>
25	25
50	50
75	75
100	100

The standard retainage, will be applied to these allowances. Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract.

#### **104-10.4 Payment Items:**

Payment will be made under:

Item No. 104-1- Erosion Control – Lump Sum.

**END OF SECTION 104**



## **SECTION 110 CLEARING, GRUBBING AND SITE DEMOLITION**

### **110-1: Description**

Clear and grub within the areas of the roadway right-of-way and of borrow pits, sand-clay base material pits, lateral ditches, and any other areas shown in the plans to be cleared and grubbed. Remove and dispose of all trees, stumps, roots and other such protruding objects, buildings, structures, appurtenances, existing flexible asphalt pavement, concrete & asphalt curbing, existing rigid pavements, driveways, sidewalks, retaining walls, drainage structures, brick pavers, street light and pole removal and disposal, and any other facilities necessary to prepare the area for the proposed construction. Remove and dispose of all product and debris not required to be salvaged or not required to complete the construction.

Also, perform certain miscellaneous work the Engineer considers necessary for the complete preparation of the overall project site, as follows:

- (a) Plug any water wells that are encountered within the right-of-way and that are to be abandoned.
- (b) Level the terrain outside the limits of construction for purposes of facilitating maintenance and other post-construction operations.
- (c) Trim trees and shrubs within the project right-of-way that are identified in the contract documents.

### **110-2: Standard Clearing and Grubbing**

**110-2.1 Work Included:** Completely remove and dispose of all buildings, timber, brush, stumps, roots, rubbish, debris, and all other obstructions resting on or protruding through the surface of the existing ground and the surface of excavated areas, and all other structures and obstructions necessary to be removed and for which other items of the Contract do not specify the removal thereof, including septic tanks, building foundations, and pipes.

Perform Standard Clearing and Grubbing within the following areas:

- (a) All areas where excavation is to be done, including borrow pits, lateral ditches, right-of-way ditches, etc.
- (b) All areas where roadway embankments will be constructed.
- (c) All areas where structures will be constructed, including pipe culverts and other pipe lines.
- (d) All areas where sidewalk will be constructed
- (e) All other areas as defined on the plans

**110-2.2 Depths of Removal of Roots, Stumps, and Other Debris:** In all areas where excavation is to be performed or roadway embankments are to be constructed, remove roots and other debris to a depth of 12 inches below the ground surface. Remove roots and other debris from all excavated material to be used in the construction of roadway embankment or roadway base. Plow the surface to a depth of at least 6 inches, and remove all roots thereby exposed to a depth of at least 12 inches. Completely remove and dispose of all stumps within the roadway right-of-way.

Remove all roots, etc., protruding through or appearing on the surface of the completed excavation within the roadway area and for structures, to a depth of at least 12 inches below the finished excavation surface.

Remove or cut off all stumps, roots, etc., below the surface of the completed excavation in borrow pits, material pits, and lateral ditches. In borrow and material pits, do not perform any clearing or grubbing within three feet inside the right-of-way line. Within all other areas where Standard Clearing and Grubbing is to be performed remove roots and other debris projecting through or appearing on the surface of the original ground to a depth of 12 inches below the surface, but do not plow or harrow these areas.

**110-2.3 Trees and Landscape Materials to Remain:** As an exception to the above provisions, where so directed by the Engineer, trim, protect, and leave standing desirable trees and landscape materials within the roadway area or right-of-way. Trim branches of trees extending over the area occupied by the roadway as directed, to give a clear height of 16 feet above the roadway and 10 feet above sidewalk.

**110-2.4 Boulders:** Remove any boulders encountered in the roadway excavation (other than as permitted under the provisions of 120-7.2) or found on the surface of the ground.

### **110-3: Selective Clearing and Grubbing**

**110-3.1 General:** The Contractor shall remove and dispose of all vegetation, obstructions, etc., as provided above except that, where so elected, the Contractor may cut roots, etc., flush with the ground surface and not to a depth 12" below the ground surface. Completely remove and dispose of stumps. Entirely remove undergrowth except in specific areas designated by the Engineer to remain for aesthetic purposes. Trim, protect, and leave standing desirable trees, with the exception of such trees as the Engineer may designate to be removed in order to facilitate right-of-way maintenance. Remove undesirable or damaged trees as so designated by the Engineer. Perform Selective Clearing and Grubbing only in areas so designated in the plans and with hand-held equipment or machinery that will not damage the adjacent trees and landscape materials.

**110-3.2 Trees to Remain:** Protect trees as shown in the Plans or directed by the Engineer. At the driplines of areas designated as trees to remain, construct a tree protection barrier in accordance with Standard Plans, Index No. 110-100. When pruning cuts or root pruning to existing trees is shown in the Plans, work is to be supervised on site by an International Society of Arboriculture (ISA) Certified Arborist performed in accordance with ANSI A300.

**110-3.3 Protection of Plant Preservation Areas:** Areas to remain natural may be designated in the Plans. Protect these areas with a tree protection barrier in accordance with Standard Plans, Index No. 110-100. No clearing and grubbing, staging, storage, or dumping is allowed in these areas. Do not bring equipment into these areas.

### **110-4: Protection of Property Remaining in Place**

Protect and do not displace property obstructions which are to remain in place, such as buildings, sewers, drains, water or gas pipes, conduits, poles, walls, posts, bridges, etc.

### **110-5: Removal of Buildings.**

**110-5.1 Parts to be Removed:** Completely remove all parts of the buildings, including utilities, plumbing, foundations, floors, basements, steps, connecting concrete sidewalks or other pavement, septic tanks, and any other appurtenances, by any practical manner which is not detrimental to other property and improvements.

Remove utilities to the point of connection to the utility authority's cut-in. After removing the sewer connections to the point of cut-in, construct a concrete plug at the cut-in point, as directed by the Engineer, except where the utility owners may elect to perform their own plugging. Contact the appropriate utility companies prior to removal of any part of the building to ensure disconnection of services.

**110-5.2 Removal by Others:** Where buildings within the area to be cleared and grubbed are so specified to be removed by others, remove and dispose of any foundations, curtain walls, concrete floors, basements or other foundation parts which might be left in place after such removal of buildings by others.

### **110-5.2 Method of Removal:**

**110-5.2.1 General:** Remove the structures in such a way as to leave no obstructions to any proposed new structures or to any waterways. Pull, cut off, or break off pilings to the requirements of the permit or other Contract Documents, whichever requires the deepest removal, but not less than two feet below the finish ground line. In the event that the plans indicate channel excavation to be done

by others, consider the finish ground line as the limits of such excavation. For materials which are to remain the property of the Town or are to be salvaged for use in temporary structures, avoid damage to such materials, and entirely remove all bolts, nails, etc. from timbers to be so salvaged. Mark structural steel members for identification as directed. Ensure clearing, grubbing and site demolition operations do not damage structures scheduled to remain or directed to remain by the Engineer.

#### **110-6: Removal of Existing Roadway Pavements and Appurtenances**

Neatly sawcut, remove and dispose of existing rigid Portland cement concrete pavement, flexible asphalt pavement, sidewalk, slope pavement, ditch pavement, curb, and curb and gutter, drainage structures, stormwater, and sewage pipes, driveways, brick pavers etc., where shown in the plans or ordered by the Engineer to be removed or where required because of the construction operations.

##### **110-6.1: Removal of Existing Asphalt Pathway Pavements and Appurtenances**

Neatly remove grass and weeds, and neatly sawcut remove and legally dispose of existing deteriorated pathway asphalt, including weeds and grass, to an elevation of the existing base rock surface, when such base rock will serve as a suitable foundation, as determined by the Engineer, for subsequent lifts of asphalt for the asphalt pathway. This work shall also include dressing the base rock to the proper elevation and compaction, 98% AASHTO T 180, of the suitable base rock and the application of a prime coat (applied at 0.15 gals/sy), and tack when appropriate, in order to accept the asphalt path overlay lift or asphalt patch at the required elevation. The contractor shall maintain a safe, passable pathway for pedestrians at all times.

##### **110-6.2: Removal of Existing Road Rock Base:**

Remove and, at the Direction of the Engineer, re-use or legally dispose of existing roadway rock base, up to 14”.

##### **110-6.3 Asbestos Containing Materials (ACM) Not Identified Prior to the Work:**

When encountering or exposing any condition indicating the presence of asbestos, cease operations immediately in the vicinity and notify the Engineer.

Make every effort to minimize the disturbance of the ACM. Immediately provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions. Provisions shall meet all applicable laws, rules or regulations covering hazardous conditions and will be in a manner commensurate with the gravity of the conditions.

The Engineer will notify the Town Contamination Assessment Coordinator/Contractor who will coordinate selecting and tasking the Town's Asbestos Contractor or Contamination Assessment/Remediation Contractor (CAR). Provide access to the potential contamination area. Preliminary investigation by the Asbestos/CAR Contractor will determine the course of action necessary for site security and the steps necessary to resolve the contamination issue.

The Asbestos/CAR Contractor will delineate the contamination areas, any staging or holding area required. Coordinate with the Asbestos/CAR Contractor and the Engineer to develop a work plan that will provide the Asbestos/CAR Contractor's operations schedule with projected completion dates for the final resolution of the contamination issue.

The Asbestos/CAR Contractor will maintain jurisdiction over activities inside any outlined contaminated areas and any associated staging holding areas. The Asbestos/CAR Contractor will be responsible for the health and safety of workers within the delineated areas. Provide continuous access to these areas for the Asbestos/CAR Contractor and representatives of regulatory or enforcement agencies having jurisdiction. Both Contractors will use the schedule as a basis for planning the completion of both work efforts. The Engineer may grant the Contract Time extensions according to the provisions of 4.17.

Cooperate with the Asbestos/CAR Contractor to expedite integration of the Asbestos/CAR Contractor's operations into the construction project. The Prime Contractor is not expected to engage in routine construction activities involving asbestos containing materials. Adjustments to quantities or to Contract unit prices will be made according to work additions or reductions on the part of the Prime Contractor in accordance with the provisions of 4.17.

The Engineer will direct the Prime Contractor when operations may resume in the affected area.

#### **110-7: Ownership of Materials**

Except as may be otherwise specified in the Contract Documents, the Contractor shall take ownership of all buildings, structures, appurtenances, and other materials removed by him and shall dispose of them in accordance in a manner that complies with all state and local regulations.

#### **110-8: Disposal of Materials**

**110-8.1 General:** Either stack materials designated to remain the property of the Town in neat piles within the right-of-way or load onto the Town's vehicles.

Dispose of timber, stumps, brush, roots, rubbish, and other objectionable material resulting from clearing and grubbing in areas and by methods meeting the applicable requirements of all Local, State and Federal regulations. Do not block waterways by the disposal of debris.

Burning of debris shall be strictly prohibited unless written approval has been provided by the Engineer. Where burning of such materials is permitted, perform all such burning in accordance with the applicable Federal, State and Local rules and regulations. Perform all burning at locations where trees and shrubs adjacent to the cleared area will not be harmed.

Treated wood must be handled and disposed of properly during removal. Treated wood should not be cut or otherwise mechanically altered in a manner that would generate dust or particles without proper respiratory and dermal protection. The treated wood must be disposed of in at least a lined solid waste facility or through recycling/reuse. Treated wood shall not be disposed by burning or placement in a construction and demolition (C&D) debris landfill.

**110-8.2 Hazardous Materials/Waste:** Handle, transport and dispose of hazardous materials in accordance with all Local, State and Federal requirements including the following:

- (a) SSPC Guide 7
- (b) Federal Water Pollution Control Act, and
- (c) Resource Conservation and Recovery Act (RCRA).

Accept responsibility for the collection, sampling, classification, packaging, labeling, accumulation time, storage, manifesting, transportation, treatment and disposal of hazardous waste, both solid and liquid. Separate all solid and liquid waste and collect all liquids used at hygiene stations and handle as hazardous materials/waste. Obtain written approval from the Engineer for all hazardous materials/waste stabilization methods before implementation.

Obtain an EPA/FDEP Hazardous Waste Identification Number (EPA/FDEP ID Number) before transporting and/or disposal of any hazardous materials/waste.

List the Town as the generator of all hazardous materials/waste.

Submit the following for the Engineers' approval before transporting, treatment or disposal of any hazardous materials/waste:

- (a) Name, address and qualifications of the transporter,
- (b) Name, address and qualifications of the treatment facility,
- (c) Proposed treatment and/or disposal of all Hazardous Materials/Waste.

Transport all hazardous materials/waste in accordance with applicable 40 CFR 263 Standards. Provide a copy of all completed Hazardous Materials/Waste manifest/bills of lading to the Engineer within 21 days of each shipment.

**110-8.2.1 Steel Members With Hazardous Coating:** Dispose of steel members with hazardous coating in one of the following manners:

- (a) Deliver the steel members and other hazardous waste to an agency approved and licensed recycling or treatment facility capable of processing steel members with hazardous coating.
- (b) Deliver the steel members with hazardous coating to a site designated by the Engineer for use as an offshore artificial reef. Deliver any other hazardous materials/waste to a licensed hazardous

materials/waste recycling treatment facility.

Dismantle and/or cut steel members to meet the required dimensions of the recycling facility, treatment facility or offshore artificial reef agency.

All compensation for the cost of removal and disposal of hazardous materials/waste will be included in the Clearing and Grubbing.

**110-8.2.2 Certification of Compliance:** Furnish two copies of a Certification of Compliance from the firm actually removing and disposing of the hazardous materials/waste stipulating, the hazardous materials/waste has been handled, transported and disposed of in accordance with this Specification. The Certification of Compliance shall be signed under the formalities of oath and attested to by a person having legal authority to bind the company.

Maintain all records required by this Specification and ensure these records are available to the Town or Engineer upon request.

## **110-9: Miscellaneous Operations**

**110-9.1 Water Wells Required to be Plugged:** Fill or plug all water wells within the right-of-way, including areas of borrow pits and lateral ditches, that are not to remain in service, in accordance with applicable South Florida Water Management District rules or the Town's Environmental Protection regulations.

Cut off the casing of cased wells at least 12 inches below the ground line or 12 inches below the elevation of the finished excavation surface, whichever is lower. Water wells, as referred to herein, are defined either as artesian or non-artesian, as follows:

(a) An artesian well is an artificial hole in the ground from which water supplies may be obtained and which penetrates any water-bearing rock, the water in which is raised to the surface by natural flow or which rises to an elevation above the top of the water-bearing bed. Artesian wells are further defined to include all holes drilled as a source of water that penetrate any water-bearing beds that are a part of the artesian water system of Florida, as determined by representatives of the South Florida Water Management District.

(b) A non-artesian (water-table) well is a well in which the source of water is an unconfined aquifer. The water in a non-artesian well does not rise above the source bed. When the plans do not indicate whether a non-flowing well is artesian or non-artesian, obtain this information from the Engineer.

**110-9.2 Landscape Areas:** When certain areas of the right-of-way, outside of the limits of construction, are shown in the plans or designated by the Engineer to be landscaped, either under the construction Contract or at a later time, remove undesirable trees, stumps, undergrowth, and vegetation, as directed, and preserve and trim natural growth and trees as directed by the Engineer.

**110-9.3 Leveling Terrain:** Within the areas between the limits of construction and the outer limits of clearing and grubbing, fill all holes and other depressions, and cut down all mounds and ridges. Make the area of a sufficient uniform contour so that the Town's subsequent mowing and cutting operations are not hindered by irregularity of terrain. Perform this work regardless of whether the irregularities were the result of construction operations or existed originally.

**110-9.4 Mailboxes:** When the Contract Documents require furnishing and installing mailboxes, permit each owner to remove the existing mailbox. Work with the Local Postmaster to develop a method of temporary mail service for the period between removal and installation of the new mailboxes. Install the mailboxes in accordance with the AASHTO publication, "A Guide for Erecting Mailboxes on Highways".

## **110-10: Method of Measurement**

**110-10.1 Clearing and Grubbing by Lump Sum:** When the proposal includes a separate lump

sum item for payment for this work, the work and incidental costs specified as being covered under this Section will be paid for at the Contract unit lump sum price for the item of Clearing and Grubbing.

**110-10.2 Clearing and Grubbing by Area:** When the proposal includes a separate unit price item in the Contract, the quantity to be paid will be the actual area cleared and grubbed by the Contractor and measured (in acres), inspected and approved in the field by the Town of Jupiter. Accuracy of the measurement and minimum payment for clearing and grubbing will be one thousandth of an acre (0.001 Acres) which equates to 43.6 square feet.

**110-10.3 Selective Clearing and Grubbing by Lump Sum:** When the proposal includes a separate lump sum item for payment for this work, the work and incidental costs specified as being covered under this Section will be paid for at the Contract unit lump sum price for the item of Selective Clearing and Grubbing.

**110-10.4 Selective Clearing and Grubbing by Area:** When direct payment is provided in the Contract, the quantity to be paid will be the actual area selectively cleared and grubbed by the Contractor and measured (in acres), inspected and approved in the field by the Town of Jupiter. Accuracy of the measurement and minimum payment for selectively clearing and grubbing will be one thousandth of an acre (0.001 Acres) which equates to 43.6 square feet.

**110-10.5 Removal and Disposal of Roadway Asphalt:** When direct payment is provided in the Contract, the quantity to be paid will be the actual quantity of pavement (up to 3" thick) sawcut, removed and disposed of by the Contractor and measured (in square yards), inspected and approved in the field by the Engineer. Accuracy of the measurement and minimum payment for sawcutting, removal and disposal of asphalt will be one square yard. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-10.6: Removal and Disposal of Pathway Asphalt:** When direct payment is provided in the Contract, the quantity to be paid will be the actual field measured quantity of asphalt pathway pavement (up to 3"), sawcut, and removed, as well as base rock dressed, compacted and primed, in square yards, inspected and approved. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-10.7 Removal of Existing Road Rock Base:** When direct payment is provided in the Contract, the quantity to be paid will be the actual quantity of roadway rock base (up to 14"), removed, in square yards. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-10.8 Removal of Existing Curb ("F", "D", Header and Valley):** Removal and disposal of concrete curb; when direct payment is provided in the Contract, the quantity to be paid will be the actual quantity of curb, removed and legally disposed in square yards. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-10.9 Removal and Disposal of Concrete:** When direct payment is provided in the Contract, the quantity to be paid will be the actual quantity of sidewalk/curb/drainage structures removed by the Contractor and measured (in square yards for sidewalk, linear feet for curb and per each for drainage structures, unless payment is made for this work as a part of the work in another Section), inspected and approved in the field by the Engineer. Accuracy of the measurement and minimum payment for sidewalk/curb/drainage structures removal and disposal will be one square yard/one linear foot/per each respectively.

**110-10.10 General:** In each case, except as provided above, where no item of separate payment for such work is included in the proposal, all costs of such work will be included in the various scheduled items in the Contract, or under specific items as specified herein above or elsewhere in the Contract.

## **110-11 Basis of Payment.**

**110-11.1 When No Direct Payment is Provided:** When no item for Clearing, Grubbing and Site Demolition or Selective Clearing and Grubbing is included in the proposal, the Contractor shall include

the cost of any work of clearing and grubbing which is necessary for the proper construction of the project in the Contract price for the structure or other item of work for which such Clearing, Grubbing and Site Demolition or Selective Clearing and Grubbing is required.

The clearing and grubbing of areas for obtaining stabilizing materials, where required only for the purpose of obtaining materials for stabilizing, will not be paid for separately.

**110-11.2 Clearing, Grubbing and Site Demolition:** Price and payment will be full compensation for all work specified in this Section including all clearing, grubbing, demolition, cutting, loading, hauling, cleanup, rough grading, herbicide application, and disposal of all vegetative material in the area to be cleared and grubbed. All neatly sawcut, removed and disposed of existing rigid Portland cement concrete pavement, flexible asphalt pavement, sidewalk, slope pavement, ditch pavement, curb, and curb and gutter, drainage structures, stormwater, and sewage pipes, driveways, brick pavers etc., where shown in the plans or ordered by the Engineer. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-11.3 Selective Clearing and Grubbing:** Price and payment will be full compensation for all work specified in this Section to selectively clear, grub, cut, trim, load, haul, cleanup, rough grading, herbicide application, and disposal of all selectively cleared vegetative material in the area specified. Any tagged vegetative material in an area to be selectively cleared and grubbed will be left in place and only trimmed per the Town of Jupiter's written instruction. If any other work is required, it will be considered incidental to the work in this Sub- Section.

**110-11.4 Removal and Disposal of Concrete:** Prices and payments will be full compensation for all work and materials specified in this Section including removal and satisfactory disposal of reinforced and plain Portland Cement Concrete. Work shall include, but not be limited to sawcutting, breaking up, removing, loading, trucking and disposing of existing Portland Cement Concrete. All materials removed shall be disposed of in a manner that complies with all state and local regulations. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-11.5 Removal and Disposal of Roadway Asphalt:** Prices and payments will be full compensation for all work and materials specified in this Section including removal and satisfactory disposal of asphaltic concrete. Work shall include, but not be limited to, the cost to provide for the sawcutting, removal, loading, trucking and disposal of existing asphalt concrete. Prices shall be based on a 2 inch layer within a local roadway. All materials removed shall be disposed of in a manner that complies with all state and local regulations. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-11.6 Removal and Disposal of Asphalt Pathway:** Price and payment will be full compensation for all work performed under this Section. No separate measurement and payment shall be made for this work under any other Item in this Contract. If any ambiguity exists between the work called for in this Sub Section and any other Sections or Sub Sections in the Contract, the method of measurement and basis of payment for Removal and Disposal of Asphalt Pathway will govern. If any other work is required, it will be considered incidental to the work in this Section.

**110-11.7 Removal of Existing Road Rock Base:** Price and payment will be full compensation for all work performed under this Sub Section. No separate measurement and payment shall be made for this work under any other Item in this Contract. If any ambiguity exists between the work called for in this Sub Section and any other Sections or Sub Sections in the Contract, the method of measurement and basis of payment for Removal and Disposal of Rock Base will govern. If any other work is required, it will be considered incidental to the work in this Sub Section.

**110-11.8 Removal of Existing Curb ("F", "D", Header and Valley)** Price and payment will be full compensation for all work performed under this Sub Section. No separate measurement and payment shall be made for this work under any other Item in this Contract. If any ambiguity exists between the work called for in this Sub Section and any other Sections or Sub Sections in the Contract, the method of measurement and basis of payment for Removal and Disposal of Rock Base shall govern. If any other

work is required, it will be considered incidental to the work in this Sub Section.

**110-11.9 Partial Payments:** When the proposal includes a separate pay item for CLEARING, GRUBBING AND SITE DEMOLITION AND/OR SELECTIVE CLEARING AND GRUBBING, partial payments will be made therefore in accordance with the following:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for the Item
10	30
20	60
40	90
50	100

The standard retainage, will be applied to these allowances. Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract.

**110-11.10 Payment Items:** Payment will be made under:

- Item No. 110-1- Clearing, Grubbing & Site Demolition – lump sum
- Item No. 110-1A- Old Town Hall Building and Foundation Demolition – lump sum
- Item No. 110-1A- Selective Clearing (Asphalt Removal 1” & Base Restoration) – per square yard
- Item No. 110-2- Clearing, Grubbing & Site Demolition – per acre
- Item No. 110-3- Selective Clearing, Grubbing & Site Demolition – per acre
- Item No. 110-4- Removal and Disposal of Concrete (up to 6” thick) – per square yard
- Item No. 110-4A- Removal and Disposal of Base and Asphalt (up to 6” thick) – lump sum
- Item No. 110-5- Removal and Disposal of Roadway Asphalt up to 3” thick – per square yard
- Item No. 110-6- Removal and Disposal of Existing Pathway Asphalt up to 3” thick – per square yard
- Item No. 110-7- Removal and Disposal of Rock Base up to 14” thick – per sq. yd.
- Item No. 110-8- Removal and Disposal of Existing Curb (“F”, “D”, Header and Valley) – per sq. yd.

**END OF SECTION 110**



## **SECTION 120 EXCAVATION AND EMBANKMENT**

### **120-1 Description.**

**120-1.1 General:** Excavate, remove unsuitable materials, remove existing roadbeds, grade, shape, place, compact, dress and construct embankments as required for the roadway, swales, sidewalks, pathways, ditches, and channel changes. Prepare subgrade and foundation areas, construct embankments, and otherwise use or dispose of the materials excavated. Provide suitable borrow materials if the quantity and quality of materials in the right-of-way are not sufficient for the required finished templates. Use suitable excavated materials or authorized borrow meeting the requirements of FDOT Standard Plans Index 120-001 to prepare and construct subgrade and foundations.

Excavate materials for clearing and grubbing under Section 110.

**120-1.2 Unidentified Areas of Contamination:** When encountering or exposing any abnormal condition indicating the presence of a hazardous or toxic waste, or contaminants, cease operations immediately in the vicinity and notify the Engineer. The presence of tanks or barrels; discolored or abnormally odorous, discolored or abnormally odorous ground water, earth, metal, wood, etc.; visible fumes; abnormal odors; excessively hot earth; smoke; or other conditions that appear abnormal may indicate hazardous or toxic wastes or contaminants and must be treated with extreme caution.

Make every effort to minimize the spread of contamination into uncontaminated areas. Immediately provide for the health and safety of all workers at the job site and make provisions necessary for the health and safety of the public that may be exposed to any potentially hazardous conditions. Provisions shall meet all applicable laws, rules or regulations covering hazardous conditions and will be in a manner commensurate with the gravity of the conditions.

The Engineer will notify the Department of Environmental Protection who will coordinate selecting and tasking the Town's Contamination Assessment/Remediation Contractor (CAR). Provide access to the potential contamination area. Preliminary investigation by the CAR Contractor will determine the course of action necessary for site security and the steps necessary under applicable laws, rules, and regulations for additional assessment and/or remediation work to resolve the contamination issue.

The CAR Contractor will delineate the contamination area(s), any staging or holding area required, and, in cooperation with the Prime Contractor and Engineer, develop a work plan that will provide the CAR Contractor's operations schedule with projected completion dates for the final resolution of the contamination issue.

The CAR Contractor will maintain jurisdiction over activities inside any outlined contaminated areas and any associated staging holding areas. The CAR Contractor will be responsible for the health and safety of workers within the delineated areas. Provide continuous access to these areas for the CAR Contractor and representatives of regulatory or enforcement agencies having jurisdiction.

Both Contractors will use the schedule as a basis for planning the completion of both work efforts. The Engineer may grant a Contract Time extension according to the General and Supplemental Conditions.

Cooperate with the CAR Contractor to expedite integration of the CAR Contractor's operations into the construction project. The Contractor is not expected to engage in routine construction activities, such as excavating, grading, or any type of soil manipulation, or any construction processes required if handling of contaminated soil, surface water or ground water is involved. All routine construction activities will be by the CAR Contractor. Adjustments to quantities or to Contract unit prices will be made according to work additions or reductions on the part of the Contractor.

The Engineer will direct the Contractor when operations may resume in the affected area.

### **120-3 Removal of Unsuitable Materials and Existing Roads.**

**120-3.1 Removal of Unsuitable Materials:** Where muck, rock, clay, or other material within the limits of the roadway template is unsuitable in its original position, excavate such material to the cross-

sections shown in the plans or indicated by the Engineer, and backfill with suitable material. Shape backfill and compact the material to the required cross-sections. Where the removal of plastic soils below the finished earthwork grade is required, meet a construction tolerance, from the lines shown in the plans as the removal limits, of  $\pm 0.2$  feet in depth and  $\pm 6$  inches (each side) in width.

**120-3.2 Removal of Existing Old Road:** Where a new roadway is to be constructed over an old one, unless otherwise directed by the Engineer, plow or scarify the old road, and break it up full width, regardless of height of fill. If the plans provide that paving materials may be incorporated into the fill, distribute such material in a manner so as not to create voids and to allow for proper subgrade and base compaction.

**120-3.3 Obliterating Old Road:** Where the plans call for obliteration of portions of an old road outside of the proposed new roadway, obliterate such sections of the old road by grading to fill ditches and to restore approximately the original contour of the ground or a contour which produces a pleasing appearance.

#### **120-4 Disposal of Surplus and Unsuitable Material.**

**120-4.1 Ownership of Excavated Materials:** Dispose of surplus and excavated materials as shown in the plans or, if the plans do not indicate the method of disposal, take ownership of the materials and legally dispose of them outside the right-of-way.

**120-4.2 Disposal of Muck on Side Slopes:** When approved by the Engineer, the Contractor may place muck on the slopes, or store it alongside the roadway, provided there is a clear distance of at least 10 feet between the roadway grading limits and the muck, and the Contractor dresses the muck to present a neat appearance. In addition, the Contractor may also dispose of this material by placing it on the slopes in developed areas where, in the opinion of the Engineer, this will result in an aesthetically pleasing appearance and will have no detrimental effect on the adjacent developments. Where the Engineer permits the disposal of muck or other unsuitable material inside the right-of-way limits, do not place such material in a manner, which will impede the inflow or outfall of any channel or of side ditches. The Engineer will determine the limits adjacent to channels within which such materials may be disposed.

**120-4.3 Disposal of Paving Materials:** Unless otherwise noted, take ownership of paving materials, such as paving brick, asphalt block, concrete slab, sidewalk, curb and gutter, etc., excavated in the removal of existing pavements and structures, and legally dispose of them outside the right-of-way. Existing limerock base that is removed may be incorporated in the stabilized portion of the subgrade. If the construction sequence will allow, incorporate all existing limerock base into the stabilized portion of the subgrade as allowed by the Contract Documents.

**120-4.4 Disposal Areas:** Where the Contract Documents require disposal of excavated materials outside the right-of-way, and the disposal area is not indicated in the Contract Documents, furnish the disposal area, haul and dispose without additional compensation.

#### **120-5 Materials for Embankment.**

**120-5.1 Use of Materials Excavated from the Roadway and Appurtenances:** Be responsible for determining the suitability of excavated material for use on the project in accordance with the applicable Contract Documents and Design Standards Index 505. Consider the sequence of work and maintenance of traffic phasing in the determination of the availability and suitability of this material. Consider the space limited in the right-of-way to stockpile and store materials.

**120-5.2 General Requirements for Embankment Materials:** Construct embankments of acceptable material. Undesirable material includes muck, stumps, roots, brush, vegetable matter, rubbish, reinforcement bar, metals, wood, plastic or other material that does not compact into a suitable and enduring roadbed. Remove any waste material designated as undesirable. Use material in embankment construction in accordance with plan details or as the Engineer directs.

Complete the embankment using maximum particle sizes (in any dimension) as follows:

- In top 12 inches: 3 1/2 inches (in any dimension).
- 12 to 24 inches: 6 inches (in any dimension).

In the depth below 24 inches: not to exceed 12 inches (in any dimension) or the compacted thickness of the layer being placed, whichever is less.

Spread all material so that the larger particles are separated from each other to minimize voids between them during compaction. Compact around these rocks in accordance with 120-9.2.

When and where approved by the Engineer, the Contractor may place larger rocks (not to exceed 18 inches in any dimension) outside the one to two slope and at least 4 feet or more below the bottom of the base. Compact around these rocks to a firmness equal to that of the supporting soil. Compact grassed embankment areas in accordance with 120-9.2.6. Where constructing embankments adjacent to bridge end bents or abutments, do not place rock larger than 3 1/2 inches in diameter within 3 feet of the location of any end-bent piling.

**120-5.3 Materials for Borrow:** Do not provide borrow materials for embankment that are polluted as defined in Chapter 376 of the Florida Statutes (oil of any kind and in any form, gasoline, pesticides, ammonia, chlorine, and derivatives thereof, excluding liquefied petroleum gas) in concentrations above any local, State, or Federal standards.

**120-5.4 Furnishing of Borrow Areas:** Except where the plans specifically call for the use of a particular borrow or dredging area, the Contractor shall obtain suitable borrow from a legal source(s), provided the Engineer determines the materials from such source(s) meet the Town's standards and other requirements for stability for use in the particular sections of the work in which it is to be placed., The Contractor shall bear all direct and indirect costs and liabilities associated with obtaining borrow.

**120-5.5 Authorization for Use of Borrow:** When the item of Borrow Excavation is included in the Contract, use borrow only when sufficient quantities of suitable material are not available from roadway and drainage excavation, to properly construct the embankment, subgrade, and shoulders, and to complete the backfilling of structures. Do not use borrow material until so ordered by the Engineer, and then only use borrow material approved by the Engineer.

**120-5.6 Materials Used at Pipes, Culverts, etc.:** Construct embankments over and around pipes, culverts, and bridge foundations with selected materials. Select earth backfill shall be free of debris, roots, frozen materials, organic matter, rock, or gravel larger than 1 inch in any dimension, or other harmful matter and shall be classified as select Florida Sampling and Testing Methods AASHTO M145.

## **120-7 Embankment Construction**

**120-7.1 General:** Construct embankments in sections of not less than 300 feet in length or for the full length of the embankment. On minor widening projects with restricted working room or because of MOT phasing, the Engineer may allow a reduction in the minimum length of 300 feet.

### **120-7.2 Dry Fill Method:**

**120-7.2.1 General:** Construct embankments to meet compaction requirements in Article 120-9 and in accordance with the acceptance program requirements in Article 120-10. Restrict the compacted thickness of the last embankment lift to 6 inches maximum.

As far as practicable, distribute traffic over the work during the construction of embankments so as to cover the maximum area of the surface of each layer.

Construct embankment in the dry whenever normal dewatering equipment and methods can accomplish the needed dewatering.

**120-7.2.2 Equipment and Methods:** Provide (including wellpoints) normal dewatering equipment including, but not limited to, surface pumps, sump pumps and trenching/digging machinery. Provide normal dewatering methods including, but not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, sumps and siphons and wellpoints. The Contractor shall be solely

responsible for permitting and for the safe, proper, appropriate and legal discharge of any and all dewatering activities.

When normal dewatering including wellpointing does not adequately remove the water, the Engineer may require the embankment material to be placed in the water or in low swampy ground in accordance with 120-7.2.2

**120-7.2.3 Placing in Unstable Areas:** Where depositing the material in water, or in low swampy ground that will not support the weight of hauling equipment, construct the embankment by dumping successive loads in a uniformly distributed layer of a thickness not greater than necessary to support the hauling equipment while placing subsequent layers. Once sufficient material has been placed so that the hauling equipment can be supported, construct the remaining portion of the embankment in layers in accordance with the applicable provisions of 120-8.2.2 and 120-8.2.4.

**120-7.2.4 Compaction Where Plastic Material Has Been Removed:** Where unsuitable material is removed and the remaining surface is of the A-4, A-5, A-6, or A-7 Soil Groups (see Florida Sampling and Testing Methods, M145), as determined by the Engineer, compact the surface of the excavated area by rolling with a sheepfoot roller exerting a compression of at least 250 psi on the tamper feet, for the full width of the roadbed (subgrade and shoulders). Perform rolling before beginning any backfill, and continue until the roller feet do not penetrate the surface more than 1 inch. Do not perform such rolling where the remaining surface is below the normal water table and covered with water. Vary the procedure and equipment required for this operation at the discretion of the Engineer.

**120-7.2.5 Placing on Steep Slopes:** When constructing an embankment on a hillside sloping more than 20 degrees from the horizontal, before starting the fill, deeply plow or cut into steps the surface of the original ground on which the embankment is to be placed.

**120-7.2.6 Placing Outside Standard Minimum Slope:** Where material that is unsuitable for normal embankment construction is to be used in the embankment outside the standard minimum slope (approximately one to two), place such material in layers of not more than 18 inches in thickness, measured loose. The Contractor may also place material, which is suitable for normal embankment, outside such standard minimum slope, in 18 inch layers. Maintain a constant thickness for suitable material placed within and outside the standard minimum slope, unless placing in a separate operation.

## **120-8 Compaction Requirements.**

**120-8.1 Moisture Content:** Compact the materials at a moisture content such that the specified density can be attained. If necessary to attain the specified density, add water to the material, or lower the moisture content by manipulating the material or allowing it to dry, as is appropriate.

### **120-8.2 Compaction of Embankments:**

**120-8.2.1 General:** Uniformly compact each layer, using equipment that will achieve the required density, and as compaction operations progress, shape and manipulate each layer as necessary to ensure uniform density throughout the embankment.

**120-8.2.2 Compaction Over Unstable Foundations:** Where the embankment material is deposited in water or on low swampy ground, and in a layer thicker than 12 inches (as provided in 120-7.2.2), compact the top 6 inches (compacted thickness) of such layer to the density as specified in 120-9.2.

**120-8.2.3 Compaction of Material to Be Used in Base, Pavement, or Stabilized Areas:** Do not compact embankment material which will be incorporated into a pavement, base course, or stabilized subgrade, to be constructed as a part of the same Contract.

**120-8.2.4 Compaction of Grassed Shoulder Areas:** Outside the roadway clear zone, for the upper 12 inch layer of all shoulders which are to be grassed, since no specific density is required, compact only to the extent directed, which compaction effort will, at a minimum, allow the unyielding support of normal landscape maintenance equipment.

**120-8.2.5 Compaction of Grassed Embankment Areas:** For the outer layer of all

embankments where plant growth will be established, do not compact. Leave this layer in a loose condition to a minimum depth of 6 inches for the subsequent seeding or planting operations.

**120-8.3 Compaction for Pipes, Culverts, etc.** Compact the backfill of trenches to the densities specified for embankment or subgrade, as applicable, and in accordance with the requirements necessary for those structures and pipes.

Thoroughly compact embankments over and around pipes, culverts, and bridges in a manner which will not place undue stress on the structures, and in accordance with the requirements necessary for those structures and pipes.

**120-8.4 Compaction of Subgrade:** If the plans do not provide for stabilizing, compact the subgrade area in both cuts and fills to the density specified in 120-9.2.

Where trenches are not of sufficient width to permit the use of standard compaction equipment, perform compaction using vibratory rollers, trench rollers, or other type compaction equipment approved by the Engineer.

Maintain the required density until the base or pavement is placed on the subgrade.

## **120-9 Acceptance Program.**

**120-9.1 General Requirements:** All testing for acceptance will be paid by the Town of Jupiter, the contractor will pay for any failed tests.

**120-9.1.1 Equipment Requirements:** The Contractor will utilize the Town of Jupiter's contracted testing laboratory. All testing shall be performed by a Construction Materials Engineering Council (CMEC) certified laboratory. All densities will be performed utilizing a nuclear gauge unless a written request from the Contractor is received outlining the proposed testing method and prior approval from the Engineer is granted.

### **120-9.1.2 Initial Construction Area:**

**120-9.1.2.1 Density over 105%:** When a computed dry density results in a value greater than 105% of the applicable maximum dry density, the Engineer will require a new proctor. The Engineer may investigate the compaction methods, examine the applicable proctor and material description.

### **120-9.1.4 Quality Control Tests:**

**120-9.1.4.1 Proctor Determination:** The maximum density and optimum moisture content will be determined by sampling and testing the material in accordance with the specified test method listed in 120-9.2.

**120-9.1.4.2 Density Testing Requirements:** Acceptance testing will comply with the requirements of 120-9.2 by Nuclear Density testing in accordance with FM 1-T 238. The in-place moisture content for each density test will be ascertained. The Florida Method FM 1-T 238, FM 5-507 (Determination of Moisture Content by Means of a Calcium Carbide Gas Pressure Moisture Tester), or ASTM D 4643 (Laboratory Determination of Moisture Content of Granular Soils By Use of a Microwave Oven) for moisture determination will be employed.

**120-9.1.4.3 Soil Classification:** Soil classification tests will be performed in accordance with AASHTO T-88. Soils will be classified in accordance with AASHTO M-145 in order to determine compliance with embankment utilization requirements.

**120-9.2 Acceptance Criteria:** Compaction efforts must meet the minimum density requirement of 98% of the maximum density as determined by AASHTO T-180, with the following exceptions: 1) material placed outside the standard minimum slope as specified in 120-8.2.4; and 2) other areas specifically excluded herein.

## **120-9.3 Additional Requirements:**

**120-9.3.1 Frequency:** The Contractor will request acceptance sampling and testing at a

minimum frequency listed in the table below:

Test Name	Quality Control
Maximum Density	One per soil type
Density*	One per 3000 Sq.Ft. or One per 250 L.F.
Soil Classification	One per Maximum Density

\* At the Engineer's sole discretion, locations may be selected along roadway or an embankment at any location. At least one test shall be performed for every 12 inch of lift.

**120-9.3.2 Test Selection and Reporting:** The Town's contracted testing laboratory will determine test locations including Stations and offsets. Copies of the test results will immediately be provided to the Contractor or as soon as results become available.

#### **120-10 Maintenance and Protection of Work.**

While construction is in progress, maintain adequate drainage for the roadbed at all times. Maintain a shoulder at least 3 feet wide adjacent to all pavement or base construction in order to provide support for the edges.

Maintain all earthwork construction throughout the life of the Contract, and take all reasonable precautions to prevent loss of material from the roadway due to the action of wind or water. Repair at no expense to the Town, except as otherwise provided herein, any slides, washouts, settlement, subsidence, or other mishap which may occur prior to final acceptance of the work. Perform maintenance and protection of earthwork construction to prevent, control and abate erosion and water pollution.

Maintain all channels excavated as a part of the Contract work against natural shoaling or other encroachments to the lines, grades, and cross-sections shown in the plans, until final acceptance of the project.

#### **120-11 Construction.**

**120-11.1 Construction Tolerances:** Shape the surface of the earthwork to conform to the lines, grades, and cross-sections shown in the plans. In final shaping of the surface of earthwork, maintain a tolerance of 0.3 foot above or below the plan cross-section with the following exceptions:

1. Shape the surface of shoulders to within 0.1 foot of the plan cross-section.
2. Shape the earthwork to match adjacent pavement, curb, sidewalk, structures, etc.
3. Shape the bottom of ditches so that the ditch impounds no water.
4. When the work does not include construction of base or pavement, shape the entire roadbed (shoulder point to shoulder point) to within 0.1 foot above or below the plan cross-section.

Ensure that the shoulder lines do not vary horizontally more than .08 foot from the true lines shown in the plans.

**120-11.2 Operations Adjacent to Pavement:** Carefully dress areas adjacent to pavement areas to avoid damage to such pavement. Complete grassing of shoulder areas prior to placing the final wearing course. Do not manipulate any embankment material on a pavement surface.

When shoulder dressing is underway adjacent to a pavement lane being used to maintain traffic, exercise extreme care to avoid interference with the safe movement of traffic.

#### **120-12: Method of Measurement**

**120-12.1 Excavation and Embankment Lump Sum Pay Item:** When a separate Lump Sum Pay

Item for Excavation and Embankment is provided, the final lump sum quantity to be paid will be based on satisfactory completion of the final templates shown in the plans. No volumetric calculations will be done by the Engineer. The final templates will be measured by field survey or from grade stakes, string line and rule as determined by the Engineer.

**120-12.2 Excavation Volumetric Pay Item:** When a separate volumetric unit price for Excavation is provided, the quantity to be paid for will be the volume, in cubic yards, calculated by the method of average end areas, unless the Engineer determines that another method of calculation will provide a more accurate result. The length used in the computations will be the station-to-station length actually constructed. The volumetric calculation will be measured from the original ground line by field survey or from grade stakes, string line and rule as determined by the Engineer, unless otherwise specified under the provisions for individual items.

The measurement will include only the net volume of material excavated between the original ground line and to the surface lines of the completed excavation.

Where excavation extends outside the lines shown in the plans or authorized by the Engineer including allowable tolerances, and the space is backfilled with material obtained in additional authorized excavation, the net fill, plus shrinkage allowance, will be deducted from the quantity of unsuitable fill excavation, select fill excavation or roadway subgrade excavation to be paid for, as applicable.

**120-12.3 Embankment Volumetric Pay Item:** When a separate volumetric unit price for Embankment is provided, the quantity to be paid for will be the volume, in cubic yards, calculated by the method of average end areas, unless the Engineer determines that another method of calculation will provide a more accurate result. The volumetric calculation will be measured from the original ground line by field survey or from grade stakes, string line and rule as determined by the Engineer, unless otherwise specified under the provisions for individual items. The measurement will include only material actually placed above the original ground line, within the lines and grades indicated in the plans or directed by the Engineer. The length used in the computations will be the station-to-station length actually constructed. The original ground line used in the computations will be as determined prior to placing of embankment and no allowance will be made for subsidence of material below the surface of the original ground.

**120-12.4 Borrow Materials Volumetric Pay Item:** Measurement will be made on a loose volume basis, as measured in trucks or other hauling equipment at the point of dumping on the road. If measurement is made in vehicles, level the material to facilitate accurate measurement. If the materials have a consistent unit weight and moisture content, the Engineer may allow measurement based on the unit weight converted to a volumetric measure. Unsuitable material excavated from borrow pits where truck measurement is provided for and from any borrow pits furnished by the Contractor, will not be included in the quantity of excavation to be paid for by the Town.

**120-12.5 Excavation and Embankment Beyond Authorized Limits:** No payment will be made for embankment material used to replace unsuitable material excavated beyond the lines and grades shown in the plans or outside the allowed construction tolerances or unless directed by the Engineer.

## **120-13: Basis of Payment**

**120-13.1 General:** Prices and payments for the various work items included in this Section will be full compensation for all work described herein, including but not limited to excavating, dredging, hauling, placing, and compacting; dressing the surface of the earthwork; maintaining and protecting the complete earthwork. Such prices and payments will include all hauling; any rehandling that may be necessary to accomplish final disposal as shown in the plans; the dressing of shoulders, ditches and slopes; removal of trash, vegetation, etc., from the previously graded roadway where no item for clearing and grubbing is shown in the plans; and compacting as required. The Town will not allow extra compensation for any rehandling of materials.

**120-13.1.1 Excluded Material.** No payment will be made for embankment or borrow

material used to replace muck or other unsuitable material excavated beyond the lines and grades shown in the plans or ordered by the Engineer.

**120-13.1.2 Clearing and Grubbing:** No payment will be made for any clearing and grubbing of the borrow or dredging areas. Where no clearing and grubbing of such areas is specified in the plans, the cost of any necessary clearing and grubbing of the borrow or dredging areas, will be included in the Contract unit price for borrow or lump sum price for Embankment.

**120-13.1.3 Cost of Permits, Rights, and Waivers:** Where the Contractor provides borrow or dredging areas of his own choosing, the cost of securing the necessary permits, rights or waivers will be included in the Contract unit or lump sum price for Embankment.

**120-13.2 When No Direct Payment is Provided:** When no pay item for Excavation and Embankment or Borrow is included in the proposal, the Contractor shall include the cost of any work which is necessary to excavate, legally dispose, construct embankments and provide borrow materials within the limits of the project in the Contract price for the other items of work for which such work is required.

**120-13.3 Excavation and Embankment Lump Sum:** Price and payment will be full compensation for all work specified in this Section, including all material for constructing the embankment; all excavating, removing unsuitable materials, dredging, pumping, furnishing and hauling borrow, placing, shaping and compacting of material for constructing the embankment; dressing of the surface of the roadway, maintenance and protection of the completed embankment, and the removal of rubbish, vegetation, etc., from the roadway, where no clearing and grubbing of the area is specified in the plans. Also, such price and payment, in each case, will specifically include all costs of any roadway, lateral ditch, or channel excavation, unless such excavation is specifically shown to be paid for separately, regardless of whether the materials are utilized in the embankment.

**120-13.4 Lump Sum Partial Payments:** When the proposal includes a separate lump sum pay item for Excavation and Embankment, partial payments will be made, if, in fact, the work is being performed and accepted in accordance with the following:

Percent of Original Contract Amount Earned	Allowable Percent of the Lump Sum Price for the Item
10	30
20	60
40	90
50	100

The standard retainage, will be applied to these allowances. Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract. The Contractor may request accelerated payment for this work if the work is substantially completed and accepted prior to the schedule listed above. Accelerated payment will be made at the sole discretion of the Engineer

**120-13.5 Excavation:** When the volumetric unit price for Excavation is included in the Contract, price and payment will be full compensation for all work specified in this Section, and will include all costs necessary to excavate materials to construct the subgrade, foundations, sidewalks and other roadside elements within the project limits, unless excavation is included in the work of other Sections.

**120-13.6 Embankment:** When the volumetric unit price for Embankment is included in the Contract, price and payment will be full compensation for all work specified in this Section, and will include all costs necessary to construct embankments within the project limits, unless embankment is included in the work of other Sections



**120-13.7 Borrow Materials:** When the volumetric unit price for Borrow is included in the Contract, price and payment will be full compensation for all work specified in this Section, and will include all costs for furnishing the borrow areas, permitting, dewatering, surveying and any necessary clearing and grubbing thereof, the removal of unsuitable material that it is necessary to excavate in order to obtain suitable borrow material, and all other costs associated with hauling, placing, shaping and compacting the borrow necessary to construct the project.

**120-13.8 Payment Items:** Payment will be made under:

Item No. 120- 1	Excavation and Embankment – lump sum
Item No. 120- 2	Excavation- per cubic yard
Item No. 120- 3	Embankment- per cubic yard
Item No. 120- 4	Borrow Materials - per cubic yard

**END OF SECTION 120**

## SECTION 121 FLOWABLE FILL

### 121-1 Description.

Furnish and place Flowable Fill as an alternative to compacted soil as approved by the Engineer. Applications for this material include, beddings, encasements, and closures for tanks, pipes, and general backfill for trenches.

### 121-2 Materials.

Meet the following requirements:

Fine Aggregate*	Section 902
Portland Cement (Types I, II, or III)	Section 921
Fly Ash, Slag and other Pozzolanic Materials	Section 929
Air Entraining Admixtures**	Section 924
Water	Section 923

\*Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 15% passing a No. 200 sieve may be used.

\*\*High air generators or foaming agents may be used in lieu of conventional air entraining admixtures and may be added at jobsite and mixed in accordance with manufacturer's recommendation.

### 121-3 Mix Design.

Flowable Fill is a mixture of Portland cement, fly ash, fine aggregate, air entraining admixture and water. Flowable fill contains a low cementitious content for reduced strength development.

Submit mix designs to the Engineer for approval. The following are suggested mix guides for excavatable and non-excavatable flowable fill:

	Excavatable	Non-Excavatable
Cement Type 1	75-100 lb/yd <sup>3</sup>	75-150 lb/yd <sup>3</sup>
Fly Ash	None	150-600 lb/yd <sup>3</sup>
Water	*	*
Air**	5-35%	5-15%
28 Day Compressive Strength**	Maximum 100 psi	Minimum 125 psi
Unit Weight (Wet)**	90-110 lb/yd <sup>3</sup>	100-125 lb/yd <sup>3</sup>

\*Mix designs shall produce a consistency that will result in a flowable self-leveling product at time of placement.

\*\*The requirements for percent air, compressive strength and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements.

Fine Aggregate shall be proportioned to yield 1 yd<sup>3</sup>.

### 121-4 Production and Placing.

Use flowable fill manufactured at an FDOT approved production facility that commercially produces concrete and meets the requirements of Section 347. Comply with all FDOT requirements for plant operation, quality control and production. Provide the Engineer with a certification that the facility meets these requirements and maintain a current approved certification from FDOT when supplying concrete to the project. It shall be the Contractor's sole responsibility to insure that the material delivered to the project are in strict accordance with the contract documents.

If the concrete production facility's approval is suspended, the Contractor is solely responsible to obtain the services of another approved concrete production facility or await the re-approval of the affected concrete production facility prior to the placement of any further concrete on the project. There will be no changes in the Contract Time or completion dates.

Deliver flowable fill using concrete construction equipment. Revolution counter are waived. Place flowable fill by chute, pumping or other methods approved by the Engineer. Tremie flowable fill through water.

#### **121-5 Construction Requirements.**

Use straps, soil anchors or other approved means of restraint to ensure correct alignment when flowable fill is used as backfill for pipe or where flotation or misalignment may occur.

Protect flowable fill from freezing for a period of 36 hours after placement.

Place flowable fill to the designated fill line without vibration or other means of compaction. Do not place flowable fill during inclement weather, e.g. rain or ambient temperatures below 40°F. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

#### **121-6 Acceptance.**

Acceptance of flowable fill will be based on the following documentation and a minimum temperature of flowable fill at the point of delivery of 50°F.

Furnish a delivery ticket to the Engineer or his representative for each load of flowable fill delivered to the worksite. Ensure that each ticket contains the following information:

- (1) Project designation,
- (2) Date,
- (3) Time,
- (4) Class and quantity of flowable fill,
- (5) Actual batch proportions,
- (6) Free moisture content of aggregates,
- (7) Quantity of water withheld.

Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi penetration resistance as measured using a hand held penetrometer in accordance with ASTM C 403. Provide a hand held penetrometer to measure the penetration resistance of the hardened flowable fill.

#### **121-7 Basis of Payment.**

**121-7.1 When No Direct Payment is Provided:** When no pay item for flowable fill is included in the proposal, the Contractor shall include the cost of any work which is necessary for flowable fill within the limits of the project in the Contract price for the other items of work for which such work is required.

**121-7.2** When the item of flowable fill is included in the Contract, payment will be made at the Contract unit price per cubic yard. Such price and payment will include all cost of the mixture, in place and accepted, determined as specified above. No measurement and payment will be made for material placed outside the neat line limits or outside the adjusted limits, or for unused or wasted material.

**121-7.3 Payment Items:** Payment will be made under:

Item No. 121-1 Flowable Fill - per cubic yard

**END OF SECTION 121**

## **SECTION 160 STABILIZING**

### **160-1 Description.**

Stabilize designated portions of the roadbed to provide a firm and unyielding subgrade, having the required bearing value specified in the plans.

### **160-2 Type B Stabilized Subgrade.**

Take responsibility for making the finished roadbed section meet the bearing value requirements, regardless of the quantity of stabilizing materials necessary to be added.

After substantially completing the roadbed grading operations, determine the type and quantity of stabilizing material necessary for compliance with the bearing value requirements. Notify the Engineer of the approximate quantity to be added.

The Engineer may allow, at no additional cost to the Town, the substitution of 5 inches of Granular Sub-base meeting the requirements of Section 290 on a compacted subgrade when 12 inches of stabilization requiring an LBR value of 40 is specified, and the granular subbase shall meet a structural layer coefficient of 0.18 per inch to achieve the requisite structural number in lieu of stabilization.

### **160-4 Materials**

**160-4.1 Commercial Materials:** Meet the requirements of Section 914 for the particular type of stabilizing material to be used.

**160-4.2 Use of Materials from Existing Base:** When the use of materials from an existing base is required as all, or a portion, of the stabilizing additives, perform this work prior to the spreading of any additional commercial or local materials. Do not remove any section of existing base until the need for it in maintaining traffic is fulfilled.

The Engineer may direct the Contractor to use materials from an existing base in combination with the designated type of stabilizing.

### **160-5 Construction Methods.**

**160-5.1 General:** Prior to the beginning of stabilizing operations, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized subgrade will conform to the lines, grades, and cross-section shown in the plans. Prior to spreading any additive stabilizing material, bring the surface of the roadbed to a plane approximately parallel to the plane of the proposed finished surface.

The Contractor may process the subgrade to be stabilized in one course, unless the equipment and methods being used do not provide the required uniformity, particle size limitation, compaction, and other desired results, in which case, the Engineer will direct that the processing be done in more than one course.

**160-5.2 Application of Stabilizing Material:** When additive stabilizing materials are required, spread the designated quantity uniformly over the area to be stabilized.

When materials from an existing base are to be used in the stabilizing at a particular location, place and spread all of such materials prior to the addition of other stabilizing additives. Scarify, blade and/or crush the existing base materials to meet the requirements of 160.5.4.

Spread commercial stabilizing material by the use of mechanical material spreaders, except that where use of such equipment is not practicable, use other means of spreading, but only upon written approval of the proposed alternate method.

**160-5.3 Mixing:** Perform mixing using rotary tillers or other equipment meeting the approval of the Engineer. The Contractor may mix the materials in a plant of an approved type suitable for this work. Thoroughly mix the area to be stabilized throughout the entire depth and width of the stabilizing limits.

Perform the mixing operations, as specified, (either in place or in a plant) regardless of whether the existing soil, or any select soils placed within the limits of the stabilized sections, have the required bearing value without the addition of stabilizing materials.

**160-5.4 Maximum Particle Size of Mixed Materials:** At the completion of the mixing, ensure that the gradation of the material within the limits of the area being stabilized is such that 97% will pass a 3 1/2 inch sieve and that the material does not have a plasticity index greater than eight or liquid limit greater than 30. Remove any materials not meeting the plasticity requirements from the stabilized area. The Contractor may break down or remove from the stabilized area materials, including clay lumps or lumps made of clay-size particles (any particle size 2 microns or less), not meeting the gradation requirements.

**160-5.5 Compaction:** After completing the mixing operations and satisfying the requirements for bearing value, uniformity, and particle size, compact the materials at a moisture content permitting the specified compaction in 160-7.2.3. If the moisture content of the material is improper for attaining the specified density, either add water or allow the material to dry until reaching the proper moisture content for the specified compaction.

**160-5.6 Finish Grading:** Shape the completed stabilized subgrade to conform with the finished lines, grades, and cross-section indicated in the plans. Check the subgrade using elevation stakes or other means approved by the Engineer.

**160-5.7 Requirements for Condition of Completed Subgrade:** After completing the stabilizing and compacting operations, ensure that the subgrade is firm and substantially unyielding to the extent that it will support construction equipment and will have the bearing value required by the plans.

Remove all soft and yielding material, and any other portions of the subgrade which will not compact readily, and replace it with suitable material so that the whole subgrade is brought to line and grade, with proper allowance for subsequent compaction.

**160-5.8 Maintenance of Completed Subgrade:** After completing the subgrade as specified above, maintain it free from ruts, depressions, and any damage resulting from the hauling or handling of materials, equipment, tools, etc. The Contractor is responsible for maintaining the required density until the subsequent base or pavement is in place including any repairs, replacement, etc., of curb and gutter, sidewalk, etc., which might become necessary in order to recompact the subgrade in the event of underwash or other damage occurring to the previously compacted subgrade. Perform any such recompaction at no expense to the Town. Construct and maintain ditches and drains along the completed subgrade section.

## **160-7 Acceptance Program.**

**160-7.1 General Requirements:** All testing for acceptance will be performed by the Town's contracted testing laboratory. The contractor shall pay for any failed tests. The test results must also meet the requirements of 120-10.1, except use 160-7.2 instead of 120-10.2.

### **160-7.2 Acceptance Criteria:**

#### **160-7.2.1 Bearing Value Requirements:**

**160-7.2.1.1 General:** Within the entire limits of the width and depth of the areas to be stabilized, obtain the required minimum bearing value. For any area where the bearing value obtained is deficient from the value indicated in the plans, in excess of the tolerances established herein, spread and mix additional stabilizing material in accordance with 160-5.3. Perform this reprocessing for the full width of the roadway being stabilized and longitudinally for a distance of 50 feet beyond the limits of the area in which the bearing value is deficient.

Determine the quantity of additional stabilizing material to be used in reprocessing.

**160-7.2.1.2 Under tolerances in Bearing Value Requirements:** Use the following undertolerances from the specified soaked bearing value, as based on tests performed on samples obtained after completing mixing operations:

Specified Bearing Value	Tolerance
LBR 40	5.0

The following unsoaked bearing value requirement is based on tests performed on samples obtained after completing mixing operations:

Specified Bearing Value	Unsoaked Bearing Value Required	Tolerance
LBR 40	LBR 43	0.0

**160-7.2.2 Mixing Depth Requirements:** Do not exceed individual depth tolerance of 2 inches -average depth tolerance of 1 inch.

As an exception to the above mixing requirements, where the subgrade is of rock, the Engineer may waive the mixing operations (and the work of stabilizing), and the Town will not pay for stabilization for such sections of the roadway.

**160-7.2.3 Density Requirements:**

**160-7.2.3.1 General:** Within the entire limits of the width and depth of the areas to be stabilized, other than as provided in 160-7.2.3.2, obtain a minimum density at any location of 98% of the maximum density as determined by AASHTO T-180.

**160-7.2.4 Frequency:** The Town will have conducted acceptance sampling and testing at a minimum frequency listed in the table below. The Contractor may perform quality control sampling and testing utilizing a CMEC Certified Laboratory at their expense, but these tests will not be used for acceptance by the Town.

Test Name	Quality Control
Maximum Density	One per soil type
Density*	One per 3000 Sq.Ft. or One per 250 L.F.
Soil Classification	One per Maximum Density

\* Locations shall be randomly selected by the Engineer at a maximum of 250 foot intervals along roadway or an embankment of 24 feet width or less. At least one test shall be performed for every 12 inches of stabilization.

**160-7.3 Additional Requirements:**

**160-7.3.1 Acceptance Testing:**

**160-7.3.1.1 Bearing Values:** The Town will have performed testing to ensure compliance with 160-7.2.1 by sampling and testing the Stabilized Subgrade for determining the Limerock Bearing Ratio (LBR) in accordance with FM 5-515 and 160-7.2.4. The Engineer or his representative will be on site to determine test locations including Stations and offsets. Copies of the test results will immediately be provided to the Contractor as soon as results become available.

**160-7.3.1.2 Mixing Depth Requirements:** Meet required plan mixing-depths by measuring from the proposed Final Grade Line. Ensure compliance with 160-7.2.2. The Engineer or his

representative will be on site to determine test locations including Stations and offsets.

**160-7.3.1.3 Maximum Density Requirement:** The Engineer will randomly select one of the retained split samples and test in accordance with FM 1-T 180, Method D.

#### **160-8 Method of Measurement.**

**160-8.1 Compacted Subgrade Lump Sum Pay Item:** When a separate Lump Sum Pay Item for Compacted Subgrade is provided, the final lump sum quantity to be paid will be based on satisfactory completion of the final templates shown in the plans. No volumetric calculations will be done by the Engineer. The final templates will be measured by field survey or from grade stakes, string line and rule as determined by the Engineer.

**160-8.2 Type B Stabilization:** Unless included in other Sections, the quantity to be paid will be the actual area of subgrade prepared by the Contractor and measured (in square yards), inspected and approved in the field by the Town of Jupiter.

#### **160-9 Basis of Payment.**

**160-9.1 General:** The above prices and payments will constitute full compensation for all work and materials specified in this Section, specifically including all costs of the processing and incorporation of existing base materials into the proposed roadway subgrade area when such work is required by the plans.

**160-9.2 When No Direct Payment is Provided:** When no pay item for stabilizing is included in the proposal, the Contractor shall include the cost of any work which is necessary for stabilizing within the limits of the project in the Contract price for the other items of work for which such work is required.

**160-9.3 Lump Sum Partial Payments:** When the proposal includes a separate lump sum pay item for Compacted Subgrade, partial payments will be made, if, in fact, the work is being performed and accepted in accordance with the following:

<b>Percent of Original Contract Amount Earned</b>	<b>Allowable Percent of the Lump Sum Price for the Item</b>
10	30
20	60
40	90
50	100

The standard retainage, will be applied to these allowances. Partial payments made on this item will in no way act to preclude or limit any of the provisions for partial payments otherwise provided for by the Contract. The Contractor may request accelerated payment for this work if the work is substantially completed and accepted prior to the schedule listed above. Accelerated payment will be made at the sole discretion of the Engineer

**160-9.4 Compacted Subgrade:** Unless included in other Sections, price and payment will constitute full compensation for all work specified in this Section applicable for preparation of the roadway subgrade, including furnishing and spreading of all material required and any reprocessing of areas.

**160-9.5 Type B Stabilization:** Price and payment will constitute full compensation for all work specified in this Section applicable to these types of Stabilization for preparation of the roadway subgrade, including furnishing and spreading of all stabilizing material required and any reprocessing of stabilization areas necessary to attain the specified bearing value.

**160-9.6 Payment Items:** Payment will be made under:

Item No. 160-1-	12" Compacted Subgrade - lump sum
Item No. 160-2-	Type B Stabilization - per square yard.



**END OF SECTION 160**

## **SECTION 200 ROCK BASE**

### **200-1 Description.**

Construct a traffic bearing base composed of limerock or other approved materials.

### **200-2 Materials.**

Meet the requirements of the Materials section of these specifications, 911, 913, 913A and 915 for either limerock, shell, shell-rock and other material for the particular type of base to be constructed. The Contractor may use more than one source of base rock on a single Contract provided that a single source is used throughout the entire width and depth of a section of base. Obtain approval from the Engineer before placing material from more than one source. Place material to ensure total thickness single source integrity at any station location of the base. Intermittent placement or "Blending" of sources is not permitted. Base rock may be referred to hereinafter as "rock".

Do not use any of the existing base that is removed to construct the new base.

### **200-3 Equipment.**

Use mechanical rock spreaders, equipped with a device that strikes off the rock uniformly to laying thickness, capable of producing even distribution. For crossovers, intersections and ramp areas; roadway widths of 20 feet or less; the main roadway area when forms are used and any other areas where the use of a mechanical spreader is not practicable; the Contractor may spread the rock using bulldozers or blade graders.

### **200-4 Transporting Rock.**

Transport the rock to its point of use, over rock previously placed, if practicable, and dump it on the end of the preceding spread. Hauling and dumping on the subgrade will be permitted only when, in the Engineer's opinion, these operations will not be detrimental to the subgrade.

### **200-5 Spreading Rock.**

**200-5.1 Method of Spreading:** Spread the rock uniformly. Remove all segregated areas of fine or coarse rock and replace them with properly graded rock.

**200-5.2 Number of Courses:** When the specified compacted thickness of the base is greater than 6 inches, construct the base in multiple courses of equal thickness. Individual courses shall not be less than 3 inches. The thickness of the first course may be increased 1" to bear the weight of the construction equipment without disturbing the subgrade.

**200-5.3 Rock Base for Shoulder Pavement:** Unless otherwise permitted, complete all rock base shoulder construction at any particular location before placing the final course of pavement on the traveled roadway. When dumping material for the construction of a rock base on the shoulders, do not allow material capable of scarring or contaminating the pavement surface on the adjacent pavement. Immediately sweep off any rock material that is deposited on the surface course.

### **200-5.4 DESCRIPTION: Removal and Disposal of Existing Pathway Asphalt and Rock Base and the Furnishing and Installation of 6" New Rock Base (Primed)**

This work involves neatly sawcutting and the removal and legal disposal of existing deteriorated pathway asphalt; the removal and legal disposal of existing rock base, when such rock base will not serve as a suitable foundation, as determined by the Engineer, for subsequent lifts of asphalt for the asphalt pathway overlay. This work shall also include the compaction of subgrade (98% AASHTO T-180), the furnishing and installation of 6" of rock base, dressing and compaction, 98% AASHTO T -180, of the base rock and the application of a prime coat (applied at 0.15 gals/sy), and tack where appropriate, in order to accept the asphalt path overlay lift at the required elevation. The contractor shall maintain a safe, passable pathway for pedestrians at all times.

## **200-6 Compacting and Finishing Base.**

### **200-6.1 General:**

**200-6.1.1 Single Course Base:** After spreading, scarify the entire surface, then shape the base to produce the required grade and cross-section after compaction.

**200-6.1.2 Multiple Course Base:** Clean the first course of foreign material, then blade and bring it to a surface cross-section approximately parallel to the finished base. Before spreading any material for the upper courses, request acceptance density tests for the lower courses to determine that the required compaction has been obtained. After spreading the material for the top course, finish and shape its surface to produce the required grade and cross-section, free of scabs and laminations, after compaction.

**200-6.2 Moisture Content:** When the material does not have the proper moisture content to ensure the required density, wet or dry it as required. When adding water, uniformly mix it in by disking to the full depth of the course that is being compacted. During wetting or drying operations, manipulate, as a unit, the entire width and depth of the course that is being compacted.

**200-6.3 Thickness Requirements:** Within the entire limits of the width and depth of the base, construct the base to specified width. The average depth in any area must meet the specified depth value.

### **200-6.4 Correction of Defects:**

**200-6.4.1 Contamination of Base Material:** If, at any time, the subgrade material becomes mixed with the base course material, dig out and remove the mixture, and reshape and compact the subgrade. Then replace the materials removed with clean base material, and shape and compact as specified above. Perform this work at no expense to the Town.

**200-6.4.2 Cracks and Checks:** If cracks or checks appear in the base, either before or after priming, which, in the opinion of the Engineer, would impair the structural efficiency of the base, remove the cracks or checks by rescarifying, reshaping, adding base material where necessary, and recompacting.

**200-6.5 Compaction of Widening Strips:** Where base construction consists of widening strips and the trench width is not sufficient to permit use of standard base compaction equipment, compact the base using vibratory compactors, trench rollers or other special equipment which will achieve the density requirements specified herein.

When multiple course base construction is required, compact each course prior to spreading material for the overlaying course.

## **200-7 Acceptance Program.**

**200-7.1 General Requirements:** Meet the requirements of 120-10.1, except use 200-7.2 instead of 120-10.2.

### **200-7.2 Acceptance Criteria:**

**200-7.2.1 Density:** Within the entire limits of the width and depth of the base, obtain a minimum density in any area of 98% of maximum density as determined by AASHTO T -180, Method D. Compact the base of any area of shoulder pavement to not less than 98% of the maximum density as determined by AASHTO T-180.

**200-7.2.2 Frequency:** The Contractor shall request acceptance sampling and testing at a minimum frequency listed in the table below:

Test Name	Acceptance Frequency Testing
Maximum Density	One per soil type
Density*	One per 3000 Sq.Ft. or One per 250 L.F.
Soil Classification	One per Maximum Density

\* Locations shall be randomly selected by the Engineer at a maximum of 300 foot intervals along roadway of 24 feet width or less. At least one test shall be performed for every 12 inches of base. The Contractor may perform quality control sampling and testing utilizing a CMEC Certified Laboratory at their expense but these tests will not be used for acceptance by the Town.

#### **200-7.3.1 Acceptance Testing:**

**200-7.3.1.1 Maximum Density Requirement:** The maximum density and optimum moisture content will be determined by sampling and testing the material in accordance with the specified test method listed in 120-10.2.

**200-7.3.1.2 Depth and Surface Testing Requirements:** The Engineer will be on site to determine test locations including Stations and offsets. Copies of the test results will immediately be provided to the Contractor or as soon as results become available.

The Town's testing laboratory shall, at the sole discretion of the Engineer, perform thickness checks on the finished base or granular subbase component of a composite base. If necessary, the Contractor shall provide traffic control for the Town's testing laboratory's coring/boring equipment during testing. Traffic control is to be provided in accordance with the standard maintenance of traffic requirements of the Contract.

The thickness is considered deficient, if the measured depth is over 1/2 inch less than the specified thickness. Correct all deficient areas of the completed base by scarifying and adding additional base material. As an exception, if authorized by the Town, such areas may be left in place without correction and with no payment.

The finished surface of the base course will be inspected (boarded) with a template cut to the required crown and with a 15-foot straightedge laid parallel and perpendicular to the centerline of the road. Correct all irregularities greater than 1/4 inch to the satisfaction of the Engineer by scarifying and removing or adding rock as required, and recompact the entire area as specified hereinbefore.

#### **200-8 Priming and Maintaining.**

**200-8.1 Priming:** Apply the prime coat only when the base meets the specified density requirements and when the moisture content in the top half of the base does not exceed 90% of the optimum moisture of the base material. At the time of priming, ensure that the base is firm, unyielding and in such condition that no undue distortion will occur.

**200-8.2 Maintaining:** Maintain the true crown and template, with no rutting or other distortion, while applying the surface course.

#### **200-9 Calculations for Average Thickness of Base.**

For bases that are not mixed in place, the Engineer will determine the average thickness from the measurements as follows:

(a) When the measured thickness is more than 1/2 inch greater than the design thickness shown on the typical cross-section in the plans, it will be considered as the design thickness plus 1/2 inch.

(b) Average thickness will be calculated per typical cross-section for the entire job as a unit.

(c) Where it is not possible through borings to distinguish the base materials from the underlying materials, the thickness of the base used in the measurement will be the design thickness.

#### **200-10 Method of Measurement.**

**200-10.1 General:** The quantity to be paid will be the actual area of rock base prepared by the Contractor and measured based on plan neat lines (in square yards), inspected and approved in the field by the Town of Jupiter, adjusted as specified below.

**200-10.2 Authorized Normal Thickness Base:** The surface area of authorized normal thickness base to be adjusted will be the quantity as specified above, omitting any areas not allowed for payment under the provisions of 200-6.3 and omitting areas which are to be included for payment under 200-10.3. The adjustment shall be made by adding or deducting, as appropriate, the area of base represented by the difference between the calculated average thickness, determined as provided in 200-9, and the specified normal thickness, converted to equivalent square yards of normal thickness base.

**200-10.3 Authorized Variable Thickness Base:** Where the base is constructed to a compacted thickness other than the normal thickness as shown on the typical section in the plans, as specified on the plans or ordered by the Engineer for providing additional depths at culverts or bridges, or for providing transitions to connecting pavements, the volume of such authorized variable thickness compacted base will be calculated from authorized lines and grades, or by other methods selected by the Engineer, converted to equivalent square yards of normal thickness base for payment.

**200-10.4 Removal & Disposal of Existing Pathway Asphalt & Rock Base Furnish & Install New 6" Rock Base (Primed):** The quantity to be paid will be that surface quantity of asphalt, sawcut, and removed as well as base rock furnished, installed dressed, compacted and primed, in square yards.

#### **200-11 Basis of Payment.**

**200-11.1 When No Direct Payment is Provided:** When no pay item for rock base is included in the proposal, the Contractor shall include the cost of any work which is necessary for rock base within the limits of the project in the Contract price for the other items of work for which such work is required.

**200-11.2** Price and payment will be full compensation for all the work specified in this Section, including correcting all defective surface and deficient thickness, removing cracks and checks as provided in 200-6.4.2, the prime coat application as directed in Article 300-8, and the additional rock required for crack elimination.

Payment shall be made under:

- Item No. 200-4 - Rock Base 4" - per square yard
- Item No. 200-5 - Rock Base 5" - per square yard
- Item No. 200-6 - Rock Base 6" - per square yard
- Item No. 200-8 - Rock Base 8" - per square yard
- Item No. 200-11 - Rock Base 11" - per square yard
- Item No. 200-12 - Rock Base 12" - per square yard
- Item No. 200-13 - Removal & Disposal of Existing Pathway Asphalt & Rock Base Furnish & Install New 6" Rock Base (Primed) – per square yard

**END OF SECTION 200**

## **SECTION 204 GRADED AGGREGATE BASE**

### **204-1 Description.**

Construct a base course composed of graded aggregate.

### **204-2 Materials.**

Use graded aggregate material, produced from FDOT approved sources, which yields a satisfactory mixture meeting all the requirements of these Specifications after it has been crushed and processed as a part of the mining operations. Provide the engineer with a written certification from producer that the graded aggregate base meets the specifications required by FDOT for this material.

### **204-3 Spreading Aggregate.**

Spread aggregate as specified in 200-5.

### **204-4 Compacting and Finishing Base.**

**204-4.1 General:** Meet the requirements of 200-7.1 with density requirements of 204-6.3.

**204-4.1.1 Single-Course Base:** Construct as specified in 200-6.1.1.

**204-4.1.2 Multiple-Course Base:** Construct as specified in 200-6.1.2.

**204-4.2 Moisture Content:** Meet the requirements of 200-6.2.

**204-4.3 Density Requirements:** After attaining the proper moisture conditions, uniformly compact the material to a density of not less than 98% of the maximum density as determined by AASHTO T-180.

**204-4.4 Density Tests:** Meet the requirements of 200-6.4.

**204-4.5 Correction of Defects:** Meet the requirements of 200-6.5.

**204-4.6 Dust Abatement:** Minimize the dispersion of dust from the base material during construction and maintenance operations by applying water or other dust control materials.

### **204-5 Testing Surface.**

The surface will be tested in accordance with the requirements of 200-6 and 200-7.3.1.2.

### **204-6 Priming and Maintaining.**

Meet the requirements of 200-8.

### **204-7 Thickness Requirements.**

Meet the requirements of 285-6.

### **204-8 Calculations for Average Thickness of Base.**

Calculations for determining the average thickness of base will be made in accordance with 285-7.

### **204-9 Basis of Payment.**

Payment for work specified in this section shall be included in the other bid items for this contract. No additional payment will be made for meeting the requirements in Section 204, Graded Aggregate Base.

**END OF SECTION 204**

## **SECTION 280 ASPHALT BASE COURSES**

### **280-1 Description.**

Construct asphalt base courses, and meet the specific requirements for base widening construction.

Use mixes designated as Asphalt Base Course Type 1 (ABC-1), Asphalt Base Course Type 2 (ABC-2) and Asphalt Base Course Type 3 (ABC-3).

### **280-2 Materials.**

**280-2.1 Bituminous Material:** Use Asphalt Cement, Viscosity Grade AC-20 or AC-30, meeting the requirements of 916-1.

**280-2.2 Course Aggregates:** Meet the requirements of Section 901.

**280-2.3 Fine Aggregates:** Meet the requirements of Section 902.

### **280-3 General Composition of the Mixes.**

**280-3.1 General:** Meet the requirements of 331-4.1.

**280-3.2 Grading Requirements:** The mix design, as established by the Contractor and approved by the Department, shall be within the design ranges as specified in Table 331-1, for ABC-1, ABC-2, and ABC-3.

**280-3.3 Stability:** Combine the constituents of the mixture in such proportions as to produce a mix having Marshall properties within the limits shown in Table 331-2.

**280-3.4 Grading Requirements:** The mix design, as established by the Contractor and approved by the Town, shall be within the design ranges as specified in Table 331-1, for ABC-1, ABC-2, and ABC-3.

### **280-4 Job Mix Formula.**

Meet the requirements of 331-3.3. In addition to these requirements, include, in the mix design, test data showing that the material as produced will meet the requirements of Table 331-2.

### **280-5 Acceptance of Mixture.**

**280-5.1 Acceptance at the Plant:** The Engineer will accept the bituminous mixture at the plant with respect to gradation and asphalt content in accordance with the requirements of 331-4.

**280-5.2 Acceptance on the Roadway:** The Engineer will accept the bituminous mixture on the roadway with respect to compacted density in accordance with the applicable provisions of 331-7. Use the permissible variations from longitudinal and transverse grades as specified in 200-7.

**280-5.3 Additional Tests:** Meet the requirements for ABC-1, ABC-2, and ABC-3.

### **280-6 Plant, Methods, and Equipment.**

Meet the plant, methods, and equipment requirements for asphalt base course construction as specified in Section 320, with the following modifications:

(a) Paving Equipment: The Engineer will not require mechanical spreading and finishing equipment for the construction of base widening strips less than 6 feet in width.

(b) Compacting Equipment: For compaction in areas too restricted to accommodate the standard rollers, the Contractor may use vibratory rollers supplemented with trucks, motor graders, or other compaction equipment approved by the Engineer.

### **280-7 Construction Requirements.**

**280-7.1 General:** Meet the construction requirements for asphalt base course construction as specified in Section 330, with the following modifications and specific requirements.

**280-7.2 Limitations for Spreading:** The Contractor may place the base mix on the subgrade when the air temperature is at least 40° and rising, provided the subgrade upon which the base mix is to be placed is not frozen or noticeably affected by frost. The Contractor may place the base mix where he removed all such frozen or frost-affected material during excavation for the subgrade.

**280-7.3 Preparation of Subgrade:** Before placing the initial layer of base material, prepare and compact the subgrade as specified in 160-7.2.2. Do not apply this requirement to base widening strips that are not to be stabilized and where the underlying native material has not been disturbed.

**280-7.4 Tacking Between Layers:** Place a tack coat between each successive layer of base material. As an exception, the Engineer may authorize the elimination of the tack coat between successive layers when the Contractor has laid them on the same day and the initial layer has not become contaminated by sand, dust, etc.

**280-7.5 Placing the Mixture:**

**280-7.5.1 Spreading and Finishing:** Place the base course material with a mechanical spreading and finishing machine meeting the requirements as specified in 320-5. Prior to the placing of the surface course, the Engineer may require motor grader leveling to bring the base into conformance with the plan grades and cross-section. The Contractor may spread the first course of multiple course bases with a motor grader where the subgrade will not support the use of a mechanical spreader.

**280-7.5.2 Automatic Screed Control:** For all machine-laid courses, use a paver that is equipped with automatic screed control of the ski or traveling string line type. Use the automatic joint matcher on the top course of the base after the first pass with the paving machine.

**280-7.5.3 Thickness of Layers:** Ensure that the maximum compacted thickness of any layer of asphalt base course is 3 inches.

**280-7.6 Compacting the Mixture:** Apply the requirements for compaction as specified in 330-10 to the compaction of asphalt base courses with these two exceptions:

**280-7.6.1** For widening strips 3 feet or less in width, the Engineer will require specified target densities but will not require nuclear determinations. The Contractor may apply the compactive efforts using a trench roller, motor grader tires, or any other heavy equipment that will effectively exert a compactive effort. Specify what equipment will be used and what compactive effort (coverage) will be furnished. Obtain the Engineer's approval before starting the operation.

**280-7.6.2** For the initial layer of an asphalt base course placed on a soil subgrade, the Engineer will not perform any density determinations. Propose a rolling train and pattern for the approval of the Engineer. The Engineer will perform density determinations on all subsequent layers, and apply the provisions of 330-11.

**280-8 Thickness Requirements.**

The Engineer may have cores taken to determine if the asphalt thickness meets the contract requirements.

**280-9 Method of Measurement.**

The quantity to be paid for will be the area, in square yards, of asphalt base course after adjustment to the equivalent area of specified thickness.

**280-10 Basis of Payment.**

**280-10.1 When No Direct Payment is Provided:** When no pay item for asphalt base courses is included in the proposal, the Contractor shall include the cost of any work which is necessary for asphalt



base course within the limits of the project in the Contract price for the other items of work for which such work is required.

**280-10.2** Prices and payments will be full compensation for all work specified in this Section, including the applicable requirements of Sections 320, 330 and 331.

Payment will be made under:

Item No. 280-5	Asphalt Base Course 5" – per square yard.
Item No. 280-6	Asphalt Base Course 6" – per square yard.
Item No. 280-8	Asphalt Base Course 8" - per square yard.

**END OF SECTION 280**

## **SECTION 285 OPTIONAL BASE COURSE**

### **285-1 Description.**

Construct a base course composed of one of the optional materials shown on the typical cross-sections.

### **285-2 Materials.**

Meet the material requirements as specified in the Section covering the particular type of base to be constructed.

Limerock .....	Section 911
Graded Aggregate .....	Section 204
Shell Base.....	Section 913
Shell-Rock.....	Section 913A
Cemented Coquina.....	Section 915

### **285-3 Selection of Base Option.**

The plans will include typical cross-sections indicating the various types of base construction (material and thickness) allowable.

Select one base option as allowed for each typical cross-section shown in the plans. Only one base option is permitted for each typical cross-section.

Notify the Engineer in writing of the base option selected for each typical cross-section at least 45 calendar days prior to beginning placement of base material.

### **285-4 Construction Requirements.**

Construct the base in accordance with the Section covering the particular type of base to be constructed.

Limerock .....	Section 200
Graded Aggregate .....	Section 204
Shell Base.....	Section 200
Shell Rock.....	Section 200
Cemented Coquina.....	Section 200

### **285-5 Variation in Earthwork Quantities.**

The plans will identify the optional materials used by the Town for determining the earthwork quantities (Excavation, Embankment or Excavation and Embankment). The Town will not revise the quantities, for those items having final pay based on plan quantity, to reflect any volumetric change caused by the Contractor's selection of a different optional material.

### **285-6 Thickness Requirements.**

**285-6.1 Measurements:** When the Town is ready to check the finished base or granular subbase component of a composite base for thickness, provide traffic control. Provide traffic control in accordance with the standard maintenance of traffic requirements of the Contract. The Town will make no additional payment for traffic control or coring/boring. The Engineer will select the locations to be tested and make the acceptance measurements.

Be present during the entire measurement and/or coring/boring operations for acceptance purposes.

Except for asphalt base courses, the Engineer will measure the thickness of the base by or

subbase by stringline and/or through holes, at least 3 inches in diameter, bored at random points on the cross-section and along the roadway. The Engineer will locate each hole to represent a section of main roadway no longer than 200 feet, regardless of the number of lanes. The Engineer will determine the thickness of the base or subbase on shoulders and widening separate from the main roadway and will locate each hole to represent a section no longer than 300 feet on alternate sides of shoulder or widening.

For subbases, meet the thickness requirements of 290-4.

The Engineer will determine the thickness of asphalt base courses in accordance with 234-8.1.3.

**285-6.2 Correction of Deficient Areas:** For non-asphalt bases, correct all areas of the completed base having a deficiency in thickness in excess of 1/2 inch by scarifying and adding additional base material. As an exception, if authorized by the Engineer, such areas may be left in place without correction and with no payment.

For asphalt bases, correct all areas of deficient thickness in accordance with 234-8.1.3.

#### **285-7 Calculation of Average Thickness of Base.**

For bases that are not mixed in place, the Engineer will determine the average thickness from the measurements specified in 285-6.1, calculated as follows;

(a) When the measured thickness is more than 1/2 inch greater than the design thickness shown on the typical cross-section in the plans, it will be considered as the design thickness plus 1/2 inch.

(b) Average thickness will be calculated per typical cross-section for the entire job as a unit.

(c) Any areas of base left in place with no payment will not be included in the calculations.

(d) Where it is not possible through borings to distinguish the base materials from the underlying materials, the thickness of the base used in the measurement will be the design thickness.

#### **285-8 Method of Measurement.**

The quantity to be paid for will be the plan quantity area in square yards, omitting any areas where under-thickness is in excess of the allowable tolerance as specified in 285-6. The pay area will be the surface area, determined as provided above, adjusted in accordance with the following formula:

$$\text{Pay Area} = \text{Surface Area} \left( \frac{\text{Calculated Average Thickness per 285 - 7}}{\text{Plan Thickness}} \right)$$

The pay area shall not exceed 105% of the surface area.

There will be no adjustment of the pay area on the basis of thickness for base courses constructed utilizing mixed-in-place operations.

#### **285-9 Basis of Payment.**

**285-9.1** Price and payment will be full compensation for all work specified in this Section, including tack coat between base layers, prime coat, cover material for prime coat, bituminous material used in bituminous plant mix, and cement used in soil-cement.

**285-9.2 When No Direct Payment is Provided:** When no pay item for optional base course is included in the proposal, the Contractor shall include the cost of any work which is necessary for optional base course within the limits of the project in the Contract price for the other items of work for which such work is required.

For typical cross-sections which permit the use of asphalt or other materials for construction of an optional base, price adjustments for bituminous material will not apply.

Payment will be made under:

Item No. 285-6	Optional Base 6" - per square yard.
Item No. 285-7	Optional Base 7" - per square yard.

**END OF SECTION 285**

## **SECTION 286**

### **TURNOUT and DRIVEWAY CONSTRUCTION**

#### **286-1 Description.**

Construct, extend, and/or modify Turnouts and Driveways with like materials and colors on new constructions, resurfacing and widening-resurfacing projects. This work shall be performed in an expeditious fashion to limit any inconvenience for access to adjacent properties. Driveways shall conform to TOJ Engineering Detail 108a, 108b, 108c, and 108e.

#### **286-2 Materials.**

The base material for turnouts, use any material currently specified by the Town for base or surface construction, except do not use hot bituminous mixtures intended for use as open-graded friction course. Proportion bituminous mixtures in accordance with a job-mix formula approved by the Town. In general, the Engineer will accept the material on the basis of visual inspection, with no testing required, unless this visual inspection or other conditions warrants it. Turnouts constructed with concrete shall comply with Section 347.

#### **286-3 Excavation.**

Excavate the area over which turnout construction is to be accomplished to the dimensions shown in the plans or the Standard plans. If the surface of the underlying soil is disturbed during the excavation operation, recompact it to meet 98% AASHTO T-180. If an existing paved turnout lies within the specified limits for turnout construction, leave the existing base and surface in place, as directed by the Engineer.

#### **286-4 Spreading, Compacting, and Finishing Base.**

Uniformly spread base material over the prepared area to a depth which will, upon completion of compaction and finishing, result in turnout base conforming with the specified lines and elevations. Then, strike off the base material to a plane paralleling the finished surface, and compact it in a manner similar to that used in the construction of roadway base, meeting 98% AASHTO T-180. Finish the surface to the specified grade and cross-section.

#### **286- 5 Concrete Turnouts and Driveways**

Construct concrete turnouts and driveways, to plan dimensions, in accordance with Section 522.

#### **286-7 Method of Measurement.**

The quantity to be paid for will be the plan quantity area, in square yards or the plan quantity length (2' wide), in feet, except, when turnout construction is specified to be paid for by weight of mixture, the weight will be measured as specified in 320-2.

#### **286-8 Basis of Payment.**

**286-8.1 When No Direct Payment is Provided:** When no pay item for turnout and driveway construction is included in the proposal, the Contractor shall include the cost of any work which is necessary for turnout and driveway construction within the limits of the project in the Contract price for the other items of work for which such work is required.

**286-8.2** Price and payment will be full compensation for all work specified in this Section and in the case of Concrete Turnouts, for the full-depth indicated in the Pay Item. No separate measurement and payment shall be made for clearing, grubbing and demolition, saw cutting, excavation, embankment, forming; compaction, furnishing materials, placing, and finishing of base, removal and legal disposal of any materials, forming and finishing of concrete. The cost of any bituminous material used in hot bituminous mix, or for prime coat or tack coat between base layers, will not be paid for separately. The cost of concrete will not be measured or paid for separately. The cost of this work shall be included in the cost for the respective items contained within this Section. All other work shall be considered incidental to the work of this Section.

Payment will be made under:

Item No. 286-1 - Turnout Construction (Asphalt Pavement Section 1 ½" thick) - per square yard.

Item No. 286-1-1 - Turnout Construction (Asphalt Pavement Section 1 ½" thick, 2' wide) - per linear foot.

Item No. 286-2 - Turnout Reconstruction (Concrete Paver Section, 2' wide) - per linear foot.

Item No. 286-6 - Turnout Construction (Concrete Pavement Section -6" thick) - per square yard.

Item No. 286-6-1 - Turnout Construction (Concrete Pavement Section -6" thick, 2' wide) - per linear feet.

Item No. 286-7.25 - Turnout Construction (Concrete Pavement Section 7.25" thick) - per square yard.

**END OF SECTION 286**

## SECTION 290 GRANULAR SUBBASE

### 290-1 Description.

Construct a granular subbase as a component of an Optional Base.

### 290-2 Materials.

Select one of the materials listed below and conform to the following requirements:

Limerock .....	Section 911
Cemented Coquina .....	Section 915
Bank Run Shell .....	Section 913
Shell Rock .....	Section 913A
Graded Aggregate .....	204-2

### 290-3 Construction Methods.

For the subbase material selected, construct the subbase in conformance with the following:

Limerock .....	Section 200
Bank Run Shell .....	Section 200
Shell Rock .....	Section 200
Cemented Coquina .....	Section 204
Graded Aggregate .....	Section 204

Straightedge and hard-planing provisions will not apply. Compact the subbase to 98% of the maximum density AASHTO T-180.

Priming is not required.

### 290-4 Thickness Requirements.

**290-4.1 General:** Do not substitute granular subbase materials in excess of the tolerance specified for the asphalt portion of the Optional Base.

**290-4.2 Measurements:** When the Town is ready to measure the finished subbase, provide the coring equipment and the operator and include this in the unit price for Optional Base. The Engineer will select the coring locations and make the acceptance measurements. Thickness measurements will be taken through 3 inch diameter holes. For subbase areas greater than 1,000 yd<sup>2</sup>, the minimum frequency of measurement will be one per 200 feet of roadway. For smaller subbase areas, the minimum frequency of measurement will be one per 500 yd<sup>2</sup> of subbase.

**290-4.3 Maximum Allowable Thickness:** The maximum allowable thickness of the subbase is 4 1/4 inches. Remove and replace areas of subbase exceeding the maximum allowable thickness. Where granular subbase exceeds the maximum allowable thickness but is below the bottom of the template, the engineer will allow this material to remain in place with no thickness adjustment for determining the quantities.

**290-4.4 Minimum Allowable Thickness:** The minimum allowable thickness of the subbase is 3 1/2 inches. Remove and replace areas not meeting the minimum allowable thickness. If authorized by the Engineer, additional asphalt may be substituted to achieve the full combined Optional Base thickness.

### 290-5 Basis of Payment.

There is no direct payment for the work specified in this Section. The costs of this work shall be incidental to, and is to be included in the payment for Optional Base.

**END OF SECTION 290**



## **SECTION 300**

### **PRIME AND TACK COATS FOR BASE COURSES**

#### **300-1 Description.**

Apply bituminous prime coats on previously prepared bases, and apply bituminous tack coats on previously prepared bases and on existing pavement surfaces.

#### **300-2 Materials.**

**300-2.1 Prime Coat:** For prime coat, use Cut-back Asphalt Grade RC-70 or RC-250 meeting the requirements of the Bituminous Materials Sections 916-3 and 916-4; Emulsified Asphalt Grades SS-1 or CSS-1, SS-1H, or CSS-1H diluted in equal proportion with water; Emulsified Asphalt Grade AE-60, AE-90, AE-150, or AE-200 diluted at the ratio of six parts emulsified asphalt to four parts water; Special MS-Emulsion diluted at the ratio of six parts emulsified asphalt to four parts water; Asphalt Emulsion Prime (AEP), Emulsion Prime (RS Type), or EPR-1 Prime meeting the requirements of 916-4, or other types and grades of bituminous material which may be specified in the Contract Documents.

Where the above materials for use as a prime coat are to be diluted, certify that the dilution was done in accordance with this Section for each load of material used.

The Contractor may select any of the specified bituminous materials unless the Contract Documents indicate the use of a specific material. The Engineer may allow types and grades of bituminous material other than those specified above if the Contractor can show that the alternate material will properly perform the function of prime coat material.

**300-2.2 Cover Material for Prime Coat:** Uniformly cover the primed base by a light application of cover material. However, if using EPR-1 prime material, the Engineer may waive the cover material requirement if the primed base is not exposed to general traffic and construction traffic does not mar the prime coat so as to expose the base. The Contractor may use either sand or screenings for the cover material. For the sand and screenings, meet the requirements as specified in 902-2 or 902-6. If exposing the primed base course to general traffic, apply a cover material that has been coated with 2 to 4% asphalt cement. Apply the asphalt coated material at approximately 10 lb/yd<sup>2</sup>. Roll the entire surface of asphalt coated prime material with a traffic roller as required to produce a reasonably dense mat.

**300-2.3 Tack Coat:** Unless the Contract Documents call for a specific type or grade of tack coat, use RA-500 meeting the requirements of 916-2, heated to a temperature of 250 to 300°F or undiluted Emulsified Asphalt Grades RS-1 or RS-2 meeting the requirements of the Bituminous Materials section. Heat RS-1 or RS-2 to a temperature of 140 to 180°F. The Contractor may use RS-1 modified to include up to 3% naphtha to improve handling of the material during the winter months.

For night paving, use RA-500 tack coat meeting the requirements of the Bituminous Materials section 916-2, heated to a temperature of 250 to 300°F. The Engineer may approve RS-1 or RS-2 for night paving if the Contractor demonstrates, at the time of use, that the emulsion will break to allow paving in a timely manner.

#### **300-3 Equipment.**

**300-3.1 Pressure Distributor:** Provide a pressure distributor that is equipped with pneumatic tires having a sufficient width of rubber in contact with the road surface to avoid breaking the bond or forming a rut in the surface. Ensure that the distance between the centers of openings of the outside nozzles of the spray bar is equal to the width of the application required, within an allowable variation of 2 inches. Ensure that the outside nozzle at each end of the spray bar has an area of opening not less than 25% or more than 75% in excess of the other nozzles. Ensure that all other nozzles have uniform openings. When the application covers less than the full width, the Contractor may allow the normal opening of the end nozzle at the junction line to remain the same as those of the interior nozzles.

**300-3.2 Sampling Device:** Equip all pressure distributors and transport tanks with an approved spigot-type sampling device.

**300-3.3 Temperature Sensing Device:** Equip all pressure distributors and transport tanks with an approved dial type thermometer.

Use a thermometer with a temperature range from 50 to 500°F with maximum 25°F increments with a minimum dial diameter of 2 inches.

Locate the thermometer near the midpoint in length and within the middle third of the height of the tank, or as specified by the manufacturer (if in a safe and easily accessible location). Enclose the thermometer in a well with a protective window or by other means as necessary to keep the instrument clean and in the proper working condition.

#### **300-4 Acceptance Criteria.**

The prime and tack coats shall be applied in accordance with the Contract requirements. The Engineer will monitor the rate of application. If the rate of application varies by more than 5% from the rate set by the Engineer or varies beyond the range established in 300-7 or 300-8, immediately make all corrections necessary to bring the spread rate into the acceptable range. The Engineer may take additional measurements at any time. The Engineer will randomly check the Contractor's measurement to verify the spread rate.

#### **300-5 Cleaning Base and Protection of Adjacent Work.**

Before applying any bituminous material, remove all loose material, dust, dirt, caked clay and other foreign material which might prevent proper bond with the existing surface for the full width of the application. Take particular care in cleaning the outer edges of the strip to be treated, to ensure that the prime or tack coat will adhere.

When applying the prime or tack coat adjacent to curb and gutter, valley gutter, or any other concrete surfaces, cover such concrete surfaces, except where they are to be covered with a bituminous wearing course, with heavy paper or otherwise protect them as approved by the Engineer, while applying the prime or tack coat. Remove any bituminous material deposited on such concrete surfaces.

#### **300-6 Weather Limitations.**

Do not apply prime and tack coats when the air temperature in the shade and away from artificial heat is less than 40°F at the location where the application is to be made or when weather conditions or the surface conditions are otherwise unfavorable.

#### **300-7 Application of Prime Coat.**

**300-7.1 General:** Clean the surface to be primed and ensure that the moisture content of the base does not exceed 90% of the optimum moisture. Ensure that the temperature of the prime material is between 100 and 150°F. The Engineer will designate the actual temperature to ensure uniform distribution. Apply the material with a pressure distributor. Determine the application amount based on the character of the surface. Use an amount sufficient to coat the surface thoroughly and uniformly with no excess.

##### **300-7.2 Rate of Application:**

**300-7.2.1 Limerock, Limerock Stabilized, and Local Rock Bases:** For these bases, use a rate of application that is not less than 0.10 gal/yd<sup>2</sup>, unless a lower rate is directed by the Engineer. Determine the application rate at the beginning of each day's production, and as needed to control the operation, a minimum of twice per day.

**300-7.2.2 Sand-Clay, Shell and Shell Stabilized Bases:** For these bases, use a rate of application that is not less than 0.15 gal/yd<sup>2</sup>, unless a lower rate is directed by the Engineer. Determine the application rate at the beginning of each day's production, and as needed to control the operation, a minimum of twice per day.

**300-7.3 Sprinkling:** If so required by the Engineer, lightly sprinkle the base with water and roll it with a traffic roller in advance of the application of the prime coat.

**300-7.4 Partial Width of Application:** If traffic conditions warrant, the Engineer may require that

the application be made on only 1/2 the width of the base at one time, in which case use positive means to secure the correct amount of bituminous material at the joint.

### **300-8 Application of Tack Coat.**

**300-8.1 General:** Where the Engineer requires a tack coat prior to laying a bituminous surface, apply the tack coat as specified herein below.

**300-8.2 Where Required:** In general, the Engineer will not require a tack coat on primed bases except in areas that have become excessively dirty and cannot be cleaned, or in areas where the prime has cured to the extent that it has lost all bonding effect. Place a tack coat on all asphalt base courses before placing the structural course.

**300-8.3 Method of Application:** Apply the tack coat with a pressure distributor except that on small jobs, if approved by the Engineer, apply it by other mechanical devices or by hand methods. Heat the bituminous material to a suitable temperature as designated by the Engineer, and apply it in a thin, uniform layer.

**300-8.4 Rate of Application:** Use a rate of application between 0.02 to 0.08 gal/yd<sup>2</sup>. The rate of application will be approved by the Engineer and may be varied or adjusted by the Engineer to meet specific field conditions. For mix placed directly on concrete pavement, set the target rate of application at 0.08 gal/yd<sup>2</sup>. For mix placed on a milled surface or where the existing surface is oxidized and cracked, set the target rate of application rate at 0.06 gal/yd<sup>2</sup>. For mix placed on newly constructed asphalt layers, set the rate of application at 0.02 gal/ yd<sup>2</sup>. Determine the rate of application at the beginning of each day's production, and as needed to control the operation, a minimum of twice per day. Control the rate of application to be within plus or minus 0.01 gal/yd<sup>2</sup> of that approved by the Engineer. When using RA-500, multiply the target rate of application by 0.6.

**300-8.5 Curing and Time of Application:** The Engineer will designate the curing period for the tack coat. Apply the tack coat sufficiently in advance of the laying of the bituminous mix to permit drying, but do not apply the tack coat so far in advance that it might lose its adhesiveness as a result of being covered with dust or other foreign material.

**300-8.6 Protection:** Keep the tack coat surface free from traffic until the subsequent layer of bituminous hot mix has been laid.

### **300-9 Method of Measurement for Acceptance.**

**300-9.1 General:** The quantity specified for acceptance will be the volume, in gallons of bituminous material actually applied and accepted. This spread rate will be determined from measurements made by the Contractor and verified by the Engineer based on tank calibrations, as specified in 300-9.2. Where it is specified that prime coat or tack coat material is to be diluted with water, the amount specified for the spread rate will be the volume after dilution.

**300-9.2 Calibration of Tanks:** Ensure that all distributors used for applying tack or prime coats are calibrated prior to use by a reliable and recognized firm engaged in calibrating tanks. Provide a certification of calibration and the calibration chart to the Engineer prior to use. In lieu of a volumetrically calibrated distributor, use a distributor that is equipped with a calibrated meter and is approved by the Engineer.

**300-9.3 Temperature Correction:** Measure the volume and increase or decrease the volume actually measured to a corrected volume at a temperature of 60°F.

Make the correction for temperature by applying the applicable conversion factor (K), as shown below.

For petroleum oils having a specific gravity (60°F/60°F) above 0.966,  $K = 0.00035$  per degree.

For petroleum oils having a specific gravity (60°F/60°F) of between 0.850 and 0.966,  $K = 0.00040$  per degree.

For emulsified asphalt,  $K = 0.00025$  per degree.

When volume-correction tables based on the above conversion factors are not available, use the following formula in computing the corrections for volumetric change:

$$V = \frac{V^1}{K(T - 60)[(T/15)] + 1}$$

Where:

$V$  = Volume of the bituminous material at 60°F (pay volume).

$V^1$  = Volume of bituminous material as measured.

$K$  = Correction factor (Coefficient of Expansion).

$T$  = Temperature (in °F), of the bituminous material when measured.

### **300-10 Basis of Payment.**

There is no direct payment for the work specified in this Section. The costs of this work shall be incidental to, and is to be included in other items of related work.

**END OF SECTION 300**

**SECTION 320**  
**HOT BITUMINOUS MIXTURES -**  
**PLANT, METHODS, AND EQUIPMENT**

**320-1 General.**

All Hot Bituminous mixtures shall be obtained from only those sources whose plant, methods, Quality Control Plan and mixes are currently approved by FDOT. Comply with all FDOT requirements for plant operation, quality control and production. Provide the Engineer with a certification that the facility meets these requirements and maintain a current approved certification from FDOT when supplying hot bituminous mixtures to the project. It shall be the Contractor's sole responsibility to insure that the material delivered to the project is in strict accordance with the contract documents.

If the production facility's approval is suspended, the Contractor is solely responsible to obtain the services of another approved production facility or await the re-approval of the affected concrete production facility prior to the placement of any further concrete on the project. There will be no changes in the contract time or completion dates.

**320-2 Requirements for All Plants.**

**320-2.1 General:** Design, manufacture, coordinate, and operate the asphalt plant in a manner that will consistently produce a mixture within the job mix tolerances and temperatures specified.

**320-2.2 Electronic Weigh Systems:** These asphalt plants shall be equipped with an electronic weigh system that: has an automatic printout, is certified every six months by an approved certified scale technician, and meets weekly comparison checks with certified truck scales. Weigh all plant produced hot mix asphalt on the electronic weigh system, regardless of the method of measurement for payment.

Include, as a minimum, the following information on the printed delivery ticket:

- (a) Sequential load number.
- (b) Project number.
- (c) Date.
- (d) Name and location of plant.
- (e) Type of mix.
- (f) Place for hand-recording mix temperature.
- (g) Truck number.
- (h) Gross, tare, and net weights (as applicable).
- (i) Accumulated total of mix.
- (j) Tons

Print the delivery ticket with an original and at least one copy. Furnish the original to the Engineer at the paving site.

**320-5 Paving Equipment.**

**320-5.1 Mechanical Spreading and Screeding Equipment:**

**320-5.1.1 General:** Provide mechanical spreading and screeding equipment of an approved type that is self-propelled and can be steered. Equip it with a receiving and distribution hopper and a mechanical screed. Use a mechanical screed capable of adjustment to regulate the depth of material spread and to produce the desired cross-section.

**320-5.1.2 Automatic Screed Control:** For all asphalt courses, placed with mechanical spreading and finishing equipment, equip the paving machine with automatic longitudinal screed controls of either the skid type, traveling stringline type, or non-contact averaging ski type. Ensure that the length of the skid, traveling stringline, or non-contact averaging ski is at least 25 feet. On the final layer of base, overbuild, and structural courses, and for friction courses, use the joint matcher in lieu of the skid, traveling stringline, or non-contact averaging ski on all passes after the initial pass. Furnish a paving machine

equipped with electronic transverse screed controls when required by the Contract Documents.

**320-5.1.3 Inflation of Tires:** When using paving machines equipped with pneumatic tires, the Engineer may require that the tires be ballasted.

**320-5.1.4 Screed Width:** Provide paving machines on full width lanes that have a screed width greater than 8 feet. Do not use extendable screed strike-off devices that do not provide preliminary compaction of the mat in place of fixed screed extensions. The Contractor may use a strike-off device on irregular areas that would normally be done by hand and on shoulders 4 feet or less in width. When using the strike-off device on shoulders in lieu of an adjustable screed extension, the Contractor must demonstrate the ability to obtain an acceptable texture, density, and thickness.

When using an extendable screed device to extend the screed's width on the full width lane or shoulder by 24 inches or greater, the Engineer will require an auger extension, paddle, or kicker device unless the Contractor provides written documentation from the manufacturer that these are not necessary.

**320-5.2 Motor Graders:** Provide motor graders for spreading leveling courses. Equip them with a blade that is at least 2 feet longer than the width of the lane being leveled. Use motor graders that are rated at not less than 6 tons and are self-propelled and power-controlled. Mount them on smooth tread or rib-type tires (no lug types allowed) with a wheel base of at least 15 feet. Equip the front motor grader with a spreader box capable of spreading the mix at the required rate.

**320-5.3 Rollers:**

**320-5.3.1 Steel-Wheeled Rollers:** Provide compaction equipment capable of meeting the density requirements described in these Specifications. In the event that density testing is not required, provide a tandem steel-wheeled roller weighing 5 to 8 tons for seal rolling, and for the final rolling, use a separate roller with a weight of 8 to 12 tons. Variations from these requirements shall be approved by the Engineer.

**320-5.3.2 Traffic Rollers:** Provide compaction equipment capable of meeting the density requirements described in these Specifications. In the event that density testing is not required, provide a self-propelled, pneumatic-tired traffic roller equipped with at least seven smooth-tread, low pressure tires, equipped with pads or scrapers on each tire. Maintain the tire pressure between 50 and 55 psi or as specified by the manufacturer. Use traffic rollers with weight between 6 and 10 tons. Do not use wobble-wheeled rollers. Variations from these requirements shall be approved by the Engineer.

**320-5.3.3 Prevention of Adhesion:** Do not allow the mixture to adhere to the wheels of any rollers. Do not use fuel oil or other petroleum distillates to prevent adhesion. Do not use any method which results in water being sprinkled directly onto the mixture.

**320-5.4 Trucks:** Transport the mix in trucks of tight construction, which prevents the loss of material and the excessive loss of heat. Provide each truck with a tarpaulin or other waterproof cover mounted in such a manner that it can cover the entire load when required. When in place, overlap the waterproof cover on all sides so that it can be tied down.

**320-5.5 Coring Equipment:** Furnish a suitable saw or drill for obtaining the required density cores.

**320-5.6 Hand Tools:** Provide the necessary hand tools such as rakes, shovels, etc., and a suitable means for keeping them clean.

**320-6.1 Basis of Payment**

Payment for work specified in this section shall be included in the other items of related work for this contract. No additional payment will be made for meeting the requirements in Section 320, Hot Bituminous Mixtures.

**END OF SECTION 320**

## **SECTION 327**

### **MILLING OF EXISTING ASPHALT PAVEMENT**

#### **327-1 Description.**

Remove existing asphalt concrete pavement by milling to improve the rideability and cross slope of the finished pavement, to lower the finished grade adjacent to existing curb prior to resurfacing, or to completely remove existing pavement.

When milling to improve rideability, the plans will specify an average depth of cut.

Take ownership of milled material and remove from the site and legally dispose of all milled material.

#### **327-2 Equipment.**

Provide a milling machine capable of maintaining a depth of cut and cross slope that will achieve the results specified in the Contract Documents. Use a machine with minimum overall length of 10 feet and a minimum cutter width of 6 feet or 4 feet as applicable.

Equip the milling machine with a built-in automatic grade control system that can control the transverse slope and the longitudinal profile to produce the specified results.

To start the project, the Engineer will approve any commercially manufactured milling machine that meets the above requirements. If it becomes evident after starting the milling operation that the milling machine cannot consistently produce the specified results, the Engineer will reject the milling machine for further use.

The Contractor may use a smaller milling machine when milling to lower the grade adjacent to existing curb or other areas where it is impractical to use the above described equipment.

Equip the milling machine with means to effectively limit the amount of dust escaping during the removal operation.

For complete pavement removal, the Engineer may approve the use of alternate removal and crushing equipment in lieu of the equipment specified above.

#### **327-3 Construction.**

Remove the existing raised reflective pavement markers prior to milling. Include the cost of removing existing pavement markers in the price for milling.

When milling to improve rideability or cross slope, remove the existing pavement to the average depth specified in the plans, in a manner that will restore the pavement surface to a uniform cross-section and longitudinal profile. The Engineer may require the use of a stringline, level and/or straightedge to ensure maintaining the proper alignment.

Establish the longitudinal profile of the milled surface in accordance with the milling plans. Ensure that the final cross slope of the milled surface parallels the surface cross slope shown on the plans or as directed by the Engineer. Establish the cross slope of the milled surface by a second sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The plans may waive the requirement of automatic grade or cross slope controls where the situation warrants such action.

Multiple cuts may be made to achieve the required pavement configuration or depth of cut. Measurements will be made to control the cross slope of the milling surface with a minimum frequency of one cross slope measurement every 250 feet during milling operations in order to ensure that the slopes are uniform and in compliance with the designed milling slope. When the difference between the measured cross slope and the designed cross slope exceeds  $\pm 0.2\%$  for travel lanes (including turn lanes) and  $\pm 0.5\%$  for shoulders, make all corrections immediately to bring the cross slope into an acceptable range. The Engineer will periodically verify the Contractor's measurements at the job site.

The Engineer will randomly take ten measurements of the cross slope per day for the first two days



of milling operation. If the average cross slope of the ten random measurements per day varies more than the required tolerance (0.2% for travel lanes including turn lanes and 0.5% for shoulders), the milling operation shall be stopped until appropriate corrective actions are made to bring the cross slope into an acceptable range. Approval of the Engineer will be required prior to resuming the milling operation. A recheck of ten random measurements will be made after corrective actions are taken. If the recheck indicates that the cross slope is out of control, the deficient section(s) shall be corrected to bring the cross slope into an acceptable range. During milling operations, the Engineer reserves the right to take ten cross slope measurements per day. If the average cross slope of the ten measurements varies more than the permissible tolerance, the milling operation will be stopped until appropriate corrective actions are made to bring the cross slope into an acceptable range and the deficient sections shall be corrected accordingly.

The Engineer may waive the corrections specified above if an engineering determination indicates that the deficiencies are sufficiently separated so as not to significantly affect the final cross slope.

For intersections, tapers, crossovers, transitions at the beginning and end of the project and in other similar areas, the cross slope will be adjusted as directed by the Engineer to match the actual site conditions.

Operate the milling machine to minimize the amount of dust being emitted. The Engineer may require prewetting of the pavement.

Provide positive drainage of the milled surface and the adjacent pavement. Perform this operation on the same day as milling. Repave all milled surfaces no later than the day after the surface was milled unless otherwise stated in the plans.

If traffic is to be maintained on the milled surface prior to the placement of the new asphalt concrete, provide suitable transitions between areas of varying thickness to create a smooth longitudinal riding surface. Produce a pattern of striations that will provide an acceptable riding surface. The Engineer will control the traveling speed of the milling machine to produce a texture that will provide an acceptable riding surface. Do not exceed drop-off criteria as specified in Standard Plans Index 102-600. Provide temporary asphalt, as necessary, adjacent to manholes, curb, sidewalks and similar structures. Insure ADA requirements are met. No separate measurement and payment will be made to provide a temporary asphalt wedge. Include the cost of this wedge in the pay item of existing asphalt.

Prior to opening an area which has been milled to traffic, sweep the pavement with a power broom or other approved equipment to remove, to the greatest extent practicable, fine material which will create dust under traffic. Sweep in a manner that will minimize the potential for creation of a traffic hazard and to minimize air pollution.

Sweep the milled surface with a power broom prior to placing asphalt concrete.

In urban and other sensitive areas, use a street sweeper or other equipment capable of removing excess milled materials and controlling dust. Obtain the Engineer's approval of such equipment, contingent upon its demonstrated ability to do the work.

Perform the sweeping operation immediately after the milling operations or as directed by the Engineer.

#### **327-4 Milled Surface.**

Provide a milled surface with a reasonably uniform texture, within 1/4 inch of a true profile grade, and with no deviation in excess of 1/4 inch from a straightedge applied to the pavement perpendicular to the centerline. Ensure that the variation of the longitudinal joint between multiple cut areas does not exceed 1/4 inch. The Engineer may accept areas varying from a true surface in excess of the above stated tolerance without correction if the Engineer determines that they were caused by a pre-existing condition which could not have reasonably been corrected by the milling operations. Correct any unsuitable texture or profile, as determined by the Director of Engineering and Public Works or his designee, at no additional expense to the Town.

The Engineer may require remilling of any area where a surface lamination causes a non-uniform

texture to occur.

### **327-5 Method of Measurement.**

When direct payment is provided in the Contract, the quantity to be paid will be the actual area milled by the Contractor and measured (in square yards), inspected and approved in the field by the Town of Jupiter. Accuracy of the measurement and minimum payment for milling will be to 1/10 of a Square Yard (0.10 Square Yards).

**327-5.1** The quantity to be paid will be the plan quantity area, in square yards, over which milling is completed and accepted.

### **327-6 Basis of Payment.**

**327-6.1 When no Direct Payment is Provided:** When no item for milling of existing asphalt pavement is included in the proposal, or specifically included in other items, the Contractor shall include the cost of any work of existing asphalt pavement which is necessary for the proper construction of the project in the Contract price for the asphalt or other item of work for which such milling is required.

The Contractor shall include the cost of all milling which might be necessary in tie-ins to existing pavement or items in the Contract price for the asphalt in which milling is necessary.

**327-6.2** Price and payment will be full compensation for all work specified in this Section, including hauling off and stockpiling or otherwise legally disposing of the milled material.

Payments will be made under:

- Item No. 327-1 Mill Existing Asphalt Pavement 1" – per square yard
- Item No. 327-1-4 Mill existing Asphalt Pavement 1" 4 ft. wide – per square yard
- Item No. 327-1-7 Mill existing Asphalt Pavement 1" 7 ft. wide – per square yard
- Item No. 327-0.75-10 Mill Existing Asphalt Pavement 3/4" Full Lane – per square yard
- Item No. 327-1-10 Mill Existing Asphalt Pavement 1" Full Lane – per square yard
- Item No. 327-1.5 Mill Existing Asphalt Pavement 1.5" – per square yard
- Item No. 327-1.5 -10 Mill Existing Asphalt Pavement 1-1/2" Full Lane – per square yard
- Item No. 327-1.75 -10 Mill Existing Asphalt Pavement 1-3/4" Full Lane – per square yard
- Item No. 327-2 Mill Existing Asphalt Pavement 2" – per square yard
- Item No. 327-3 Mill Existing Asphalt Pavement using Small Portable Milling Machine – per day
- Item No. 327-4 Mill Existing Asphalt Pavement using Full Lane Milling Machine – per day

**END OF SECTION 327**

**SECTION 330**  
**HOT BITUMINOUS MIXTURES -**  
**GENERAL CONSTRUCTION REQUIREMENTS**

**330-1 Description.**

Construct plant-mixed hot bituminous pavements and bases. The Contractor shall perform the work using the best practices of the industry that assures that all materials, products and completed construction submitted for acceptance meets the requirements of the Contract Documents.

**330-2 Mix Design:** The Contractor shall obtain a mix design, from an FDOT approved producer, and provide it to the Engineer for any Hot Bituminous mixtures required by the Contract.

**330-3 Limitations of Operations.**

**330-3.1 Weather Limitations:** The Contractor shall not transport asphalt mix from the plant to the roadway unless all weather conditions are suitable for the laying operations.

**330-3.2 Limitations of Laying Operations:**

**330-3.2.1 General:** Spread the mixture only when the surface upon which it is to be laid has been previously prepared, is intact, firm, and properly cured, and is dry. Do not place friction course until the adjacent shoulder area has been dressed and grassed.

**330-3.2.2 Temperature:** Spread the mixture only when the air temperature in the shade and away from artificial heat is at least 40°F for layers greater than 1 inch (100 lb/yd<sup>2</sup>) in thickness and at least 45°F for layers 1 inch (100 lb/yd<sup>2</sup>) or less in thickness (this includes leveling courses). The minimum temperature requirement for leveling courses with a spread rate of 50 lb/yd<sup>2</sup> or less is 50°F.

**330-3.2.3 Wind:** Do not spread the mixture when the wind is blowing to such an extent that proper and adequate compaction cannot be maintained or when sand, dust, etc., are being deposited on the surface being paved to the extent that the bond between layers will be diminished.

**330-3.2.4 Night Paving:** Provide sufficient lighting for night operations.

**330-4 Mix Temperature:**

Determine the temperature of the completed mixture using a quick-reading thermometer through a hole in the side of the loaded truck immediately after loading. Locate 1/4 inch hole on both sides of the truck body within the middle third of the length of the body, and at a distance from 6 to 10 inches above the surface supporting the mixture. If a truck body already has a hole located in the general vicinity of the specified location, use this hole. At the Engineer's discretion, the Contractor may take the temperature of the load over the top of the truck in lieu of using the hole in the side of the truck.

The normal frequency for taking asphalt mix temperatures will be for each day, for each design mix on the first five loads and once every five loads thereafter. The Engineer may take the temperature of the asphalt mix at the plant and at the roadway before the mix is placed at the normal frequency. The Engineer may record the temperature on the front of the respective delivery ticket. The Engineer shall review the plant and roadway temperature readings and may take additional temperature measurements at any time.

The master range for all mix designs will be the established temperature from the mix design  $\pm 30^\circ\text{F}$ . The Engineer may reject for use on the project any load or portion of a load of asphalt mix at the roadway with a temperature outside of this master range. The Engineer will immediately notify the Contractor of the rejection.

If any single load at the roadway is within the master range but differs from the established mix temperature by more than  $\pm 25^\circ\text{F}$  or if the average difference of the temperature measurements from the established mix temperature for five loads exceeds  $\pm 15^\circ\text{F}$ , the temperature of every load will be monitored until the temperature falls within the specified tolerance range in Table 330-2; at this time the normal frequency may be resumed. Under no circumstance will any load be accepted if its temperature exceeds 335° F.

Table 330-2 Temperature Tolerance From Verified Mix Design	
Any Single Measurement	±25°F
Average of Any Five Consecutive Measurements	±15°F

### 330-5 Transportation of the Mixture.

Transport the mixture in tight vehicles previously cleaned of all foreign material. After cleaning, thinly coat the inside surface of the truck bodies with soapy water or an asphalt release agent as needed to prevent the mixture from adhering to the beds. Do not allow excess liquid to pond in the truck body. Do not use diesel fuel or any other hazardous or environmentally detrimental material as a coating for the inside surface of the truck body. Cover each load during cool and cloudy weather and at any time there is a probability of rain.

### 330-6 Preparation of Application Surfaces.

**330-6.1 Cleaning:** Prior to the laying of the mixture, clean the surface of the base or pavement to be covered of all loose and deleterious material by the use of power brooms or blowers, supplemented by hand brooming where necessary.

**330-6.2 Patching and Leveling Courses:** Where an asphalt mix is to be placed on an existing pavement or old base which is irregular, and wherever the plans indicate, bring the existing surface to proper grade and cross-section by the application of patching or leveling courses.

**330-6.3 Application Over Surface Treatment:** Where an asphalt mix is to be placed over a newly constructed surface treatment, sweep and dispose of all loose material from the paving area.

**330-6.4 Coating Surfaces of Contacting Structures:** Paint all structures which will be in actual contact with the asphalt mixture, with the exception of the vertical faces of existing pavements and curbs or curb and gutter, with a uniform coating of asphalt cement to provide a closely bonded, watertight joint.

#### 330-6.5 Tack Coat:

**330-6.5.1 Tack Coat Required:** Apply a tack coat, as specified in Section 300, on existing pavement structures that are to be overlaid with an asphalt mix and between successive layers of all asphalt mixes.

**330-6.5.2 Tack Coat at Engineer's Option:** Apply a tack coat on the following surfaces only when so directed by the Engineer:

**330-6.5.2.1** Freshly primed bases.

**330-6.5.2.2** Surface treatment.

### 330-7 Placing Mixture.

#### 330-7.1 Requirements Applicable to All Types:

**330-7.1.1 Alignment of Edges:** Lay all asphalt concrete mixtures, including leveling courses, other than the pavement edge just adjacent to curb and gutter or other true edges, by the stringline method to obtain an accurate, uniform alignment of the pavement edge.

**330-7.1.2 Temperature of Spreading:** Maintain the temperature of the mix at the time of spreading within the master range as defined in 330-6.3. The minimum frequency for taking mix temperatures on the roadway will be as indicated in 330-6.3. Any load or portion of a load of asphalt mix on the roadway with a temperature outside of the master range shall be rejected for use on the project.

**330-7.1.3 Rain and Surface Conditions:** Immediately cease transportation of asphalt mixtures from the plant when rain begins at the roadway. Do not place asphalt mixtures while rain is falling, or when there is water on the surface to be covered. Once the rain has stopped and water has been removed from the tacked surface to the satisfaction of the Engineer and the temperature of the mixture caught in

transit still meets the requirements as specified in 330-9.1.2, the Contractor may then place the mixture caught in transit.

**330-7.1.4 Speed of Paver:** Establish the forward speed of the asphalt paver based on the rate of delivery of the mix to the roadway but not faster than the optimum speed needed to adequately compact the pavement.

**330-7.1.5 Number of Crews Required:** For each paving machine operated, use a separate crew, each crew operating as a full unit.

**330-7.1.6 Checking Depth of Layer:** The depth of each layer will be checked at frequent intervals, and the Contractor shall make adjustments when the thickness exceeds the allowable tolerance. When making an adjustment, allow the paving machine to travel a minimum distance of 32 feet to stabilize before the second check is made to determine the effects of the adjustment.

**330-7.1.7 Hand Spreading:** In limited areas where the use of the spreader is impossible or impracticable, the Contractor may spread and finish the mixture by hand.

**330-7.2 Requirements Applicable to Courses Other Than Leveling:**

**330-7.2.1 Spreading and Finishing:** Upon arrival, dump the mixture in the approved mechanical spreader, and immediately spread and strike-off the mixture to the full width required, and to such loose depth for each course that, when the work is completed, the required weight of mixture per square yard, or the specified thickness, is secured. Carry a uniform amount of mixture ahead of the screed at all times.

**330-7.2.2 Thickness of Layers:** Construct each course of Types mixtures in layers of the thickness shown in Section 334.

**330-7.2.3 Laying Width:** If necessary due to the traffic requirements, lay the mixture in strips in such a manner as to provide for the passage of traffic. As an option, where the road is closed to traffic, lay the mixture to the full width with machines traveling in echelon, if practicable.

**330-7.2.4 Correcting Defects:** Before starting any rolling, check the surface; correct any irregularities; remove all drippings, fat sandy accumulations from the screed, and fat spots from any source; and replace them with satisfactory material. Do not skin patch. When correcting a depression while the mixture is hot, scarify the surface and add fresh mixture.

**330-7.3 Requirements Applicable Only to Leveling Courses:**

**330-7.3.1 Patching Depressions:** Before spreading any leveling course, fill all depressions in the existing surface more than 1 inch deep by spot patching with leveling course mixture, and then compact them thoroughly.

**330-7.3.2 Spreading Leveling Courses:** Place all courses of leveling by the use of a motor grader, equipped with a spreader box. Use other types of leveling devices after they have been approved by the Engineer.

**330-7.3.3 Rate of Application:** The quantity of mix for leveling shown in the plans represents the average for the entire project; however, the Contractor may vary the rate of application throughout the project as directed by the Engineer. When leveling in connection with base widening, the Engineer may require placing all the leveling mix prior to the widening operation.

**330-7.3.4 Placing Leveling Course Over Existing Pavement:** When the Contract Documents specify a leveling course to be placed over cracked concrete pavement, including existing concrete pavement covered with an asphalt surface, place the first layer of leveling course as soon as possible but no later than 48 hours after cracking the concrete.

**330-7.3.5 Removal of Excess Joint Material:** Where placing a leveling course over existing concrete pavement or bridge decks, trim the excess joint filler in the cracks and joints flush with the surface prior to placing the first layer of the leveling course.

### **330-8 Compacting Mixture.**

#### **330-8.1 Provisions Applicable to All Types:**

**330-8.1.1 Equipment and Sequence:** When density testing for acceptance is required, select equipment, sequence, and coverage of rolling to meet the specified density requirement. The coverage is the number of times the roller passes over a given area of pavement. Regardless of the rolling procedure used, complete the final rolling before the surface temperature of the pavement drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

**330-8.1.2 Standard Rolling Procedure:** Meet the following equipment, sequence, and coverage requirements:

**330-8.1.2.1 Seal Rolling:** Provide two coverages with a tandem steel-wheeled roller (either vibratory or static), weighing 5 to 12 tons, following as close behind the spreader as possible without pick-up, undue displacement, or blistering of the material. Use vibratory rollers in the static mode for layers of 1 inch or less in thickness.

**330-8.1.2.2 Intermediate rolling:** Provide five coverages with a minimum 6 ton self-propelled pneumatic-tired roller, following as close behind the seal rolling operation as the mix will permit.

**330-8.1.2.3 Final rolling:** Provide one coverage with a tandem steel-wheeled roller (static mode only) weighing 8 to 12 tons, after completing the seal rolling and intermediate rolling, but before the surface pavement temperature drops to the extent that effective compaction may not be achieved or the rollers begin to damage the pavement.

The Contractor may use equipment, sequences, or coverages other than those specified in the standard rolling procedure if so authorized by the Engineer.

**330-8.1.3 Compaction at Crossovers, Intersections, etc.:** When using a separate paving machine to pave the crossovers, compact the crossovers with one, 8 to 12 ton tandem steel roller. If placing crossovers, intersections, and acceleration and deceleration lanes with the main run of paving, also use a traffic roller to compact these areas.

**330-8.1.4 Rolling Procedures:** Ensure that the initial rolling is longitudinal. Where the lane being placed is adjacent to a previously placed lane, pinch or roll the center joint prior to the rolling of the rest of the lane.

Roll across the mat, overlapping the adjacent pass by at least 6 inches. Roll slowly enough to avoid displacement of the mixture, and correct any displacement at once by the use of rakes and the addition of fresh mixture if required. Continue final rolling to eliminate all roller marks.

**330-8.1.5 Number of Pneumatic-tired Rollers Required:** Use a sufficient number of self-propelled pneumatic-tired rollers to ensure that the rolling of the surface for the required number of passes does not delay any other phase of the laying operation and does not result in excessive cooling of the mixture before completing the rolling. In the event that the rolling falls behind, discontinue the laying operation until the rolling operations are sufficiently caught up.

**330-8.1.6 Compaction of Areas Inaccessible to Rollers:** Use hand tamps or other satisfactory means to compact areas which are inaccessible to a roller, such as areas adjacent to curbs, headers, gutters, bridges, manholes, etc.

**330-8.1.7 Rolling Patching and Leveling Courses:** Use self-propelled pneumatic-tired rollers to roll all patching and leveling courses. Where placing the initial leveling course over broken concrete pavement, use a pneumatic-tired roller that weighs at least 15 tons.

**330-8.1.8 Correcting Defects:** Do not allow the rollers to deposit gasoline, oil, or grease onto the pavement. Remove and replace any areas damaged by such deposits as directed by the Engineer. While rolling is in progress, test the surface continuously, and correct all discrepancies to comply with the surface requirements. Remove and replace all drippings, fat or lean areas, and defective construction of any description. Remedy depressions that develop before completing the rolling by loosening the mixture and

adding new mixture to bring the depressions to a true surface. Should any depression remain after obtaining the final compaction, remove the full depth of the mixture, and replace it with sufficient new mixture to form a true and even surface. Correct all high spots, high joints, and honeycombing as directed by the Engineer. Remove and replace any mixture remaining unbonded after rolling. Correct all defects prior to laying the subsequent course.

**330-8.1.9 Use of Traffic Roller on First Overbuild Course:** Use a self-propelled pneumatic-tired roller on the first overbuild course. Compact with a minimum of five coverages.

**330-8.1.10 Use of Traffic Roller or Vibratory Roller on First Structural Layer Placed on a Milled Surface:** Use a self-propelled pneumatic-tired roller or vibratory roller on the first structural layer placed on a milled surface.

**330-8.1.11 Use of Traffic Roller or Vibratory Roller on First Structural Layer Placed on an Asphalt Rubber Membrane Interlayer (ARMI):** Use a self-propelled pneumatic-tired roller or a vibratory roller on the first structural layer placed on an ARMI.

### **330-9 Joints.**

**330-9.1 Transverse Joints:** Place the mixture as continuously as possible. Do not pass the roller over the unprotected end of the freshly laid mixture except when discontinuing the laying operation long enough to permit the mixture to become chilled. When thus interrupting the laying operation, construct a transverse joint by cutting back on the previous run to expose the full depth of the mat.

**330-9.2 Longitudinal Joints:** For all layers of pavement except the leveling course, place each layer so that longitudinal construction joints are offset 6 to 12 inches laterally between successive layers. The Engineer may waive this requirement where offsetting is not feasible due to the sequence of construction.

**330-9.3 General:** When laying fresh mixture against the exposed edges of joints (trimmed or formed as provided above), place it in close contact with the exposed edge to produce an even, well-compacted joint after rolling.

**330-9.4 Placing Asphalt Next to Concrete Pavement:** When placing asphalt next to concrete pavement, construct a continuous joint by sawing a groove into the asphalt pavement at the abutment with the concrete pavement. Produce a joint that is  $\frac{3}{4}$  inch wide and  $\frac{3}{4}$  inch deep, after sawing and cleaning. Seal the joint with hot-poured type sealant.

### **330-10 Surface Requirements.**

**330-10.1 Contractor's Responsibility:** Furnish a 15 foot manual and a 15 foot rolling straightedge. Make them available at the job site at all times during the paving operation for checking joints and surface irregularities. Obtain a smooth surface on all pavement courses placed.

When the intermediate layer will be opened to the traffic, the Engineer reserves the right to require the Contractor to straightedge the layer with a 15 foot rolling straightedge to ensure that no smoothness deficiency is in excess of  $\frac{3}{8}$  inch. When the intermediate layer is straightedged, correct all deficiencies in excess of  $\frac{3}{8}$  inch as approved by the Engineer, before placing the next course.

Construct a pavement surface with cross slopes in compliance with the requirements of the Contract Plans. Furnish a level with a minimum length of 4 feet or a digital measuring device approved by the Engineer for the control of cross slope. Make this level or measuring device available at the jobsite at all times for the measurement of cross slope during paving operations.

**330-10.2 Texture of the Finished Surface of Paving Layers:** Produce a finished surface of uniform texture and compaction with no pulled, torn, crushed or loosened portions and free of segregation, sand streaks, sand spots, or ripples. Correct any area of the surface that does not meet the foregoing requirements in accordance with 330-12.4.

Do not use asphalt concrete mixtures containing aggregates that cause a different color

appearance in the final wearing surface in sections less than 1 mile in length and across the full width of the roadway unless approved by the Engineer.

**330-10.3 Acceptance Testing for Surface Tolerance:**

**330-10.3.1 General:** Notify the Engineer of the location and time of testing a minimum of 48 hours before beginning testing. Perform acceptance testing for surface tolerance on all pavement lanes and ramps where the width is constant, and document all deficiencies on a form approved by the Engineer. Perform all testing with a CTQP Asphalt Paving Level I technician.

Do not perform acceptance testing for surface tolerance with the rolling straightedge as provided below at intersections, tapers, crossovers, transitions at beginning and end of project, parking lots and similar areas. However, correct any individual surface irregularity in these areas that deviates from plan grade in excess of 3/8 inch as determined by a 15 foot manual straightedge, and that the Engineer deems to be objectionable, in accordance with 330-12.4.

Provide traffic control in accordance with the STANDARD PLANS Index No. 102-625 during all testing. When traffic control cannot be provided in accordance with Index 102-625, submit a Traffic Control Plan for the Engineer's written approval. Include the cost of this traffic control and testing in the Contract bid prices for the asphalt items.

**330-10.3.2 Test Method:** The Engineer may perform acceptance testing with one pass of a standard 15 foot rolling straightedge operated along outside wheel path of each lane tested. This does not preclude the Engineer from requiring additional acceptance testing at other locations within the lane being tested.

**330-10.3.3 Acceptance Criteria for Last Layer Prior to Friction Course:** Furnish and operate an approved 15 foot rolling straightedge for testing of the last layer prior to the friction course as directed and supervised by the Engineer. Correct all deficiencies in excess of 3/16 inch in accordance with 330-12.4, and retest the last layer prior to placement of the friction course. Where the final surface is not a friction course, meet acceptance criteria in accordance with 330-12.3.4.

**330-10.3.4 Acceptance Criteria for Final Surface or Friction Course:** Upon completion of the final surface or friction course, correct all deficiencies in excess of 3/16 inch in accordance with 330-12.4, except do not correct by overlaying when the final surface is a friction course. For bicycle paths, correct all deficiencies in excess of 3/8 inch in accordance with 330-12.4.

**330-10.3.5 Adjustment of Pay Item Quantity:** The Engineer may waive corrections specified above if an engineering determination indicates that the deficiencies are sufficiently separated so as not to significantly affect the ride quality of the pavement and corrective action would unnecessarily mar the appearance of the finished pavement.

Where the Engineer elects to waive correction and the finished pavement surface is a friction course, the Town will reduce the pay quantity for Asphalt Concrete Course by the amount of the course that the Contractor would have removed and replaced if the Contractor had made the correction.

**330-10.4 Correcting Unacceptable Pavement:** The Contractor may select one of the following methods, unless 330-12.3.4 prohibits overlaying:

a. Removing and Replacing: If correction is made by removing and replacing the pavement, remove the full depth of the course to a width and length as determined by the Engineer.

b. Overlaying: If correction is made by overlaying, cover the length of the defective area and taper uniformly to a featheredge thickness at a minimum distance on either side of the defective area to a distance determined by the Engineer. Extend the overlay the full width of the roadway. Maintain the specified cross slope. The Engineer may adjust, as necessary, the mix used for the overlay for this purpose.

c. Other Methods: For parking lots as well as bicycle paths and courses which will not be the final pavement surface, correct minor straightedge deficiencies by methods other than specified above as approved by the Engineer.



Perform all corrective work, at no cost to the Town.

**330-10.5 Control of Cross Slope:** Measure the cross slope of pavement surface by placing an approved measuring device perpendicular to the roadway centerline and calculate the cross slope in percentage to the nearest 0.01% and round it to the nearest 0.1%.

Measure the cross slope with a minimum frequency of one check every 100 feet during paving operations to ensure that the slopes are uniform and in compliance with the designed slope. When the difference between the measured cross slope and the designed cross slope exceeds  $\pm 0.2\%$  for travel lanes including turn lanes and  $\pm 0.5\%$  for shoulders, make all corrections immediately to bring the cross slope into an acceptable range. The Engineer will periodically verify the measurements at the job site.

When the variance of cross slope measurements is consistently within the acceptance range, the frequency of cross slope checking can be reduced to one measurement every 150 feet during paving operations.

The Engineer will randomly take ten measurements of the cross slope per day for the first two days of construction. If the average cross slope of the ten random measurements per day varies more than the required tolerance ( $0.2\%$  for travel lanes including turn lanes and  $0.5\%$  for shoulders), the paving operation shall be stopped until appropriate corrective actions are made to bring the cross slope into an acceptable range. Approval of the Engineer will be required prior to resuming paving operations. A recheck of ten random measurements will be made afterward. If the recheck indicates that the cross slope is still out of control, the deficient section shall be corrected in accordance with Section 330-12.4. During production, the Engineer reserves the right to take ten measurements of cross slope for any paving day. If the average cross slope of the ten measurements varies more than the required tolerance, the paving operation will be stopped until appropriate corrective actions are made to bring the cross slope into acceptable range.

The Engineer may waive the corrections specified above if an engineering determination indicates that the deficiencies are sufficiently separated so as not to significantly affect the ride quality and the surface drainage of pavement and corrective action would unnecessarily mar the appearance of the finished pavement.

For intersections, tapers, crossovers, transitions at beginning and end of project and similar areas, the cross slope shall be adjusted as directed by the Engineer to match the actual site conditions.

### **330-11 Protection of Finished Surface.**

Keep sections of newly compacted asphalt concrete, which are to be covered by additional courses, clean until the successive course is laid.

Do not dump embankment or base material directly on the pavement. Dress shoulders before placing the friction course on adjacent pavement.

Equip blade graders operating adjacent to the pavement during shoulder construction with a 2 by 8 inch or larger board, or other attachment providing essentially the same results, attached to their blades in such manner that it extends below the blade edge in order to protect the pavement surface from damage by the grader blade.

To prevent rutting or other distortion, protect sections of newly finished dense-graded friction course and the last structural layer prior to the friction course from traffic until the surface temperature has cooled below  $160^{\circ}\text{F}$ .

The Contractor may, after achieving the requisite density, use artificial methods to cool the pavement to expedite paving operations. The Town may direct the Contractor to use artificial cooling methods when maintenance of traffic requires opening the pavement to traffic at the earliest possible time.

### **330-12 Basis of Payment.**

There is no direct payment for the work specified in this Section. The costs of this work shall be incidental to, and is to be included in other items of related work.

**END OF SECTION 330**

**SECTION 347**  
**PORTLAND CEMENT CONCRETE - CLASS I**  
**(NONSTRUCTURAL)**

**347-1 Description.**

The requirements of this Section are applicable to concrete designated as Class I (Nonstructural), hereinafter referred to as concrete. Use concrete composed of a mixture of Portland cement, aggregates, and water, with or without chemical admixtures, slag, or pozzolanic materials. Deliver concrete to placement site in a freshly mixed, unhardened state.

**347-2 Materials.**

**347-2.1 General:** Certify that all materials used in concrete are from an FDOT approved sources, and free from frozen or other detrimental matter.

Meet the following requirements:

- (a) Portland Cement ..... Section 921
- (b) Fine Aggregate ..... Section 902
- (c) Coarse Aggregate ..... Section 901
- (d) Water ..... Section 923
- (e) Chemical Admixtures ..... Section 924
- (f) Pozzolans and Slag..... Section 929

**347-2.2 Admixture Requirements:** Chemical admixtures may be added at the dosage rates recommended by the manufacturer.

**347-2.3 Substitution of Materials:** Approved material sources may be substituted for similar materials indicated on the originally approved mix design. Use originally approved mix components and proportions, when unsatisfactory test results are obtained from the use of the substituted material(s).

**347-3 Production, Mixing and Delivery.**

**347-3.1 Concrete Production Requirements:** Deliver concrete from a production facility that is certified by the National Ready-Mixed Concrete Association (NRMCA) and is on the FDOT's approved plant list. Comply with all FDOT requirements for plant operation, quality control and production. Provide the Engineer with a certification that the facility meets these requirements and maintain a current approved certification from FDOT when supplying concrete to the project. It shall be the Contractor's sole responsibility to insure that the concrete delivered to the project is in strict accordance with the contract documents.

If the concrete production facility's approval is suspended, the Contractor is solely responsible to obtain the services of another approved concrete production facility or await the re-approval of the affected concrete production facility prior to the placement of any further concrete on the project. There will be no changes in the contract time or completion dates.

Ensure that the calibration of the measuring devices of the concrete production facilities meets the requirements of Chapter 531 of the Florida Statutes.

**347-3.2 Mixers:**

**347-3.3 Delivery:** The maximum allowable mixing and agitation time of concrete is 120 minutes. Water may be added at the job site before discharging concrete, provide the ratio values for water to cementitious materials and slump remain below the maximum allowable values specified in the approved mix design.

**347-4 Control of Quality.**

**347-4.1 Concrete Mix Design:** Before producing any concrete, submit the proposed mix design to the Engineer. Use only concrete mix designs meeting the following requirements and having prior approval of the Engineer.

Maximum water to cementitious materials ratio	0.55 lbs/lbs
Minimum 28-Day Compressive Strength	2,500 psi
Minimum Cementitious Materials Content	470 lbs/yd <sup>3</sup>
Slump	0 to 6 inch

Materials may be adjusted provided that the theoretical yield requirement of the approved mix design is met. Show all required original approved design mix data and batch adjustments and substituted material on the concrete delivery ticket. The Engineer may disqualify any concrete production facility for non-compliance with Specification requirements.

**347-4.2 Sampling and Testing:** The Engineer may sample and test the concrete at his discretion to verify its quality.

**347-4.3 Records:**

1.If requested provide to the Engineer recent NRMCA or FDOT inspection records certifying plant can produce concrete and documentation showing that action has been taken to correct deficiencies noted during the inspections.

**347-5 Certification and Acceptance.**

Furnish a Delivery Ticket with each batch of concrete before unloading at the placement site. The concrete producer may use its form provided that it contains the required information. Record material quantities incorporated into the mix on the Delivery Ticket. Ensure that the Batchers responsible for production of the concrete, certifying that the batch was produced in accordance with specification requirements, signs the Delivery Ticket. Sign the Delivery Ticket certifying that the maximum specified water to cementitious materials ratio was not exceeded due to any jobsite adjustments to the batch, and that the batch was delivered and placed in accordance with specification requirements.

Concrete acceptance by the Town will be by Certification on the Delivery Ticket, as described herein, by the Batchers and the Contractor. The Engineer will hold the contractor responsible for rejecting loads of concrete that do not meet specification requirements, or exceeds the allowable slump or water to cementitious materials ratio. Replace, at no cost to the Town, all concrete that does not meet the 28-day compressive strength requirements. At the sole option of the Town, the Engineer may accept concrete at a reduced pay when it is determined that the concrete may remain in place and serve its intended function.

**END OF SECTION 347**

## SECTION 400 CONCRETE STRUCTURES

### 400-1 Description.

Construct concrete structures and other concrete members, with the exception of pavement and incidental concrete construction (which are specified in other Sections). Refer to Section 450 for prestressed construction requirements additional to the requirements of this Section. For precast concrete structures meet the requirements of Section 450 for storage, shipping and erection.

### 400-2 Materials.

Meet the following requirements:

Concrete.....	Sections 346 and 347
Reinforcing Steel.....	Section 415
Water.....	Section 923
Curing Materials.....	*Section 925
Epoxy Bonding Compounds.....	Sections 926 and 937
Joint Materials.....	Section 932
Bearing Pads.....	Section 932-2
Non-Shrink Grout.....	Section 934
Class 5 Applied Finish Coatings.....	Section 975

\*The Engineer will allow clean sand and sawdust for certain curing, when and as specified.

### 400-3 Depth of Footing.

Consider the elevations of the bottoms of footings, as shown in the plans, as approximate only. The Engineer may change dimensions or elevations of footings as necessary to secure a satisfactory foundation. If the elevation of a footing as shown in the plans is changed to a higher or lower elevation, the Engineer will not consider such change as a material change to the original Contract Documents, a waiver of any condition of the Contract, or an invalidation of any of the provisions of the Contract. If the excavation must be carried deeper than shown in the plans to obtain a satisfactory foundation, the Engineer will revise the plans in accordance with one of the following methods:

(a) The Engineer will keep the top of the footing at the elevation shown in the original plans and will increase the thickness to obtain a satisfactory foundation. The Engineer will follow this method when the change in bottom elevation of the footing is 12 inches or less. When this method is followed, place the reinforcing steel the same as if the footings, as shown in the original plans, were placed on a subfooting of plain concrete; make no alteration in the position of the reinforcing bars relative to the top of the footing.

(b) The Engineer will revise the plans and lower the footing, thereby increasing the height of stem, to obtain a satisfactory foundation. Generally, the Engineer will increase the thickness and width of footing over that shown in the original plans. If this method is followed, use the dimensions, sizes, and location of reinforcing steel shown in the revised plans. The Engineer will follow this method when the change in elevation of the bottom of footing exceeds 12 inches.

The Engineer will determine which of the above methods to use.

### 400-4 Falsework.

**400-4.1 Plans:** At the Engineer's request, furnish detailed plans for falsework or centering to the Town. The Contractor is responsible for results obtained by using these plans.

**400-4.2 Design and Erection:** Design and construct all falsework to provide the necessary rigidity and to support the loads without appreciable settlement or deformation. Use screw jacks or hardwood wedges to take up any settlement in the framework, either before or during the placing of concrete. If any weakness develops and the centering shows undue settlement or distortion, stop the work, remove any masonry affected, and strengthen the falsework before resuming work. Support falsework which cannot be founded on a satisfactory footing on piling. Space, drive, and remove the piling in an approved manner.

**400-4.3 Camber:** Provide camber to correct for settlement and deflection of falsework. Give

bridges permanent camber only when shown in the plans.

#### **400-5 Forms.**

**400-5.1 General:** Provide forms, either of wood or metal, that are as follows: (a) externally secured and braced where feasible; (b) substantial and unyielding; (c) of adequate strength to contain the concrete without bulging between supports and without apparent deviation from the neat lines, contours, and shapes shown in the plans. Design forms to withstand the additional forces of vibration without apparent deviation from the desired shape or position. Assemble forms to be mortar-tight. If using lumber forms, construct them of dressed wood of uniform thickness. Use form liners on wooden forms where Class 3 surface finish is specified. Construct assembled forms to render a concrete surface of smooth, uniform finish. Make provisions to remove forms without injury to concrete surfaces. Remove blocks and bracing with the forms, and do not leave any portion of the forms in the concrete. Use the same form system for a type of work throughout.

**400-5.2 Inspection and Approval:** Do not place concrete in a form until the form has been inspected and approved. Although the Engineer inspects and approves the forms, the Contractor is responsible for obtaining satisfactory concrete surfaces, free from warping, bulging, or other objectionable defects. Pay special attention to the ties and bracing. Where the forms appear to be insufficiently braced or unsatisfactorily built, stop and correct defects to the satisfaction of the Engineer.

#### **400-5.3 Non-metallic Form Materials:**

**400-5.3.1 Lumber:** For all surfaces, use lumber that is not less than 3/4 inch in thickness, dressed, and free of knot holes, loose knots, cracks, splits, warps, and other defects. Proportion the spacing of studs, joists, and wales to exclude warps and bulges and to produce true and accurate concrete surfaces. Only use structurally sound lumber.

**400-5.3.2 Form Liners:** Use form liners of durable, abrasion resistant materials that are unaffected by water. Use liners with a hard surface texture capable of rendering concrete surfaces of a smooth, uniform texture, without grain marks, patterns, or blemishes. Use form liner material of sufficient thickness to eliminate the reflection of irregularities, undesirable patterns, and marks from the forms to the surfaces. Replace liners as necessary to produce a consistent concrete surface texture. Use form liners in large sheets and with true, tight-fitted joints which are logically located. Obtain the Engineer's approval of the layout of sheets. Do not use liners which have been patched. Use liner material of the same stock throughout.

**400-5.3.3 Plywood:** The Contractor may use plywood of not less than 5/8 inch in thickness manufactured with waterproof glue or protected with an approved impervious coating. Do not use pieces with bulged plies or raveled, untrue edges.

#### **400-5.4 Special Requirements:**

**400-5.4.1 Re-entrant Angles:** Use chamfered forms for exterior concrete corners and filleted forms for interior concrete corners. Use chamfers and fillets that are 3/4 by 3/4 inch and are mill-dressed on all sides to uniform dimensions. The Contractor may use plastic or metal chamfers and fillets provided they perform satisfactorily in producing uniform, smooth concrete corner surfaces without honeycomb.

**400-5.4.2 Handrails and Parapets:** Construct barriers and parapets in accordance with Section 521.

**400-5.4.3 End-bent Caps:** Do not place forms for end-bent caps until the embankment has been constructed to within 12 inches of the bottom of the cap. Place a mass of embankment that is sufficient to produce the subsidence, displacement, and settlement which may result from the construction of the total embankment.

**400-5.4.4 Footings:** Where footing concrete can be placed in dry excavation, the Contractor may omit cribs, cofferdams, and forms, subject to compliance with the following limitations and conditions:

- (a) Use this procedure only in locations not exposed to view from traveled roadways.

- (b) Obtain required elevations shown in the plans.
- (c) Obtain neat line dimensions shown in the plans.
- (d) Fill the entire excavation with concrete to the required elevation of the top of the footing.
- (e) The Engineer will determine the volume of footing concrete to be paid for from the neat line dimensions shown in the plans.

**400-5.5 Form Alignment, Bracing, and Ties:** Construct forms in such manner that they may be adequately secured for alignment, shape, and grade. Use bracing systems, ties, and anchorages that are substantial and sufficient to ensure against apparent deviation from shape, alignment, and grade. Do not drive nails into existing concrete. Do not use bracing systems, ties, and anchorages which unnecessarily deface or mark, or have an injurious or undesirable effect on surfaces that will be a part of the finished surface.

If metal ties and anchorages are to remain in the concrete, construct them so as to permit the removal of metal to at least 1 inch beneath the finished surface of concrete. Use accessories for metal ties and anchorages that allow the removal of metal to the prescribed depth while leaving the smallest possible repairable cavity.

When using wire ties, cut or bend them back from the finished surface of the concrete a minimum of 1 inch. Do not use internal ties of wire when forming surfaces that are exposed to view.

**400-5.6 Preparation and Cleaning:** Meet the following requirements for the condition of forms at the time of beginning concrete casting:

- (a) Treat all forms with an approved form-release agent before placing concrete. Do not use material which adheres to or discolors the concrete.
- (b) Clean forms of all concrete laitance from previous use and all dirt, sawdust, shavings, loose wire ties and other debris.
- (c) Close and secure all inspection and cleanout holes.

#### **400-5.7 Stay-In-Place Metal Forms:**

##### **400-5.7.1 General:**

(a) Use of permanent stay-in-place metal forms: Permanent stay-in-place metal forms may be used in lieu of removable forms to form concrete bridge deck slabs only when allowed by design note in the plans, and is subject to the conditions, limitations, and requirements contained herein. Use forms made of corrugated material of cellular or non-cellular construction. Fill form flutes completely with concrete. Do not use fillers, such as sand, Styrofoam, etc. to fill the form flutes.

Stay-in-place metal forms may be used to form the portion of the top slab which lies between the webs of individual steel box girders regardless of the environmental classification.

Prior to using stay-in-place forms, submit detailed plans for approval of the forming system, including method of support and attachment and method of protecting the supporting structural steel components from welding effects. Submit design calculations for the forming system which have been signed and sealed by the Specialty Engineer. Detail stay-in-place forms such that they in no way infringe upon the concrete outline of the slab shown on the plans. Use stay-in-place forms that provide and maintain the dimensions and configuration of the original slab in regards to thickness and slope.

Do not weld stay-in-place metal form supports and connections to structural steel components. Make attachments by permissible welds, bolts, clips, or other approved means. If metal form supports and connections are field welded in place, protect structural steel components from damage by using a shield to guard against weld splatter, weld overrun, arc strikes, or other damaging effects of the welding process. Upon completion of welding, rest the metal form support flush on the supporting steel

component. Should any weld spatter, weld overrun, arc strike, or other effects of the welding process be evident or occur to the structural steel component, immediately stop in place welding of the metal form supports for the remainder of the work. In this event, weld all metal form supports off of the structure and erect the forms after prefabrication, or use an alternate approved method of attaching the form supports. Remove improper weldment, repair the supporting steel component for any improper welding technique, and perform all required verification and testing at no expense to the Town and to the satisfaction of the Engineer.

Do not use stay-in-place forms until the forming system has been approved by the Engineer. The Contractor is responsible for the performance of the stay-in-place forms.

(b) Structures designed, detailed, and dimensioned for the use of removable forms: Where stay-in-place metal forms are permitted, the Contractor is responsible and shall obtain the approval of the Engineer for the additional slab thickness, elevation changes, changes in design, etc. to accommodate the use of stay-in-place forms. The Engineer will compute pay quantities of the various components of the structure which are paid on a cubic yard basis from the design dimensions shown on the plans with no allowance for changes in deflection or dimensions necessary to accommodate the stay-in-place forms or concrete to fill the form flutes. The Engineer will limit pay quantities of other Contract items that the Contractor increases to accommodate the use of stay-in-place forms to the quantity required for the original plan design.

Submit all changes in design details of bridge structural members that support stay-in-place forms, showing all revisions necessary to enable the supporting components to withstand the additional weight of the forms and the weight of the extra concrete required to fill the form flutes. Include with the design calculations a comparative analysis of the stresses in the supporting components as detailed on the Contract plans and as modified to support the forms. Use the identical method of analysis in each case, and do not allow the stresses in the modified components to exceed those of the component as detailed in the Contract plans. Include with the design the adjusted cambers for any changes in deflection over those shown on the original plans. Modify the beams to provide additional strength to compensate for the added dead loads imposed by the use of stay-in-place forms. Obtain the additional strength by adding strands to the prestressed beams or by adding steel material to increase the section modulus of steel girders. Substantiate the added strength by the comparative calculations. Do not use stay-in-place forms until the forming system and all necessary design revisions of supporting members have been approved by the Engineer.

(c) Structures designed, detailed, and dimensioned for the use of stay-in-place metal forms: Prior to using stay-in-place forms, submit detailed plans for approval of the forming system (including method of support and attachment) together with design calculations. Include an analysis of the actual unit weight of the proposed forming system over the projected plan area of the metal forms. If the weight thus calculated exceeds the weight allowance for stay-in-place metal forms and concrete required to fill the form flutes shown on the plans, then modify the supporting components to support the excess in weight as stipulated in 400-5.7.1(b).

(d) Painting of top flange: For all structures utilizing structural steel supporting components for which stay-in-place metal forms are to be used, paint the vertical sides of the top flange prior to installation of the stay-in-place forms in accordance with 560.

(e) Zinc coating of supports and connections: Apply a zinc paint coating in accordance with Section 562 to all welded areas of supports and to accessories cut from galvanized sheets, which are not embedded in concrete.

**400-5.7.2 Materials:** Fabricate permanent stay-in-place metal forms and supports from steel meeting the requirements of ASTM A 653 having a coating designation G165. Do not use form materials that are less than 22 gauge in thickness.

**400-5.7.3 Design:** Meet the following criteria for the design of permanent bridge deck forms:

(1) Design the forms on the basis of deadload of form, reinforcement, and plastic



concrete plus 50 lb/ft<sup>2</sup> for construction loads. Use a unit working stress in the steel sheet of not more than 0.725 of the specified minimum yield strength of the material furnished, but not to exceed 36,000 psi.

(2) Do not allow deflection under the weight of the forms, reinforcement, and plastic concrete to exceed 1/180 of the form span or 1/2 inch, whichever is less, for form spans of 10 feet or less, or 1/240 of the form span or 3/4 inch, whichever is less, for form spans greater than 10 feet. In all cases, do not use a loading that is less than 120 psf total.

(3) Use a design span of the form equal to the clear span of the form plus 2 inches. Measure the span parallel to the form flutes.

(4) Compute physical design properties in accordance with requirements of the AISI Specifications for the Design of Cold Formed Steel Structural Members, latest published edition.

(5) For all reinforcement, maintain the design concrete cover required by the plans.

(6) Maintain the plan dimensions of both layers of primary deck reinforcement from the top surface of the concrete deck.

(7) Do not consider the permanent bridge deck form as lateral bracing for compression flanges of supporting structural members.

(8) Do not use permanent steel bridge deck forms in panels where longitudinal deck construction joints are located between stringers.

(9) Secure forms to the supporting members by means other than welding directly to the member.

**400-5.7.4 Construction:** Install all forms in accordance with approved fabrication and erection plans.

Do not rest form sheets directly on the top of the stringer or floor beam flanges. Fasten sheets securely to form supports, and maintain a minimum bearing length of 1 inch at each end for forms. Place form supports in direct contact with the flange of the stringer or floor beam. Make all attachments for forms by bolts, clips, or other approved means.

For any permanent exposed steel where the galvanized coating has been damaged, thoroughly clean, wire brush, and paint it with two coats of galvanizing compound in accordance with Section 975 to the satisfaction of the Engineer. Do not touch up minor heat discoloration in areas of welds.

Locate transverse construction joints at the bottom of a flute, and field drill 1/4 inch weep holes at not less than 12 inches on center along the line of the joints.

**400-5.7.5 Placing of Concrete:** Vibrate concrete to avoid honeycomb and voids, especially at construction joints, expansion joints, and valleys and ends of form sheets. Use approved pouring sequences. Do not use calcium chloride or any other admixture containing chloride salts in the concrete.

**400-5.7.6 Inspection:** The Engineer will observe the Contractor's method of construction during all phases of the construction of the bridge deck slab, including the installation of the metal forms; location and fastening of the reinforcement; composition of concrete items; mixing procedures, concrete placement, and vibration; and finishing of the bridge deck. Should the Engineer determine that the procedures used during the placement of the concrete warrant inspection of the underside of the deck, remove at least one section of the forms in each span for this purpose. Do this as soon after placing the concrete as practicable in order to provide visual evidence that the concrete mix and the procedures are obtaining the desired results. Remove an additional section in any span if the Engineer determines that there has been any change in the concrete mix or in the procedures warranting additional inspection.

After the deck concrete has been in place for a minimum period of two days, test for soundness and bonding of the forms by sounding with a hammer as directed by the Engineer. If sounding discloses areas of doubtful soundness to the Engineer, remove the forms from such areas for visual inspection after the concrete has attained adequate strength. Remove permanent bridge deck forms at no

expense to the Town.

At locations where sections of the forms have been removed, the Engineer will not require the Contractor to replace the forms. Repair the adjacent forms and supports to present a neat appearance and to ensure their satisfactory retention. As soon as the form is removed, the Engineer will examine the concrete surfaces for cavities, honeycombing, and other defects. If irregularities are found, and the Engineer determines that these irregularities do not justify rejection of the work, repair the concrete as directed, and provide a General Surface Finish in accordance with 400-15. If the Engineer determines that the concrete where the form is removed is unsatisfactory, remove additional forms as necessary to inspect and repair the slab, and modify the method of construction as required to obtain satisfactory concrete in the slab. Remove and replace all unsatisfactory concrete as directed at no expense to the Town.

If the method of construction and the results of the inspections as outlined above indicate that sound concrete has been obtained throughout the slabs, the amount of sounding and form removal may be reduced when approved.

Provide the facilities for the safe and convenient conduct of the inspection procedures.

#### **400-5.8 Stay-In-Place Concrete Forms:**

**400-5.8.1 General:** Permanent stay-in-place precast reinforced concrete forms may be used in lieu of removable forms to form concrete bridge deck slabs subject to the conditions contained herein. Precast reinforced concrete stay-in-place forms are not permitted to construct a composite concrete deck. Do not use precast prestressed concrete stay-in-place forms to form any permanent bridge decks.

When detailed plans for structures are dimensioned for the use of removable forms, provide additional slab thickness, elevation changes, changes in design, etc. to accommodate the use of stay-in-place forms, subject to the Engineer's approval. The Engineer will compute pay quantities of the various component members of the structure which are paid on a cubic yard basis from the design dimensions shown on the plans with no allowance for changes in deflection and changes in dimensions necessary to accommodate the stay-in-place forms. The Engineer will limit pay quantities of other Contract items which are increased to accommodate the use of stay-in-place forms to the quantity required for the original plan design.

Prior to using stay-in-place forms, submit for approval detailed plans of the forming system and design calculations. Indicate on the plans the form panel sizes, placing patterns, type of mastic or felt bearing material and type and method of caulking between panels. Also, submit appropriate changes in design details of structural members supporting stay-in-place forms showing any revisions necessary to enable the supporting components to withstand the additional weight of the forms and perform equally as contemplated in the plans. All calculations and details submitted shall be sealed by the Contractor's Engineer of Record. Modify the beams to provide additional strength to compensate for the added dead loads imposed by the use of stay-in-place forms. Obtain this strength by adding additional strands to prestressed girders or increasing the section modulus for steel girders. Do not use stay-in-place forms until the forming system and any necessary design revisions of supporting structural members have been approved by the Engineer. The Town is not responsible for the performance of the stay-in-place forms by its approval.

**400-5.8.2 Materials:** Construct permanent concrete forms of precast reinforced concrete with a Class 3 Surface Finish. As a minimum, use the same class of concrete and 28-day minimum compressive strength as being used to construct the bridge deck. Use welded steel wire reinforcement meeting the requirements of Section 931.

**400-5.8.3 Design:** Use the following criteria for the design of permanent bridge deck forms:

(1) Design the forms on the basis of deadload of form, reinforcement, and plastic concrete plus an unfactored live load of 50 psf for construction loads. Meet the AASHTO design requirements for service loads and ultimate loads as applicable.

(2) Deflection under the weight of the forms, reinforcement, and the plastic concrete shall not exceed 1/180 of the form span or 1/2 inch, whichever is less. In all cases, do not use a

loading that is less than 120 psf total.

(3) Use a design span of the form equal to the clear span of the form between supports. Measure the span of concrete forms parallel to the centerline of the form panels.

(4) Compute physical design properties of concrete forms in accordance with current AASHTO design procedures.

(5) Ensure that all steel reinforcement contained in the cast-in-place concrete has the minimum cover shown on the plans or not less than 1 inch, whichever is greater. Measure the minimum cover normal to the plane of the bottom of the cast-in-place concrete. For stay-in-place concrete forms with other than plane surfaces in contact with the cast-in-place concrete, such as regularly spaced geometrical shapes projecting above the plane of the bottom of the cast-in-place concrete, meet the following special requirements:

(a) Space geometrical shapes projecting above the bottom plane of the cast-in-place concrete used to provide support for reinforcement no closer than 3 feet apart and of sufficient height to maintain the required concrete cover on the bottom mat of reinforcing steel.

(b) Construct all other geometrical shapes projecting above the plane of the bottom of the cast-in-place concrete to provide a minimum vertical clearance of 3/4 inch between the closest surface of the projections and the secondary longitudinal reinforcing steel in the deck slab.

(c) Do not allow a minimum horizontal distance from the surface of any transverse reinforcing steel to surfaces of the stay-in-place form of less than 1 1/2 inches.

For all steel reinforcement for the stay-in-place form panels, provide a minimum of 1 inch concrete cover except that, for construction in a salt or other corrosive environment, provide a minimum of 1 1/2 inches concrete cover.

(6) Maintain the plan dimensions of both layers of primary deck reinforcement from the top surface of the concrete deck. Measure the minimum cover of the bottom mat of steel normal to the top of the precast concrete form panel.

(7) Do not consider the permanent bridge deck form as lateral bracing for compression flanges of supporting structural members.

(8) Do not use permanent concrete bridge deck forms in panels where longitudinal deck construction joints are located between stringers.

(9) Do not allow the maximum weight of the concrete form to exceed 40 lb/ft<sup>2</sup> of form surface.

**400-5.8.4 Construction:** Install all forms in accordance with approved fabrication and erection plans. For concrete forms, provide a minimum bearing length of at least 1 1/2 inches but not exceeding 2 1/2 inches. Support concrete forms on the beams or girders by continuous layers of an approved mastic or felt bearing material that will provide a mortar tight uniform bearing. Use a mastic or felt bearing material that has a minimum width of 1 inch and a maximum width of 1 1/2 inches. Seal joints between concrete form panels with caulking, tape, or other approved method.

**400-5.8.5 Placing of Concrete:** Place the concrete in accordance with the requirements of 400-5.7.5. Immediately prior to placing the slab concrete, saturate concrete stay-in-place form panels with water.

**400-5.8.6 Inspection:** Inspect the concrete in accordance with the requirements of 400-5.7.6.

After the deck concrete has been in place for a minimum period of two days, inspect the forms for cracks and excessive form deflection, and test for soundness and bonding of the forms by sounding with a hammer as directed by the Engineer. Remove, for visual inspection, form panels found

to be cracked that show evidence of leakage and form panels which have a deflection greater than adjacent panels by 1/2 inch or more which show signs of leakage. If sounding discloses areas of doubtful soundness to the Engineer, remove the form panels from such areas for visual inspection after the concrete has attained adequate strength. Remove permanent bridge deck form panels at no expense to the Town.

At locations where sections of the forms have been removed, the Engineer will not require the forms to be replaced. Repair the adjacent forms and supports to present a neat appearance and to ensure their satisfactory retention. As soon as the form is removed, the Engineer will examine the concrete surfaces for cavities, honeycombing, and other defects. If irregularities are found, and the Engineer determines that these irregularities do not justify rejection of the work, repair the concrete as directed and provide a General Surface Finish in accordance with 400-15. If the concrete where the form is removed is unsatisfactory, as determined by the Engineer, additional forms shall be removed as necessary to inspect and repair the slab, and modify the methods of construction as required to obtain satisfactory concrete in the slab. Remove and replace all unsatisfactory concrete as directed at no expense to the Town. If the methods of construction and the results of the inspections as outlined above indicate that the Contractor has obtained sound concrete throughout the slabs, the Contractor may moderate the amount of sounding and form removal, when approved. Provide all facilities for the safe and convenient conduct of the inspection procedures.

#### **400-6 Weep Holes.**

Provide weep holes in all abutments, retaining walls, and culverts over 5 feet in height. Provide weep holes that are at least 3 inches in diameter and not more than 10 feet apart, but do not place any weep holes under the area to be occupied by the base or pavement. Place the outlet ends of the weep holes just above the ground line in front of abutments and retaining walls. In culverts, place weep holes approximately 6 inches above the top of the floor slab. Cover the inside ends of all weep holes with wire mesh and at least 2 ft<sup>3</sup> of clean, broken stone or gravel, so placed as to allow free drainage but at the same time prevent the fill from washing out. From approximately 6 inches below the bottom of the inside ends of the weep holes, carry a column of clean, broken stone or gravel at least 1 ft<sup>2</sup> up against the back of the wall to the surface of the original ground.

#### **400-7 Placing Concrete.**

##### **400-7.1 Temperature Restrictions:**

**400-7.1.1 Concreting in Cold Weather:** Do not place concrete when the temperature of the concrete at placement is below 45°F.

Meet the air temperature requirements for mixing and placing concrete in cold weather as specified in Section 346. During the curing period, if NOAA predicts the ambient temperature to fall below 35°F for 12 hours or more or to fall below 30°F for more than 4 hours, enclose the structure in such a way that the concrete and air within the enclosure can be kept above 60°F for a period of 3 days after placing the concrete or until the concrete reaches a minimum compressive strength of 1,500 psi.

Assume all risks connected with the placing and curing of concrete. Although the Engineer may give permission to place concrete, the Contractor is responsible for satisfactory results. If the placed concrete is determined to be unsatisfactory, remove, dispose of, and replace the concrete at no expense to the Town.

**400-7.1.2 Concreting in Hot Weather:** Meet the temperature requirements and special measures for mixing and placing concrete in hot weather as specified in Section 346.

When the temperature of the concrete as placed exceeds 75°F, incorporate in the concrete mix a water-reducing retarder or water reducer if allowed by Section 346.

Spray reinforcing steel and metal forms with cool fresh water just prior to placing the concrete in a method approved by the Engineer.

Assume all risks connected with the placing and curing of concrete. Although the Engineer may give permission to place concrete, the Contractor is responsible for satisfactory results. If the placed concrete is determined to be unsatisfactory, remove, dispose of, and replace the concrete at no

expense to the Town.

**400-7.2 Lighting Requirements:** Provide adequate lighting for all concrete operations conducted at night. Obtain approval of the lighting system prior to starting the concrete operations.

**400-7.3 Inspections before Placing Concrete:** Do not place concrete until the depth and character of the foundation and the adequacy of the forms and falsework have been approved by the Engineer. Do not deposit any concrete until all reinforcement is in place and has been inspected and approved by the Engineer.

**400-7.4 Exposure to Water:** Do not expose concrete other than seal concrete in cofferdams to the action of water before final setting. Do not expose such concrete to the action of salt or brackish water for a period of seven days after placing the concrete. Protect the concrete during this period by keeping salt or brackish water pumped out of cofferdams.

**400-7.5 General Requirements for Placing Concrete:** Do not place any concrete prior to approval of the Contractors quality control plan in accordance with 6-8. Deposit concrete as nearly as possible in its final position. Do not deposit large quantities at one point and then run or work it along the forms. Take special care to fill each part of the forms, to work coarse aggregate back from the face, and to force concrete under and around reinforcing bars without displacing them.

Use a method and manner of placing concrete that avoids the possibility of segregation or separation of aggregates. If the Engineer determines that the quality of concrete as it reaches its final position is unsatisfactory, remove it and discontinue or adjust the method of placing until the Engineer determines that the quality of the concrete as placed is satisfactory.

Use metal or metal-lined open troughs or chutes with no aluminum parts in contact with the concrete. Where steep slopes are required, use chutes that are equipped with baffles or are in short lengths that reverse the direction of movement. Where placing operations would involve dropping the concrete freely more than 5 feet, deposit it through pipes, troughs, or chutes of sheet metal or other approved material. Use troughs, chutes, or pipes with a combined length of more than 30 feet only with the Town's authorization. Keep all troughs, chutes, and pipes clean and free from coatings of hardened concrete by thoroughly flushing them with water after each run or more often if necessary.

Place all foundation concrete against supporting material that is moist at the time of concrete placement. If additional water is required, uniformly apply it ahead of the concrete placement as directed by the Engineer. Do not place concrete on supporting material that is frozen. The Contractor may use a moisture barrier in lieu of controlling the foundation grade moisture when approved by the Engineer.

**400-7.6 Placing Concrete by Belt Conveyor:** Place concrete by means of a belt conveyor system with written Town authorization. Remove conveyor belt systems which produce unsatisfactory results before continuing operations. Take concrete samples for assurance testing at the discharge end of the belt conveyor system. Make available to the Engineer the necessary platform to provide a safe and suitable place for sampling and testing. Remove any concrete placed in an unsatisfactory manner at no expense to the Town before continuing operations.

Use conveyor belt systems that do not exceed a total length of 550 feet, measured from end to end of the total assembly. Arrange the belt assembly so that each section discharges into a vertical hopper arrangement to the next section. To keep segregation to a minimum, situate scrapers over the hopper of each section to remove mortar adhering to the belt and to deposit it into the hopper. Equip the discharge end of the conveyor belt system with a hopper and a chute or suitable deflectors to cause the concrete to drop vertically to the deposit area.

In order to avoid delays due to breakdowns, provide stand-by equipment with an alternate power source prior to the beginning of the placement.

After the beginning of the placement, direct the discharge from the belt conveyor so that the concrete always falls on freshly placed concrete.

**400-7.7 Placing Concrete by Pumping:** In general, use concrete pumping equipment that is suitable in kind and adequate in capacity for the work proposed. Use a pump discharge line that has a minimum diameter of 4 inches. Use a pump and discharge lines that are constructed so that no aluminum surfaces are in contact with the concrete being pumped. Operate the pump to produce a continuous stream of concrete, without air pockets. When using cement slurry or similar material to lubricate the discharge line when pumping begins, collect such material at the point of discharge. Dispose of the collected slurry in areas provided by the Contractor. Control the pump discharge locations so that the placement locations of the various lots of concrete represented by strength test cylinders can be identified in the event the test cylinders indicate deficient strength. When concrete is placed by pumping, take all test samples of concrete at the end of the discharge line, except in accordance with the provisions of Section 346.

**400-7.8 Consolidation:** Consolidate the concrete by continuous working with a suitable tool in an acceptable manner, or by vibrating as set forth in 400-7.11. When not using vibrators, thoroughly work and compact all thin-section work with a steel slicing rod. Spade all faces, and flush the mortar to the surface by continuously working with a concrete spading implement.

**400-7.9 Obstructions:** In cases where, because of obstructions, difficulty is encountered in puddling the concrete adjacent to the forms, bring the mortar content of the mix into contact with the interior surfaces by vibrating the forms. Produce the vibrations by striking the outside surfaces of the forms with wooden mallets or by other satisfactory means. In placing concrete around steel shapes place it only on one side of the shape until it flushes up over the bottom flange of the shape on the opposite side, after which place it on both sides to completion. After the concrete has taken its initial set, exercise care to avoid jarring the forms or placing any strain on the ends of projecting reinforcing bars.

**400-7.10 Requirements for Successive Layers:** Generally, place concrete in continuous horizontal layers, approximately 12 inches thick. To avoid obtaining a plane of separation between batches, do not allow the time before placing the next successive layer to exceed 20 minutes, unless the Engineer determines that adequate fluidity exists in the underlying layer. Generally, leave each layer of concrete unfinished to secure efficient bonding with the overlying layer. To minimize the visibility of joints on exposed faces, finish the top surface of the concrete immediately adjacent to the forms of the exposed face, smoothing with a plaster mason's trowel. Where required, use inset form work to eliminate featheredges and to obtain concrete layers with a minimum thickness of 6 inches. Conduct the operation of depositing and consolidating the concrete so as to form a dense, impervious mass of uniform texture with smooth faces on exposed surfaces. Remove, dispose of, and replace defective concrete as directed by the Engineer and at no expense to the Town.

#### **400-7.11 Vibration of Concrete:**

**400-7.11.1 General:** Consolidate all concrete except seal, steel pile jackets, and concrete for incidental construction by the use of mechanical vibrators.

**400-7.11.2 Vibrators:** Provide adequate vibrators on the project that are approved by the Engineer before beginning concrete work. Generally, provide vibrators of the internal type. For thin sections, where the forms are especially designed to resist vibration, the Contractor may use external vibrators. Use a vibrator with a minimum frequency of 4,500 impulses per minute with sufficient intensity and duration to cause complete consolidation of the concrete without causing segregation of the materials. For vibrating thin, heavily reinforced sections, use heads of such size to secure proper vibration of the concrete without disturbance of either the reinforcing steel or the forms.

**400-7.11.3 Number of Vibrators Required:** Use a sufficient number of vibrators to secure the compaction of each batch before the next batch is delivered, without delaying the delivery. In order to avoid delays due to breakdowns, provide at least one stand-by vibrator, with an appropriate power source.

**400-7.11.4 Method of Vibration:** Use vibrators to consolidate properly placed concrete. Do not use them to move concrete about in the forms. Insert the vibrators in the surface of concrete at points spaced to ensure uniform vibration of the entire mass of the concrete. Insert the vibrator at points that are no further apart than the radius over which the vibrator is visibly effective. Allow the vibrator to sink into the

concrete by its own weight, and allow it to penetrate into the underlying layer sufficiently so that the two layers are thoroughly consolidated together. After thoroughly consolidating the concrete, withdraw the vibrator slowly to avoid formation of holes.

**400-7.11.5 Hand Spading:** When necessary in order to secure well-filled forms, free from aggregate pockets, honeycomb, bubbles, etc., spade the concrete by hand, along the surfaces of the forms and in all corners, following the vibration.

**400-7.12 Columns:** Place concrete in columns in one continuous operation for each lift as shown in the plans.

#### **400-7.13 Slabs and Bridge Decks:**

**400-7.13.1 Bulkheads, Screed Rails, and Screeding Devices:** Strike-off the concrete using an approved metal screed operating on rails or bulkheads. Use devices which do not contain aluminum parts. Prior to placing concrete, provide an approved screed capable of striking-off and screeding the surface of the slab or deck to the required shape. Set all necessary bulkheads and screed rails to the required grade. Use bulkheads, screed rails, and screeding devices that permit vertical profile adjustment to the grade, satisfactory for providing straight transverse slopes, differing transverse slopes broken as shown in the plans and/or transverse slopes with changing grade along the longitudinal length of slab or deck. Locate the screed rails so the entire placement surface can be screeded to grade without using intermediate screed rails, unless approved otherwise by the Engineer.

Use a screed consisting of a truss or heavy beams that will retain its shape under all working conditions, and a set of rotating drums with a diameter sufficient to carry a 2 inch mortar roll in front of and parallel to the axis of the drums, while making an initial pass. Adjust the drums to prevent mortar buildup forming behind the trailing edges of the drums. For long bridges, as defined in 400-15.2.5.1, provide a device that automatically smooths the concrete surface to an untextured finish and that is attached to, and is moved by, the rolling drum screed. As an alternate to the drum type screed, a mechanical screed with a metal strike-off may be used. Equip the mechanical screed with mechanical vibrators to provide continuous uniform vibration to the entire length unless otherwise authorized by the Engineer. Small and irregularly shaped areas that cannot be mechanically screeded may be screeded in a manner approved by the Engineer.

**400-7.13.2 Screed Demonstration:** Subsequent to the placement of all reinforcing steel and prior to placing any slab or deck concrete, demonstrate that the proposed equipment and methods can finish the concrete to the specified grades while maintaining the specified cover over the reinforcement. Provide the demonstration over the entire length and width of the spans to be placed. During the demonstration, load the screed support rails that are cantilevered beyond the fascia girders to simulate the concrete loading that will be placed on the rail support system during actual placement and screeding operations.

**400-7.13.3 Screeding Operations:** Perform concrete placement and screeding as independently controlled mechanical operations. Ensure that the passing of the screed and forward movement of the screeding equipment are independent of the movement of concrete placement equipment.

Level the concrete in front of the screed as near to the finished grade as possible to prevent the screed from rising off the rail and forming uneven ridges behind the screed. Pass the screed over the slab or deck as many times as necessary to obtain a satisfactory surface and provide a concrete surface true to grade and crown, and free of irregularities.

Do not add water to the concrete surface to assist in finishing operations unless specifically authorized by the Engineer. If the Engineer permits the addition of water, apply only a fog mist, above the concrete surface, by means of approved power driven spray equipment.

For long bridges, as defined in 400-15.2.5.1, do not manually or mechanically float the concrete surface or apply a texture by broom or any other device to the concrete surface produced by the screeding process. Correct isolated surface irregularities in accordance with 400-15.2.5.3.

**400-7.13.4 Placing Operations:** Select an approved concrete design mix which ensures

complete placement of all slab or deck concrete between construction joints before initial set begins in the plastic concrete. On placements of 50 yd<sup>3</sup> or less, the minimum placement rate is 20 yd<sup>3</sup>/h. On placements of greater than 50 yd<sup>3</sup>, the minimum placement rate is 30 yd<sup>3</sup>/h. The Engineer will not permit slab or deck placements until an acceptable plan for meeting the minimum placement rate is approved.

**400-7.13.5 Concrete Decks on Steel Spans:** Where concrete decks are placed on steel spans, release the temporary supports under the bridge before placing any concrete.

**400-7.13.6 Concrete Decks on T-Beams:** For cast-in-place T-beam construction, cast the slabs and beams in one continuous operation. As an exception, where special shear anchorage or keys are provided for in the plans or approved by the Engineer, the beams and slabs may be constructed in successive placements.

**400-7.13.7 Diaphragms:** Place concrete diaphragms at least 48 hours before the bridge deck slabs are placed unless otherwise indicated in the plans.

**400-7.13.8 Weather Protection:** Provide an approved means of protecting unhardened concrete from rain. Position the protection system to shield the concrete from rain and running water. Provide a shield impervious to water over the slab or deck concrete, of sufficient size to protect all areas of slab or deck concrete subject to water damage, and include a means of intercepting and diverting water away from freshly placed concrete. Arrange the equipment so that the weather protection system can be erected over unhardened concrete. When there is a possibility of rain during concrete placement operations, place the weather protection system in stand-by readiness, capable of being deployed in a timely manner. Use the weather protection immediately when rain begins so that slab or deck concrete damage will not occur. Do not place concrete during rain.

Assume responsibility for damage to the slab or deck in the case of failure of the weather protection system.

Describe the weather protection materials and methods in the Contractor's quality control plan.

**400-7.14 Concrete Box Culverts:** In general, place the base slab or footing of concrete box culverts, and allow them to set before constructing the remainder of the culvert. In this case, make suitable provision for longitudinal keys. Construct bottom slabs, footings, and apron walls as a monolith if practicable. Where transverse construction joints are necessary, place them at right angles to the culvert barrel, and make suitable provision for keys.

In the construction of box culverts having walls 6 feet or less in height, the sidewalls and top slab may be constructed as a monolith or may place the concrete in the walls and allow it to set before placing the top slab concrete.

Where the height of the box culvert walls exceeds 6 feet, place the walls, and allow the concrete to set at least 12 hours before placing the top slab concrete. In such cases, form keys in the sidewalls.

When casting the walls and top slabs of box culverts as a monolith, ensure that any necessary construction joints are vertical. Design all construction joints with formed keys. Provide keys that are beveled as shown in the plans or as directed, but do not allow the edge of the beveled material forming the key to be less than 1 1/2 inches from the edge of the concrete.

Construct each wingwall, if possible, as a monolith. Ensure that construction joints, where unavoidable, are horizontal and so located that no joints will be visible in the exposed face of the wing above the ground line.

Precast box culvert sections may be used in lieu of cast-in-place box culvert construction provided the provisions in Section 410 are satisfied.

#### **400-8 Seals.**

**400-8.1 General:** Wherever practicable, dewater all foundation excavations, and deposit the concrete in the dry as defined in 455-15.2. Where conditions are encountered which render it impracticable to dewater the foundation before placing concrete, the Engineer may authorize the construction of a concrete foundation seal of the required size. Then, dewater the foundation, and place the balance of the concrete in the dry.



When required to place seal concrete, the Contractor is responsible for the satisfactory performance of the seal in providing a watertight excavation for placing structural concrete. The Town will provide and pay for the seal concrete as an aid to the construction of the structure. Repair seal concrete as necessary to perform its required function at no expense to the Town.

**400-8.2 Method of Placing:** Carefully place concrete deposited under water in the space in which it is to remain by means of a tremie, a closed-bottom dump bucket of not less than 1 yd<sup>3</sup> capacity, or other approved method. Do not disturb the concrete after depositing it. Deposit all seal concrete in one continuous placement. Do not place any concrete in running water, and ensure that all form work designed to retain concrete under water is watertight.

**400-8.3 Use of Tremie:** Use a tremie consisting of a tube having a minimum inside diameter of 10 inches, constructed in sections having water-tight joints. Do not allow any aluminum parts to have contact with the concrete. Ensure that the discharge end is entirely seated at all times, and keep the tremie tube full to the bottom of the hopper. When dumping a batch into the hopper, keep the tremie slightly raised (but not out of the concrete at the bottom) until the batch discharges to the bottom of the hopper. Stop the flow by lowering the tremie. Support the tremie such as to permit the free movement of the discharge end over the entire top surface of the work and to permit its being lowered rapidly when necessary to choke off or retard the flow. Provide a continuous, uninterrupted flow until completing the work. Exercise special care to maintain still water at the point of deposit.

**400-8.4 Time of Beginning Pumping:** Do not commence pumping to dewater a sealed cofferdam until the seal has set sufficiently to withstand the hydrostatic pressure, and in no case earlier than 72 hours after placement of the concrete.

#### **400-9 Construction Joints.**

**400-9.1 Location:** Make construction joints only at locations shown in the plans or in the placement schedule, unless otherwise approved in writing. If not detailed in the plans or placement schedule, or in case of emergency, place construction joints as directed.

**400-9.2 Provisions for Bond and Transmission of Shear:** Use shear key reinforcement where necessary to transmit shear or to bond the two sections together.

**400-9.3 Preparations of Surfaces:** Before depositing new concrete on or against concrete which has hardened, re-tighten the forms. Roughen the surface of the hardened concrete in a manner that will not leave loosened particles, aggregate, or damaged concrete at the surface. Thoroughly clean the surface of foreign matter and laitance, and saturate it with water.

**400-9.4 Placing Concrete:** Continuously place concrete from joint to joint. Carefully finish the face edges of all joints which are exposed to view true to line and elevation.

**400-9.5 Joints in Sea Water or Brackish Water:** For concrete placed in sea water or brackish water, do not place any construction joints between points 2 feet below extreme low tide and 4 feet above extreme high tide.

**400-9.6 Joints in Long Box Culverts:** For long concrete box culverts, vertical construction joints may be placed at a spacing not less than 30 feet. When using transverse construction joints, ensure that longitudinal reinforcing steel is continuous through the joint and that the joint is vertical.

**400-9.7 Crack Control Grooves in Concrete Bridge Decks:** When the plans require crack control grooves in the top surface of decks, either install a tooled "V" groove prior to initial concrete set or saw a groove using an early entry dry cut saw. When using an early entry dry cut saw, operate in accordance with the manufacturer's recommendations. Commence sawing as soon as the concrete has hardened enough to permit standing on the surface without leaving visible tracks or impressions and before uncontrolled concrete cracks occur.

#### **400-10 Expansion Joints.**

**400-10.1 General:** After meeting the smoothness criteria in 400-15, construct expansion joints to permit absolute freedom of movement. Carefully remove all loose or thin shells of mortar likely to cause a spall with movement at a joint from all expansion joints as soon as possible.

**400-10.2 Sealed Joints:** Fill expansion joints with a preformed joint filler. Cut the filler to conform to the cross-section of the structure, and furnish it in as few pieces as practicable, using only a single piece

in each curb section. Do not use small pieces that would tend to come loose. Prepare joints to be sealed and apply the sealer in accordance with approved manufacturer's directions.

**400-10.3 Joint System Installation:** Install expansion joints before or after the deck planing required by 400-15.2.5.5 following the manufacturer's instructions. When installed after deck planing, install the edge rail assemblies in the blockouts on a profile tangent between the ends of the deck and/or approach slab to within a +0 and -1/4 inch variation.

When installed before deck planing, install the edge rail assemblies 3/8 inch,  $\pm 1/16$  inch, below the top surface of the deck or approach slab to compensate for concrete removal during planing.

#### **400-11 Contact and Bearing Surfaces.**

**400-11.1 Separation of Surfaces:** In general, separate all contact surfaces between superstructure and substructure or end walls and between adjacent superstructure sections by a layer of 55 lb roofing felt.

**400-11.2 Finishing of Bearing Surfaces:** Construct bearing surfaces (areas) to the tolerances as specified herein and in the other parts of the Contract Documents. When using neoprene bearing pads, finish the concrete surface to a uniform 'rough' texture using a burlap drag, fine bristle broom or float. For metal or high load rotational bearings, fill minor depressions, 1/8 inch maximum, caused by finishing, bush hammering, or grinding with a low-viscosity epoxy meeting the requirements of 926-1, Type F-2, applied by the use of a squeegee. Bearing surfaces may be ground to final position with carborundum. Check all bearing surfaces with a metallic straightedge prior to setting bearings or neoprene pads.

**400-11.2.1 Deviation from Specified Elevations for Steel Beam Superstructures:** Construct to the elevation shown on the plans plus or minus 0.01 feet and do not exceed a 0.01 feet difference between specified elevations of bearing areas of adjacent bearings measured between the centerlines of bearing areas.

**400-11.2.2 Deviation from Specified Elevations for Concrete Beam Superstructures:** Construct to the elevation shown on the plans plus or minus 0.02 feet.

**400-11.2.3 Projecting Irregularities:** Projecting irregularities will not exceed 1/16 inch.

**400-11.2.4 Variations in Flatness for Neoprene Pads:** In any direction, the pad is to be flat to within 1/16 inch. Pads designated to be sloped are not to deviate from the theoretical slope by the same amount.

**400-11.2.5 Variations in Flatness for Metal or High Load Rotational Bearings:** Construct the bearing area to the tolerance indicated for the measured length along the orthogonal axes.

Bearing area length up to 30 inches long to plus or minus 1/16 inch.

Bearing area length over 30 inches up to 45 inches long to plus or minus 3/32 inch.

Bearing area length over 45 inches long to plus or minus 1/8 inch.

**400-11.3 Beam and Deck Slab Units:** Do not allow the bearing plate or bearing area plane of precast concrete beam and deck slab units, including prestressed units, to deviate from a true plane by more than 1/8 inch when both bearing areas of a unit are tested on a level plane. Provide a bearing plate or bearing area that also proves to be a true plane when tested in all directions of the plane surface with a steel straightedge. In the event that a 100% true plane is not achieved, the Engineer will accept a surface having not less than 80% of its area in a true plane provided the deviations from such true plane are evenly distributed. Remove minor convex projections by grinding with an abrasive stone. The Engineer will accept minor depressions, provided that they amount to not more than 20% of the bearing area, are evenly distributed over the entire bearing area, and are not deeper than 1/8 inch.

**400-11.4 Bearing Pads:** Use bearing pads for seating bridge shoes, ends of beams, and slabs of the types specified or required in the plans.

Furnish and install Composite Neoprene Pads as detailed in the plans. Place neoprene pads, where specified or required, directly on masonry surfaces finished in accordance with the requirements of this Article. Ensure that pads, bearing areas of bridge seats, and metal bearing plates are thoroughly cleaned and free from oil, grease, and other foreign materials.

Exercise care in fabrication of related metal parts to avoid producing conditions detrimental to the performance of the pads, such as uneven bearing, excessive bulging, etc.

**400-12 Anchor Bolts and Dowels.**

Set anchor bolts and dowels as specified in Section 460.

Galvanize all anchor bolts as specified in Section 962.

**400-13 Epoxy Bonding Compounds.**

Where epoxy bonding compounds for bonding concrete are specified or required, apply the epoxy bonding materials only to clean, dry, structurally sound concrete surfaces. Provide surface preparation, application, and curing of epoxy bonding compound in strict accordance with the manufacturer's recommendations for each particular application. Use an epoxy bonding compound listed on the Qualified Products List.

**400-14 Removal of Forms.**

Use the table below as the criterion for minimum time or compressive strength required before removal of forms or supports.

When using the time period criterion, include in the time period all days except days in which the temperature falls below 40°F.

Use the specified 28-day minimum compressive strength value as stated in 346-3.1 for each Class of Concrete utilized.

Location of Concrete Placement	Minimum Time for Form Removal for any Strength Concrete	Minimum (%) of 28-day Compressive Strength for Form Removal
(1) Deck slabs, top slabs of culverts and bottom of caps, forms under sidewalks, and safety curb overhangs extending more than 2 feet		
(a) Class II (Bridge Deck)	7 days*	75*
(b) Class II (Other than Bridge Deck)	7 days	75
(c) Class III	7 days	70
(d) Class IV	7 days	60
(e) Class V	7 days	50
(2) Walls, piers, columns, sides of beams and other vertical surfaces	24 hours**	50**
(3) Front face form of curbs	6 hours	70
* Reference 400-16.4		
**Do not place additional load on the section until 70% of the specified 28-day concrete strength is attained. Also, refer to 400-7.4.		

When using the percent of required strength, cast test cylinders from representative concrete for compressive strength determination.

Provide the Engineer with a minimum of three cylinder breaks, established at different curing times and concrete strength, so he can develop a curve relating curing time to concrete strength. Cure such test cylinders as nearly as practical in the same manner as the concrete in the corresponding structural component, and test them in accordance with ASTM C 39 and ASTM C 31. Perform casting, curing, and testing at no expense to the Town and under the observation of the Engineer. When approved by the Engineer, the Contractor may use test results certified by a testing laboratory approved by the Town as a basis for form removal. When concrete strength tests indicate a compressive strength equal to or greater

than the percentage of specified strength shown in the table above, the Contractor may remove the forms. Curing periods so established may be used so long as the ambient temperature is equal to or greater than the temperature existing during the curing of the test cylinders. When the temperature falls 15°F or more below the ambient temperature existing during the test cylinder curing period, repeat the test procedure outlined above, and establish a different curing period for the different ambient temperature.

Do not remove forms at any time without the consent of the Engineer. Even when the Engineer provides consent to remove the forms, the Contractor is responsible for the work.

#### **400-15 Finishing Concrete.**

**400-15.1 General Surface Finish (Required for All Surfaces):** After placing and consolidating the concrete, strike-off all exposed surfaces to the lines and grades indicated in the plans in a manner that will leave a surface of uniform texture free of undesirable surface irregularities, cavities, and other defects. Cut back metal ties supporting reinforcement, conduit, and other appurtenances a minimum of 1 inch from finished surface. After removing excess mortar and concrete and while the concrete is still in a workable state, carefully tool all construction and expansion joints. Leave joint filler exposed for its full length with clean edges. Ensure that finished work in addition to that specified above is compatible and complementary to the class of surface finish required.

Immediately after removing forms from any exposed concrete surface, remove all fins and irregular projections flush with the surface. Clean, saturate with water, and point all holes, tie cavities, honeycomb, chips and spalls with an approved high-strength, non-metallic, non-shrink grout meeting the requirements of Section 934, mixed and applied in accordance with the manufacturer's recommendations. Exercise care during the roughening process to prevent additional defacement and damage to the formed surface.

In the event unsatisfactory surfaces are obtained, repair these surfaces by methods approved by the Engineer or the affected concrete will be rejected. Repair any surface or remove rejected concrete at no expense to the Town.

#### **400-15.2 Surface Finishes:**

**400-15.2.1 General:** In addition to the general surface work specified for all exposed concrete surfaces, the Engineer may require one of the classes of surface finish listed below. For all such exposed surfaces, begin finish work for the applicable class specified, along with the general finish work, immediately after removal of the forms. In order to further ensure the required quality of the finish, remove forms no later than the minimum time specified for the forms to remain in place. Satisfactorily repair finished concrete surfaces which are subsequently disfigured or discolored at no expense to the Town.

Provide the required class of surface finish for the various items of structural concrete as shown in the plans.

**400-15.2.2 Class 1 Surface Finish:** As soon as the pointing has sufficiently set, thoroughly saturate the exposed surfaces with water, and rub them with a medium coarse carborundum stone. Continue rubbing until the surface has been ground to a paste and remove all form marks, irregularities, and projections. In this process, do not introduce any additive material other than water. After the rubbing has produced a smooth surface of uniform color, allow the material which has been ground to a paste to reset under proper curing conditions. Subsequently, as a second operation, re-saturate the concrete surfaces with water, and thoroughly rub them with a fine carborundum stone. Continue this rubbing until the surface has a smooth, fine grain texture of uniform color.

The Contractor may substitute a Class 5 applied finish coating in accordance with 400-15.2.6 as an alternate surface finish on all areas where Class 1 surface finish is specified.

**400-15.2.3 Class 2 Surface Finish:** As soon as pointing has sufficiently set, thoroughly saturate the exposed concrete surfaces with water and rub them with a medium coarse carborundum stone. Continue rubbing until the surface has been ground to a paste and remove all form marks, irregularities, and projections. In this process, do not introduce any additive material other than water.

After rubbing has produced a smooth surface finish, of uniform color, carefully brush the material which has been ground to a paste to a uniform texture, and allow it to reset under proper curing conditions. Carefully protect these surfaces from disfigurement and discoloration during subsequent construction operations.

**400-15.2.4 Class 3 Surface Finish:** Where this surface finish is specified, use metal forms or timber forms with a form liner. Where specified or required on the plans, use No. 89 coarse aggregate for concrete.

After concrete has been placed in the forms and compacted, finish all exposed surfaces which are not contained by the forms to produce a surface texture as nearly equal to that produced by the form as practicable. Generally, finish unformed surfaces to a smooth, dense surface with a steel trowel.

Perform all work, including general surface finish work, in a manner that will preserve the same surface texture and color produced by the form. Pointed areas may be rubbed with a dry carborundum stone.

**400-15.2.5 Class 4 Deck Finish:**

**400-15.2.5.1 General:** Apply a Class 4 finish on bridge decks and concrete approach slabs. On Short Bridges (bridges and approach slabs having a combined length less than or equal to 100 ft), and on Miscellaneous Bridges (Pedestrian, Trail, and Movable Spans) regardless of length, meet the finish and smoothness requirements of 400-15.2.5.2 and 400-15.2.5.4. On Long Bridges (bridges and approach slabs having a combined length greater than 100 ft) meet the finish and smoothness requirements of 400-15.2.5.3 and 400-15.2.5.5. After meeting the screeding requirements of 400-7.13 and curing requirements of 400-16 and the smoothness requirements, herein, groove the bridge deck and approach slabs.

Regardless of bridge length, finish decks with less than 2 1/2 inches of top cover in accordance with the requirements for Short Bridges.

**400-15.2.5.2 Plastic Surface Finish for Short and Miscellaneous Bridges:** After screeding is completed, check the surface of the plastic concrete with a 10 foot straightedge, positioning and half-lapping the straightedge parallel to the centerline to cover the entire surface. Immediately correct deficiencies of more than 1/8 inch, measured as an ordinate between the surface and the straightedge.

Finish the concrete surface to a uniform texture using a burlap drag, fine bristle broom or float. Finish the deck to a smooth surface having a sandy texture without blemishes, marks or scratches deeper than 1/16 inch.

**400-15.2.5.3 Plastic Surface Finish for Long Bridges:** Do not moisten, manually float or apply texture to the concrete surface after the screed, with attached smoothing device, has passed unless correction of isolated surface irregularities is warranted and this should be done as soon as possible after screeding while the concrete is plastic. Correct all flaws such as cavities, blemishes, marks, or scratches that will not be removed by planing.

If the Engineer permits the addition of water when correcting flaws, apply moisture to the concrete surface only if required and only in the immediate vicinity of the isolated irregularity. Apply a quantity of moisture not greater than what is needed to facilitate correction of the irregularity and apply only a fog mist, above the concrete surface, by power driven spray equipment approved by the Engineer.

**400-15.2.5.4 Smoothness Requirements for Short Bridges and Miscellaneous Bridges (including approach slabs):** Perform a final straightedge check with a 10 foot straightedge, positioning and half-lapping the straightedge parallel to the centerline, approximately 5 feet apart to cover the entire surface. Correct all irregularities greater than 3/16 inch measured as an ordinate to the straightedge, by grinding. Perform grinding by the abrasive method using hand or power tools or by

machine, to leave a smooth surface within a 1/8 inch tolerance.

**400-15.2.5.5 Smoothness Evaluation and Concrete Surface Planing, Long Bridges (including approach slabs):** Prior to planing, provide a smoothness evaluation of the completed bridge deck and concrete approach slab riding surfaces by a computerized Cox California-type profilograph in accordance with the criteria herein and FM 5-558E. Furnish this evaluation through an independent provider approved by the Engineer, using equipment calibrated by the Engineer. The vehicular riding surfaces subject to this evaluation include all bridge deck and concrete approach slab surfaces between gutter lines

Prior to initial profilograph testing, complete work on the bridge deck. Thoroughly clean and clear the bridge deck and approach slab area to be evaluated for smoothness of all obstructions and provide the smoothness evaluation. Ensure that no radio transmissions or other activities that might disrupt the automated profilograph equipment are allowed during the evaluation.

Average the Profile Index Value for the bridge deck, including the concrete approach slabs, for the left and right wheel path of each lane. The maximum allowable Profile Index Value for acceptable smoothness is 10 inches per mile utilizing the 0.2 inch blanking band. Apply this criteria to each 300 feet of each lane. Additionally, correct individual bumps or depressions exceeding a cutoff height of 0.3 inch from a chord of 25 feet (see ASTM E-1274) on the profilograph trace. Ensure that the surface meets a 1/4 inch in 10 feet straightedge check made transversely across the deck and approach slabs if determined necessary by the Engineer. Provide additional profilograph testing as necessary following longitudinal planing and any other actions taken to improve smoothness, until a profile meeting the acceptance criteria is obtained.

Regardless of whether expansion joints are installed before or after deck planing is complete, plane off the concrete deck surface to a minimum depth of 1/4 inch and also meet or exceed the profilograph smoothness criteria. Plane the entire bridge deck and concrete approach slab surfaces longitudinally using a self-propelled planing machine with gang mounted diamond saw cutting blades specifically designed for such work. Use the profilograph generated smoothness data, to establish the optimum planing machine settings. Plane the deck surface close to the gutter line so that there is a smooth transition, without vertical faces or sudden surface discontinuities, from the fully planed surface to the unplanned surface at the gutter line. Use a machine with a minimum wheel base length of 15 feet, constructed and operated in such manner that it does not cause strain or damage to the deck surface, excessive ravels, aggregate fractures or spalling. The equipment shall be approved by the Engineer. Perform longitudinal planing parallel to the roadway centerline, and provide a consistent, textured surface. Clean the surface of all slurry/debris generated during this work concurrently with operation of the machine.

After the deck has been planed the initial 1/4 inch, reevaluate the pavement smoothness using the profilograph testing described above. Perform cycles of planing and profilograph retesting as necessary until the deck is in compliance with the smoothness criteria but do not exceed the maximum concrete removal depth of 1/2 inch.

**400-15.2.5.6 Grooving:** After the concrete surface profile, as required by 400-15.2.5, has been accepted by the Engineer, and prior to opening the bridge to traffic, groove the bridge deck and approach slabs perpendicular to the centerline of the structure. Do not groove the deck surface of pedestrian or trail bridges unless otherwise shown in the Contract Documents. Cut grooves into the hardened concrete using a mechanical saw device which will leave grooves nominally 1/8 inch wide and 3/16 inch deep. Space the grooves apart in random spacing center of grooves in the following sequence: 3/4 inch, 1 1/8 inch, 5/8 inch, 1 inch, 5/8 inch, 1 1/8 inch, 3/4 inch in 6 inch repetitions across the width to be grooved in one pass of the mechanical saw device. One 6 inch sequence may be adjusted by 1/4 sequence increments to accommodate various cutting head widths provided the general pattern is carried out. The tolerance for the width of the grooves is +1/16 to -0 inch and the tolerance for the depth of grooves is ±1/16 inch. The tolerance for the spacing of the grooves is ±1/16 inch.

Cut grooves continuously across the deck or approach slab to within 18 inches of

gutter lines at barrier rail, curb line and median divider. At skewed metal expansion joints in bridge deck surfaces, adjust groove cutting by using narrow width cutting heads so that all grooves of the bridge deck surface or approach slab surface end within 6 inches, measured normal to centerline of the joint, leaving no ungrooved surface adjacent to each side of the joint greater than 6 inches in width. Ensure that the minimum distance to the first groove, measured normal from the edge of the concrete joint or from the junction between the concrete and the metal leg of the armored joint angle, is 1 inch. Produce grooves that are continuous across construction joints or other joints in the concrete surface less than 1/2 inch wide. Apply the same procedure described above where the gutter lines at barrier rails, curb lines and median dividers are not parallel to the centerline of the bridge to maintain the 18 inches maximum dimension from the grooves to the gutter line. Cut grooves continuously across formed concrete joints.

#### **400-15.2.6 Class 5 Applied Finish Coating:**

**400-15.2.6.1 General:** Place an applied finish coating upon all concrete surfaces where the plans indicate Class 5 Applied Finish Coating. Apply the finish coating after completion of the general surface work specified for all exposed concrete surfaces. Select an Applied Finish Coating from the Departments Qualified Products List meeting the requirements of Section 975.

**400-15.2.6.2 Material:** For the coating material, use a commercial product designed specifically for this purpose. Use only coating material that is manufactured by one manufacturer and delivered to the job site in sealed containers bearing the manufacturer's original labels. Submit a copy of the manufacturer's printed instructions to the Engineer.

**400-15.2.6.3 Surface Preparation:** Prepare the surface prior to the application of an applied finish coating by providing a surface finish in accordance with the requirements of 400-15.1. The Engineer will not require surface voids that are 1/4 inch or less in width and depth to be grouted prior to application of the finish coating. Fill surface void larger than 1/4 inch in width and depth an approved high strength, non-metallic, non-shrink grout meeting the requirements of Section 934, mixed and applied in accordance with the manufacturer's recommendations. Apply the grout by filling the surface voids using burlap pads, float sponges, or other acceptable methods. As soon as the grout has taken its initial set, brush the surface to remove all loose grout, leaving the surface smooth and free of any voids. Ensure that the surface to be coated is free from efflorescence, flaking coatings, curing compound, dirt, oil, and other substances deleterious to the applied finish coating. Prior to application of the finish coating onto precast or cast-in-place concrete surfaces, test the concrete surface at 30 foot intervals for the presence of curing compound using one or two drops of muriatic acid placed on the concrete surface. If curing compound is present, there will be no reaction between the acid and the concrete. If there is no reaction, remove the compound by pressure washing the concrete surfaces. Prepare the surfaces in accordance with the manufacturer's recommendations, and ensure that they are in a condition consistent with the manufacturer's requirements.

**400-15.2.6.4 Application:** Apply the finish coating in a manner recommended by the manufacturer. When applying the finish coating by spraying, supply heavy duty spray equipment capable of maintaining a constant pressure necessary for proper application. Mix, apply, and cure all coating materials in accordance with the manufacturer's printed instructions. Apply the finished coating at a rate of  $50 \pm 10$  ft<sup>2</sup>/gal.

**400-15.2.6.5 Finished Product:** Produce a texture of the completed finish coat that is generally similar to that of rubbed concrete. Ensure that the completed finished coating is tightly bonded to the structure and presents a uniform appearance and texture. If necessary, apply additional coats to produce the desired surface texture and uniformity.

Upon failure to adhere positively to the structure without chipping, flaking, or peeling, or to attain the desired surface appearance, remove coatings entirely from the structure, and reapply the finish coating after surface preparation until achieving the desired finished product. Do not allow the average thickness of the completed finish coating to exceed 1/8 inch.

**400-15.2.6.6 Material Tests and Certification:** Before any portion of any shipment of finish coating is applied on the project, furnish the Engineer with a certificate from the

manufacturer attesting that the commercial product furnished conforms to the same formula as that previously subjected to the tests specified in Section 975. In addition, submit the following product analysis, obtained from the manufacturer, for each batch of the material used:

- (a) Weight per gallon.
- (b) Consistency (Krebs Units).
- (c) Weight percent pigment.
- (d) Weight percent vehicle solids.
- (e) Infra-red spectra of vehicle solution.

#### **400-15.2.7 Final Straightedging for Surfaces to Receive Asphalt Concrete Surface:**

Test the slab surfaces of poured-in-place decks which are to be surfaced with an asphalt concrete wearing course for trueness with a 10 foot straightedge, as specified above. As an exception, correct only irregularities of more than 1/4 inch measured as an ordinate (either above or below the general contour of the surface). The Engineer will not require belting or brooming of slabs that are to be surfaced with an asphalt concrete wearing course. For curing, meet the requirements specified for other deck slabs.

**400-15.2.8 Finishing Bridge Sidewalks:** Provide bridge sidewalks, that are not finished in accordance with the requirements of Section 522, a Class 4 finish.

#### **400-16 Curing Concrete.**

**400-16.1 General:** Cure cast-in-place and precast (non-prestressed) concrete as required herein for a minimum duration of 72 hours. If forms are loosened or removed before the 72 hour curing period is complete, expand the curing to cover these surfaces by either coating with curing compound or extending the continuous moist cure area. Maintain concrete surface moisture at all times until curing is begun. Prevent water sheen loss on flat work by use of an evaporation retarder and/or by applying supplemental moisture by misting. During the construction of footings and bridge decks when the forecasted or actual wind speed exceeds 10 mph, evaporation counter measures are required. The Quality Control Plan shall ensure evaporation counter measures which will limit evaporation to less than 0.20 lb/ft<sup>2</sup>/hr.

**400-16.2 Methods:** Except where other curing methods are specified, select from the following options the chosen method(s) for curing all concrete components and indicate the method to be used in the Quality Control Plan.

(a) Continuous Moisture: Place burlap on the surface and keep it continuously saturated for the curing period by means of soaker hoses or automatic sprinklers. Water flow may be metered to cycle repetitively for five minutes on and five minutes off during the 72 hour curing period. Do not apply moisture manually. If side forms are loosened or removed during the curing period, extend the burlap so as to completely shield the sides of the members.

(b) Membrane Curing Compound: Apply a white Type 2 curing compound to all surfaces at a uniform coverage as recommended by the manufacturer but not less than 0.06 gal/yd<sup>2</sup>. Allow surfaces covered by the membrane curing compound to remain undisturbed for the curing period. Recoat any cracks, checks or other defects in the membrane seal which are detected during the curing period within one hour. If side forms are loosened during the curing period, maintain surface moisture and remove the forms within one hour and immediately coat the formed surfaces with a membrane curing compound. Bottom surfaces shall be similarly coated after removal of or from the forms.

If curing compound is to be applied by spraying, use a compressor driven sprayer of sufficient size to provide uniform mist. Standby equipment is required in case of mechanical failure and hand held pump-up sprayers may be used only as standby equipment.

(c) Curing Blankets: Curing blankets may be used for curing the top surfaces of members while the member side forms remain in place. Do not use curing blankets which have been torn or punctured. Securely fasten all edges to provide as tight a seal as practical. Should the system fail to maintain a moist



condition on the concrete surface, discontinue use of the blankets and continue curing using another method. Keep curing blankets in place for the duration of the curing period.

(d) Accelerated Cure:

(1) General: Accelerated curing of the concrete can be achieved by use of either low pressure steam curing, radiant heat curing or continuous moisture and heat curing. If accelerated curing is completed before the 72 hour curing period has elapsed, continue curing for the remaining part of the 72 hour curing period in accordance with one of the curing methods listed above.

If accelerated curing is used, furnish temperature recording devices that will provide accurate, continuous and permanent records of the time and temperature relationship throughout the entire curing period. Provide one such recording thermometer for each 200 feet of placement length or part thereof. Initially calibrate recording thermometers and recalibrate at least annually.

The preheating period shall equal or exceed the time of initial set as determined by ASTM C 403 and shall not be less than 4 hours. When the ambient air temperature is above 50°F, allow the member to remain undisturbed in the ambient air for the preheating period. If the ambient air temperature is below 50°F, apply heat during the preheating period to hold the air surrounding the member at a temperature of 50 to 90°F.

To prevent moisture loss from exposed surfaces during the preheating period, enclose members as soon as possible after casting or keep the surfaces wet by fog mist or wet blankets. Use enclosures for heat curing that allow free circulation of heat about the member with a minimum moisture loss. The use of tarpaulins or similar flexible covers may be used provided they are kept in good repair and secured in such a manner to prevent the loss of heat and moisture. Use enclosures that cover the entire placement.

During the application or removal of the heat, do not allow the temperature rise or fall within the enclosure to exceed 40°F/hr. Do not allow the curing temperature throughout the enclosure to exceed 160°F. Maintain the curing temperature within a temperature range of 130 to 160°F until the concrete has reached the required form removal strength for precast and cast-in-place components or the required release strength for prestressed concrete components.

(2) Low-Pressure Steam: The steam used shall be in a saturated condition. Do not allow steam jets to impinge directly on the concrete, test cylinders, or forms. Cover control cylinders to prevent moisture loss and place them in a location where the temperature is representative of the average temperature of the enclosure.

(3) Curing with Radiant Heat: Apply radiant heat by means of pipes circulating steam, hot oil or hot water, or by electric heating elements. Do not allow the heating elements to come in direct contact with the concrete or the forms. Distribute sources of heat in a manner that will prevent localized high temperatures above 160°F. To prevent moisture loss during curing, keep the exposed surfaces wet by fog mist or wet blankets.

(4) Continuous Moisture and Heat: This method consists of heating the enclosure in combination with the continuous moisture method described above.

In addition to the curing blankets, an auxiliary cover for retention of the heat will be required over the entire placement. Support this cover at a sufficient distance above the placement being cured to allow circulation of the heat.

**400-16.3 Silica Fume Concrete:** Cure silica fume concrete a minimum of 72 hours using continuous moisture cure. No substitution of alternative methods nor reduction in the time period is allowed. After completion of the 72 hour curing period, apply a membrane curing compound to all concrete surfaces. Apply curing compound according to 400-16.2.

**400-16.4 Bridge Decks:** Cure bridge decks for a duration of seven days. Apply a membrane curing compound to the deck top surface in accordance with 400-16.2 using a compressor driven sprayer. In

general, apply curing compound to a concrete deck when the surface is damp and after all pooled water has evaporated. For Short bridges, begin applying curing compound immediately after the initially placed concrete has been floated, straightedged, textured and a damp surface condition exists and continue applying compound as concrete placement progresses with as little interruption as possible until the entire deck surface has been coated with compound. For Long bridges, begin applying curing compound to the initially placed concrete as soon as a damp surface condition exists and continue applying compound as concrete placement progresses with as little interruption as possible until the entire deck surface has been coated with compound. However, for both Short and Long bridges, the elapsed time between the initial placement of deck concrete and the completed application of curing compound must not exceed 120 minutes. The 120 minute limit may be extended by the Engineer if project specific factors (cool temperatures, high humidity, retarding admixtures, etc.) are prolonging wet surface conditions.

Prior to the first deck placement, submit to the Engineer the method that will be used to periodically measure the rate of application of curing compound in, gallons/sq ft as the deck placement progresses. Prior to the placement of each deck, submit to the Engineer the anticipated quantity of curing compound in gallons along with the corresponding square feet of deck to be covered to meet the coverage rate in 400-16.2. Compute the actual quantity of curing compound applied at the conclusion of each deck placement and submit the quantity to the Engineer. Apply the curing compound from a work platform.

Place curing blankets on all exposed surfaces which are not formed as soon as possible with minimal effect on the surface texture. Place the curing blankets with sufficient overlapping seams to form an effective moisture seal. Before using curing blankets, mend tears, splits, or other damage that would make them unsuitable. Discard curing blankets that are not repairable. Wet all curing blankets immediately after satisfactorily placing them and maintain them in a saturated condition throughout the seven day curing period. Supply sufficient quantity of potable water at the job site for wetting the blankets.

Where a bridge deck slab is to be subjected to walking, wheeling or other approved construction traffic within the seven day curing period, protect the curing blankets and the slab surface from damage by placing wooden sheeting, plywood or other approved protective material in the travel areas.

When the ends of the curing blankets are rolled back to permit screeding of adjacent bridge deck slabs, keep the exposed surfaces wet throughout the period of exposure.

Removal of bottom and side forms after 72 hours is acceptable upon compliance with 400-14. Apply membrane curing compound to all surfaces stripped of forms within one hour of loosening. Apply curing compound according to 400-16.2.

**400-16.5 Construction Joints:** Cure construction joint areas using either the continuous moisture or curing blankets method.

**400-16.6 Traffic Barriers, Railings, Parapets and End Post:** Ensure concrete is cured in accordance with 400-16.2(b). When construction is by the slip form method, coat all concrete surfaces with a curing compound that meets the requirements of 925-2, either within 30 minutes of extrusion or before the loss of water sheen, whichever occurs first. Ensure a curing compound coating period of not less than seven days after application. Prior to each concrete placement, submit to the Engineer the method that will be used to periodically measure the rate of application in gallons/sq ft. Also, prior to each placement, submit to the Engineer the anticipated quantity of curing compound in gallons that will be used to meet the coverage rate specified in 400-16.2 along with the corresponding square footage of barriers, railings, parapets and end posts to be coated with that quantity. Compute the actual quantity of curing compound that is applied during each concrete placement and submit the quantity to the Engineer. Applied Finish Coatings, that are on the Qualified Products List and that are flagged as permitted for use as a curing compound, may be used in lieu of a curing compound; If an Applied Finish Coating is used in lieu of a curing compound, have a backup system that is in full compliance with 400-16.2(b) available at all times to ensure that an effective alternative system will be immediately available if the Applied Finish Coating cannot be applied within 30 minutes of extrusion or before the loss of water sheen.

**400-16.7 Removal of Membrane Curing Compounds:** Provide the longest possible curing

duration; however, remove curing compound on portions of members to be bonded to other concrete. Compounds may be removed by either sand or water blasting. Water blasting requires the use of potable water and a minimum nozzle pressure of 2,900 psi.

#### **400-17 Protection of Concrete.**

**400-17.1 Opening to Traffic:** Close concrete bridge decks and culverts to traffic for a period of at least 14 days after placing and for such additional times as deemed advisable. In the operation of placing, the Contractor may wheel concrete across previously poured slabs after they have set for 24 hours, provided plank runways are used to keep the loads over the beams.

**400-17.2 Storing Materials on Bridge Slabs:** Do not store heavy equipment or material, other than light forms or tools, on concrete bridge slabs until 14 days after they have been poured. For all stockpiles, tools, and equipment stored on bridge slabs at any time, obtain prior approval by the Town, and the Engineer will require any such stored materials or equipment to be dispersed in order to avoid overloading any structural part.

**400-17.3 Time of Placing Superstructure:** In the case of piers or bents with concrete caps, do not place the weight of the superstructure or of beams on the caps until they have reached the ages required in the following table:

Superstructure	seven days
Beams	three days

**400-17.4 Alternate Procedure:** As an alternate procedure, in lieu of the time delay periods set forth in 400-17.1 and 400-17.3, test beams may be cast from representative concrete and cure them identically with the concrete in the corresponding structural component. Test the test beams in accordance with ASTM C 31 and ASTM C 78. When the test results indicate a flexural strength of 550 psi or more, concrete bridge decks and culverts may be opened to traffic and the superstructure and beams placed on caps.

#### **400-18 Precast Planks, Slabs, and Girders.**

**400-18.1 General:** Where so shown in the Contract Documents, the Contractor may construct concrete planks, slabs, girders, and other structural elements by precasting. In general, use a method that consists of casting structural elements in a casting yard, curing as specified in 400-16, transporting them to the site of the work, installing them on previously prepared supports and, where so shown in the plans, joining them with poured-in-place slabs or keys. Handle and install precast prestressed members as specified in Section 450.

**400-18.2 Casting:** Cast precast elements on unyielding beds or pallets. Use special care in casting the bearing surfaces on both the elements and their foundations in order that these surfaces shall coincide when installing the elements. Check bearing surfaces on casting beds with a level and a straightedge prior to the casting. Similarly check corresponding surfaces on the foundations during finishing operations.

**400-18.3 Poured-in-Place Keys:** Where precast elements are to be joined with poured-in-place keys, carefully align the elements prior to pouring the keys.

**400-18.4 Surface Finish:** Finish the surface as specified in 400-15, except that where precast slabs and poured-in-place keys form the riding surface, give the entire surface a broomed finish.

**400-18.5 Moving, Placing, and Opening to Traffic:** Reinforced precast members may be moved from casting beds, placed in the structure, and opened to traffic at the ages shown in the following table:

Handling from casting beds to storage areas.....	7 days
Placing in structure.....	14 days
Opening to traffic:	
Precast elements.....	14 days

Cast-in-place slabs over precast girders.....	14 days
Cast-in-place keys joining precast slabs.....	7 days

As an alternate procedure, in lieu of the time delay periods set forth above, test beams may be cast from representative concrete, and cure them identically with the concrete in the corresponding structural component. Test the test beams in accordance with ASTM C 31 and ASTM C 78. When the test results indicate a flexural strength of 550 psi, or more, any of the operations listed above may proceed without completing the corresponding time delay period.

**400-18.6 Setting Prestressed Slabs:** Before permitting construction equipment on the bridge to erect slab units, submit sketches showing axle loads and spacing and a description of the intended method of setting slab units to the Engineer for approval. Do not use axle loads, spacing, and methods of setting which produce stresses in the slab units greater than the allowable stress.

**400-18.7 Protection of Precast Elements:** The Contractor is responsible for the safety of precast elements during all stages of construction. The Engineer will reject any precast elements that become cracked, broken, seriously spalled, or structurally impaired. Remove rejected precast elements from the work at no expense to the Town.

**400-18.8 Form Material:** Form material used to form hollow cores may be left in place. Ensure that the form material is neutral with respect to the generating of products harmful to the physical and structural properties of the concrete. The Contractor is responsible for any detrimental effects resulting from the presence of the form material within the precast element.

#### **400-19 Cleaning and Coating Concrete Surfaces.**

Water blast existing concrete surfaces as shown in the plans to be coated. Use water blast equipment producing a minimum working pressure of 2,900 psi with a gauge at or near the nozzle to confirm the working pressure. After cleaning, apply a Class 5 Applied Finish Coating as directed in the plans.

#### **400-20 Approach Slabs.**

Construct approach slabs at the bridge ends in accordance with the applicable requirements of Section 350 using Class II (Bridge Deck) concrete. Place the reinforcement as specified in 350-7 and Section 415.

The approach slab may be opened to traffic, vehicular or construction equipment, 14 days after concrete placement or after the prescribed curing period has elapsed and the concrete has attained the required 28 day cylinder strength.

#### **400-21 Classification of Cracks in Concrete Structures to be Sealed.**

Cracks are classified as structural and nonstructural. Do not seal or repair structural cracks without having a repair procedure approved in advance by the Engineer. Seal nonstructural cracks in accordance with the criteria listed in Table I below. Structural cracks are those which are induced by external forces which produce internal stresses exceeding the tensile strength of the concrete, commonly referred to as working cracks, and those caused by overloads. Nonstructural cracks are those which appear as a result of atmospheric effects and localized constraint effects, commonly called shrinkage cracks. In any case, the Engineer will determine the classification of cracks.

Table I			
Criteria for Sealing Nonstructural Cracks During Construction			
Environment (*4)	Crack Width	Location (*2)	Treatment (*3) (*1)
Extremely Aggressive	Less than 0.006 inch	Substructure and Superstructure	Coat with penetrant sealer

Greater than 0.006 inch and less than 0.012 inch	Substructure including Superstructure less than 18 feet above existing ground or high water elevation	Epoxy injection	
Superstructure including Substructure more than 18 feet above existing ground or high water elevation		Coat with penetrant sealer	
Greater than 0.012 inch and less than 0.025 inch	Substructure and Superstructure	Epoxy injection	
Moderately Aggressive	Less than 0.006 inch	Substructure and Superstructure	No treatment
Greater than 0.006 inch and less than 0.012 inch	Substructure including Superstructure less than 18 ft above existing ground or high water elevation	Coat with penetrant sealer	
Superstructure including Substructure more than 18 ft above existing ground or high water elevation		No treatment	
Greater than 0.012 inch and less than 0.025 inch	Substructure and Superstructure	Coat with penetrant sealer	
Slightly Aggressive	Less than 0.025 inch	All locations	No treatment
<p>Notes: (*1) Cracks greater than 0.025 inch require individual investigation. Report these cracks to the Engineer for initiation of an investigation.</p> <p>(*2) When the substructure crack elevation is 18 feet above the high water elevation or ground level, use the same method of treatment as the superstructure for that environment.</p> <p>(*3) (a) Perform epoxy injection of cracks in accordance with Section 411. Apply penetrant sealers in accordance with Section 413.</p> <p>(b) Use penetrant sealers to repair cracks that are compatible with previously applied materials.</p> <p>(c) Use sealers to repair riding surfaces that are designated for that purpose.</p> <p>(d) The Contractor may also repair riding surfaces of bridge decks with a methacrylate sealer for crack widths greater than 0.006 inch in extremely aggressive environments.</p> <p>(e) Clean for epoxy injection in compliance with Section 411. Clean for penetrant sealer application in compliance with Section 413.</p> <p>(f) Recoat cracks which reopen after the initial application of penetrant sealer with penetrant sealer.</p> <p>(*4) Investigate cracks which occur underwater prior to treatment.</p>			

Seal cracks determined by the Engineer to be excessive due to inadequate curing effort or inadequate construction practice at no expense to the Town. Seal all other cracks occurring in concrete in accordance with the above and Sections 411 and 413. When such work is authorized by the Engineer, the Town will pay for the work under the appropriate pay items contained in Sections 411 and 413.

Prepare the surface, clean the surface, and apply the sealant in accordance with the sealant material manufacturer's recommendations.

#### **400-22 Method of Measurement.**

**400-22.1 General:** The quantities of concrete to be paid for will be the volume, in cubic yards, of each of the various classes shown in the plans, in place, completed and accepted. The quantity of precast anchor beams to be paid for will be the number in place and accepted. The quantity of bridge deck grooving to be paid for will be the area, in square yards of bridge deck and approach slab, completed and accepted. The quantity of bridge deck grooving and planing to be paid for will be the area, in square yards of bridge deck and approach slab, completed and accepted.

Except for precast anchor beams, for any item of work constructed under this Section and for which measurement for payment is not to be made by the volume of concrete, measurement and payment for such work will be as specified in the Section under which the work is specified in detail. No separate payment will be made for obtaining the required concrete finish.

#### **400-22.2 Calculation of Volume of Concrete:**

**400-22.2.1 Dimensions:** The quantity will be computed by the plan dimensions of the concrete, within the neat lines shown in the plans, except that no deduction will be made for weep holes, deck drains, or encroachment of inlets and pipes in box culverts, and no chamfers, scorings, fillets, or radii 1 1/2 in<sup>2</sup> or less in cross-sectional area will be taken into account.

**400-22.2.2 Pay Quantity:** The quantity to be paid for will be the original plan quantity, measured as provided in 400-22.2.1, except that where the plans call for an estimated quantity of miscellaneous concrete for contingent use, the contingent concrete will be measured as the actual quantity in place and accepted.

**400-22.2.3 Items not Included in Measurement for Payment:** No measurements or other allowances will be made for work or material for forms, falsework, cofferdams, pumping, bracing, expansion-joint material, etc. The volume of all materials embedded in the concrete, such as structural steel, pile heads, etc., except reinforcing steel, will be deducted when computing the volume of concrete to be paid for. For each foot of timber pile embedded, 0.8 ft<sup>3</sup> of concrete will be deducted. The cost of furnishing and placing dowel bars shall be included in the Contract unit price for the concrete.

**400-22.2.4 Deck Girders and Beam Spans:** In computing the volume of concrete in deck girders and beam spans, the thickness of the slab will be taken as the nominal thickness shown on the drawings and the width will be taken as the horizontal distance measured across the roadway. The volume of haunches over beams will be included in the volume to be paid for.

**400-22.2.5 Stay-in-Place Metal Forms:** When using stay-in-place metal forms to form the slab of deck girder and beam spans, the volume of concrete will be computed in accordance with the provisions of 400-20.2.4 except that the thickness of the slab over the projected plan area of the stay-in-place metal forms will be taken as the thickness shown on the

drawings above the top surface of the forms. The concrete required to fill the form flutes will not be included in the volume of concrete thus computed.

**400-22.3 Bridge Deck Grooving:** The quantity to be paid for will be plan quantity in square yards, computed, using the area bound by the gutter lines (at barrier rails, curbs and median dividers) and the beginning and end of the bridge or the end of approach slabs, whichever is applicable, constructed, in place and accepted.

**400-22.4 Bridge Deck Grooving and Planing:** The quantity to be paid for will be plan quantity in square yards, computed, using the area bound by the gutter lines (at barrier rails, curbs and median dividers) and the beginning and end of the bridge or the end of approach slabs, whichever is applicable, constructed, in place and accepted.

**400-22.5 Composite Neoprene Pads:** The quantity to be paid for will be the original plan quantity, computed using the dimensions of the pads shown in the plans.

**400-22.6 Cleaning and Coating Concrete Surfaces:** The quantity to be paid for will be the plan quantity in square feet for the areas shown in the plans.

**400-23 Basis of Payment.**

**400-23.1 Concrete: When No Direct Payment is Provided:** When no pay item for concrete structures is included in the proposal, the Contractor shall include the cost of any work which is necessary for concrete structures within the limits of the project in the Contract price for the other items of work for which such work is required.

**400-23.1.1 General:** Price and payment will be full compensation for each of the various classes of concrete shown in the proposal.

**400-23.1.2 Concrete Placed Below Plan Depth:** Authorized concrete placed in seal or footings 5 feet or less below the elevation of bottom of seal or footing as shown in the plans will be paid for at the Contract price set forth in the proposal under the pay items for substructure concrete.

Authorized concrete used in seal (or in the substructure where no seal is used) at a depth greater than 5 feet below the bottom of seal or footing as shown in the plans will be paid for as Unforeseeable Work.

Such payment will be full compensation for the cofferdam construction, for excavation, and for all other expenses caused by the lowering of the footings.

**400-23.1.3 Seal Concrete Required but Not Shown in Plans:** When seal concrete is required as provided in 400-8 and there is no seal concrete shown in the plans, it will be paid for as Unforeseeable Work.

**400-23.2 Precast Anchor Beams:** Price and payment will be full compensation for the beams, including all reinforcing steel and materials necessary to complete the beams in place and accepted.

No separate prices will be allowed for the various types of anchor beams.

**400-23.3 Reinforcing Steel:** Reinforcing steel will be measured and paid for as provided in Section 415, except that no separate payment will be made for the fabric reinforcement used in concrete jackets on steel piles or reinforcement contained in barriers, traffic separators or parapets. Where so indicated in the plans, the Town will not separately pay for reinforcing steel used in incidental concrete work, but the cost of such reinforcement shall be included in the Contract unit price for the concrete.

**400-23.4 Bridge Deck Grooving:** Price and payment will be full compensation for all grinding, grooving, equipment, labor, and material required to complete the work in an acceptable manner.

**400-23.5 Bridge Deck Grooving and Planing:** Price and payment will be full compensation for all grooving, planing, equipment, labor, and material required to complete the work in an acceptable manner.

**400-23.6 Composite Neoprene Pads:** Price and payment will be full compensation for all work and materials required to complete installation of the pads.

**400-23.7 Cleaning and Coating Concrete Surfaces:** Price and payment will be full compensation for all work and materials required. The cost of coating new concrete will not be paid for separately, but will be included in the cost of the item to which it is applied.

**400-23.8 General:** The above prices and payments will be full compensation for all work specified in this Section, including all forms, falsework, joints, weep holes, drains, pipes, conduits, bearing pads, setting anchor bolts and dowels, surface finish, and cleaning up, as shown in the plans or as directed. Where the plans call for water stops, include the cost of the water stops in the Contract unit price for the concrete.

Unless payment is provided under a separate item in the proposal, the above prices and payments will also include all clearing and grubbing; removal of existing structures; excavation, as provided in Section 125; and expansion joint angles and bolts.

The Town will not change the rate of payment for the various classes of concrete in which steel may be used due to the addition or reduction of reinforcing steel.

The Town will not make an allowance for cofferdams, pumping, bracing, or other materials or equipment not becoming a part of the finished structure. The Town will not pay for concrete placed outside the neat lines as shown in the plans.

When using stay-in-place metal forms to form bridge decks, the forms, concrete required to fill the form flutes, attachments, supports, shoring, accessories, and all miscellaneous items or work required to install the forms shall be included in the Contract unit price of the superstructure concrete.

**400-23.9 Payment Items:** Payment will be made under:

- Item No. 400 - 1- Class I Concrete - per cubic yard.
- Item No. 400 - 2- Class II Concrete - per cubic yard.
- Item No. 400 - 3- Class III Concrete - per cubic yard.
- Item No. 400 - 4- Class IV Concrete - per cubic yard.
- Item No. 400 - 6- Precast Anchor Beams - each.
- Item No. 400 - 7- Bridge Deck Grooving - per square yard.
- Item No. 400 - 9- Bridge Deck Grooving and planning - per square yard.
- Item No. 400 - 10- Reinforced Concrete Speed Table – Lump Sum
- Item No. 400 - 143- Cleaning and Coating Concrete Surfaces - per square foot.
- Item No. 400 - 147- Composite Neoprene Pads - per cubic foot.

**END OF SECTION 400**



## SECTION 415 REINFORCING STEEL

### 415-1 Description.

Furnish and place in concrete masonry reinforcing steel of the quality, type, size, and quantity designated.

### 415-2 Materials.

Meet the following requirements:

Bar Reinforcement .....931-1.1

Fabric Reinforcement.....931-1.2

### 415-3 Protection of Material..

Store steel reinforcement above the surface of the ground, upon platforms, skids, or other supports, and protect it as far as practicable from mechanical injury and surface deterioration caused by exposure to conditions producing rust. When placing steel reinforcement in the work, ensure that the steel reinforcement is free from loose rust, scale, dirt, paint, oil, and other foreign material.

### 415-4 Bending, Splicing, and Cutting.

Fabricate reinforcing bars as prescribed in the CRSI Manual of Standard Practice. Bend the reinforcement cold to the shapes indicated in the plans. Perform bending in the shop before shipment, and not in the field unless shown otherwise in the Contract Documents.

Do not hot bend or straighten, weld, or thermal cut reinforcing steel unless otherwise specified in the Contract Documents.

### 415-5 Placing and Fastening..

**415-5.1 Bar Spacing - General:** Except as otherwise specified herein, ensure that each bar is within 1 inch of the plan position.

**415-5.2 Mortar Blocks for Spacing:** Use precast mortar blocks to space and support the reinforcing steel. Use blocks composed of one part of cement to two parts of concrete sand that have wires cast into them for fastening to the steel. Moist-cure the blocks for at least three days prior to use.

**415-5.3 Wire for Tying:** For tying reinforcing steel, use soft pliable wire, that readily bends and twists without breaking and that provides a tie of sufficient strength to hold the reinforcing steel in its proper position.

**415-5.4 Splices:** Where splices are authorized, rigidly clamp the bars or tie them in a manner meeting the Engineer's approval. Use the splice length as shown on the plans.

Do not use welded splices except as specifically authorized by the Engineer and, when authorized, meet the requirements of AWS D 1.4 "Structural Welding Code - Reinforcing Steel".

Use mechanical couplers or splice devices which develop at least 125% of the specified yield strength of the bar being spliced and are listed on the FDOT's Qualified Products List.

#### 415-5.5 Footings:

**415-5.5.1 Supports:** In general, support the footing mat steel with mortar blocks having dimensions not greater than 4 by 4 inches by plan clearance. Fasten mortar blocks to the steel using the cast-in wires. The Engineer may approve other proposed means of support.

**415-5.5.2 Tolerances:** Place footing mat steel within 1/2 inch vertically from the plan bottom clearance and within 1 inch from the plan side clearance.

**415-5.5.3 Tying:** Tie footing mat steel with a double-strand single tie at all intersections on the periphery and at alternate intersections within the mat.

#### **415-5.6 Dowel Bars for Columns and Walls:**

**415-5.6.1 Supports and Positioning:** Position dowel bars projecting into columns and walls so as to allow splicing of the column bars or vertical wall bars to the dowels and to tie the dowel bars in their plan position. Support the dowel bars by a rigid template constructed across the top of the footing, and attach them to the template in such manner that placing the concrete does not disturb their position. Set the supports prior to the pouring of the concrete in the footings, and do not push dowel bars into the wet concrete after placing the footing concrete.

**415-5.6.2 Tolerances:** Place the dowels within 1/2 inch of their plan position and with a side clearance tolerance not exceeding 1/4 inch.

#### **415-5.7 Verticals and Hoops for Columns:**

**415-5.7.1 Spacing-off from Side Forms:** Space-off column steel from the side forms by mortar blocks of dimensions not exceeding 2 by 2 inches by clearance dimension. Securely fasten each block to the reinforcing.

##### **415-5.7.2 Tolerances and Clearance:**

(a) Column Verticals: Place column verticals within 1/2 inch of their plan position. Ensure that the side form clearance is within 1/4 inch of the specified clearance.

(b) Column Hoops: Place every hoop within 1 inch of the plan position for the specific hoop, with no accumulation of such tolerance caused by the spacing between any two hoops. Ensure that side form clearance for any hoop is within 1/2 inch of its specified clearance.

**415-5.7.3 Tying:** Tie the column hoops to the column verticals at each intersection, by a cross tie or “figure 8” tie.

#### **415-5.8 Wall Steel (Not Including Dowel Bars):**

**415-5.8.1 Supports:** Space-off wall steel from the side forms by mortar blocks of dimensions not greater than 2 by 2 inches by clearance dimensions. Fix the spacing between wall mats by means satisfactory to the Engineer.

**415-5.8.2 Tolerance:** Except where it is necessary in order to clear a fixture, place each bar within 1 inch of its specified position. In any case, ensure that the number of bars in any affected unit is as specified, and place the remainder of the bars (not thus affected) within the specified 1 inch tolerance.

**415-5.8.3 Tying:** Tie wall steel with a cross tie or “figure 8” tie. On the periphery, tie the steel at each intersection. Within the mat, tie the steel at every third intersection, except that where the wall is of such size that it is necessary that workmen use the reinforcing as a ladder, the Engineer may require tying at every other intersection, or at every intersection, as he deems necessary.

#### **415-5.9 Beams and Caps:**

**415-5.9.1 Supports:** Maintain bottom clearances by approved heavy beam bolsters. Support additional layers of main longitudinal steel from the lower layers by heavy upper-beam bolsters, placed directly over low supports.

Begin the spacing of beam bolsters at not more than 2 feet from the end of the beams or caps and space the additionally required bolsters at not more than 4 feet.

Use mortar blocks, having dimensions not greater than 2 by 2 inches by specified clearance, fastened to the steel by the cast-in wires, for spacing the upper main longitudinal steel below the top bars. Maintain the side clearance by mortar blocks, having dimensions not greater than 2 by 2 inches by required clearance, fastened to the reinforcing steel by the cast-in wires.

**415-5.9.2 Tolerances:** Place the main longitudinal steel so as to provide a bottom and top clearance within 1/4 inch of the plan vertical dimensions for all layers. Space the steel from side forms within 1/2 inch of the specified spacing.

Space and tie the stirrups within 1 inch of the plan position for each individual stirrup, and

do not allow the tolerance to accumulate.

**415-5.9.3 Tying:** Tie all intersecting bars with a double-strand single tie.

**415-5.10 Deck Slabs:**

**415-5.10.1 Supports:**

(a) Bottom Mats: In general, support the bottom mats of steel by one row of slab bolsters placed 6 inches from the edge of the slab and by two rows down each panel between beams. Do not allow the spacing between rows to exceed 4 feet, measured center to center.

As an exception, when deemed satisfactory by the Engineer, the Contractor may use mortar blocks in lieu of slab bolsters. Use blocks 2 by 2 inches by clearance dimensions. Space mortar blocks 4 feet on center as a maximum. If at any time, however, the Engineer judges that the mortar blocks do not provide the proper support, he may require using slab bolsters.

(b) Top Mats: Support the top mats of steel by either continuous high chairs or individual high chairs. Support continuous high chairs along both sides of each beam and approximately 6 inches back from the edge of the beam. Place the outside row of high chairs 6 inches from the edge of the slab. If using individual high chairs, space them transversely, as specified for the continuous high chair, and do not allow the longitudinal spacing to be greater than 4 feet.

As an alternate to the above, on prestress beam construction, the Contractor may support the top mat of steel on the shear connectors bent to the proper elevation with one line of high chairs centered between the beams.

(c) Truss Bars: Support truss bars at each end of the top bends by continuous high chairs or by individual high chairs spaced longitudinally at not more than 4 feet.

**415-5.10.2 Tolerances:** Ensure that top and bottom clearances are within 1/4 inch from those shown on the plans.

Ensure that end and bottom clearances are within 1/4 inch from those shown on the plans.

Ensure that end and edge clearances are within 1/4 inch of the clearance specified.

Place curb bars within 1/4 inch in any direction of the plan position.

**415-5.10.3 Tying:** Tie all steel in each layer with a double-strand single tie at every intersection on the periphery and at every third intersection in the interior area. If encountering difficulty in maintaining the reinforcing steel in position during the placing of concrete, tie additional intersections as necessary to hold the reinforcing steel secure.

**415-5.11 Box Culverts:**

**415-5.11.1 Supports:**

(a) Bottom Slabs: In the bottom slabs of box culverts, provide supports for single-mat steel and for bottom-mat steel, including placement and spacing, as specified for footing mat steel in 415-5.5. In addition, where the plans call for more than one mat of steel in the bottom slab of the culvert, support the top mat away from the bottom mat, either by upper beam bolsters or by other means satisfactory to the Engineer.

(b) Walls: Place, space and support the steel in walls of box culverts in accordance with the requirements of 415-5.8.

(c) Top Slabs: In the top slabs of box culverts, support the bottom mats of steel by a row of slab bolsters 12 inches from the inside face of the walls and with additional rows of bolsters at spacings not exceeding 4 feet, center to center. As an exception, unless the Engineer deems the use of the slab bolsters as necessary to obtain proper support, the Contractor may use mortar blocks as the supporting device. Use blocks of dimensions not greater than 2 by 2 inches by the required clearance, with spacings not exceeding 4

feet in any direction. Fasten blocks to the reinforcing steel by the cast-in wires.

(d) Truss Bars: Support truss bars as specified in 415-5.10.1 (c).

**415-5.11.2 Tolerances:** Use tolerances in placing the steel in box culvert slabs as specified for deck slabs in 415-5.10.2. Use tolerances for placing steel in walls as specified in 415-5.8.2.

**415-5.11.3 Tying:** Tie steel in box culverts as specified for deck slabs in 415-5.10.3.

**415-5.12 Cleaning:** Before placing any concrete, clean all mortar from the reinforcement.

#### **415-5.13 Metal Chairs and Bolsters:**

**415-5.13.1 General:** Provide reinforcing steel bar supports manufactured in accordance with all requirements of the CRSI Manual of Standard Practice. Use chairs and bolsters of adequate strength to withstand a 300 pound concentrated load without permanent deformation or breakage, with the deformation under a 300 pound load being less than 5% of the support height.

Ensure that no more than 5% of the reinforcing steel bar supports exhibit unsatisfactory performance, breakage, or permanent deformation during rebar tying and/or concrete placement operations. If a bar support does not achieve this level of performance, reduce the average spacing between bar supports by 15%, or remove that product from use on the job.

Ensure that bar supports, both chair and bolster, do not move during concrete placing operations. To prevent movement, tie supports to the reinforcing steel.

When using bar supports on corrugated metal stay-in-place forms, use supports specifically designed for the form being used.

**415-5.13.2 Metal Chairs and Bolsters:** For metal bar supports in contact with steel stay-in-place forms and metal bar supports in contact with boundary surfaces of concrete to be cast, provide supports constructed with molded plastic legs or plastic protected steel legs. Do not allow any portion of the bar support other than the molded plastic leg or plastic protected portion of the steel leg to be closer than 1/2 inch from the boundary surface of concrete to be cast.

Certify that all metal bar supports meet the following requirements:

(1) That they are manufactured from cold drawn steel wire in accordance with the wire sizes and geometrical dimensions shown in the CRSI Manual of Standard Practice, Chapter 3, Table II.

(2) That the plastic used for protection of the steel legs has a thickness of 3/32 inch or greater at points of contact with the form work.

Provide plastic protection by a dipping operation, by adding premolded plastic tips to the legs of the support or by molding plastic to the top wire of the support. Ensure that the plastic material used for protection of steel legs does not chip, crack, deform, or peel under ordinary job conditions. Provide molded plastic legs that have sufficient strength to carry the weight of the supported reinforcing steel in its required position without deformation and relaxation under job conditions.

**415-5.13.3 Recycled Plastic Chairs and Bolsters:** In addition to the physical properties specified in Section 972, mold plastic rebar supports in a configuration which does not restrict concrete flow and consolidation around and under the rebar support.

Do not use continuous legs or rails on surfaces of concrete.

Meet the requirements of Section 972 for all recycled plastic products.

Due to the wide range of applications and heights, ensure that the manufacturer additionally certifies that he has examined the particular application and that his product is recommended for that stated use for that specific project.

Provide each individual bar support with an identification number unique to the particular model permanently marked on the surface as included in the Qualified Products

List. The Contractor may use a patent number or manufacturer's model number as the identification number.

#### **415-6 Welded Deformed Steel Wire Fabric Reinforcement.**

**415-6.1 General:** The Contractor may substitute welded deformed steel wire fabric reinforcement for deformed bar reinforcement when approved on shop drawings. Propose substitutions of welded deformed steel wire fabric in a manner that provides a cross-sectional area per foot of welded deformed steel wire fabric equal to that provided on the plans for deformed bar reinforcement. Orient the deformed wires of welded deformed steel wire fabric reinforcement in the same position as bar reinforcement detailed in the plans. The Contractor may use smooth or deformed cross wires of welded deformed steel wire reinforcement. Use a cross wire size that is a minimum of 35% or more of the area of the deformed wire.

Provide welded steel wire fabric reinforcement as shown in the plans.

**415-6.2 Design:** When welded deformed steel wire fabric reinforcement is substituted for deformed bar reinforcement, ensure that the development length, splices, shear reinforcement, and distribution meet the requirements of the AASHTO Standard Specifications for Highway Bridges.

#### **415-7 Method of Measurement.**

**415-7.1 General:** The quantity to be paid for will be the computed weight, in pounds, of reinforcing steel entering into the completed structure or item of work and accepted. The quantity will not include the reinforcing steel in any item of work for which the basis of payment includes the steel reinforcement. No separate payment will be made for reinforcing steel in pipe endwalls. No deduction will be made from reinforcing steel quantities for encroachment of inlets and pipes in box culverts. The lengths to be used in the calculation will be the detailed lengths of bars as shown in the plans. The quantity to be paid for will be the original plan quantity, determined as provided above.

**415-7.2 Unit Weights of Bars:** The unit weights used will be CRSI Standard Reinforcing Steel Bar Weights.

**415-7.3 Fabric Reinforcement:** Where fabric reinforcement is to be paid for by weight, the quantity to be paid for will be the product of the area, in square feet, of the fabric actually incorporated in the structure and accepted, by the manufacturer's standard weight per square foot.

When welded deformed steel wire fabric reinforcement is substituted for deformed bar reinforcement, the quantity to be paid for will be the quantity which would be paid for if bar reinforcement as detailed in the plans were utilized, based on plan quantity.

#### **415-8 Basis of Payment.**

**415-8.1 When No Direct Payment is Provided:** When no pay item for reinforcing steel is included in the proposal, the Contractor shall include the cost of any work which is necessary for reinforcing steel within the limits of the project in the Contract price for the other items of work for which such work is required.

**415-8.2** Price and payment will be full compensation for all work specified in this Section, including all welding, all clips, spacers, ties, mechanical couplers, etc., and wire or other material used for fastening the reinforcement in place.

In case short bars are permitted for use when full length bars might reasonably be required, the weight paid for will be only that which would be obtained if full length bars were used, with no allowance for lap.

Payment will be made under:

Item No. 415-1 Reinforcing Steel - per pound

Item No. 415-2 Fabric Reinforcing Steel – per pound.

**END OF SECTION 415**

## SECTION 425

### INLETS, MANHOLES, AND JUNCTION BOXES

#### 425-1 Description.

Construct drop inlets, manholes, junction boxes, shoulder gutter inlets, and yard drains from reinforced concrete. Use brick masonry to seal and set areas around pipe that penetrate the structures. Furnish and install the necessary metal frames and gratings. Also, adjust those structures shown in the plans to be adjusted or which are required to be adjusted for the satisfactory completion of the work.

#### 425-2 Composition and Proportioning.

**425-2.1 Concrete:** Use FDOT approved Class I concrete meeting the requirements of Section 346 and 347.

**425-2.2 Mortar:** For brick masonry, make the mortar by mixing one part Portland cement to three parts sand. Miami Oolitic rock screenings may be substituted for the sand, provided the screenings meet the requirements of the Current FDOT Division III Materials except for gradation requirements. Use materials passing the No. 8 sieve that are uniformly graded from coarse to fine. Hydrated lime may be added to the mortar in an amount not to exceed 10% of the amount of cement.

Masonry cement may be used in lieu of the above-specified mortar provided it is delivered in packages properly identified by brand name of manufacturer, net weight of package, and whether it is Type 1 or Type 2, and further provided that it has not been in storage for a period greater than six months. Do not use hydrated lime with masonry cement.

#### 425-3 Materials.

**425-3.1 General:** Meet the following requirements:

Sand (for mortar).....	Current FDOT Division III Materials
Portland Cement.....	Current FDOT Division III Materials
Hydrated Lime .....	Current FDOT Division III Materials
Water.....	Current FDOT Division III Materials
Reinforcing Steel.....	Current FDOT Division III Materials
Inlet and Outlet Pipe .....	Current FDOT Division III Materials
Brick and Concrete Masonry Units.....	Current FDOT Division III Materials
Castings for Frames and Gratings .....	Current FDOT Division III Materials

**425-3.2 Gratings:** Use gratings and frames fabricated from structural steel galvanized in accordance with the requirements of ASTM A 123, or painted, meeting the requirements of the Current FDOT Division III Materials. Use the Qualified Products List to determine the number of dip coats to apply and the thickness of each coat. Apply a black finish coat (Color No. 17038, Federal Standard 595A). Prior to painting, clean the steel in accordance with the Steel Structures Painting Council Surface Preparation Specifications, SSPC-SP2 or SSPC-SP7. All paint may be applied in the shop, by dipping, provided that the first coat application is thoroughly dry before applying the second coat. Do not follow the requirements of this Subarticle when using ASTM A 588 steel.

#### 425-4 Forms.

Design and construct wood or metal forms so that they may be removed without injuring the concrete. Build forms true to line and grade and brace them in a substantial and unyielding manner. Prior to placing concrete, support and tie steel reinforcement. Obtain the Engineer's approval prior to placing concrete.

#### 425-5 Precast Inlets, Manholes, and Junction Boxes.

Precast inlets, manholes and junction boxes, designed and fabricated in accordance with the plans, may be substituted for cast-in-place units.

Smooth welded wire fabric may be substituted for deformed re-bar or welded deformed wire reinforcement in non-circular precast drainage structures provided the following requirements are met:

1. The smooth welded wire fabric complies with ASTM A 185.
2. Substitution of equal areas of smooth wire fabric for the reinforcing steel and provided the width and length of the unit is four times the width of the spacing of the cross wires.
3. Wire is continuous around the box and spliced at a quarter point of one side with an overlap of not less than the spacing of the cross wires plus 2 inches.

#### **425-6 Construction Methods.**

##### **425-6.1 Excavation:** Excavate as specified in Section 125.

Where unsuitable material for foundations is encountered, excavate the unsuitable material and backfill and compact with suitable material prior to constructing or setting inlets, manholes and junction boxes.

As an option to the above and with the Engineer's approval, the Contractor may carry the walls down to a depth required for a satisfactory foundation, backfill to 8 inches below the flowline with clean sand and cast a non-reinforced 8 inch floor.

**425-6.2 Placing and Curing Concrete:** Place the concrete in the forms, to the depth shown in the plans, and thoroughly vibrate it. After the concrete has hardened sufficiently, cover it with suitable material and keep it moist for a period of three days. Finish the traffic surface in accordance with a simulated broom finish approved by the Engineer.

**425-6.3 Setting Manhole Castings:** After curing the concrete as specified above, set the frame of the casting in a full mortar bed composed of one part Portland cement to two parts of fine aggregate.

**425-6.4 Reinforcing Steel:** Follow the construction methods for the steel reinforcement as specified in Section 415.

**425-6.5 Laying Brick:** Saturate all brick with water before laying. Bond the brick thoroughly into the mortar using the shove joint method to lay the brick. Arrange headers and stretchers so as to bond the mass thoroughly. Finish the joints properly as the work progresses and ensure that they are not less than 1/4 inch or more than 3/4 inch in thickness. Do not use spalls or bats except for shaping around irregular openings or when unavoidable at corners. Plan openings and place pipe to limit the number of courses of brick around the circumference of a pipe, to no more than two. Openings that are incorrectly placed or unused will be repaired using reinforced structural concrete with reinforcing steel and epoxy anchored reinforcing steel dowels.

**425-6.6 Placing Pipe:** Construct inlet and outlet pipes of the same size and kind as the connecting pipe shown in the plans. Extend the pipes through the walls for a distance beyond the outside surface sufficient for the intended connections, and construct the concrete around them neatly to prevent leakage along their outer surface. Keep the inlet and outlet pipes flush with the inside of the wall. Resilient connectors as specified in 942-3 may be used in lieu of a masonry seal.

**425-6.7 Backfilling:** Backfill as specified in Section 125, meeting the specific requirements for backfilling and compaction around inlets, manholes, and junction boxes detailed in 125-8.1 and 125-8.2. However, for outfall lines beyond the sidewalk or future sidewalk area, where no vehicular traffic will pass over the pipe, inlets, manholes, and junction boxes, compact backfill as required in 125-8.3.

**425-6.8 Adjusting Existing Structures:** Cut down or extend existing manholes, catch basins, inlets, valve boxes, monument boxes, etc., within the limits of the proposed work, to meet the finished grade of the proposed pavement, or if outside of the proposed pavement area, to the finished grade designated on the plans for such structures. Use materials and construction methods which meet the requirements specified above to cut down or extend the existing structures.

The Contractor may extend manholes needing to be raised using adjustable extension rings of the type which do not require the removal of the existing manhole frame. Use an extension device that provides positive locking action and permits adjustment in height as well as diameter and meets the approval of the Engineer.



#### **425-7 Method of Measurement.**

The quantities to be paid for will be (1) the number of inlets, manholes, junction boxes, and yard drains, completed and accepted; and (2) the number of structures of these types (including also valve boxes and monument boxes) satisfactorily adjusted.

#### **425-8 Basis of Payment.**

**425-8.1 When No Direct Payment is Provided:** When no pay item for inlets, manholes, and junction boxes is included in the proposal, the Contractor shall include the cost of any work which is necessary for inlets, manholes, and junction boxes within the limits of the project in the Contract price for the other items of work for which such work is required.

**New Structures:** Price and payment will be full compensation for furnishing all materials and completing all work described herein or shown in the plans. No separate measurement and payment will be made for, clearing, grubbing and demolition, excavation and embankment, compaction, the legal disposal of surplus and/or deleterious material, and the furnishing and placing of forms, concrete, all gratings, frames, covers, and any other necessary fittings. The cost of this work shall be included in the cost for the respective items contained within this Section. All other construction shall be considered incidental to the work of this Section.

**425-8.2 Adjusted Structures:** When an item of payment for adjusting manholes, valve boxes, inlets, or monument boxes is provided in the proposal, price and payment will be full compensation for the number of such structures designated to be paid for under such separate items, and which are satisfactorily adjusted, at the Contract unit prices each for Adjusting Inlets, Adjusting Manholes, Adjusting Valve Boxes and Adjusting Monument Boxes.

For any of such types of these structures required to be adjusted but for which no separate item of payment is shown in the proposal for the specific type, payment will be made under the item of Adjusting Miscellaneous Structures.

#### **425-8.3 Payment Items:** Payment will be made under:

Item No. 425-1-1	Inlets (DBI Type C) - each
Item No. 425-1-2	Inlets (DBI Type E) – each
Item No. 425-1-3	J-1 Manhole - each
Item No. 425-1-4	J-7 Curb Inlet - each
Item No. 425-P1	P-1 Inlet - each
Item No. 425-P2	P-2 Inlet - each
Item No. 425-P3	P-3 Inlet - each
Item No. 425-P4	P-4 Inlet - each
Item No. 425-P5	P-5 Inlet - each
Item No. 425-P6	P-6 Inlet - each
Item No. 425-P7	P-7 Inlet - each
Item No. 425-P9	P-9 Inlet - each
Item No. 425-2	Inlets (Closed Flume) - each
Item No. 425-2-1	Concrete Flume (Open) - each
Item No. 425-2-2	Concrete Flume (Closed) - each
Item No. 425-3	Utility Manholes (Adjust Top) – each
Item No. 425-4	Adjusting Inlets - each
Item No. 425-5	Adjusting Manhole Tops – each
Item No. 425-5-1	Adjusting Manholes (Frame and Cover Adjustment) – each
Item No. 425-5-1A	Removal and Replacement of Manholes (Frame and Cover Adjustment) – each
Item No. 425-6	Adjusting Valve Boxes - each
Item No. 425-7	Adjusting Monument Boxes - each
Item No. 425-8	Adjusting Miscellaneous Structures - each

Item No. 425-9	Shoulder Gutter Inlets - each
Item No. 425-10	Yard Drains - each
Item No. 425-11	Modify & Adjust Existing Drainage Structure - each

**END OF SECTION 425**

## **SECTION 520**

### **CONCRETE GUTTER, CURB ELEMENTS, AND TRAFFIC SEPARATOR**

#### **520-1 Description.**

Construct Portland cement Concrete curb and gutter, Curb will include concrete curb and gutter, concrete traffic separator, valley gutter, special concrete gutter, and any other types of concrete curb not specified in other Sections.

#### **520-2 Materials.**

**520-2.1 Concrete:** Use Class I (NS) Concrete meeting the requirements of Section 347.

**520-2.2 Reinforcement:** For all steel reinforcement required by the plans, meet the requirements of Section 415.

**520-2.3 Joint Materials:** Meet the requirements of the Current FDOT Division III Materials.

#### **520-3 Forms.**

**520-3.1 Form Materials:** Construct forms for this work of either wood or metal. Provide forms that are straight, free from warp or bends, and of sufficient strength, when staked, to resist the pressure of the concrete without deviation from line and grade. For all items constructed on a radius, use flexible forms.

**520-3.2 Depth of Forms:** Ensure that forms have a depth equal to the plan dimensions for the depth of concrete being deposited against them.

**520-3.3 Machine Placement:** The Contractor may place these items by machine methods with the approval of the Engineer provided that the Contractor consistently produces an acceptable finished product, true to line, grade, and cross section.

#### **520-4 Excavation.**

Excavate to the required depth, and compact the foundation material upon which these items are to be placed as specified in 120-9.

#### **520-5 Placing Concrete.**

Place the concrete in the forms, and tamp and spade it to prevent honeycombing, and until the top of the structure can be floated smooth and the edges rounded to the radius shown in the plans.

#### **520-6 Joints.**

**520-6.1 Contraction Joints:** Except for machine placed items, the Contractor may form joints by using dummy joints (either formed or sawed) or by using sheet metal templates. If using sheet metal templates, ensure that they are of the dimensions, and are set to the lines, shown in the plans. Hold templates firmly while placing the concrete. Leave templates in place until the concrete has set sufficiently to hold its shape, but remove them while the forms are still in place.

Saw contraction joints, for machine placed items, unless the Engineer approves an alternate method. Saw the joints as soon as the concrete has hardened to the degree that excessive raveling will not occur and before uncontrolled shrinkage cracking begins.

Space contraction joints at intervals of 10 feet except where closure requires a lesser interval, but do not allow any closure section to be less than 4 feet in length.

**520-6.2 Expansion Joints:** Construct expansion joints at all inlets, at all radius points, and at other locations indicated in the plans. Locate them at intervals of 500 feet between other expansion joints or ends of a run. Ensure that the joint is ½ inch in width.

#### **520-7 Finishing.**

**520-7.1 Repair of Minor Defects:** Remove the forms within 24 hours after placing the concrete, and then fill minor defects with mortar composed of one part Portland cement and two parts fine aggregate. The Engineer will not allow plastering on the face of the curb. Remove and replace any rejected curb, curb and gutter, or valley gutter without additional compensation.

**520-7.2 Final Finish:** Finish all exposed surfaces while the concrete is still green. In general, the Engineer will only require a brush finish. For any surface areas, however, which are too rough or where other surface defects make additional finishing necessary, the Engineer may require the Contractor to rub the curb to a smooth surface with a soft brick or wood block, using water liberally. Also, if necessary to provide a suitable surface, the Engineer may require the Contractor to rub further, using thin grout or mortar.

**520-7.3 Imprinted Concrete:** Install imprinted concrete as shown in the plans.

## **520-8 Curing.**

**520-8.1 General:** Continuously cure the concrete for a period of at least 72 hours. Commence curing after completely finishing and as soon as the concrete has hardened sufficiently to permit application of the curing material without marring the surface. Immediately replace any curing material removed or damaged during the 72 hour period.

After removing the forms, cure the surfaces exposed by placing a berm of moist earth against them or by any of the methods described below, for the remainder of the 72 hour curing period.

**520-8.2 Wet Burlap Method:** Place burlap, as specified in the Current FDOT Division III Materials, over the entire exposed surface of the concrete, with sufficient extension beyond each side to ensure complete coverage. Overlap adjacent strips a minimum of 6 inches. Hold the burlap securely in place such that it will be in continuous contact with the concrete at all times, and do not allow any earth between the burlap surfaces at laps or between the burlap and the concrete. Saturate the burlap with water before placing it, and keep it thoroughly wet throughout the curing period.

**520-8.3 Membrane Curing Compound Method:** Apply clear membrane curing compound or white pigmented curing compound, as specified in the Current FDOT Division III Materials, by a hand sprayer meeting the requirements of the current FDOT Standard Specifications, 350-3.10, in a single coat continuous film at a uniform coverage of at least 200 square feet per gallon. Immediately recoat any cracks, checks, or other defects appearing in the coating. Thoroughly agitate the curing compound in the drum prior to application, and during application as necessary to prevent settlement of the pigment.

**520-8.4 Polyethylene Sheeting Method:** Place polyethylene sheeting, as specified in the Current FDOT Division III Materials, over the entire exposed surface of the concrete, with sufficient extension beyond each side to ensure complete coverage. Overlap adjacent strips a minimum of 6 inches. Hold the sheeting securely in place and in continuous contact with the concrete at all times.

## **520-9 Backfilling and Compaction.**

After the concrete has set sufficiently, but not later than three days after pouring, refill the spaces in front and back of the curb to the required elevation with suitable material. Place and thoroughly compact the material in layers not thicker than 6 inches.

## **520-10 Surface Requirements.**

Test the gutter section of curb and gutter with a 10 foot straightedge laid parallel to the centerline of the roadway and while the concrete is still plastic. Perform straightedging along the edge of the gutter adjacent to the pavement or along other lines on the gutter cross-section may be performed, as directed by the Engineer. Immediately correct irregularities in excess of 1/4 inch.

## **520-11 Method of Measurement.**

For curb or curb and gutter, the quantity to be paid will be plan quantity, in feet, measured along the face of the completed and accepted curb or curb and gutter. Curb for sidewalk curb ramps or driveways will be paid at the contract unit price for adjacent curb type.

For valley gutter or shoulder gutter, the quantity to be paid will be plan quantity, in feet, measured along the gutter line of the completed and accepted valley gutter or shoulder gutter.

For header curb, the quantity to be paid will be the plan quantity, in feet, measured along the center of its width, completed and accepted. Where steel reinforcement is required it shall meet the requirements

of Section 415, but will not be measured separately for pavement.

For concrete traffic separator of constant width, the quantity to be paid will be plan quantity, in feet, measured along the center of its width, completed and accepted, including the length of the nose.

For concrete traffic separator of varying width, the quantity to be paid will be plan quantity, in square yards, completed and accepted.

Except for Acceptance testing, there will be no measurement of curb pads under this item.

## **520-12 Basis of Payment.**

**520-12.1 When No Direct Payment is Provided:** When no pay item for concrete gutter, curb elements, and traffic separator is included in the proposal, the Contractor shall include the cost of any work which is necessary for concrete gutter, curb elements, and traffic separator within the limits of the project in the Contract price for the other items of work for which such work is required.

**520-12.2 General:** Price and payment will be full compensation for all work specified in this Section.

**520-12.3 Reinforcement:** Reinforcing steel will not be paid for separately. The Contractor shall include the cost of the steel in the Contract unit price for the item in which the steel is placed.

**520-12.4 Joint Materials:** The Contractor shall include the cost of all joint materials in the Contract unit price for the item in which they are used.

**520-12.5 Curb Pads:** Curb Pads will not be measured and paid separately. Curb Pads shall be included in the cost of the respective item for Curb.

**520-12.6 Payment Items:** Payment will be made under:

Item No. 520-1	Concrete Curb and Gutter (Type F) - per linear foot.
Item No. 520-2	Concrete Curb (Type D) - per linear foot.
Item No. 520-3	Concrete Valley Gutter – per linear foot.
Item No. 520-3A	Concrete Valley Gutter (Remove & Replace) – per linear foot.
Item No. 520-4	Special Concrete Gutter – per linear foot.
Item No. 520-5	Concrete Traffic Separator – per linear foot.
Item No. 520-6	Concrete Shoulder Gutter - per linear foot.
Item No. 520-7	Concrete Traffic Separator - per square yard.
Item No. 520-8	Concrete Header Curb – per linear foot.
Item No. 520-9	Concrete Curb Island– per lump sum.
Item No. 520-10	A Curb Street Chicane– per lump sum.

**END OF SECTION 520**

## SECTION 522 CONCRETE SIDEWALKS

### **522-1 Description.**

Construct concrete sidewalks, pathways and concrete bicycle lanes when indicated in the Plans. Sidewalk construction will also include sidewalk curb ramps, driveway aprons and flares.

### **522-2 Materials.**

Meet the requirements specified in the Section 400.

### **522-3 Forms.**

Provide forms as specified in the current FDOT Standard Specifications, 520-3.

### **522-4 Foundation.**

Excavate to the lines and grades as shown, or as directed by the Engineer, which are required to install sidewalks to the proper grade and alignment. Compact all areas, including cut areas, under the sidewalk to a minimum of 98% AASHTO T -180 density. The area to be compacted is defined as that area directly under the sidewalk and 1 foot beyond each side of the sidewalk where the right-of-way allows.

### **522-5 Joints.**

**522-5.1 Expansion Joints:** Form 1/2 inch expansion joints between the sidewalk and the curb, driveway or at other required sections with a preformed joint filler meeting the requirements specified in 932-1.1, Division III Materials. Install expansion joints in accordance with the Plans and Standard Plans.

#### **522-5.2 Contraction Joints:**

**522-5.2.1 Types:** The Contractor may use open type or sawed contraction joints. Install contraction joints in accordance with the Plans and Standard Plans.

**522-5.2.2 Open-Type Joints:** Form open type contraction joints by staking a metal bulkhead in place and depositing the concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, remove the bulkhead. After finishing the sidewalk over the joint, edge the slot with a tool having a 1/2 inch radius.

**522-5.2.3 Sawed Joints:** If electing to saw the contraction joints, cut a slot approximately 3/16 inch wide and not less than 1 1/2 inches deep with a concrete saw after the concrete has set, and within the following periods of time:

Joints at not more than 30 feet intervals .....within 12 hours after finishing.

Remaining joints.....within 96 hours after finishing.

### **522-6 Placing Concrete.**

Place the concrete as specified in the Section 520-5.

### **522-7 Finishing.**

**522-7.1 Screeding:** Strike-off the concrete by means of a wood or metal screed, used perpendicular to the forms, to obtain the required grade and remove surplus water and laitance.

**522-7.2 Surface Requirements:** Imprint concrete as detailed in the Plans, otherwise provide the concrete with a broom finish. Ensure that the surface variations are not more than 1/4 inch under a 10 foot straight edge, or more than 1/8 inch on a 5 foot transverse section. Finish the edge of the sidewalk with an edging tool having a radius of 1/2 inch.

### **522-8 Curing.**

Cure the concrete as specified in Section 520-8.

#### **522-8.1 ADA Requirements**

All sidewalks shall conform to the most current ADA standards, which include, but are not

limited to, all cross slopes < 2%; longitudinal slopes < 5%, and ramp slopes < 8.33% for no greater longitudinal ramp distance of six feet.

**522-9 Method of Measurement.**

The quantity to be paid for will be the area of sidewalk, measured in square yards, in place, completed and accepted. Sidewalk curb ramps, monolithic or separately cast back of sidewalk curb, concrete bicycle lanes, concrete driveways and a monolithic thickened edge will be included in the area to be paid.

**522-10 Basis of Payment.**

**522-10.1 When No Direct Payment is Provided:** When no pay item for concrete sidewalks is included in the proposal, the Contractor shall include the cost of any work which is necessary for concrete sidewalks within the limits of the project in the Contract price for the other items of work for which such work is required.

**522-10.2** Price and payment will be full compensation for furnishing all labor, equipment, and materials; for completing all work described in this Section or shown in the Plans, including clearing and grubbing outside the limits of clearing and grubbing as shown in the Plans, formwork, curing, all excavation, backfill, and compaction, and reinforcing steel/wire; monolithic thickened edge when shown in the Plans; and for furnishing all other incidentals necessary to complete the work required by this Section.

**522-10.3 Payment Items:** Payment will be made under:

**Item No. 522-5.5-** Concrete Sidewalk (5.5") - per square yard

**Item No. 522-6.0-** Concrete Sidewalk/Driveway (6") - per square yard

**Item No. 522-7.2-** Concrete Sidewalk/Driveway (7.25") - per square yard

**END OF SECTION 522**

**SECTION 527**  
**DETECTABLE WARNINGS ON WALKING SURFACES**

**527-1 Description.**

Furnish and install Detectable Warning devices on newly constructed and/or existing concrete curb ramps and sidewalks constructed in accordance with the FDOT Standard Plans, where indicated in the Plans.

**527-2 Materials.**

**527-2.1 Detectable Warning:** Provide Detectable Warnings in accordance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) Section 4.29.2 - Detectable Warnings on Walking Surfaces. Use Detectable Warnings of materials intended for exterior use applied to concrete and subject to routine pedestrian traffic and occasional vehicular traffic. Use Detectable Warnings with size and pattern shown in the Plans comprised of truncated domes aligned in parallel rows in accordance with Index No. 304 of the FDOT Standard Plans. Do not use detectable warnings with a diagonal pattern.

**527-2.1.1 Preformed Materials:** Use Detectable Warnings consisting of weather-resistant tiles, pavers or mats that are adhered to concrete and have mechanical bond or fasteners, or torch-applied preformed thermoplastic. Preformed products may be used only if listed on the FDOT's Approved Products List in accordance with 527-2.4.

**527-2.1.2 Field-Formed Materials:** Use Detectable Warnings applied as a secondary application to cured concrete. Products applied as a secondary application on cured concrete, may be used only if listed on the Florida Department of Transportation Qualified Products List in accordance with 527-2.4.

**527-2.2 Material Properties:** Provide Detectable Warnings that meet the following minimum material property requirements when tested in accordance with the indicated Standard.

PROPERTY	STANDARD	MINIMUM THRESHOLD
Slip Resistance	FM 3-C1028	Dry Coefficient of Friction – 0.8 min. and Wet Coefficient of Friction – 0.65 min.:(include recessed areas between truncated
Wear Resistance	FM 5-594	Average Volume Loss: no more than 0.06 cm <sup>3</sup>
Water Absorption*	ASTM D570	Not to exceed 5%.
Adhesion/Bond Strength**	FM 5-589	150 psi min. tensile adhesion strength
Fade (UV) Resistance	ASTM G151/G154	$\Delta E \geq 3$ after 2000 hrs.
Non-Hazardous Classification	RCRA Subtitle C	Non-Hazardous

\* Applies only to plastic materials.

\*\* Applies only to surface-applied materials.

**527-2.3 Color/Contrast:** Use safety yellow, brick red or black colored detectable warnings on concrete walking surfaces. Use safety yellow colored detectable warnings on asphalt walking surfaces. Acceptable detectable warnings shall meet the following criteria for a duration of three years.



COLOR	LIGHT REFLECTANCE VALUES (LRV) CAP Y*
Safety Yellow	25 – 45
Brick Red	5 – 15
Black	0 – 5
*When measured with a spectrophotometer	

**527-2.4 Approved Product List:** Methods or products used to form detectable warnings in wet concrete will not be permitted. Use detectable warnings listed on the FDOT's Approved Product List (APL).

**527-3 Installation Procedures.**

**527-3.1 Surface Preparation and Installation:** Prepare the surface in accordance with the manufacturer's recommendations. Use only products and materials appropriate for the surface on which they will be applied. Install in accordance with the manufacturer's instructions, using materials and equipment recommended and approved by the manufacturer. For surface applied tiles or mats, use adhesives applied over the entire surface and mechanical fasteners.

**527-4 Method of Measurement.**

Detectable warnings applied to newly constructed concrete sidewalk/curb ramps or applied to existing curb ramps will be paid by plan quantity, per square foot, that is furnished, installed and accepted.

**527-5 Basis of Payment.**

**527.1 When No Direct Payment is Provided:** When no pay item for detectable warnings on walking surfaces is included in the proposal, the Contractor shall include the cost of any work which is necessary for detectable warnings on walking surfaces within the limits of the project in the Contract price for the other items of work for which such work is required.

**527.2** Price and payment will be full compensation for furnishing all labor, equipment, and materials; for completing all work described in this Section or shown in the Plans; and for furnishing all other incidentals necessary to complete the work required by this Section.

**527-5.1 Payment Items:** Payment will be made under:

**Item No. 527-1-** Detectable Warnings on Walking Surfaces (Black) – per square foot

## SECTION 575 SODDING

### 575-1 Description.

Establish a stand of grass within the specified areas, by furnishing and placing sod, and rolling, fertilizing, watering, and maintaining the sodded areas to ensure a healthy stand of grass.

### 575-2 Materials.

Meet the following requirements:

Sod .....	Current FDOT Division III Materials
Fertilizer, Type I .....	Current FDOT Division III Materials
Water.....	Current FDOT Division III Materials

### 575-3 Construction Methods.

**575-3.1 Preparation of Ground:** Fertilize at the rate as shown in Section 570. Scarify or loosen the areas requiring sod to a depth of 6 inches. Around the perimeter of the proposed sod, grade or excavate a two inch notch (back a minimum of three feet) in order to place the new sod flush with the existing grade providing for a smooth transition. If necessary excess fill and debris is to be removed from the site and disposed of properly. On areas where the soil is sufficiently loose, particularly on shoulders and fill slopes, the Engineer may authorize the elimination of the ground preparation. Limit preparation to those areas that can be sodded within 72 hours after preparation. Prior to sodding, thoroughly water areas and allow water to percolate into the soil. Allow surface moisture to dry before sodding to prevent a muddy soil condition.

**575-3.2 Placing Sod:** Place sod immediately after ground preparation. Do not use sod which has been cut for more than 72 hours. Stack all sod that is not planted within 24 hours after cutting and maintain proper moist condition.

Do not sod when weather and soil conditions are unsuitable for proper results. Pre-wet the area prior to placing sod. Do not place sod on eroded or washed out sites.

Place the sod on the prepared surface, with edges in close contact, and embed it firmly and smoothly by light tamping with appropriate tools.

Place the sod to the edge of all the paving and shrub areas and 1 inch below adjoining pavement with an even surface and edge. Place rolled sod parallel with the roadway and cut any exposed netting even with the sod edge.

Roll using a lightweight turf roller. Provide a true and even surface without any displacement of the sod or deformation.

Where sodding in drainage ditches, stagger the setting of the sod pieces to avoid a continuous seam along the line of flow. Ensure that the offsets of individual strips do not exceed 6 inches. Tamp the outer pieces of sod to produce a featheredge effect.

Peg sod at locations where the sod may slide. Drive pegs through sod blocks into firm earth, at intervals approved by the Engineer.

Remove any sod as directed by the Engineer.

**575-3.3 Watering:** Thoroughly water the sod immediately after placing. Do not water in excess of 1 inch per acre per week for establishment.

Use watering equipment that will prevent damage to the finished sod surface. Keep the sod in a moist condition for the duration of the Contract period.

**575-3.4 Maintenance:** Maintain the sodded areas in a satisfactory condition until final acceptance of the project. Include in such maintenance the filling, leveling, and repairing of any washed or eroded areas, as may be necessary. The Town of Jupiter will pay for resodding necessary due to factors determined to be beyond the control of the Contractor.

Mow the sodded areas to a height of 6 inches when competing vegetation height exceeds 20 inches in height.

### 575-4 Method of Measurement.

The quantities to be paid for will be for the following items, completed and accepted:

(1) The area, in square yards, of sod, directed to be furnished and installed by the Engineer, and/or to the neat lines of the actual work performed which may require sod.

(2) The area, in square yards, of fertilizer may be measured for acceptance, but no separate payment will be made for this work.

(3) The volume of water may be measured for acceptance but no separate payment will be made for this work

(4) The area, in square yards, of mowing.

**575-5 Basis of Payment.**

**575-5.1 When No Separate Item is Included in the Proposal:** When the proposal does not include a separate item for Sod, all work and incidental costs specified as being covered under this Section will be included for payment under the several scheduled items of the overall Contract, and no separate payment will be made for the costs of Sod.

**575-5.2** Prices and payments will be full compensation for all work and materials specified in this Section, and the satisfactory disposal of excavated material, except the furnishing of the fertilizer, No separate payment will be made for watering and/or fertilization. Include the cost of the watering and fertilization and the pay item for sod. All other related work shall be considered incidental to the work in this Section.

Payment will be made under:

Item No. 575-1	Bahia Sod - per square yard
Item No. 575-2	Floritam Sod - per square yard
Item No. 575-3	Bermuda Sod - per square yard
Item No. 570-7	Mowing - per square yard

**END OF SECTION 575**

**SECTION 577**  
**REWORKING SHOULDERS, SLOPES AND ROADSIDE DITCHES**

**577-1 Description.**

Perform shoulder preparation, sodding, fertilizing, mulching, and watering as specified in this Section. The work includes repairing non-paved shoulders, slopes, and roadside ditches by adding suitable materials, removal of excess materials, and restoring the roadside to the desired typical section for proper drainage, protection of pavement edge, and to provide a safe recovery area.

**577-2 Materials.**

Meet the following requirements:

Emulsified Asphalt (Grade SS-1).....	916-4
Sod .....	981-1
Mulch.....	981-3
Fertilizer.....	982-1
Water.....	983

**577-3 Equipment.**

**577-3.1 Equipment for Mixing Shoulders:** Provide equipment that may include pulver mixer and rotovators with shovel-like cultivators, of a type that will mix the additional shoulder material with the existing turf to the required depth and which will leave the shoulder in a non-compacted condition.

**577-3.2 Water-metering Devices:** Provide devices as specified in 570-3.6.

**577-4 Construction Methods.**

**577-4.1 Sequence of Construction:** Proceed with the several operations involved in the work in the following sequence: blade shoulders if necessary, add and spread borrow material, and mix borrows material with the underlying turf. Apply hay mulch and/or emulsified asphalt if required by the Contract Documents, and water as specified. Do not use any equipment that will damage the pavement or turf areas.

**577-4.2 Preparation of Shoulder to be Reworked:** Blade the existing shoulder as necessary to achieve a reasonable uniform plane. Blade turf which has grown over the edge of existing pavement from the pavement for a width of not more than 18 inches from the pavement's edge. Disc the existing shoulders prior to placing additional material.

Use existing materials (high spots) within the project limits as fill material for low areas, prior to using borrow materials. Stockpile excess materials resulting from the reworking procedure in areas designated by the Engineer.

Provide and maintain all measures required for the prevention, control, and abatement of dust, erosion, and water pollution. Prevention, control, and abatement of dust, erosion, and water pollution shall be incidental to the work being performed and will not be paid separately, unless specific pay items and quantities are established in this Contract.

**577-4.3 Additional Material:** Add and spread borrow material to conform to the desired shoulder configuration. Do not place this added material on the shoulders earlier than seven calendar days before beginning mixing operations in that area.

Borrow material required to bring turf shoulders to proper grade may be available from stockpiled areas as specified in Subarticle 577-4.2.

Provide fill material when authorized by the Engineer and sufficient quantities of Department furnished fill materials are not available from Department sources. Provide borrow materials, when approved by the Engineer, which may be used if the related pay item(s) and quantity are established in this Contract. The requirements for the furnished borrow material and payment will be in accordance with Section 120 and revisions thereto.

**577-4.4 Mixing:** Mix the additional shoulder material with the existing turf with a pulver mixer or rotovator mixer to a depth such that the upper 4 inches of the existing turf becomes uniformly mixed with the added material. Add seed and fertilizer after the mixing operation, and incorporate them into the seed bed in an acceptable manner to an average depth of 1/2 inch, prior to applying the mulch.

In those areas where the added borrow material exceeds 4 inches in depth, the Engineer will not require mixing of borrow material and turf. At these locations, mix the seed into a seed bed to an average depth of 1/2 inch.

Immediately after the above operations, reshape the shoulder area to the required configuration, and lightly roll it.

Completed work will be to the line, grades, and slopes according to the particular roadway typical requirements for shoulders, slopes, and ditches. Unless the established typical sections dictate or directed by the Engineer the typical sections will be as follows:

Drop off from edge of pavement to shoulder	½" to 1" maximum
Shoulders	¾" per foot
Front Slopes	4:1 to 6:1 (horizontal to vertical)
Ditch Bottom	Grade for proper drainage
Back Slope	2:1 to 4:1 (horizontal to vertical)

**577-4.5 Sodding:** Sod in accordance with Section 575

**577-4.6 Watering:** If, at the time of reworking the shoulder, the Engineer determines the soil is dry, apply water for a period of three weeks from the date of planting unless rainfall occurs providing adequate moisture. Add the water at a minimum rate of 1/2 inch per watering, twice a week. Perform watering in such a manner as to prevent washing of the newly built shoulders.

#### **577-5 Method of Measurement.**

**577-5.1 General:** The quantities to be paid for will be for the following items, completed and accepted.

(1) The area, in square yards, of reworking shoulders.

**577-5.2 Reworking Shoulders:** The quantity will be determined as specified in 575-4.

**577-5.3 Sod:** The quantity will be determined as specified in Section 575.

**577-5.4 Borrow Material:** Borrow Material is not included for payment in this Section. Borrow material will be paid for by the cubic yard truck measure as specified in 120-13.3.

#### **577-6 Basis of Payment.**

**577-6.1 When No Direct Payment is Provided:** When no pay item for reworking shoulders, slopes and roadside ditches is included in the proposal, the Contractor shall include the cost of any work which is necessary for reworking shoulders, slopes and roadside ditches within the limits of the project in the Contract price for the other items of work for which such work is required.

**577-6.2** Prices and payments will be full compensation for all of work and materials specified in this Section, including all work and incidentals to complete the work.

Prices and payments will be full compensation for all clearing and grubbing, excavation, embankment, borrow, compaction hauling; any re-handling that may be necessary to accomplish final disposal; the dressing of the shoulders, ditches, and slopes; removal of trash, etc.

Payment shall be made under:

Item No. 577-1 Reworking Shoulders, Slopes and Roadside Ditches-per square yard

Item No. 577- 2 Shoulder Rehabilitation - per linear foot

**END OF SECTION 577**

## **SECTION 581 IRRIGATION**

### **581-1 General**

This work consists of the installation of an automatic underground irrigation system within the Town of Jupiter rights-of-way, easements, parks and/or as directed by the Town of Jupiter. The system will utilize potable water sources. The Contractor shall be responsible for coordinating the installation of new water service connections in certain locations to provide water to the area sprinkled. Water service connections (where specified) will require the tapping of existing water mains and possible directional drilling to median and/or opposite side of roadway. In other locations, the system is existing; and therefore, only modifications downstream of the existing meter are required. All work associated with the installation of water service connections shall be completed in accordance with the Town of Jupiter Water Department Standards.

The Contractor shall install a complete and operable system, including the furnishing of all labor, equipment, materials, supervision, including permit fees necessary to construct the irrigation systems in accordance with written plans and layouts provided by the Town of Jupiter and the specifications contained herein. The Town of Jupiter will be responsible for the cost of tapping the water main and providing water meters and capital water connection changes.

The irrigation system shall be constructed to meet all applicable codes, including the installation of the pressure vacuum breaker. The Contractor shall install the irrigation system to provide a fully operational automatic system. The Contractor shall install all materials specified and implied by the drawings and specifications.

#### **581-1.1 Contractor Qualifications**

The irrigation Contractor shall be licensed in accordance with State and local laws. The irrigation Contractor shall obtain all necessary permits prior to commencing work, including irrigation, electrical and plumbing.

### **581-2 State and Local Permitting Requirements**

The Contractor will be responsible for obtaining all required State, County and local permits required for the installation of fully operable irrigation systems in accordance with the plans and these Technical Specifications, except as noted in supplemental conditions. The Town will obtain all permits required from the FDOT.

### **581-3 Submittals**

#### **581-3.1 Product Data**

All manufacturers' product data, cut sheets, warranty terms. All product data will be submitted prior to construction.

#### **581-3.2 Record Drawings**

Project record drawings will be kept up-to-date daily at work sites and will be accessible to the Engineer. Project record drawings and specifications will include, but not be limited to, all horizontal and vertical deviations from the contract documents made during construction affecting the underground irrigation system.

1. Indicate all field changes, dimensions, legends, pipe sizes, valve numbers (corresponding to controller program), installer's name and phone number, size of material, manufacturer's name and catalog name and number.
2. All piping will be sized and drawn to scale. Remote control valves and isolation valves will have two measurements from fixed objects.
3. Prior to substantial completion, the Contractor will submit one clean, legible set of marked up Irrigation plans and specifications to the Engineer.

#### **581-3.3 Operations & Maintenance Manuals**

Operations and maintenance manuals containing the following information shall be submitted to the

Town:

**581-3.3.1** Index sheet stating the Contractor's address and business telephone number, list of equipment with name(s) and address(es) of local manufacturer's representative(s);

**581-3.3.2** Catalog and parts sheets on all material and equipment installed under this contract;

**581-3.3.3** Complete operating and maintenance instructions on all major equipment, including watering schedule for the first year;

**581-3.3.4** Provide the Town of Jupiter's maintenance personnel with instructions for major equipment.

**581.3.3.5** Provide two (2) battery key devices for operating Leit controllers.

#### **581-3.4 Time of Submittal**

The Contractor will submit all record drawings and operation and maintenance manuals to the Engineer 10 days before substantial completion can occur. There will be no exception to this requirement.

#### **581-4 Job Conditions**

It shall be the responsibility of the Contractor to protect all persons from injury and to avoid property damage.

The Contractor shall be responsible for the temporary support, adequate protection, maintenance and repair of any damage to existing utilities, structures, drains, sewer and other obstructions encountered in the progress of work. Refer to Landscape Specifications (Section 02210) part 3.02 for more information regarding utilities.

##### **581-4.1 Existing Conditions**

The Contractor shall protect existing plant materials, and site grades unless otherwise noted on plans or previously approved by the Engineer.

Any disruption, destruction, or disturbance of any plants or structures shall be completely restored to the satisfaction of the Engineer.

The Contractor shall inspect the job site prior to the bid submittal and shall accept full responsibility for coordination between existing site conditions and irrigation drawings to be provided.

##### **581-4.2 Conflicts**

Whenever irrigation plans and existing utilities conflict, the Contractor shall notify the Engineer in order to field adjust the irrigation plan layout. Refer to conflict details in irrigation plans.

##### **581-4.3 Damage**

Any pavement cut, damaged, or undermined during the installation of the system shall be fully restored at the Contractor's expense.

#### **581-5 Material**

All irrigation work shall be done in a good workman like manner and in accordance with the manufacturer's specifications. All irrigation system materials shall be new.

##### **581-5.1 Pipe**

All pipes shall be delivered in full 20-foot lengths and clearly marked with the manufacturer's name and classification.

**581-5.1.1 Main:** All pipe situated hydraulically between the water meter and the sprinkler control valve is classified as MAIN LINE PIPE, and is herein specified to be PVC Schedule 40, Type 1120-1220, and shall conform to CS 256-63, and shall be equipped with factory attached couplings or integrally formed bells for solvent weld connections. All pipes shall be cut squarely and burrs removed. All P.V.C. joints to be made with the use of cleaner, primer and clean solvent weld. Installation will be in accordance with the manufacturer's instruction. The location of the mainline is shown schematically for clarity. Adjust to planting, curbs and paving accordingly. Provide 12 inches minimum setback for mainline from roadway curbs and edge of pavement.

- Cut with saw or approved PVC cutting tool.

- Bevel ends with hand beveling tool or pilot tool.
  - Mark ends with reference mark.
  - Set ring in groove with painted edge facing toward end of bell.
  - Lubricate pipe end with light film of lubricant.
- Push end in so that reference mark in spigot end is flush with the end of the bell.

**581-5.1.2 Lateral:** Pipe situated hydraulically on the discharge side of the sprinkler control valve is classified as LATERAL LINE PIPE. All 1/2" pipe shall be PVC, Type I SDR 13.5, Class 315. All pipe sizes of 3/4" to 1" in diameter shall be PVC, Type I Class 200. All pipe of diameter 1-1/4" to 3" is to be SDR 26 Class 160. Pipe shall be equipped with factory attached couplings or integrally formed bells for solvent weld connections.

**581-5.1.3 Lateral pipes will be solvent weld joints.** Pipe will be installed in a manner so as to provide for expansion and contraction as recommended by the manufacturer. PVC pipe will be cut with a hand saw, PVC cutter, or hack saw so as to ensure a square cut. Burrs cut at ends will be removed prior to installation so that a smooth unobstructed flow will be obtained.

**581-5.1.4** Only the solvent recommended by the pipe manufacturer will be used. All PVC pipe and fittings will be installed as outlined and instructed by the manufacturer, and it will be the Contractor's full responsibility to make arrangements with the pipe manufacturer for any field assistance that may be necessary. The Contractor will assume full responsibility for the correct installation.

**581-5.1.5** All PVC to metal joints will be made with PVC male adapters. The solvent weld joints will be made in the following manner:

**581-5.1.6** Thoroughly clean the mating pipe and fitting with a clean dry cloth then apply PVC primer. Apply a uniform coat of PVC cement to the outside of the pipe to the fitting in a similar manner and quickly insert it into the fitting. Give the pipe or fitting a quarter turn to ensure even distribution of solvent and make sure the pipe is inserted to the full depth of the fitting socket. Hold in position for 15 seconds. Wipe off excess solvent that appears at the outer shoulder of the fitting. Care should be taken not to use an excess amount of solvent, thereby causing an obstruction to form on the inside of the pipe. The joints will be allowed to cure at least 24 hours before pressure is applied to PVC pipe.

**581-5.1.7** Adjust location of lateral lines to planting beds, trees, palms, curbs and paving accordingly. Provide 12" minimum setback from roadway curbs and edge of pavement.

## **581-5.2 Fittings**

Main line and lateral pipe fittings shall be of the proper type and class for use with the above specified pipe and shall have solvent welds, threaded connections according to the requirements of the connection being made.

Both the fittings, solvent cement, and the cleaner used in the installation shall be either manufactured or supplied by the manufacturer, or supplied by, the manufacturer of the pipe on which they are to be used. The Contractor shall guarantee that the pipe, fittings, cement and cleaner utilized in this work are all compatible with one another.

Threaded pipe connections between Main pipe and sprinkler control valves shall be made using PVC Schedule 80 threaded pipe and fittings.

**581-5.2.1** Spray pop-up sprinkler heads shall be installed flush with finish grade. One-half-inch flexible PVC, or thick wall poly pipe, shall be installed between the rigid PVC.

**581-5.2.2** Sprinkler heads placed adjacent to walks and curbs shall be installed 6 inches from concrete. Automatic remote control valves shall be installed in specified valve boxes. The valve shall have 6 inches of pea gravel installed below the bottom of the valve.

**581-5.2.2.1** Sprinkler heads will be at finish grade, as shown on the plans.



**581-5.2.2.2** Sprinkler heads placed adjacent to walks and curbs will be installed 4 inches from the concrete.

### **581-5.2.3 Sprinkler Head Material**

Sprinkler heads shall be:

6" Pop-up Mist Heads

570Z/6P – 10Q, 12Q, 15Q

570Z/6P – 10H, 12H, 15H

570Z/6P – 10F, 12F, 15F

Specialty Heads for Annuals

570Z/12P – 10Q, 12Q, 15Q

570Z/12P – 10Q, 12Q, 15Q

### **581-5.3 Valves**

Valves shall be Irritrol 100 series valve with DC Solenoid with flow control configured for operation with Solatrol LEIT 4000 or X Series universal controllers. Valves to be configured to operate with Altec micro power actuators - LEMA 1500 Series.

### **581-5.4 Valve Boxes**

Valve boxes shall be NDS or equal. All valve boxes shall be numbered according to the irrigation plans.

### **581-5.5 Wire**

Wiring used for connecting the automatic remote control valves to the controllers shall be type UF, 600 Volt test, UL approved for direct burial, single strand, solid copper with PVC insulation 4/64 inch thick. Size shall be 14 gauge, red for "hot" or lead wires, and the common wire to be 12 gauge, white in color. The Contractor shall install all control wires at least 18" below grade and along the backside of, or below, the main line pipe. The Contractor shall provide looped slack at the valve locations and snake wires in the trench and bundle the wires at 20-foot intervals to allow for the contraction of wires.

All splices in control wire shall be made at valve locations or marked with valve access box. Control wire splices other than at valves are acceptable at 500-foot intervals. All wire species and connections at the valves are to consist of epoxy wire connectors or Solatrol ID Splice connectors SPLI 2201.

### **581-5.6 Controllers**

Irrigation controllers will be LEIT 4000 and X Series Models distributed by Ambient Control Systems. Controllers shall be configured with SKIT 8821 Single Station Sensor Adapters to accommodate the required rain sensor specified. Controller to be mounted on 35" mounting column (LMTG 2035). The controllers shall be installed in accordance with the manufacturer's recommendations and as shown in the detail on the plans utilizing the manufacturer's 35" mounting column (model #LMTG 2035).

### **581-5.7 Backflow Prevention Devices**

Pressure vacuum backflow prevention devices shall be 1.5-inch Febco #850Y.

#### **581-5.7.1 Pressure Vacuum Breaker Installation**

The installation of pressure vacuum breakers shall be conducted by a plumber licensed in accordance with State and local laws. The installation of backflow preventers shall be coordinated with the Town of Jupiter Water Department and certified.

### **581-5.8 Rain Sensor**

The Contractor will install rain sensors at a location designated by the Engineer within 10' of each irrigation controller. The Engineer shall approve the configuration of the rain sensor installation. The rain sensors will be Mini-Click 502-C Rain Switch with Rain Bypass Switch or approved equal.

### **581-5.9 Utility Locate Wire**

Utility locate wiring shall be 10 gauge THWN insulated blue in color, copper stranded wire in continuous runs.

#### **581-5.10 Water Meters**

The Town of Jupiter will be responsible for the cost of all water meters and service connection charges. The Town of Jupiter Water Department will do the meter installation. The Contractor shall provide the Town with a minimum of 14 days notice for installation of each water meter. Upon notification of the completion of the installation of the back flow prevention device, the Town of Jupiter will install respective water meters together with a concrete meter box.

#### **581-5.11 Water Meter Box**

The water meter box will be provided and installed by the Town of Jupiter Water Department as a part of the meter installation.

#### **581-5.12 Water Main Service Saddles**

Service saddlers shall be double strap with 2 inch IP in accordance with the Town of Jupiter requirements

#### **581-5.13 Corporations**

Corporations shall be in accordance with the Town of Jupiter requirements.

#### **581-5.14 Meter Valves**

Water meter valves shall be in accordance with the Town of Jupiter requirements.

### **581-6 Trenching and Backfilling**

**583-6.1** Trenches for pipe shall be cut to required grade lines and compacted to provide accurate grade and uniform bearing for the full length of the line. The bottom of the trenches shall be free of rock or other sharp edged objects. Minimum cover shall be between 12 and 14 inches for pressure lines and 12 inches for non-pressure lines. All pipelines shall have a 6-inch minimum clearance from each other and from lines of other trades. Backfill shall be compacted to dry density equal to adjacent undisturbed soils and shall conform to adjacent grades without dips, sunken areas or other irregularities.

#### **581-6.2 Hand Trench Work**

Conduct hand trench work in all areas where potential for conflicts with existing underground utilities and infrastructure exist. Report any conflicts to the Engineer. Modification to avoid conflicts may be made subject to the approval of the Engineer. The costs of any and all modifications shall be included in the Contractor's lump sum price for Irrigation.

### **581-7 Pressure Vacuum Breakers**

**581-7.1** Pressure Vacuum Breakers (PVB) shall be installed 12" higher than highest sprinkler head and in accordance with State and local laws. A licensed plumber must complete the installation of the pressure vacuum breakers. The Contractor shall coordinate the installation of the PVB's with the Engineer and the Town of Jupiter Water Department.

**581-7.2** The backflow preventer shall be installed down stream of the water meter in accordance with all local and state codes. The Contractor shall be responsible for notifying the Town of Jupiter Water Department upon completion of the backflow preventer installation. Water meters will not be installed until after the backflow preventer installation has been reviewed and approved by the water department. The Contractor shall provide the Town of Jupiter with 14 Days Notice for the installation of the water meter.

**581-7.3** Prior to final acceptance by the town the Contractor shall be responsible for testing of all backflow prevention devices. A certified backflow tester shall conduct the testing. The Contractor shall provide a certification to Town of Jupiter, in accordance with the requirements of the Water Department.

### **581-8 Testing and Inspection**

**581-8.1 Prior to Work Commencement:** Prior to the commencement of work an inspection schedule will be established between the Contractor and the Engineer. All work will be inspected prior to backfilling trenches. Should the material, workmanship or method of installation not meet the standards specified herein, the Contractor shall replace the work at his own expense.

**581-8.2 Hydrostatic Tests:** All hydrostatic tests must be inspected by the Engineer, providing 48 hours advance notice of the test. Testing is to be accomplished at the expense of the Contractor. Test shall

be performed by applying a continuous and static water pressure of 125 p.s.i. on mainlines and submain for 2 hours with no leakage.

**581-8.3 System Efficiency:** The Contractor shall balance and adjust the various components of the system so the overall operation of the system is most efficient. This includes a synchronization of the controllers, adjustments to pressure regulations, pressure relief valves, part circle sprinkler heads, and individual station adjustments on the controllers.

**581-9 Maintain Existing Irrigation System:**

**581-9.1 During Construction Period:** When an existing irrigation system exists within the project limits, and no plans or as-built drawings are provided or are available for that system(s), the Contractor shall provide all labor, material, equipment and incidentals to perform as required: Coordination of the operation of any zones of that system that may be affected by the construction operations with the respective systems' operators , which may include homeowner associations and individual homeowners; provide all labor, material, equipment and incidentals to perform, as required,: repairs of damaged irrigation systems (zones), maintenance operation of existing systems and, if necessary, replace and relocate components of the system to accommodate the construction operations to locations approved by the Engineer.

**581-9.2 During Maintenance Period:** The Contractor shall maintain the irrigation system throughout the maintenance period.

**581-10 Site Cleanup**

The Contractor shall keep the construction site clean of all surplus materials, waste, tools, equipment, rubbish, excessive earth and waste generated by the installation of the irrigation system. The Contractor shall fully restore the site to the conditions that existed prior to the beginning of the irrigation system installation.

**581-11 Guarantee**

The Contractor, as part of this contract shall furnish a written guarantee for all materials and workmanship for a period of **six months** from the date of acceptance by the Town of Jupiter. Leaks shall be repaired and paid for by the Contractor at any time they appear during the warranty period. All warranty work provided by the Contractor during maintenance and warranty period will be included in the unit prices for Irrigation.

**581-12 Method of Measurement:** Except for acceptance, there will be no measurement for work performed under this item.

**581-13 Basis of Payment:** Price and payment shall be full compensation for all work specified in this section, including supplying all materials.

**581-13.1 When No Separate Item is Included in the Proposal:** When the proposal does not include a separate item for Irrigation, all work and incidental costs specified as being covered under this Section will be included for payment under the several scheduled items of the overall Contract, and no separate payment will be made for the costs of Irrigation.

**581-13.2** Payment will be made under:

Item 581-1 Irrigation – Lump Sum

Item 581-2 Rework Existing Irrigation – Lump Sum

Item 581-3 Landscape and Irrigation - Lump Sum

**END OF SECTION 581**

## **SECTION 700 HIGHWAY SIGNING**

### **700-1 Description.**

Furnish and erect aluminum or steel roadway signs, with supporting posts or columns, at the locations shown in the plans, in accordance with the details shown in the plans. Reflectorize all signs, and, when so specified in the plans, provide overhead signs with lighting.

The Town designates Roadside Traffic Signs as all signs erected on the shoulders, slopes, or medians, but not extending over the traveled roadway.

The Town designates signs erected partially or completely over the traveled roadway or mounted on bridges as Overhead Traffic Signs, and may further classify some of these signs as Overhead Cantilever Traffic Signs.

### **700-2 Sign Assembly Design Requirements.**

**700-2.1 General:** Sign assemblies as specified in the plans fall into three general categories: frangible support ground sign assemblies, breakaway support ground sign assemblies, and overhead sign assemblies.

Use any combination of sign materials described below. The Contractor may utilize different combinations for each type of sign assembly. However, ensure that the material combination used for each type is the same within the Contract.

**700-2.2 Sign Panels:** Use either aluminum or galvanized steel for any sign panel shown in the plans, regardless of its mounting type.

If using galvanized steel for the sign panels, provide the same dimensions, including the thickness, as those shown in the plans for aluminum.

Fabricate standard sign panel messages in accordance with details included in the Standard Highway Signs Manual published by the U.S. Department of Transportation. The Engineer will not require the submittal of shop drawings for these signs or for non-standard sign panels and messages fabricated in accordance with details shown in the plans. Submit seven copies of shop drawings indicating detailed layout of the sign legend, spacing, and border for all other signs to the Engineer of prior to fabrication.

If the size of a sign is not specified in the plans, provide the size sign for conventional roadways as shown in the MUTCD.

#### **700-2.3 Roadside Sign Supports:**

**700-2.3.1 Frangible Supports:** Provide posts for all frangible sign assemblies consisting of aluminum tubes up to 3 1/2 inches outside diameter with 3/16 inch wall thickness, or galvanized steel U-Channel up to 3 lb/ft as listed on the Approved Products List, and in accordance with DESIGN STANDARDS, Index Nos. 11860 through 11862 for frangible sign supports.

**700-2.3.2 Breakaway Supports:** For posts for breakaway sign assemblies, the Contractor may use either aluminum or galvanized steel in accordance with the requirements for breakaway signs in the DESIGN STANDARDS.

The Engineer will accept breakaway sign assemblies utilizing load concentrating couplers as an alternate to the slip base. Supply erection drawings with the assemblies. Supply evidence that the proposed couplers meet the breakaway requirements of the AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, prior to use on a project.

The FDOT lists alternate proprietary and non-proprietary breakaway assemblies on the Qualified Products List. For an acceptable non-proprietary breakaway lap splice for U-Channel steel posts, refer to the U-Channel Lap Splice Detail. The Engineer may accept other alternate breakaway designs if satisfactorily tested in accordance with the current AASHTO requirements.

**700-2.3.3 Steel Posts:** When using steel posts as the structural member in a full length support or breakaway base installation for a small roadway sign, provide steel flanged U-channel consisting of rerolled rail steel or an equivalent billet steel, meeting the mechanical requirements of ASTM A 499, Grade 60, and meeting the chemical requirements of ASTM A 1. For each U-channel, punch or drill 3/8 inch diameter holes on 1 inch centers through the center of the post, starting approximately 1 inch from the top and extending the full length of the U-post. Ensure that the weight per foot of a particular manufacturer's U-channel size does not vary more than  $\pm 3 \frac{1}{2}\%$  of its specified weight per foot. Taper the bottom end of the U-channel post for easier installation. Machine straighten the U-channel to a tolerance of 0.4% of the length. Ensure that post configuration generally complies with the dimensions for Type F or Type M flanged U-channel, as shown on DESIGN STANDARDS, Index No. 11860 through 11865.

Only provide steel components that have been galvanized after fabrication in accordance with ASTM A 123 and have a smooth uniform finish free from defects affecting strength, durability, and appearance.

Attach the sign to the structural member using hardware meeting the manufacturer's recommendations and as specified in the DESIGN STANDARDS. Only use attachment hardware (nuts, bolts, clamps, brackets, braces, etc.) of a non-corrosive metal, aluminum, or galvanized steel, meeting the requirements specified on the DESIGN STANDARDS, Index Nos. 11860 through 11865.

#### **700-2.4 Overhead Sign Structures:**

**700-2.4.1 Town's Design:** When the overhead sign structure is detailed in the plans, submit shop drawings to the Town for approval as specified in Sub-Section 4.4 of the General Conditions. Prior to the submittal of the shop drawings, determine the actual length of support columns for all sign structures on the basis of existing field conditions and include these lengths on the shop drawings.

**700-2.4.2 Contractor's Design:** When the overhead sign structure is not detailed in the plans, submit to the Town a sign structure design utilizing steel structural members. Meet the requirements of this Section and the AASHTO Specification for the Design and Construction of Structural Supports for Highway Signs, Luminaires and Traffic Signals.

Use a design wind speed as shown in the DESIGN STANDARDS. When a sign structure is attached to a bridge or wall structure, ensure that the loads from the sign structure applied to the bridge or wall structure are equal to or less than those shown on the Contract drawings. When the sign support is not on a structure, the Contractor is responsible for the design of the foundation.

Have designs and shop drawings prepared by a Specialty Engineer, and submit them to the Town for review and approval in accordance with Sub-Section 4.4 of the General Conditions.

Determine the actual length of support columns for all sign structures on the basis of existing field conditions, and include these lengths in the shop drawings and calculations.

**700-2.5 Sign Background:** Meet the requirements of Section 994, Division III Materials. Use Type III, IV or V sheeting for background sheeting, white legends, borders and shields on all signs, excluding STOP, DO NOT ENTER, and WRONG WAY. Use Type VII sheeting for STOP, DO NOT ENTER and WRONG WAY signs. Use Type III, IV, V or VII yellow-green fluorescent sheeting only for S1-1 school advance signs and S2-1 school crossing signs. Do not mix work zone signs having fluorescent orange sheeting with signs having orange reflective sheeting.

#### **700-3 Materials.**

**700-3.1 General:** Meet the materials requirements shown below and any additional requirements which the plans might show.

**700-3.2 Concrete:** For footings, use Class II concrete meeting the requirements of Section 346.

**700-3.3 Reinforcing Steel:** For reinforcing steel in footings, meet the requirements of Section 415.

#### **700-3.4 Aluminum Materials:**

**700-3.4.1 General:** For aluminum materials, meet the general provisions of 965-1, Division

III Materials. Sign panels shall be .080 inches thick.

**700-3.4.2 Sheets and Plates:** For aluminum sheets and plates for sign panels, meet the requirements of ASTM B 209, Aluminum Association Alloy 6061-T6, 5154-H38 or 5052-H38 and those shown in the plans.

**700-3.4.3 Extruded Tubing:** For extruded aluminum tubing, meet the requirements shown in the plans.

**700-3.4.4 Castings:** Provide aluminum castings of the alloys shown in the plans. For aluminum alternates the Engineer will allow a cast base, provided the Contractor submits test reports giving evidence that the base to be used for each pole size is as strong as the pole with which it is to be used. Perform physical tests and submit certified reports for one base to be used with each pole size. Use Alloy A 356-T6 for the castings. Use aluminum bolts for connecting parts of the cast base.

**700-3.4.5 Channels:** For aluminum channels, meet the requirements of ASTM B 308 for the alloys shown in the plans.

**700-3.4.6 Bolts, Nuts, and Lockwashers:** For aluminum bolts, nuts, and lockwashers, meet the requirements shown in the plans. Ensure that finished bolts and washers are given an anodic coating of at least 0.0002 inch in thickness and are chromate-sealed.

#### **700-3.5 Steel:**

**700-3.5.1 General:** Only use structural steel, including bolts, nuts, and washers, that have been hot dip galvanized or metalized after fabrication. Perform hot dip galvanizing in accordance with ASTM A 123 or ASTM A 153 and metalizing in accordance with Section 562. For galvanized steel members, except plate for sign panels, meet the general requirements of Section 962 and the specific requirements of 962-7. For steel plate for use as sign panels, meet the requirements of ASTM A 283 for either Grade C or Grade D.

**700-3.5.2 Specific Uses of Aluminum and Galvanized Steel:** Use aluminum bolts, nuts, and hardware to connect parts of the cast base.

Use galvanized steel anchor bolts for anchoring base plates to concrete bases and for the nuts and washers therefor.

For all other metal parts, the Engineer will allow galvanized steel as an alternate to aluminum.

**700-3.6 Bearing Pads:** For bearing pads, meet the requirements of 932-2, Division III Materials.

**700-3.7 Reflective Sheeting:** Meet the reflective sheeting requirements of Section 994, Division III Materials.

**700-3.8 Process Colors:** Use transparent and black opaque process colors meeting the requirements of 994-4, Division III Materials on reflective sheeting.

**700-3.9 Demountable Sign Face Materials:** For demountable sign face materials, meet the requirements of Section 995.

**700-3.10 Porcelain Enamel Background:** For porcelain enamel background material, meet the requirements of Section 996, Division III Materials.

#### **700-4 Preparation of Sign Blanks.**

##### **700-4.1 De-greasing and Etching for Aluminum Sign Blanks:**

**700-4.1.1 General:** Prior to the application of reflective sheeting, use any of the methods shown below to de-grease and etch the aluminum sign blanks.

**700-4.1.2 Hand Method:** Under this method, de-grease and etch the blanks in one operation, using steel wool (medium grade) with any of the following combinations of materials:

- (1) An abrasive cleanser of a commercial grade kitchen scouring powder.
- (2) Acid and a suitable detergent solution.
- (3) An alkaline solution.

Thoroughly rinse the blanks with clean water following all hand de-greasing operations.

**700-4.1.3 Power-Washer Method:** Under this method, de-grease the blanks with an inhibited alkaline cleanser, by spraying for 90 seconds with the solution between 135 and 249°F, the exact temperature to be as recommended by the manufacturer of the cleanser. After the spraying, rinse the blanks with clean water. Then etch the blanks by immersing them in a 6 to 8% solution of phosphoric acid at a temperature of 100 to 180°F for 60 seconds. After immersion, rinse the blanks in clean water.

**700-4.1.4 Immersion Method:** Under this method, de-grease the blanks by immersing them in a solution of inhibited alkaline cleanser at a temperature between 160 and 180°F for three to five minutes, and then rinsing with clean water. Then etch blanks by immersing them in a 6 to 8% solution of phosphoric acid at a temperature of 100°F for three minutes. After immersion, rinse the blanks in clean water.

**700-4.1.5 Vapor De-greasing Method:** Under this method, de-grease the blanks by totally immersing them in a saturated vapor of trichloroethylene. Remove trademark printing with lacquer thinner or a controlled alkaline cleaning system.

**700-4.1.6 Alkaline De-greasing Method:** De-grease the blanks by totally immersing them in a tank containing an alkaline solution, controlled and titrated in accordance with the solution manufacturer's directions. Adapt immersion time to the amount of soil present and the thickness of the metal. After immersion, thoroughly rinse the blanks with running water.

**700-4.1.7 Etching Method when De-greasing is Separate Operation:** If using either of the de-greasing methods described under 700-4.1.5 and 700-4.1.6, accomplish etching by one of the following alternate methods:

(1) Acid Etch: Etch well in a 6 to 8% phosphoric acid solution at 100°F, or in a proprietary acid etching solution. Rinse thoroughly with running cold water, which may be followed by a hot water rinse.

(2) Alkaline Etch: Etch aluminum surfaces in an alkaline etching material that is controlled by titration. Meet the time, temperature, and concentration requirements specified by the solution manufacturer. After completing etching is complete, rinse the panel thoroughly.

**700-4.2 Preparation of Surface for Steel Sign Blanks:** Clean and prepare galvanized steel sign blanks for painting or for application of reflective sheeting in accordance with the recommendations of the manufacturer of the material to be applied to the sign blanks.

**700-4.3 Drying:** Dry the panels using a forced-air drier. Use a device or clean canvas gloves, to handle the material between all cleaning and etching operations and the application of reflective sheeting. Do not allow the metal to come in contact with greases, oils or other contaminants prior to the application of reflective sheeting.

**700-4.4 Fabrication of Sign Blanks:** Fabricate all metal parts to ensure a proper fit of all sign components. Complete all fabrication, with the exception of cutting and punching of holes, prior to metal de-greasing and applying the reflective sheeting. Cut metal panels to size and shape and keep free of buckles, warp, dents, burrs, and defects resulting from fabrication. Provide all sign panels with a flat surface. Where signs are to be fabricated from galvanized steel, cut the plates to the required size and drill prior to galvanizing.

## **700-5 Fabrication of Reflectorized Sign Faces.**

**700-5.1 Application of Sheeting:** Apply reflective sheeting to the base panels with mechanical

equipment in a manner specified for the manufacture of traffic control signs by the sheeting manufacturer. Ensure that sheeting applied to extruded aluminum sections adheres over and around the side legs of all panels to a minimum distance of 1/16 inch beyond the radius of top edge.

Match sign faces comprising two or more pieces of reflective sheeting for color and reflectivity at the time of sign fabrication. Reverse and apply consecutively alternate successive width sections of either sheeting or panels to ensure that corresponding edges of sheeting lie adjacent on the finished sign. The Engineer will not accept nonconformance that may result in nonuniform shading and an undesirable contrast between adjacent widths of applied sheeting.

**700-5.2 Finish:** Seal reflective sheeting splices and sign edges with materials the sheeting manufacturer supplies in a manner the sheeting manufacturer specifies for traffic control signs.

**700-5.3 Screening-on Message:** Screen message and borders on reflective sheeting in accordance with the recommendations of the paint manufacturer. Process either before or after applying the sheeting to the base panels.

**700-5.4 Finished Sign Face:** Provide finished signs with clean cut and sharp messages and borders. Ensure that finished background panels are essentially a plane surface.

**700-5.5 Stenciling:** For permanent roadway signs, mark the back of all finished panels at the bottom edge with "TOJ", the date of fabrication, the date of installation, and the fabricator's initials. For construction signs, mark the back of all finished panels at the bottom edge with the date of fabrication and the fabricator's initials. Make the markings unobtrusive, but legible enough to be easily read by an observer on the ground when the sign is in its final position. Apply the markings in a manner that is at least as durable as the sign face.

**700-5.6 Product Changes:** If changes in the formulation of the sheeting occur, submit new samples for re-evaluation for continued approval.

#### **700-6 Painting Panels for Nonreflectorized Background.**

When specified in the Contract Documents, provide all Type A and Type B signs with a nonreflectorized background, composed of one spray coat of primer and two finish coats of baked enamel, as specified below.

After the cleaning and etching, give these sign faces one spray coat of primer of the type the manufacturer of the finish coats recommends. Allow this prime coat to dry for at least 12 hours and until dry, after which, give the sign faces two coats of finish paint meeting the following requirements.

Provide finish coats of baked alkyd resin enamels meeting Federal Specifications TT-E-529A, Class B, of a composition which effects on the finished background surface, when thoroughly dry, colors matching those described in the current Highway Blue Color Tolerance Chart, PR Color No. 3, or in Highway Green Color Tolerance Chart, PR Color No. 4, published by the U.S. Town of Commerce, Bureau of Public Roads (now designated as the U.S. Town of Transportation, FHWA, Washington, D.C. 20590), as specified for the particular application. The Town will judge the color match visually per the Chart directions but the Town may use instrumental methods in the case of questionable visual matches.

Revise the package viscosity requirement on the opaque paints, as specified in Federal Specifications TT-E-529A, as follows: change the maximum requirement for Viscosity (Package), No. 4 Ford Cup, for Class B, from 110 seconds as shown to 150 seconds.

Ensure that the manufacturer of the enamel paints furnishes the Engineer with six copies of a certified test report indicating that the paint furnished meets the above requirements. Identify the pigmentation by the appropriate color number in Table I, and show the manufacturer's test results for compliance with the requirements of 3.3.1, 3.3.2.2, 3.4.1, and 3.4.2 of Federal Specifications TT-E-529A.

Notwithstanding the certification required, the Town reserves the right to test this paint. Submit samples to the Engineer.



## **700-7 Acceptance of Signs.**

**700-7.1 Manufacturer's Certification and Recommendations:** Ensure that the sign manufacturer provides producer's certifications of materials incorporated into the signs. Ensure that the sign manufacturer certifies that the delivered signs conform to this Section and provides recommendations for storing and repairing signs.

**700-7.2 Packaging and Shipping:** Have the manufacturer package and ship the signs in a manner which will minimize possible damage.

**700-7.3 Storage of Signs:** If signs are stored prior to installation, store them in accordance with the manufacturer's recommendations.

**700-7.4 Sign Inspection:** Do not install signs until the Engineer inspects them for conformance with this Section. Provide all manufacturer certifications and recommendations prior to the Engineer's inspection. The Engineer will inspect the signs upon delivery to the storage or project site and again at the final construction inspection. Repair and replace signs deemed unacceptable by the Engineer at no expense to the Town.

**700-7.5 Imperfections and Repairs:** Repair and replace signs containing imperfections or damage regardless of the kind, type, or cause of the imperfections or damage. Make repairs according to the manufacturer's recommendations and to the satisfaction of the Engineer. Ensure that completed repairs provide a level of quality necessary to maintain the service life warranty of the sign and are satisfactory in appearance to the Engineer.

## **700-8 Footings for Signs, Posts and Supports.**

**700-8.1 Excavation and Backfilling:** Perform excavation and backfilling for the footings in accordance with Section 125, with the exceptions that no specific density is required and that the backfill may be tamped in 4 inches maximum layers. Use material that is at near optimum moisture and neither dry or saturated, and tamp to the extent directed by the Engineer. The Town may require that the backfilling be done with poured concrete.

Install spread footings which support sign structures overhanging the roadway.

**700-8.2 Mixing and Placing Concrete:** For batching and mixing of concrete for footings, meet the requirements of the current FDOT Standard Specifications Division II Materials, Section 346, except that the Engineer will allow hand mixing by approved methods using commercially available dry premixed concrete where the quantity to be mixed does not exceed 1/2 yd<sup>3</sup>. Use cast-in-place or precast concrete for the footings.

**700-8.3 Forms:** The Engineer will not require forms when the ground is sufficiently firm, in which case, sufficiently moisten the adjacent earth to prevent it from absorbing the moisture from the concrete. Where forms are required and the soil is not moist, place sufficient water, as directed by the Engineer, in the hole, and pour the concrete as soon as the water has been absorbed. Place at least 4 inches of loose earth, free from clods or gravel, over the top of the footing to effect curing.

**700-8.4 Finishing Concrete:** Trowel the top of the concrete to a smooth finish.

**700-8.5 Removal of Footing:** When the plans call for existing ground-mounted signs to be modified or removed, immediately remove supports and footings that project more than 6 inches above the ground surface after removing the sign panel from the assembly. Remove existing footings to a depth at least 12 inches below the ground surface. The costs will be included in the Contract unit price of the item to which it is incidental.

## **700-9 Erection of Signs and Sign Supports.**

Do not erect overhead sign supports until the concrete in the support footing has cured for at least seven days. The Engineer may allow sign support erections prior to seven days provided the footing concrete strength is at least 2,500 psi. Determine concrete strength from tests on a minimum of two test cylinders, tested in accordance with the current FDOT Standard Specifications Division II Materials,

Section 346.

Erect the signs and sign structures in accordance with the details shown in the plans. The Contractor may fabricate the structural steel sign trusses in sections that will fit into available galvanizing vats. Prior to galvanizing, weld the joints as specified in the plans and in accordance with the details shown in the plans. Metalize damaged parts as specified in Section 562.

Weld aluminum structures in accordance with 965-3, Division III Materials.

**700-10 Method of Measurement.**

The quantities to be paid for will be:

- (1) The number of roadside traffic signs of each designated class of assembly, complete.
- (2) The number of overhead traffic signs of each designated class of assembly, complete.
- (3) The number of lighted overhead traffic signs of each designated class of assembly, complete.
- (4) The number of existing signs removed, relocated, modified, lighted, placed on breakaway or nonbreakaway supports, of each designated class of assembly, complete.
- (5) The number of each existing sign refurbished, existing sign panel removed, pole installed, exit numbering panel, and mile post, complete.
- (6) The number of overhead signs span wire mounted, bridge mounted, and lighted sequential, of each designated class of assembly, complete.
- (7) The number of lighted roadside signs of each designated class of assembly, complete.

For the purpose of payment, a sign assembly consists of all the signs mounted on a single structure (one, two or three posts, or overhead structure) or all the signs on a bridge mounted sign structure and the sign structure.

**700-11 Basis of Payment.**

**700-11.1 When No Direct Payment is Provided:** When no pay item for highway signing is included in the proposal, the Contractor shall include the cost of any work which is necessary for highway signing within the limits of the project in the Contract price for the other items of work for which such work is required.

**700-11.2** Price and payment will be full compensation for furnishing and installation of all materials necessary to complete the signs in accordance with the details shown in the plans; including sign panels complete with sheeting, painting, and message; sign posts and supports, footings, excavation, etc.; for the lighted signs, all costs of the electrical installation for lighting, up to the point of connection by others; and all other work specified in this Section, including all incidentals necessary for the complete item.

**Payment Items:**

Item No. 700-1 Sign Post Single - Each

Item No. 700-2 Sign Existing (Relocate) Single Post – Each

Item No. 700-3 Traffic Signing – Lump Sum

**END OF SECTION 700**

## **SECTION 706**

### **RETRO-REFLECTIVE PAVEMENT MARKERS AND BITUMINOUS ADHESIVE**

#### **706-1 Description.**

Place Retro-Reflective Pavement Markers (RPMs) and adhesive, which upon installation produces a positive guidance system to supplement other reflective pavement markings.

#### **706-2 Materials.**

Use only RPM materials and bituminous adhesives listed on the FDOT Approved Products List (APL). Meet the material requirements of current FDOT Division III Materials. The Engineer will take random samples of the RPMs in accordance with the FDOT's Sampling, Testing and Reporting Guide schedule.

Use only Class B markers unless otherwise shown in the plans.

#### **706-3 Equipment.**

Use equipment having either thermostatically controlled double boiler type units utilizing heat transfer oil or thermostatically controlled electric heating pots to install hot applied bituminous adhesive. Do not use direct flame melting units with flexible adhesives; however, this type of unit may be used with standard adhesive in accordance with manufacturer's recommendation. Use a melter/applicator unit suited for both melting and pumping the adhesive through heated applicator hoses.

Heat the adhesive to between 375 and 425F and apply directly to the bonding surface from the melter/applicator by either pumping or pouring. Maintain the application temperature between 375 and 425F. The adhesive may be reheated. However, do not exceed the manufacturer's recommendations for pot life at application temperatures.

#### **706-4 Application.**

Install RPMs in accordance with Standard Plans, Index Nos. 711-003 and 706-001.

Apply RPMs to the bonding surface using bituminous adhesives only. The Engineer will conduct field testing in accordance with FM 5-566. Correct RPMs not applied in accordance with these requirements at no cost to the Town.

Prior to application of adhesive, clean the portion of the bonding surface of any material which would adversely affect the adhesive.

Apply the adhesive to the bonding surface (not the marker) so that 100% of the bonding area of the marker will be covered, in accordance with adhesive manufacturer's recommendations. Apply sufficient adhesive to ensure, that when the marker is pressed downward into the adhesive, adhesive will be forced out around the entire perimeter of the marker.

Immediately remove excess adhesive from the bonding surface and exposed surfaces of the RPMs. Soft rags moistened with mineral spirits meeting Federal Specifications TT-T-291 or kerosene may be used to remove adhesive from exposed faces of the RPMs. Do not use any other solvent. If any adhesive, pavement marking materials or other foreign matter adheres to the reflective face of the marker, replace the marker at no cost to the Town.

Install RPMs with the reflective face of the RPM perpendicular to a line parallel to the roadway centerline. Do not install RPMs over longitudinal or transverse joints of the bonding surface.

Ensure that all final RPMs are in place prior to opening the road to traffic.

If more than 2% of the RPMs fail in adhesion or alignment within the first 45 days under traffic, replace all failed markers at no expense to the Town. If more than 5% of the markers fail in adhesion and or alignment during the initial 45 day period, the Engineer will extend the replacement period an additional 45 days from the date that all replacement markers have been installed. If, at the end of the additional 45 day period, more than 2% of all markers (initial installation and 45 day replacements combined) fail in adhesion or alignment, replace all failed markers at no expense to the Town.

**706-5 Contractor's Responsibility for Notification.**

Notify the Engineer prior to the placement of RPMs. At the time of notification, submit the APL number and the batch or LOT numbers of RPMs and bituminous adhesive to be used. Verify that the approved LOT numbers appear on the material packages. Furnish a test report to the Engineer certifying that the materials meet all requirements specified.

**706-6 Method of Measurement.**

The quantities to be paid for will be the number of RPMs, furnished and installed, completed and accepted.

**706-7 Basis of Payment.**

**706-7.1 When No Direct Payment is Provided:** When no pay item for retro-reflective pavement markers and bituminous adhesive is included in the proposal, the Contractor shall include the cost of any work which is necessary for retro-reflective pavement markers and bituminous adhesive within the limits of the project in the Contract price for the other items of work for which such work is required.

**706-7.2** Price and payment will be full compensation for all work specified in this Section. Payment will be made under:

Item No. 706-3 Retro-Reflective Pavement Markers -Bi-Directional (White-Red) - each.

Item No. 706-4 Retro-Reflective Pavement Markers -Bi-Directional (Amber-Amber) - each.

Item No. 706-5 Retro-Reflective Pavement Markers -Bi-Directional (Blue-Blue) - each.

**END OF SECTION 706**

## SECTION 710 PAINTING TRAFFIC STRIPES

### 710-1 Description.

Apply Paint Traffic Stripes and Markings in accordance with the details shown in the Contract Documents, and remove traffic stripes and markings when required.

### 710-2 Materials.

**710-2.1 Paint Materials:** Use only paint materials listed on the FDOT's Approved Products List (APL), and meeting the following requirements:

Materials for Retroreflective Pavement markers and Bituminous:

Adhesive.....Current FDOT Division III Materials  
Standard Paint.....Current FDOT Division III Materials  
Durable Paint..... Current FDOT Division III Materials  
Glass Spheres..... Current FDOT Division III Materials

The Engineer may take random samples of the paint materials in accordance with the FDOT's Sampling, Testing and Reporting Guide schedule.

### 710-3 Equipment.

Use equipment that will produce continuously uniform dimensions of traffic stripes and markings of varying widths and meet the following requirements:

(a) Capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, in order to produce a uniform application of paint and capable of following straight lines and making normal curves in a true arc.

(b) Capable of applying glass spheres to the surface of the completed stripe by an automatic sphere dispenser attached to the striping machine such that the glass spheres are dispensed closely behind the installed line. Use a glass spheres dispenser equipped with an automatic cut-off control synchronized with the cut-off of the traffic paint and applies the glass spheres in a manner such that the spheres appear uniform on the entire traffic stripes and markings surface with, 50 to 60% embedment.

(c) Capable of spraying the paint to the required thickness and width without thinning of the paint. Equip the paint tank with nozzles equipped with cut-off valves which will apply broken or skip lines automatically.

### 710-4 Application:

**710-4.1 General:** Mix the paint thoroughly prior to pouring into the painting machine. Apply paint to the pavement by spray or other means approved by the Engineer. The Engineer may conduct field testing in accordance with FM 5-541. Remove and replace traffic stripes and markings not meeting the requirements of this Section at no additional cost to the Town.

Ensure that existing pavement markings are removed, such that scars or traces of removed markings will not conflict with new stripes and markings by a method approved by the Engineer.

Prior to applying pavement stripes and markings, remove any material that would adversely affect the bond of the pavement stripes and markings by a method approved by the Engineer.

Establish tack points at appropriate intervals for use in aligning stripes, and set a stringline from such points to achieve accuracy.

Apply traffic stripes or markings only to dry surfaces, and when the ambient air and surface temperature is at least 40°F and rising. Follow the manufacturer's recommendations for

application temperature. Do not apply pavement markings when winds are sufficient to cause spray dust.

Apply traffic stripes or markings, having well defined edges, over existing pavement markings such that not more than 2 inches on either end and not more than 1 inch on either side is visible.

Apply all final traffic stripes and markings prior to opening the road to traffic.

Reapply all final traffic stripes and markings a minimum of 14 days after first application but prior to final acceptance of the project.

**710-4.2 Corrections for Deficiencies to Applied Traffic Stripes and Markings:** Remove and reapply, at a distance to be determined by the Engineer, centered around any deficiency, at no additional cost to the Town.

**710-4.3 Rate of Paint Application:** Meet the following minimum rate of application:

6 inch solid traffic stripe: 25 gal/mi.

6 inch skip traffic stripe: 6.2 gal/gm.

Any other width stripe: a direct proportion of the above.

**710-4.4 Required Film Thickness:** Apply paint to attain a minimum wet film thickness of 15 mils.

**710-4.5 Application of Spheres:** Apply glass spheres immediately and uniformly following the paint application, at a rate of not less than 6 lb/gal of paint.

**710-4.6 Retroreflectivity:** Apply white and yellow pavement markings that will attain an initial retroreflectance of not less than 300 cd/fc·ft<sup>2</sup> and not less than 250 cd/fc·ft<sup>2</sup>, respectively. Ensure that the intermittent and final retroreflectance of white and yellow pavement markings are not less than 150 cd/fc·ft<sup>2</sup>. This does not apply to transverse lines, bike lane symbols and longitudinal lines adjacent to or in a proposed bike lane.

**710-4.7 Color:** Use white striping and marking material that is pure white, free from any tint and showing no deviations from magnesium oxide color standard greater than the following:

Scale Definition	Magnesium Oxide Standard	Sample
RD	100	75% minimum
Reflectance		
a. Red-Green	0	-5 to +5
b. Yellow-Blue	0	-10 to +10

Use yellow striping and marking material which visually matches Federal Test Standard Number 595-color 33538, and meet the following criteria for chromaticity coordinates (x,y):

X	0.455	0.510	0.472	0.530
Y	0.444	0.485	0.400	0.456

## **710-5 Tolerances in Dimensions and in Alignment.**

### **710-5.1 Dimensions:**

**710-5.1.1 Longitudinal Lines:** Apply painted skip segments of 10 foot, with a 30 foot

unpainted gap between segments. Apply painted segments with no more than  $\pm 12$  inches variance, so that over-tolerance and under-tolerance lengths will approximately balance. Apply longitudinal lines at least 2 inches from construction joints of Portland cement concrete pavement.

**710-5.1.2 Transverse Markings, Gore Markings, Arrows, and Messages:** Apply paint in multiple passes when the marking cannot be completed in one pass, with an overall line width allowable tolerance of  $\pm 1$  inch.

**710-5.1.3 Contrast Lines:** Use black paint to provide contrast on concrete or light asphalt pavement, when specified by the Engineer. Apply black paint in 10 foot segments following each longitudinal skip line.

**710-5.2 Alignment:** Apply painted stripes that will not deviate more than 1 inch from the stringline on tangents and curves one degree or less. Apply painted stripes that will not deviate more than 2 inches from the stringline on curves greater than one degree. Apply painted edge stripes uniformly, not less than 2 inches or more than 4 inches from the edge of pavement, without noticeable breaks or deviations in alignment or width.

**710-5.3 Correction Rates:** Make corrections of variations in width at a maximum rate of 10 feet for each 0.5 inch of correction. Make corrections of variations in alignment at a maximum rate of 25 feet for each 1 inch of correction, to return to the stringline.

**710-5.4 Alignment of Stripes:** Remove and replace at no additional cost to the Town traffic stripes that deviate more than 1 inch in any 40 feet from the stringline.

#### **710-6 Contractor's Responsibility for Notification.**

Notify the Engineer prior to the placement of the materials. Furnish the Engineer with the manufacturer's name and LOT numbers of the materials and glass spheres to be used. Ensure that the approved LOT numbers appear on the materials and glass spheres packages. Submit a certified report to the Engineer indicating that the materials meet all requirements specified.

#### **710-7 Protection of Newly Painted Stripes.**

Do not allow traffic onto newly applied traffic stripes and markings until they are sufficiently dry to permit vehicles to cross them without damage. Remove and replace any portion of the traffic stripes and markings damaged by passing traffic or from any other cause, at no additional cost to the Town.

#### **710-8 Method of Measurement.**

The quantities to be paid for under this Section will be as follows:

- (1) The length, in feet, of Solid Traffic Stripes and Skip Traffic Stripes.
- (2) The number of directional arrows and pavement messages, painted.
- (3) Re-application as specified in (1) through (6).

The quantities to be paid for will also include 6' to 10' skip traffic stripe sections as indicated in the plans. Measurement will be taken as the distance from the beginning of the first painted stripe to the end of the last painted stripe with proper deductions made for unpainted intervals as determined by plan dimensions or stations. Unpainted intervals will not be included in pay quantity.

The gross-mile measurement of Skip Traffic Stripes will be taken as the distance from the beginning of the first painted stripe to the end of the last painted stripe, and will include the unpainted intervals. It will not include any lengths of unpainted intervals which, by design or by other intent of the Town, are greater than 30 feet.

#### **710-9 Basis of Payment.**

**710-9.1 When No Direct Payment is Provided:** When no pay item for painting traffic stripes is included in the proposal, the Contractor shall include the cost of any work which is necessary for painting traffic stripes within the limits of the project in the Contract price for the other items of work

for which such work is required.

**710-9.2** Prices and payments will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

Payment will be made under:

- Item No. 710-1 Pavement Message (Paint) - each
- Item No. 710-2 Directional Arrows, Paint (White) – each
- Item No. 710-3 Yield Triangles, Paint (White, 16” (base) x 24” (height)) – each
- Item No. 710-4 Skip Traffic Stripe, Paint (White; 6”, 2’ – 4’) - linear feet
- Item No. 710-6 Solid Traffic Stripe, Paint (White; 6”) - linear feet
- Item No. 710-7 Solid Traffic Stripe, Paint (Yellow; 6”) - linear feet
- Item No. 710-10 Skip Traffic Stripe, Paint (White; 6”, 6’ – 10’) - linear feet
- Item No. 710-11 Skip Traffic Stripe, Paint (Yellow; 6”, 6’ – 10’) - linear feet
- Item No. 710-12 Solid Traffic Stripe, Paint (White; 12”) - linear feet
- Item No. 710-18 Solid Traffic Stripe, Paint (Yellow; 18”) - linear feet
- Item No. 710-24 Solid Traffic Stripe, Paint (White; 24”) - linear feet
- Item No. 710-31 Skip Traffic Stripe, Paint (Yellow; 10’ – 30’) - linear feet
- Item No. 710-32 Skip Traffic Stripe, Paint (White; 10’ – 30’) - linear feet
- Item No. 710-33 Speed Hump Traffic Stripe, Paint (White; 6”) - each
- Item No. 710-72 Solid Traffic Stripe, Paint (Double Yellow; 6”) - linear feet

**END OF SECTION 710**



## SECTION 711 THERMOPLASTIC TRAFFIC STRIPES AND MARKINGS

### 711-1 Description.

Apply thermoplastic traffic stripes and markings, or refurbish existing thermoplastic traffic stripes and markings, in accordance with the Contract Documents and remove traffic stripes and markings as required.

### 711-2 Materials.

**711-2.1 General:** Only thermoplastic materials submitted and approved by the Engineer will be used. These materials shall meet the requirements as described in the current FDOT Division III Materials for initial traffic striping and markings or recapping. Use materials for refurbishing existing thermoplastic traffic stripes and markings meeting the requirements current FDOT Division III Materials

**711-2.2 Glass spheres (for reflective traffic stripes and markings):** Use only glass spheres meeting the requirements of current FDOT Division III Materials. The Engineer may take random samples of all glass spheres in accordance with ASTM D1155.

### 711-3 Equipment.

Use equipment to install hot applied thermoplastic material constructed to provide continuous uniform heating to temperatures exceeding 390°F, mixing and agitation of the material reservoir and the line dispensing devices to prevent accumulation and clogging. All parts of the equipment which contact the material are to be constructed for easy accessibility and exposure for cleaning and maintenance. Use equipment that will maintain the thermoplastic material at a plastic temperature, to all mixing and conveying parts, including the line dispensing device. Do not use pans, aprons or similar appliances which the dispenser overruns. Use equipment which will provide for varying traffic stripes and marking application widths and meet the following requirements:

- (a) mobile and capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, in order to produce a uniform application of thermoplastic material and maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc.
- (b) capable of applying glass spheres to the surface of the completed stripe by an automatic sphere dispenser attached to the striping machine such that the glass spheres are dispensed closely behind the installed line. Use a glass spheres dispenser equipped with an automatic cut-off control synchronized with the cut-off of the thermoplastic material and applies the glass spheres in a manner such that the spheres appear uniform on the entire traffic stripes and markings surface with, 50 to 60% embedment. Provide each nozzle with suitable line guides, either metallic shrouds or air blasts.
- (c) equipped with a special kettle for uniformly melting and heating the thermoplastic material. The kettle must be equipped with an automatic temperature control device and material thermometer for positive temperature control and to prevent overheating or scorching of the thermoplastic material.
- (d) meet the requirements of the National Fire Protection Association, state, and local authorities.

### 711-4 Application.

**711-4.1 General:** Apply thermoplastic material to the pavement either by spray, extrusion or other means approved by the Engineer. The Engineer will conduct field tests in accordance with FM 5-541. Remove and replace traffic stripes and markings not meeting the requirements of this Section at no additional cost to the Town.

Ensure that existing pavement markings are removed, such that scars or traces of removed markings will not conflict with new stripes and markings by a method approved by the Engineer.

Prior to applying pavement stripes and markings, remove any material that would adversely affect the bond of the pavement stripes and markings by a method approved by the Engineer.

Apply traffic stripes or markings only to dry surfaces, and when the ambient air and surface temperature is at least 55°F and rising. Follow the manufacturer's recommendations for application temperature. Do not apply pavement markings when winds are sufficient to cause spray dust.

Offset longitudinal lines at least 2 inches from construction joints of Portland cement concrete pavement.

Prior to installation of the thermoplastic material, apply a two-part epoxy primer sealer recommended by the manufacturer, on all Portland cement concrete surfaces.

Apply traffic stripes or markings, having well defined edges, over existing pavement markings such that not more than 2 inches on either end and not more than 1 inch on either side is visible.

Apply all final pavement markings prior to opening the road to traffic.

Apply striping to the same tolerances in dimensions and in alignment specified in 710-5.

#### **711-4.2 Corrections for Deficiencies:**

**711-4.2.1 Recapping Newly Applied Traffic Stripes and Markings:** Recapping applies to conditions where additional thermoplastic material is applied to new traffic stripes or markings. If, in the sole opinion of the Engineer, Recapping is required, the Engineer will determine the extent of recapping necessary centered around the deficiency with additional thermoplastic material or by complete removal and reapplication at no additional cost to the Town.

If the Engineer determines that recapping will result in a thickness exceeding the maximum allowed, the traffic stripes or markings may be completely removed and reapplied, or removed to a thickness that will meet the minimum and maximum thickness criteria when recapped.

**711-4.2.2 Refurbishing of Existing Traffic Stripes and Markings:** Refurbishing applies to conditions where additional thermoplastic material is applied to existing traffic stripes or markings. Unless the Contract Documents provide otherwise, use materials approved by the Engineer.

If the Engineer determines that refurbishing of traffic stripes or markings will result in a thickness exceeding the maximum allowed, the existing traffic stripes or markings may be completely removed and reapplied, or removed to a thickness that will meet the minimum and maximum thickness criteria when refurbished.

#### **711-4.3 Thickness:**

**711-4.3.1 Initial Traffic Striping and Markings or Recapping per Division III Materials.** Apply or recap traffic stripes or markings such that, after application of drop-on glass spheres (AASHTO M 247 Type I), all lane lines, center lines, transverse markings (except pavement edge lines) and traffic stripes and markings within traffic wearing areas (such as dotted turning guide lines), will have a thickness of 0.10 to 0.15 inch when measured above the pavement surface at the edge of the traffic stripe or marking.

Also, all pavement edge lines, gore, island, and diagonal stripe markings, bike lane symbols and messages, wherever located, will have a thickness of 0.07 to 0.10 inch when measured above the pavement surface at the edge of the traffic stripe or marking.

**711-4.3.2 Refurbishing Existing Traffic Strips and Markings:** Apply thermoplastic material at a thickness greater than or equal to the minimum thickness as prescribed by the Engineer. Ensure that the combination of existing stripe and overlay after application of drop-on glass spheres (AASHTO M 247 Type I), does not exceed the maximum thickness of 0.10 inch for edge lines and 0.150 inch for lane and center lines.

**711-4.4 Glass Spheres:** Apply reflective glass spheres to all white and yellow traffic stripes or markings immediately behind the striping mechanism, at the rate of 0.10 lb/ft<sup>2</sup> of thermoplastic surface, with 50 to 60% embedment.

Apply a mixture consisting of 50% glass spheres and 50% sharp silica sand to all thermoplastic transverse lines, bike lane symbols and longitudinal lines adjacent to or in a proposed bike lane, at a rate of 0.10 lb/ft<sup>2</sup> thermoplastic surface.

**711-4.5 Retroreflectivity:** Apply white and yellow pavement markings that will attain an initial retroreflectance of not less than 300 mcd/lx·m<sup>2</sup> and not less than 250 mcd/lx·m<sup>2</sup>, respectively. Ensure that the intermittent and final retroreflectance of white and yellow pavement markings are not less than 150 mcd/lx·m<sup>2</sup>. This does not apply to transverse lines, bike lane symbols and longitudinal lines adjacent to or in a proposed bike lane.

**711-4.6 Color:** Use white thermoplastic material that is pure white, free from any tint and showing no deviations from magnesium oxide color standard greater than the following:

Scale Definition	Magnesium Oxide Standard	Sample
RD	100	75% minimum
Reflectance		
a. Red-Green	0	-5 to +5
b. Yellow-Blue	0	-10 to + 10

Use yellow thermoplastic material which visually matches Federal Test Standard Number 595-color 33538, and meet the following criteria for chromaticity coordinates (x,y):

x	0.455	0.510	0.472	0.530
y	0.444	0.485	0.400	0.456

**711-4.7 Durability:** Durability is the measured percent of thermoplastic material completely removed from the pavement. The thermoplastic material line loss must not exceed 5.0%.

#### **711-5 Contractor's Responsibility for Notification.**

Notify the Engineer prior to the placement of the thermoplastic materials. Furnish the Engineer with the manufacturer's name and LOT numbers of the thermoplastic materials and glass spheres to be used. Ensure that the approved LOT numbers appear on the thermoplastic materials and glass spheres packages. Submit a certified test report to the Engineer indicating that the materials meet all requirements specified.

#### **711-6 Protection of Newly Applied Traffic Stripes and Markings.**

Do not allow traffic onto newly applied traffic stripes and markings until they are sufficiently dry to permit vehicles to cross them without damage. Remove and replace any portion of the traffic stripes and markings damaged by passing traffic or from any other cause, at no additional cost to the Town.

#### **711-7 Method of Measurement.**

The quantities to be paid for under this Section will be as follows:

- a. The net length, in feet, of each of the various types of thermoplastic lines, stripes and bands, authorized and acceptably applied.
- b. The number of thermoplastic pavement messages and directional arrows, authorized and acceptably applied.
- c. The area, in square feet, of Remove Existing Markings (Thermoplastic), acceptably removed.
- d. The length, in net feet, of Solid Traffic Stripe, authorized and acceptable applied.
- e. The length, in gross feet, of Alternating Skip Traffic Stripe, authorized and acceptable applied.

#### **711-8 Basis of Payment.**

**711-8.1 When No Direct Payment is Provided:** When no pay item for thermoplastic traffic stripes and markings is included in the proposal, the Contractor shall include the cost of any work which is necessary for thermoplastic traffic stripes and markings within the limits of the project in the Contract price for the other items of work for which such work is required.

**711-8.2** Prices and payments will be full compensation for all work specified in this Section, including, all cleaning and preparing of surfaces, furnishing of all materials, application, curing and protection of all items, protection of traffic, furnishing of all tools, machines and equipment, and all incidentals necessary to complete the work. Final payment will be withheld until all deficiencies are corrected.

Payment will be made under:

- Item No. 711-1 Pavement Message (Thermoplastic) - each
- Item No. 711-2 Directional Arrow, Thermoplastic (White) - each
- Item No. 711-3 Yield Triangles, Thermoplastic, (White, 16" (base) x 24" (height)) - each
- Item No. 711-4 Skip Traffic Stripe, Thermoplastic (White; 6", 2' – 4') - linear feet
- Item No. 711-5 Solid Traffic Stripe, Thermoplastic (White; 4") - linear feet
- Item No. 711-6 Solid Traffic Stripe, Thermoplastic (White; 6") - linear feet
- Item No. 711-7 Solid Traffic Stripe, Thermoplastic (Yellow; 6") - linear feet
- Item No. 711-10 Skip Traffic Stripe, Thermoplastic (White; 6", 6' – 10') - linear feet
- Item No. 711-11 Skip Traffic Stripe, Thermoplastic (Yellow; 6", 6' – 10') - linear feet
- Item No. 711-12 Solid Traffic Stripe, Thermoplastic (White; 12") - linear feet
- Item No. 711-17 Solid Traffic Stripe, Thermoplastic (White; 18") - linear feet
- Item No. 711-18 Solid Traffic Stripe, Thermoplastic (Yellow; 18") - linear feet
- Item No. 711-24 Solid Traffic Stripe, Thermoplastic (White; 24") - linear feet
- Item No. 711-31 Skip Traffic Stripe, Thermoplastic (Yellow; 10' – 30') - linear feet
- Item No. 711-32 Skip Traffic Stripe, Thermoplastic (White; 10' – 30') - linear feet
- Item No. 711-33 Speed Hump Traffic Stripe, Thermoplastic (White; 6") - each
- Item No. 711-72 Solid Traffic Stripe, Thermoplastic (Double Yellow; 6") - linear feet
- Item No. 711-99 Thermoplastic Removal - square feet
- Item No. 711-100 Bike Lane Markings, Thermoplastic, Helmeted Bicyclist Symbol and Bike Lane Arrow (White) - each
- Item No. 711-104 Solid Traffic Stripe, Thermoplastic (Blue; 4") - linear feet
- Item No. 711-106 Solid Traffic Stripe, Thermoplastic (Blue; 6") - linear feet
- Item No. 711-136 Universal Symbol of Accessibility, Thermoplastic, (White, 36") - each

**END OF SECTION 711**

**DIVISION IV**  
**TOWN STANDARD DETAILS**

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**DIVISION V**  
**BID FORMS**

## **BID FORMS**

- **Bidders Certification (Certifies no collusion or fraud)**
- **Trench Safety Act**
- **Bid**
- **Certificate as to Corporate Principal**
- **Bid Bond**
- **Sworn Statement on Public Entity Crimes**
- **Debarment Certification**
- **Certified Resolution**
- **Certificate of Non-segregated Facilities**
- **Qualifications Statement**
- **Foreign (Non Florida) Corporations**
- **References**
- **Bid Checklist**



### **BIDDER'S CERTIFICATION**

I certify that this Bid acknowledgment is made without prior understanding, agreement or connection with any corporation, firm or person submitting a Bid for the same commodities, services, and is in all respects fair and without collusion or fraud. I agree to abide by all conditions of this Bid and certify that I am authorized to sign this Bid for the Bidder. By signature on this form, Bidder acknowledges and accepts without limitation, pages 1 through 19 inclusive of the Invitation to Bid as well as any special instructions if applicable.

CORRECT LEGAL NAME OF BIDDER:

\_\_\_\_\_  
(SIGNATURE OF BIDDER'S AUTHORIZED AGENT)

TITLE: \_\_\_\_\_

TYPED/PRINTED NAME OF  
AUTHORIZED AGENT: \_\_\_\_\_

ADDRESS: \_\_\_\_\_  
\_\_\_\_\_

PHONE NO: (\_\_\_\_\_) \_\_\_\_\_

FEDERAL ID NUMBER OR SOCIAL  
SECURITY NUMBER OF BIDDER:

\_\_\_\_\_

### **TRENCH SAFETY ACT**

Section 553.62, Florida Statutes incorporates the Occupational Safety and Health Administration's (OSHA) safety standards, 29 CFR's. 1926.650 Subpart P, as the state standard. The Department of Labor and Employment Security may adopt updated or revised versions by rule. Other state or political subdivisions may also have standards that are applicable. If trench excavation will be required on the project in excess of five feet in depth, the Bidder must identify the cost of compliance with the applicable trench safety standards below. If there will be no trench excavation on the project in excess of five feet in depth, write "not applicable" below.

	Trench Safety Measure (Description)	Units of Measure	Quantity	Unit Cost	Extended Cost
A.	_____	_____	_____	_____	_____
B.	_____	_____	_____	_____	_____
C.	_____	_____	_____	_____	_____
D.	_____	_____	_____	_____	_____
E.	_____	_____	_____	_____	_____
TOTAL:					_____

(ATTACH SEPARATE SHEET IF NECESSARY)

No separate payment will be made by the Town for the cost of trench safety and compliance. Include the cost of any required and necessary trench safety in the contract pay items.

**BID**  
**TOWN HALL - PHASE II**  
**TOWN OF JUPITER**  
**PALM BEACH COUNTY, FLORIDA**  
**CONTRACT NO.: EPW 2024-24**

**DATE**

**SUBMITTED:** \_\_\_\_\_

**BIDDERS NAME:** \_\_\_\_\_

1. The undersigned Bidder, hereby warrants and affirms under oath and penalty of perjury that the only person(s) who has a financial interest in the Bid as Principal(s) is/are expressly named herein; that no other person(s) other than those listed herein has any financial interest in this Bid or in the Contract to be awarded; that this Bid is made without the joint or co-venture, partnership, assistance or other relationship or connection with any other person or entity submitting a Bid in this procurement; and that the Bid made is in all respects fair, in good faith and made without collusion or fraud.
2. The Bidder further declares that the Bidder has examined the site or location, of the Work and is fully informed as to all conditions pertaining to the location of the Work; that the Bidder has examined the Plans and Specifications for the Work and the Contract Documents, including but not limited to, the Request For Bids, Instructions to Bidders, Bid Form, Bid Bond, Sworn Statement on Public Entity Crimes, Sample Contract, General and Supplemental Conditions, Technical Specifications, and all other forms included with the Bid Documents, and has read all of the Bid Documents furnished by the Town prior to the opening of Bids; and that the Bidder fully understands the Work to be performed.
3. If this Bid is accepted, the undersigned Bidder agrees to complete all Work under this Contract within **One Hundred Eighty (180)** calendar days from the date established by the Town in the "Notice to Proceed with Contract Work."
4. If the Contractor fails to complete the Work within the time fixed by the Contract, or any extension thereof granted, the Contractor shall be liable to the Town, not as a penalty but as liquidated damages, the sum of **Seven Hundred Ninety-Four Dollars and No Cents (\$794.00)** for each calendar day that the Work remains incomplete after the Contract completion date or any extension thereof, plus any monies paid by the Town to any other person or entity to preserve or complete the Work. The liquidated damages and other costs shall be deducted from monies due to be paid the Contractor by the Town, or if no money is due or the amount due is insufficient to cover the amount charged, the Contractor and the Contractor's Surety shall be liable for the amount due.

Item	Description	Unit	Quantity	Unit Price	Total Price
001	<b>Indemnification</b> Pursuant to Section 8, Indemnification, payment for this bid item will be made at the Contract Lump Sum Price of \$100.00 as part of the first invoice in the first pay request. This indemnification shall remain in force during the entire contract period and any subsequent extensions.	LS	1	\$100.00	\$100.00
	Unit Price Written in Words: One Hundred Dollars and No Cents				
002	Demolition and Construction of Town Hall – Phase II in accordance with the Contract Documents	LS	1		
	Unit Price Written in Words:				
1000-1	<b>Contingency</b> Contingency work determined in accordance with Sub-Article 3.2.2 of the Contract and as directed by the Engineer.	LS	1	\$400,000.00	\$400,000.00
	Unit Price Written in Words: Four Hundred Thousand Dollars and No Cents				
GRAND TOTAL PRICE FOR CONTRACT					
\$					
WRITTEN AMOUNT:					

5. If this Bid is accepted, it is understood that all terms and conditions of the Bid documents shall be binding upon the parties. If awarded the Contract, the undersigned Bidder agrees to execute a Contract with Town of Jupiter which shall memorialize the terms and conditions of the Work including the required bonds (each bond equal to one hundred percent (100%) of the total Contract Bid), the insurance, indemnification, the, Instructions to Bidders, General Conditions, Supplemental Conditions, Technical Specifications, and.
6. Attached to this Bid Form is a cashiers check or approved Bid Bond for the sum of Dollars (\$\_\_\_\_\_) as required by the Instructions to Bidders.
7. The Bidder understands that this Bid does not constitute a contract with the Bidder. There is no official contract binding the parties until: (1) bids are reviewed and accepted by Town staff; (2) the Contract has been approved by the appropriate level of authority within the Town; and (3) the Contract has been executed by both parties.
8. The undersigned Bidder understands and agrees that if the Bidder is awarded the Contract but fails to execute and deliver the Contract and the Bonds within fifteen (15) days after receipt of the Contract, then the Bid Bond or securities accompanying the Bid, shall be paid to the Town of Jupiter, otherwise, the Bid Bond or Bid security shall be returned to the Bidder.

9. The legal name of the Bidder together with the signature of the person authorized to bind the Bidder, and the signature of any licensee qualifying the Bidder, must appear on the signature page of this Bid.
10. The Bidder understands and agrees that the Bidder must perform all work necessary to complete the job as described in the Plans and Specifications. Payment will be made only for the actual quantities of Work performed and accepted or materials furnished in accordance with the Contract. All work and materials not specified under "Item Description" in the Bid shall be considered incidental to the Contract.
11. The undersigned Bidder hereby states that, in making this Bid, the Bidder has complied with Section 725.06, Florida Statutes (if that law is applicable to this project), by including in the amount of the Bid, the specific consideration for the indemnification of the Town by the Bidder as required by this statute.
12. Both the Bidder and the licensee shall fill in the information below as required by Chapter 489, Florida Statutes. Licensee is defined herein as the person who is the licensed Contractor who qualifies the bidding entity. If the Bidder is an individual, the individual must be licensed. (Please print or type, excluding signatures).

NAME:

---

ADDRESS

---

FEID OR SOCIAL SECURITY  
NUMBER

---

LICENSE NUMBER

---

STATE OR COUNTY:

---

LICENSE TYPE:

---

(Attach a copy of License)

LICENSE LIMITATIONS, IF ANY:

---

(Attach a separate sheet of limitations, if necessary)

LICENSEE SIGNATURE:

---

BIDDER'S NAME:

---

BIDDER'S SIGNATURE:

---

BIDDER'S ADDRESS:

---

BIDDER'S PHONE NUMBER:

---

BIDDER'S FAX NUMBER:

---

**ADDENDUM ACKNOWLEDGEMENT (If necessary)**

The Bidder has received Addendum No. \_\_\_\_\_, dated \_\_\_\_\_

The Bidder has received Addendum No. \_\_\_\_\_, dated \_\_\_\_\_

The Bidder has received Addendum No. \_\_\_\_\_, dated \_\_\_\_\_

The Bidder has received Addendum No. \_\_\_\_\_, dated \_\_\_\_\_

If an **INDIVIDUAL** is a Bidder,  
sign on this line. If doing business as  
another entity.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Address)

If a **PARTNERSHIP** is a Bidder, fill  
in name of Partnership, followed by  
the signature of the partner signing.

\_\_\_\_\_  
(Signature)

Business address of Partnership  
(Names and addresses of all partners.  
Attach separate sheet if necessary.

\_\_\_\_\_  
(Address)

\_\_\_\_\_  
(Name of Partnership)

\_\_\_\_\_  
(Business Address of Partnership)

If a **CORPORATION** is Bidder, fill  
in the name of the Corporation,  
followed by the signature of the  
President or Vice President.

\_\_\_\_\_  
(Name of Corporation)

\_\_\_\_\_  
(President)

\_\_\_\_\_  
(Address)

If a Bidder is a **CORPORATION** ,  
affix Corporate Seal.

(Corporate Seal)

### **CERTIFICATE AS TO CORPORATE PRINCIPAL**

I, \_\_\_\_\_, certify that I am the Secretary of the Corporation named as principal in the within Bond; that \_\_\_\_\_, who signed the said Bond on behalf of the principal, was then President of said Corporation; that I know his signature, and his signature thereto is genuine; and that said Bond was duly signed, sealed, and attested for and in behalf of said Corporation by authority of its governing body.

---

Secretary

(Corporate Seal)



## BID BOND

COUNTY OF \_\_\_\_\_ RFB No. \_\_\_\_\_  
STATE OF FLORIDA

KNOW ALL MEN BY THESE PRESENTS, that we, \_\_\_\_\_, as Principal and \_\_\_\_\_, as Surety, are held and firmly bound unto Town of Jupiter in the penal sum of \$ \_\_\_\_\_ dollars (\$ \_\_\_\_\_) lawful money of the United States, 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.

THE CONDITION OF THE OBLIGATION IS SUCH that whereas the Principal has submitted the accompanying bid, dated \_\_\_\_\_, 20\_\_\_\_\_, for the Contract and Specifications for the Bid Number \_\_\_\_\_.

NOW, THEREFORE, if the Principal shall not withdraw said Bid within ninety (90) days after date of opening of the same and shall within fifteen (15) calendar days after the prescribed forms are presented to him for signature, enter into a written contract with the Town of Jupiter, in accordance with the Bid, as accepted, and shall give such bond or bonds as may be specified in the Bidding or Contract documents, with good and sufficient sureties, as may be required, for the faithful performance and proper fulfillment of such Contract, and for the payment of labor and supplies incurred in connection therewith, or in the event of the withdrawal of said Bid within the period specified, in the failure to enter into such Contract and give such bonds within the time specified, if the Principal shall pay the Town the difference between the amount specified in said Bid and the amount for which the Town may procure the required work and/or supplies, if the latter amount be in excess of the former, then the above obligations shall be void and of no effect, otherwise, to remain in full force and virtue.

IN WITNESS WHEREOF, the above bound parties have executed this statement under their several seals this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_, the name and corporate seal, if applicable, being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

**IF AN INDIVIDUAL, IN THE PRESENCE OF:**

\_\_\_\_\_  
(Individual Principal) By: \_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
(Individual Principal) By: \_\_\_\_\_  
(Witness)

\_\_\_\_\_  
(Business Address)

**IF A CORPORATION, ATTEST:**

(Corporate Seal)

\_\_\_\_\_  
(Corporate Principal) By: \_\_\_\_\_

\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
(President) By: \_\_\_\_\_  
(Secretary)

**ATTEST:**

(Corporate Seal)

\_\_\_\_\_  
(Corporate Principal) By: \_\_\_\_\_

\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
By: \_\_\_\_\_  
(Secretary)

Surety: \_\_\_\_\_  
(Name of Firm)

By: \_\_\_\_\_

Title: \_\_\_\_\_

Address for Notices:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
Note: Notary acknowledgement for Surety and Surety's Power of Attorney must be attached.

**SWORN STATEMENT UNDER 287.133(3)(A)  
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES**

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted with Bid or Contract No. \_\_\_\_ for \_\_\_\_\_.
2. This sworn statement is submitted by \_\_\_\_\_.

(Name of entity submitting sworn statement)

Whose business address is \_\_\_\_\_

(if applicable) its Federal Employer Identification Number (FEID) is \_\_\_\_\_

(if the entity has no FEID, include the Social Security Number (SSAN) of the individual signing this sworn statement \_\_\_\_\_ (SSAN)

3. My name is \_\_\_\_\_ and my relationship  
(Please print name of individual signing this form)

to the entity named above is \_\_\_\_\_.

4. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g) Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including, but not limited to, any bid or contract for goods or services to be provided to any public entity or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, or material misrepresentation.
5. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1) b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication of guilt, in any federal or state trial court of record relating to charges brought by indictment or information after July 1, 1989, as a result of a jury verdict, non-jury trial, or entry of plea of guilty or nolo contendere.
6. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means:
  - 6.1. A predecessor or successor of a person convicted of a public entity crime; or
  - 6.2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting a controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.
7. I understand that a "person" as defined in Paragraph 287.133(1)(e), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the

provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with a public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

**IMPORTANT: THE CONTRACTOR MUST COMPLETE THIS SECTION BEFORE SIGNING FORM.**

8. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Please indicate which statement applies.)

\_\_\_\_\_ Neither the entity submitting this sworn statement, or any officers, directors, executives, partners, shareholders, employees, members, or agents who are active in neither management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989.

\_\_\_\_\_ The entity submitting this sworn statement, or one or more of the officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, or an affiliate of the entity has been charged with and convicted of a public entity crime subsequent to July 1, 1989, AND (Please indicate which additional statement applies.)

\_\_\_\_\_ There has been a proceeding concerning the conviction before a hearing officer of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer did not place the person or affiliate on the convicted vendor list. (Please attach a copy of the final order.)

\_\_\_\_\_ The person or affiliate was placed on the convicted vendor list. There has been a subsequent proceeding before a hearing officer of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer determined that it was in the public interest to remove the person or affiliate from the convicted vendor list. [Please attach a copy of the final order.]

\_\_\_\_\_ The person or affiliate has not been placed on the convicted vendor list. (Please describe any action taken by or pending with the Department of General Services.)

I UNDERSTAND THAT THE SUBMISSION OF THIS FORM TO THE CONTRACTING OFFICER FOR THE PUBLIC ENTITY IDENTIFIED IN PARAGRAPH 1 ABOVE IS FOR THAT PUBLIC ENTITY ONLY AND, THAT THIS FORM IS VALID THROUGH DECEMBER 31 OF THE CALENDAR YEAR IN WHICH IT IS FILED. I ALSO UNDERSTAND THAT I AM REQUIRED TO INFORM THE PUBLIC ENTITY PRIOR TO ENTERING INTO A CONTRACT IN EXCESS OF THE THRESHOLD AMOUNT PROVIDED IN SECTION 287.017, FLORIDA STATUTES FOR CATEGORY TWO OF ANY CHANGE IN THE INFORMATION CONTAINED IN THIS FORM.

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Date)

Sworn to and subscribed before me  
by means of ☐ physical presence or  
☐ online notarization, this

\_\_\_\_\_ Day of

\_\_\_\_\_ 20 \_\_\_\_\_

Personally known \_\_\_\_\_

Produced identification \_\_\_\_\_

Notary Public, State of \_\_\_\_\_

My commission expires \_\_\_\_\_

(Printed typed or stamped commissioned name of notary)

**CERTIFICATION REGARDING DEBARMENT,  
SUSPENSION, INELIGIBILITY, AND VOLUNTARY  
EXCLUSION - LOWER TIER PARTICIPANT**

Certification regarding Debarment Suspension, Ineligibility and Voluntary Exclusion- Lower Tier Covered Transactions pursuant to 49 CFR 24, Code of Federal Regulations, Part 24.510(b):

By signing and submitting this proposal, the prospective lower-tier participant certifies that neither it, nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. The prospective Lower-Tier participant further certifies that:

1. I, and any principals of my firm, understand that 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 I/we 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.
2. Further, I, and any principal of my firm, shall provide immediate written notice to the person to which this proposal is submitted if, at any time, we learn that my/our certification was erroneous when submitted, or has become erroneous by reason of changed circumstances.
3. By submitting this proposal, I, and any principals of my firm, agree that should the proposed covered transaction be entered into, I/we will 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 agency with which this transaction originated.
4. I, and any principals of my firm, further agree by submitting this proposal that I/we will include this Certification, without modification, in all Lower-Tier covered transactions and in all solicitations for Lower-Tier covered transactions.

Contractor Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

**NON-CERTIFICATION:**

Contractor Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### **CERTIFIED RESOLUTION**

I, \_\_\_\_\_ (Name), the duly elected Secretary of \_\_\_\_\_ (Corporate Title), a corporation organized and existing under the laws of the State of \_\_\_\_\_, do hereby certify that the following Resolution was unanimously adopted and passed by a quorum of the Board of Directors of the Said corporation at a meeting held in accordance with law and the by-laws of the said corporation. "IT IS HEREBY RESOLVED THAT \_\_\_\_\_ (Name)" The duly elected \_\_\_\_\_ (Title of Officer) of \_\_\_\_\_ (Corporate Title) be and is hereby authorized to execute and submit a Bid and Bid Bond, if such bond is required, to the Town of Jupiter and such other instruments in writing as may be necessary on behalf of the said corporation; and that the Bid, Bid Bond, and other such instruments signed by him/her shall be binding upon the said corporation as its own acts and deeds. The secretary shall certify the names and signatures of those authorized to act by the foregoing resolution.

The Town of Jupiter shall be fully protected in relying upon such certification of the secretary and shall be indemnified and saved harmless from any and all claims, demands, expenses, loss or damage resulting from or growing out of honoring, the signature of any person so certified or for refusing to honor any signature not so certified.

I further certify that the above resolution is in force and effect and has not been revised, revoked or rescinded.

I further certify that the following are the name, titles and official signatures of those persons authorized to act by the foregoing resolution.

NAME	TITLE	SIGNATURE
_____		_____
_____		_____

Given under my hand and the Seal of the said corporation this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

(SEAL) By: \_\_\_\_\_ Secretary \_\_\_\_\_ Corporate Title

NOTE: The above is a suggested form of the type of Corporate Resolution desired. Such form need not be followed explicitly, but the Certified Resolution submitted must clearly show to the satisfaction of the Town of Jupiter that the person signing the Bid and Bid Bond for the corporation has been properly empowered by the corporation to do so in its behalf.

## CERTIFICATION OF NONSEGREGATED FACILITIES

The federally assisted construction contractor certifies that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor certifies further that he will not maintain or provide for his employees any segregated facilities at any of his establishments, and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work area, restrooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise. The federally assisted construction contractor agrees that (except where he has obtained identical certifications from proposed contractors for specific time periods) he will obtain identical certifications from proposed subcontractors prior to the award of subcontractors exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity clause, and that he will retain such certifications in his files.

Signature \_\_\_\_\_

Date \_\_\_\_\_

Name and Title of Signer (Please Type) \_\_\_\_\_

NOTE: The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.



## QUALIFICATION STATEMENT

The undersigned certifies under oath the truth and correctness of all statements and of all answers to questions made hereinafter:

SUBMITTED TO:                      Town of Jupiter  
   (Purchasing Administrator)

ADDRESS:                              210 Military Trail  
   Jupiter, Florida 33458

CIRCLE ONE

SUBMITTED BY: \_\_\_\_\_

Corporation  
Partnership  
Individual  
Other

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

TELEPHONE NO. \_\_\_\_\_

FAX NO. \_\_\_\_\_

E-MAIL ADDRESS: \_\_\_\_\_

1. State the true, exact, correct and complete name of the partnership, corporation, trade or fictitious name under which you do business and the address of the place of business.

The correct name of the Bidder is: \_\_\_\_\_

The address of the principal place of business is: \_\_\_\_\_

\_\_\_\_\_

2. If Bidder is a corporation, answer the following:

a. Date of Incorporation: \_\_\_\_\_

b. State of Incorporation: \_\_\_\_\_

c. President's name: \_\_\_\_\_

d. Vice President's name: \_\_\_\_\_

e. Secretary's name: \_\_\_\_\_

f. Treasurer's name: \_\_\_\_\_

g. Name and address of Resident Agent:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

3. If Bidder is an individual or a partnership, answer the following:

a. Date of organization: \_\_\_\_\_

b. Name, address and ownership units of all partners:

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c. State whether general or limited partnership: \_\_\_\_\_

4. If Bidder is other than an individual, corporation or partnership, describe the organization and give the name and address of principals:

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5. If Bidder is operating under a fictitious name, submit evidence of compliance with the Florida Fictitious Name Statute.

6. How many years has your organization been in business under its present business name?

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a. Under what other former names has your organization operated?

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7. Indicate registration, license numbers or certificate numbers for the businesses or professions, which are the subject of this Bid. Please attach certificate of competency and/or state registration.

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8. Have you personally inspected the site of the proposed work?  
(Y) \_\_\_\_ (N) \_\_\_\_\_

9. Do you have a complete set of documents, including drawings and addenda?  
(Y) \_\_\_\_ (N) \_\_\_\_\_

10. Did you attend the Pre-Bid Conference if any such conference was held?  
(Y) \_\_\_\_ (N) \_\_\_\_\_

11. Have you ever failed to complete any work awarded to you? If so, state when, where and why?

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12. Within the last five (5) years, has any officer or partner of your organization ever been an officer or partner of another organization when it failed to complete a contract? If so, explain fully.

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THE BIDDER ACKNOWLEDGES AND UNDERSTANDS THAT THE INFORMATION CONTAINED IN RESPONSE TO THIS QUALIFICATIONS STATEMENT SHALL BE RELIED UPON BY OWNER IN AWARING THE CONTRACT AND SUCH INFORMATION IS WARRANTED BY BIDDER TO BE TRUE. THE DISCOVERY OF ANY OMISSION OR MISSTATEMENT THAT MATERIALLY AFFECTS THE BIDDER'S QUALIFICATIONS TO PERFORM UNDER THE CONTRACT SHALL CAUSE THE OWNER TO REJECT THE BID, AND IF AFTER THE AWARD TO CANCEL AND TERMINATE THE AWARD AND/OR CONTRACT.

\_\_\_\_\_  
Signature

State of \_\_\_\_\_

County of \_\_\_\_\_

The foregoing instrument was acknowledged before me by means of ☐ physical presence or ☐ online notarization, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ By \_\_\_\_\_ of \_\_\_\_\_, who is personally known to me or who has produced \_\_\_\_\_ as identification and who did (did not) take an oath.

WITNESS my hand and official seal,

\_\_\_\_\_  
NOTARY PUBLIC

\_\_\_\_\_  
(Name of Notary Public: Print,  
Stamp, or type as Commissioned)

**FOREIGN (NON-FLORIDA) CORPORATIONS MUST COMPLETE THIS FORM AND  
SUBMIT WITH BID**

DEPARTMENT OF STATE CORPORATE CHARTER NO. \_\_\_\_\_

If your corporation is exempt from the requirements of Section 607.1501, Florida Statutes, You must check below the reason(s) for the exemption. Please contact the Department of State, Division of Corporations at (904) 488-9000 for assistance with corporate registration or exemptions.

607.1501 Authority of foreign corporation to transact business required.

1. A foreign corporation may not transact business in this state until it obtains a certificate of authority from the Department of State.
2. The following activities, among others, do not constitute transacting business within the meaning of subsection 1:
  - \_\_\_\_\_ a. Maintaining, defending, or settling any proceeding.
  - \_\_\_\_\_ b. Holding meetings of the board of directors or shareholders or carrying on other activities concerning internal corporate affairs.
  - \_\_\_\_\_ c. Maintaining bank accounts.
  - \_\_\_\_\_ d. Maintaining officers or agencies for the transfer, exchange, and registration of the corporation's own securities or maintaining trustees or depositaries with respect to those securities.
  - \_\_\_\_\_ e. Selling through independent contractors.
  - \_\_\_\_\_ f. Soliciting or obtaining orders, whether by mail or through employees, agents, or otherwise, if the orders require acceptance outside this state before they become contracts.
  - \_\_\_\_\_ g. Creating or acquiring indebtedness, mortgages, and security interests in real or personal property.
  - \_\_\_\_\_ h. Securing or collecting debts or enforcing mortgages and security interests in property securing the debts.
  - \_\_\_\_\_ i. Transacting business in interstate commerce.
  - \_\_\_\_\_ j. Conducting an isolated transaction that is completed within 30 days and that is not one in the course of repeated transactions of a like nature.
  - \_\_\_\_\_ k. Owning and controlling a subsidiary corporation incorporated in or transacting business within this state or voting the stock of any corporation which it has lawfully acquired.
  - \_\_\_\_\_ l. Owning a limited partnership interest in a limited partnership that is doing business within this state, unless such limited partner manages or controls the partnership or exercises the powers and duties of a general partner.
  - \_\_\_\_\_ m. Owning, without more, real or personal property.
3. The list of activities in subsection (2) is not exhaustive.
4. This section has no application to the question of whether any foreign corporation is subject to service of process and suit in this state under any law of this state.

Please check one of the following if your firm is NOT a corporation:

- (I) \_\_\_\_\_ Partnership, Joint Venture, Estate or Trust  
(II) \_\_\_\_\_ Sole Proprietorship or Self Employees

Note: This sheet MUST be enclosed with your bid if you claim an exemption or have checked (I) or (II) above. If you do not check (I) or (II) above, your firm will be considered a corporation and subject to all requirements listed herein.

\_\_\_\_\_  
Bidder's Correct Legal Name

\_\_\_\_\_  
Signature of Authorized Agent of Bidder

## REFERENCES

In order to receive Bid Award consideration on the proposed bid, it is a requirement that the following "Information Sheet" be completed and returned with your bid. This information may be used in determining the Bid Award for this contract. BIDDER (COMPANY NAME):

ADDRESS: \_\_\_\_\_

TELEPHONE NO: ( ) \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

TITLE: \_\_\_\_\_

NUMBER OF YEARS IN BUSINESS: \_\_\_\_\_

ADDRESS OF NEAREST FACILITY: \_\_\_\_\_

LIST THREE (3) COMPANIES OR GOVERNMENTAL AGENCIES WHERE THESE PRODUCTS AND SERVICES HAVE BEEN PROVIDED IN THE LAST YEAR:

1. COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NO: ( ) \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE PRODUCTS SOLD: \_\_\_\_\_

2. COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NO: ( ) \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE PRODUCTS SOLD: \_\_\_\_\_

3. COMPANY NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NO: ( ) \_\_\_\_\_

CONTACT PERSON: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE PRODUCTS SOLD: \_\_\_\_\_

**BID CHECKLIST  
TOWN HALL - PHASE II  
TOWN OF JUPITER  
PALM BEACH COUNTY, FLORIDA  
CONTRACT NO. EPW 2024-24**

Bidders Name: \_\_\_\_\_

Bidders are encouraged to read all items in the Instructions to Bidders in order to insure all Bid Forms are completed and attached. This checklist must be completed and attached with all indicated forms executed properly.

1. Complete Bidder's Certification
2. Complete Trench Safety Act, if necessary.
3. Properly complete the Bid Form.
  - a. Fill in all blanks on the Bid Form
  - b. Insert your prices for lump sum items, unit bid items the properly extend and/or sum bid item prices for the total Bid.
  - c. Sign, date and provide corporate seal (if applicable) including witnesses.
  - d. Attach a copy of the qualifier's State or County (as applicable) Contracting License.
  - e. Bid is signed by one duly authorized to do so, if not attach principal's written authorization to do so.
  - f. Bids by corporation must be executed in the Corporation Name by the President or other corporate officers accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown below the signature.
  - g. Bids by partnerships must be executed in the partnership name and signed by a general partner whose title must appear under the signature and the official address of the partnership must be shown below the signature.
  - h. If the Bid involves a joint venture, a copy of the joint venture agreement shall be included with the Bid along with the attached "Statement of Business Organization".
4. Complete Certificate as to Corporate Principal.
5. Bid Bond - If a Bid Bond is provided, properly execute the attached Bid Bond Form.
  - a. Fill in all blanks on the Bid Bond form.
  - b. Sign, date and provide corporate seal (if applicable) including witnesses.
  - c. Attach Bid Bond from the Surety which includes the Company Seal.
6. Complete, sign, date and **notarize** the Sworn Statement on Public Entities Crime.
7. Complete Debarment Certification/
8. Complete Certified Resolution.
9. Complete Qualifications Statement.
10. Complete Certificate of Non-Segregated Facilities.

11. Complete Foreign (Non Florida) Corporations.

12. Fill out references.

13. Certificates of Insurances, if required.

14. Acknowledge receipt of any and all Addenda.

The above listed items shall be fully completed and submitted by the Contractor. Failure to do so may result in your Bid being deemed non-responsive.

**DIVISION VI**  
**SUPPLEMENTAL CONDITIONS**

- **Index of Supplemental Conditions**
- **Supplemental Conditions**



## **SUPPLEMENTAL CONDITIONS**

The following Supplemental Conditions are provided to amplify, clarify, revise or amend the terms and conditions of the Instructions to Bidders, Contract, Bid Form, Construction plans, and Technical Specifications for this particular project. Please refer to the specific paragraph and or section noted. Bidders are encouraged to read the following conditions carefully. Failure to comply with these conditions may cause bid to be declared non-responsive.

### **Supplemental Conditions for Invitation to Bid, Instruction to Bidders, General Conditions Contract, and Standard Specifications**

**1. Add section 3.4 following section 3.3 in the Invitation to Bid (ITB) as follows:**

- 3.4 Bidder shall provide a minimum of three (3) references for completed projects of similar scope and value.
  - 3.4.1 Contracts of similar size and scope shall be defined as contracts for construction projects within the past five (5) years where the contract had a minimum value of \$2,500,000 and are of similar nature and scope to the Town Hall - Phase II.
  - 3.4.2 The Town shall, at its discretion, reject any bid where the contractor has not demonstrated the ability to satisfactory complete the projects of similar size and scope in a timely manner.

**2. Delete Article 3.1 in the ITB in its entirety and supersede with:**

3.1 No Bid will be accepted from, nor will any contract be awarded to any person who is in arrears to the TOWN, upon any debt or contract, or who is a defaulter, as surety or otherwise, upon any obligation to TOWN, or any other governmental agency or entity, or who is deemed irresponsible or unreliable by the TOWN.

**3. Delete Article 6.2 in the ITB in its entirety and supersede with:**

**6.2** If a Bidder is in doubt as to the meaning of any of the Bid Documents, or is of the opinion that the plans and/or specifications contain errors, contradictions, or reflect omissions, the Bidder shall submit a written request (by U.S. mail, overnight courier service, i.e. FedEx, UPS, DHL, etc. or facsimile) directed to:

Town of Jupiter Construction Services  
Roger Held, Director of Construction Services  
210 Military Trail  
Jupiter, Florida 33458  
Phone No. (561) 741-2669  
Fax No. (561) 741-0911  
Email: rogerh@jupiter.fl.us

In order for any such request to be given consideration, the written request must be received by the Town's Project Engineer at least ten (10) calendar days prior to the date fixed for the opening of Bids. Interpretations or clarifications deemed necessary by the TOWN will be issued in the form of written addenda which, will be mailed to all parties recorded by the TOWN as having received the Bid Documents, no later than five (5) calendar days prior to the date fixed for the opening of Bids. The Town's Engineering Division publishes invitations to bid on Demand Star, along with any associated documents. In addition, all addenda are published on Demand Star. If a

bidder obtains the Invitation to Bid from Demand Star, addenda will not be mailed to those bidders. It shall be the bidder's responsibility to obtain the addenda from Demand Star and acknowledge receipt of addenda in the bid forms.

**4. Delete Article 12.2 of the ITB in its entirety and supersede with:**

12.2 Such cash, certificate of deposit, check, bank draft or Bid Bonds will be returned to all Bidders, with the exception of the two (2) lowest, most responsible and responsive Bidders, within thirty (30) calendar days after the opening of the Bids. Cash, certificates of deposit, check, bank draft or bid bonds of the two (2) lowest, most responsible and responsive Bidders will be returned to them promptly after the TOWN and the successful Bidder have (i) executed the Contract for the work, and (ii) the Contractor (successful Bidder) has secured and tendered to the TOWN valid and acceptable Performance and Payment Bonds as required under the provisions of the Contract. Failure of the TOWN to execute the Contract within ninety (90) calendar days after the date of the Bid opening shall initiate release of the cash, certificate of deposit, check, bank draft or Bid Bonds of the lowest and second lowest Bidders unless mutually agreed otherwise.

**5. Delete Article 18.3 in the ITB in its entirety and supersede with:**

18.3 The Bidder understands that this ITB does not constitute a Contract with the Bidder. An official Contract does not exist until a Contract has been executed by both parties. The successful Bidder shall execute the Contract and return it to the TOWN, together with the required performance and payment bonds and certificates of insurance, within fifteen (15) calendar days from receipt of the Contract. If the successful Bidder fails to execute the Contract and/or provide the bonds and certificate of insurance within fifteen (15) calendar days, the TOWN shall have just cause to annul the Contract award and the successful Bidder shall forfeit its Bid Security to the TOWN. The TOWN may then award the Contract to the next lowest, most responsible, and responsive Bidder, or the work may be re-advertised at the TOWN's sole discretion.

**6. Delete Article 19.0 of the ITB in its entirety.**

**7. Delete Article 22.4 in the ITB in its entirety and supersede with:**

22.4 A Contract, if awarded, will be on the basis of material and equipment described in the plans and the technical specifications without consideration of possible substitute or an "or equal" item. Whenever it is indicated that a substitute or an "or equal" item of material or equipment may be furnished or used by the Bidder if acceptable to the TOWN Engineer, application for such acceptance will not be considered by the TOWN Engineer until after the date of execution of the Contract. In all cases, the total price of the Bidder shall be determined on the basis of the base bid which shall reflect the costs for the materials and equipment specified. Bidders unable to provide the specified materials and equipment shall be determined unresponsive.

**8. Delete Article 25.3 in the ITB in its entirety and supersede with:**

25.3 The CONTRACTOR shall comply with public records laws Chapter 119, Florida Statutes, specifically to: Keep and maintain public records that ordinarily and necessarily would be required by the TOWN in order to perform the service; Provide the public with access to public records on the same terms and conditions that the TOWN would provide the records and at a cost that does not exceed the cost provided in Chapter 119, F.S. or as otherwise provided by law; Ensure that public records that are exempt or confidential and exempt from public records disclosure requirements are not disclosed except as authorized by law; Meet all requirements for retaining public records and transfer, at no cost to the TOWN, all public records in possession of

the contractor upon termination of the contract and destroy any duplicate public records that are exempt of confidential and exempt from public disclosure requirements. All records stored electronically must be provided to the TOWN in a format that is compatible with the information technology systems of the TOWN. If the CONTRACTOR does not comply with a public records request, the public agency shall enforce the contract provisions in accordance with the contract.

IF THE CONTRACTOR HAS QUESTIONS REGARDING THE APPLICATION OF CHAPTER 119, FLORIDA STATUTES, TO THE CONTRACTOR'S DUTY TO PROVIDE PUBLIC RECORDS RELATING TO THIS CONTRACT, CONTACT THE CUSTODIAN OF PUBLIC RECORDS AT (561) 735-2379, [townclerk@jupiter.fl.us](mailto:townclerk@jupiter.fl.us)

Town Clerk  
Town of Jupiter  
210 Military Trail  
Jupiter, FL 33458

9. **Delete General Condition Sub-article 4.15.2 in its entirety and supersede with the following:**

**4.15.2.** For construction projects having an estimated cost of less than \$10 million, the punch list will be completed within 30 calendar days of substantial completion as defined in Section 2.0. Failure on the part of the Contractor to complete the punch list within that time period shall result in the assessment of liquidated damages as prescribed by the Contract, commencing at midnight of the 31<sup>st</sup> day following the date of substantial completion.

10. **Delete General Condition Sub-article 4.16.4 in its entirety and supersede with the following:**

**4.16.4 Warranty of Fitness for Particular Purpose:** The Contractor warrants the goods shall be fit for and sufficient for the purposes(s) intended. The purpose(s) for which the goods covered by the Contract are intended:

Town Hall – Phase II.

11. **Delete General Condition Sub-article 4.16.5 in its entirety and supersede with the following:**

**Warranty of Performance:** The Contractor warrants that the material shall meet the following performance requirements:

Minimally attain the requirements of the plans and specifications.

If properly operated, the materials are warranted to be capable of doing the same or better quality work than other goods of equal value operated under the same conditions.

12. **Any reference to the “Town’s Standard Specifications” shall be superseded by “Town Modified Standard Specifications”.**

13. **Add Sub-article 334-8.2 following 334-8.1 in Section 334 Superpave Asphalt Concrete of the Technical Special Provisions as follows:**

**334-8.2 When No Direct Payment is Provided** When no pay item for Superpave Asphalt Concrete is included in the proposal, the Contractor shall include the cost of any work which is necessary for Superpave Asphalt Concrete within the limits of the project in the Contract price for the other items of work for which such work is required.

14. The Contractor shall provide all asphalt from an FDOT Approved Asphalt Plant for this Contract.
15. The Town will accept the use of a milling machine fitted with a drum with 5/8" spacing and a triple wrap design in lieu of Section 327A Micro Milling of Existing Asphalt Pavement. This substitution will be allowed if the Contractor has the ability to slow the forward speed and increase the drum speed to achieve a smooth uniform texture of the milled surface; as to minimize damage to the pavement structure.
16. The Contractor shall utilize Superpave Asphalt Concrete for this project in accordance with the Section 334 Superpave Asphalt Concrete of the most current FDOT Standard Specifications for Road and Bridge Construction.
17. Permits required for the execution of this Contract have been issued to the Town of Jupiter at no expense to the Contractor. The permit types are as follows: Demolition, Site Lighting, Aluminum Awning, Temporary Fencing, and Engineering/Utilities. The Contractor shall also obtain a Town of Jupiter Vegetation Removal Permit. The Contractor shall protect existing trees, that are to remain, in accordance with the standard of the FDOT Standard Plans prior to the commence of work.
18. At or before the Preconstruction meeting the Contractor shall provide a Stormwater Pollution Prevention Plan.
19. The Contractor shall be responsible to provide a Traffic Control Plan (TCP) in accordance with Section 102 - Maintenance of Traffic of the Town's Modified Standard Specifications for review and approval by the Engineer. Roadways adjacent to the project corridor are owned by state/local governments and any MOT on those roadways shall be subject to review and approval by those agencies.
20. The Town reserves the right to reject any Traffic Control Plan (TCP) submitted, which in the sole opinion of the Engineer, does not protect the safety of the public and/or work force, does not conform to the requisite standards and/or creates undue disruption to the traveling public. Obtain the Engineer's written approval before beginning work using the TCP. The Engineer's written approval is required for all modifications to the TCP. The Engineer will only allow changes to the TCP in an emergency without the proper documentation. The cost of the preparation of the TCP shall be considered incidental to this work, and no separate payment shall be made for the development and submittal of the TCP.
21. The Contractor shall be responsible for restoration of any damaged roadways used for means of ingress and egress used during the execution of this contract at no additional expense to the Town.
22. The Contractor shall be responsible to replace any curbing damaged during the milling operations at no additional expense to the Town.
23. The Contractor shall be responsible for the removal of any excess tack and asphalt tracked on driveways, parking areas, and roadways used as means of ingress and egress to the project. The

Contractor shall be responsible to fully restore all pavement marking damaged by excessive tack and asphalt tracking at no additional expense to the Town. The Contractor shall be responsible for placement of a layer of sand on the roadways at the entrance and exit to the job site during as a means of containment of tack asphalt paving operations.

24. The Contractor shall not use newly paved roadways as means of ingress and egress during paving operations. Newly paved roadways with tracked tack from trucks used to supply asphalt to the job site may be identified by Town staff to be milled and repaved at the Contractor's expense.
25. The Contractor shall provide adequate labor and equipment to apply tack in a uniform manner and in accordance with the Specifications and manufacturer's recommendations. The application of excessive tack during paving operations shall be documented. The Contractor shall be responsible to mill and repave roadway areas where excessive tack was applied at no additional expense to the Town.
26. The Contractor shall utilize hot-dipped galvanized 3lb per foot Franklin Channel for all street sign posts. The cost of sign posts shall be included in pay item Site Work.
27. Paving operations shall commence no later than **fourteen (14) calendar days** following milling operations. Damage to the road base caused by traffic shall be repaired by the Contractor prior to the commencement of paving operations at no additional expense to the Town.
28. The Contractor shall be responsible to install all required electrical conduit, junction boxes, wire, and fixtures in accordance with Florida Building Code and the NEC for the electrical and lighting requirements for this project. The Town has secured light poles and concrete foundations for all the light pole locations. The Town has secured eight (8) junction boxes. The Contractor shall be responsible to furnish the four (4) additional matching junctions boxes. The Contractor shall furnish all materials, equipment, and labor to install all the light foundations, poles, and fixtures to provide a fully functioning lighting system in accordance with the plan set.
29. The Contractor shall include activities for procurement fabrication, and delivery of materials, plant, and equipment, and review time for shop drawings and submittals. **No additional time will not be granted by the Town to the Contractor for procurement of the aforementioned required for an on-time completion of this project.**
30. The Contractor shall utilize the U.S. Department of Homeland Security's E-Verify System to verify the employment eligibility of all new employees hired by the Contractor during the term of the Contract and shall expressly require any subcontractors performing work or providing services pursuant to the Contract to likewise utilize the U.S. Department of Homeland Security's E-Verify system to verify the employment eligibility of all new employees hired by the subcontractor during the Contract term.
31. The Contractor shall register with and use the U.S. Department of Homeland Security's E-Verify system, <https://www.e-verify.gov/employers>, to verify the work authorization status of all Contractor employees hired on and after January 1, 2021, pursuant to section 448.095, Florida Statutes.
32. The Contractor shall also require all subcontractors performing work under this Agreement to use the E-Verify system for any employees they may hire during the term of this Agreement.
33. The Contractor shall obtain from all subcontractors an affidavit stating the subcontractor does not employ, contract with, or subcontract with an unauthorized alien, as defined in section 448.095,

Florida Statutes.

34. The Contractor shall provide a copy of all subcontractor affidavits to the Town upon receipt and shall maintain a copy for the duration of the Agreement.
35. The Contractor must provide evidence of compliance with section 448.095, Florida Statutes. Evidence shall consist of an affidavit from the Contractor stating all employees hired on and after January 1, 2021 have had their work authorization status verified through the E-Verify system and a copy of their proof of registration in the E-Verify system. Failure to comply with this provision is a material breach of the Agreement, and shall result in the immediate termination of the Agreement without penalty to the Town. The Contractor shall be liable for all costs incurred by the Town to secure a replacement Agreement, including but not limited to, any increased costs for the same services, any costs due to delay, and rebidding costs, if applicable.
36. The Town will pay the Contractor a “No Excuse Bonus” in the amount of **Two Hundred Fifty Thousand Dollars and No Cents (\$250,000.00)**, if the work in this Contract is substantially completed in accordance with the Contract documents, on or before, **One Hundred Twenty (120) calendar days** from the Notice to Proceed Date. For purposes of the calculation and the determination of entitlement to the “No Excuse Bonus” the Completion Date will not be adjusted for any reason, cause or circumstance whatsoever, regardless of fault, save and except in the instance of a catastrophic event (i.e., hurricane or a declared state of emergency).

The parties anticipate that delays may be caused by or arise from any number of events during the course of the Contract, including, but not limited to, work performed, work deleted, change orders, supplemental agreements, delays, disruptions, differing site conditions, utility conflicts, design changes or defects, time extensions, extra work, right of way issues, permitting issues, actions of suppliers, subcontractors or other contractors, actions by third parties, shop drawing approval process delays, expansion of the physical limits of the project to make it functional, weather, weekends, holidays, suspensions of Contractor’s operations, or other such events, forces or factors sometimes experienced in highway construction work. Such delays or events and their potential impacts on performance by the Contractor are specifically contemplated and acknowledged by the parties in entering into this Contract, and shall not extend the “No Excuse Bonus” Completion Date set forth above. Further, any and all costs or impacts whatsoever incurred by the Contractor in accelerating the Contractor’s work to overcome or absorb such delays or events in an effort to complete the Contract by the “No Excuse Bonus” Completion Date, regardless of whether the Contractor successfully does so or not, shall be the sole responsibility of the Contractor in every instance.

In the event of a catastrophic event (i.e., hurricane or a declared state of emergency) directly and substantially affecting the Contractor’s operations on the Contract, the Contractor and the Town shall agree as to the number of calendar days to extend the “No Excuse Bonus” Completion Date. In the event the Contractor and Town are unable to agree to the number of calendar days to extend the “No Excuse Bonus” Completion Date, the Town shall unilaterally determine the number of calendar days to extend the “No Excuse Bonus” Completion Date reasonably necessary and due solely to such catastrophic event and the Contractor shall have no right whatsoever to contest such determination, save and except that the Contractor establishes that the number of calendar days determined by the Town were arbitrary or without any reasonable basis.

The Contractor shall have no rights under the Contract to make any claim arising out of this “No Excuse Bonus” provision except as is expressly set forth in this Supplemental Conditions Item.

As conditions precedent to the Contractor’s entitlement to any “No Excuse Bonus” the Contractor

must:

(1) Actually complete the Contract and obtain substantial completion by the Town, as determined by the Director of Construction Services on or before the “No Excuse Bonus” Completion Date.

(2) The Contractor shall notify the Town in writing, within 30 days of the final acceptance of the work in the Contract by the Town, that the Contractor elects to be paid the “No Excuse Bonus” which the Contractor is eligible to be paid based on the actual substantial completion date, and such written notice shall constitute a full and complete waiver, release and acknowledgment of satisfaction by the Contractor of any and all claims, causes of action, issues, demands, disputes, matters or controversies, of any nature or kind whatsoever, known or unknown, against the Town, its employees, officers, agents, representatives, consultants, and their respective employees, officers and representatives, the Contractor has or may have as to work performed, work deleted, change orders, supplemental agreements, delays, disruptions, differing site conditions, utility conflicts, design changes or defects, time extensions, extra work, right of way issues, permitting issues, actions of suppliers or subcontractors or other Contractors, actions by third parties, shop drawing approval process delays, expansion of the physical limits of the project to make it functional, weather, weekends, holidays, suspensions of Contractor’s operations, extended or unabsorbed home office or job site overhead, lump sum maintenance of traffic adjustments, lost profits, prime mark-up on subcontractor work, acceleration costs, any and all direct and indirect costs, any other adverse impacts, events, conditions, circumstances or potential damages, on or pertaining to, or as to or arising out of the Contract. This waiver, release and acknowledgment of satisfaction shall be all-inclusive and absolute, save and except any routine Town final estimating quantity adjustments.

Should the Contractor fail to actually complete the Contract and obtain substantial completion by the Town as determined by the Director of Construction Services, or should the Contractor, having done so, fail to timely request the “No Excuse Bonus” for any reason, and including but not limited to the Contractor choosing not to fully waive, release and acknowledge satisfaction as set forth in (2) above, the Contractor shall have no right to any payment whatsoever under this Article.

37. The Town anticipates using the Jupiter Green area for the Jupiter Jubilee on February 8, 2025. All work shall be completed in the Jupiter Green area prior to the Jupiter Jubilee scheduled for February 8, 2025. This work shall include, but not be limited to, sod installation and policing of the area to ensure the site is safe and ready for Town.
38. The Contractor shall be responsible for the performance of all work within Phase II as defined by the Phase II limits in the plan set; as well as, any work items specifically noted in the plan set that lie outside of the phase II work zone limits.

**DIVISION VII**  
**TECHNICAL SPECIAL PROVISIONS**

- **Index of Technical Special Provisions**
- **Technical Special Provisions**



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## **SECTION 327A**

### **MICRO MILLING OF EXISTING ASPHALT PAVEMENT**

#### **327A-1 Description.**

Remove existing asphalt concrete pavement by milling to improve the rideability and cross slope of the finished pavement, to lower the finished grade adjacent to existing curb prior to resurfacing, or to completely remove existing pavement.

When milling to improve rideability, the plans will specify an average depth of cut.

Take ownership of milled material and remove from the site and legally dispose of all milled material.

#### **327A-2 Equipment.**

The Contractor shall provide milling equipment and operate in a manner that will prevent scabbing, delamination of the asphalt surface and exposure of the base.

1. Triple Wrap Lacing Pattern
2. 3/8" (9mm) Line Spacing
3. Milling Machine Advance Rate 30 FPM
4. Milling Machine Drum Speed 100 RPM

In addition, the Engineer will review the milling equipment and condition of the milling tools are to wear and holder condition. The tools and holders on the revolving cutting drum must be continually maintained and shall be replaced as warranted to provide a smooth uniform pavement texture. The Contractor shall adjust the recommended speeds as necessary to prevent scabbing, delamination and exposure of base.

Provide a micro milling machine capable of maintaining a depth of cut and cross slope that will achieve the results specified in the Contract Documents. Use a machine with minimum overall length of 10 feet and a minimum cutter width of 6 feet or 4 feet as applicable.

Equip the micro milling machine with a built-in automatic grade control system that can control the transverse slope and the longitudinal profile to produce the specified results.

To start the project, the Engineer will approve any commercially manufactured micro milling machine that meets the above requirements. If it becomes evident after starting the micro milling operation that the micro milling machine cannot consistently produce the specified results, the Engineer will reject the micro milling machine for further use.

The micro milling machine shall be equipped with a built-in automatic grade averaging control system that can control the longitudinal profile and the transverse cross-slope to produce the specified results. The longitudinal controls shall be capable of operating from any longitudinal grade reference, including string line, contact ski (30 feet minimum), non-contact ski (20 feet minimum), or mobile string line (30 feet minimum). The transverse controls shall have an automatic system for controlling cross-slope at a given rate. The Engineer may waive the requirement for automatic grade or slope controls where the situation warrants such action.

The Contractor maybe requested to perform a test strip to demonstrate that the same surface tolerance can be attained at an increased forward speed. The test strip shall be a maximum length of 500 feet and shall have the same criteria for surface tolerance as noted in this specification. The final decision for implementing the increased forward speed will be at the discretion of the Engineer.

The Contractor may use a smaller micro milling machine when milling to lower the grade adjacent to existing curb or other areas where it is impractical to use the above described equipment.

Equip the micro milling machine with means to effectively limit the amount of dust escaping during the removal operation.

For complete pavement removal, the Engineer may approve the use of alternate removal and crushing equipment in lieu of the equipment specified above.

### **327A-3 Construction.**

Remove the existing raised reflective pavement markers prior to milling. Include the cost of removing existing pavement markers in the price for milling.

When micro milling to improve rideability or cross slope, remove the existing pavement to the average depth specified in the plans, in a manner that will restore the pavement surface to a uniform cross-section and longitudinal profile. The Engineer may require the use of a stringline, level and/or straightedge to ensure maintaining the proper alignment.

Establish the longitudinal profile of the micro milled surface in accordance with the milling plans. Ensure that the final cross slope of the micro milled surface parallels the surface cross slope shown on the plans or as directed by the Engineer. Establish the cross slope of the micro milled surface by a second sensing device near the outside edge of the cut or by an automatic cross slope control mechanism. The plans may waive the requirement of automatic grade or cross slope controls where the situation warrants such action.

Multiple cuts may be made to achieve the required pavement configuration or depth of cut. Measurements will be made to control the cross slope of the milling surface with a minimum frequency of one cross slope measurement every 250 feet during milling operations in order to ensure that the slopes are uniform and in compliance with the designed milling slope. When the difference between the measured cross slope and the designed cross slope exceeds  $\pm 0.2\%$  for travel lanes (including turn lanes) and  $\pm 0.5\%$  for shoulders, make all corrections immediately to bring the cross slope into an acceptable range. The Engineer will periodically verify the Contractor's measurements at the job site.

The Engineer will randomly take ten measurements of the cross slope per day for the first two days of micro milling operation. If the average cross slope of the ten random measurements per day varies more than the required tolerance ( $0.2\%$  for travel lanes including turn lanes and  $0.5\%$  for shoulders), the micro milling operation shall be stopped until appropriate corrective actions are made to bring the cross slope into an acceptable range. Approval of the Engineer will be required prior to resuming the micro milling operation. A recheck of ten random measurements will be made after corrective actions are taken. If the recheck indicates that the cross slope is out of control, the deficient section(s) shall be corrected to bring the cross slope into an acceptable range. During micro milling operations, the Engineer reserves the right to take ten cross slope measurements per day. If the average cross slope of the ten measurements varies more than the permissible tolerance, the micro milling operation will be stopped until appropriate corrective actions are made to bring the cross slope into an acceptable range and the deficient sections shall be corrected accordingly.

The Engineer may waive the corrections specified above if an engineering determination indicates that the deficiencies are sufficiently separated so as not to significantly affect the final cross slope.

For intersections, tapers, crossovers, transitions at the beginning and end of the project and in other similar areas, the cross slope will be adjusted as directed by the Engineer to match the actual site conditions.

Operate the micro milling machine to minimize the amount of dust being emitted. The Engineer may require prewetting of the pavement.

Provide positive drainage of the micro milled surface and the adjacent pavement. Perform this operation on the same day as milling. Repave all milled surfaces no later than the day after the surface was milled unless otherwise stated in the plans.

If traffic is to be maintained on the milled surface prior to the placement of the new asphalt concrete, provide suitable transitions between areas of varying thickness to create a smooth longitudinal

riding surface. Produce a pattern of striations that will provide an acceptable riding surface. The Engineer will control the traveling speed of the micro milling machine to produce a texture that will provide an acceptable riding surface. Do not exceed drop-off criteria as specified in DS Index 600. Provide temporary asphalt, as necessary, adjacent to manholes, curb, sidewalks and similar structures. Insure ADA requirements are met. No separate measurement and payment will be made to provide a temporary asphalt wedge. Include the cost of this wedge in the pay item of existing asphalt.

Prior to opening an area which has been micro milled to traffic, sweep the pavement with a power broom or other approved equipment to remove, to the greatest extent practicable, fine material which will create dust under traffic. Sweep in a manner that will minimize the potential for creation of a traffic hazard and to minimize air pollution.

Sweep the micro milled surface with a power broom prior to placing asphalt concrete.

In urban and other sensitive areas, use a street sweeper or other equipment capable of removing excess micro milled materials and controlling dust. Obtain the Engineer's approval of such equipment, contingent upon its demonstrated ability to do the work.

Perform the sweeping operation immediately after the micro milling operations or as directed by the Engineer.

#### **327A-4 Micro Milled Surface.**

The micro milled surface shall provide a riding surface with a corduroy textured appearance with a groove depth of  $\frac{1}{4}$  to  $\frac{1}{2}$  - inch. The milled surface shall be free from gouges, longitudinal grooves and ridges, oil film, and other imperfections that are a result of defective equipment, improper use of equipment, or poor workmanship. No area shall have a depth greater than  $\frac{1}{8}$  - inch when measured with a ten (10) foot straightedge. The Engineer may accept areas varying from a true surface in excess of the above stated tolerance without correction if the Engineer determines that they were caused by a pre-existing condition which could not have reasonably been corrected by the micro milling operations. Correct any unsuitable texture or profile, as determined by the Director of Engineering and Public Works or his designee, at no additional expense to the Town.

The Engineer may require additional micro milling of any area where a surface lamination causes a non-uniform texture to occur.

#### **327A-5 Method of Measurement.**

When direct payment is provided in the Contract, the quantity to be paid will be the actual area milled by the Contractor and measured (in square yards), inspected and approved in the field by the Town of Jupiter. Accuracy of the measurement and minimum payment for milling will be to 1/10 of a Square Yard (0.10 Square Yards).

**327-5.1** The quantity to be paid will be the plan quantity area, in square yards, over which micro milling is completed and accepted.

#### **327A-6 Basis of Payment.**

**327A-6.1 When no Direct Payment is Provided:** When no item for micro milling is included in the proposal, or specifically included in other items, the Contractor shall include the cost of any work of milling which is necessary for the proper construction of the project in the Contract price for the asphalt or other item of work for which such milling is required.

The Contractor shall include the cost of all milling which might be necessary in tie-ins to existing pavement or items in the Contract price for the asphalt in which milling is necessary.

**327A-6.2** Price and payment will be full compensation for all work specified in this Section, including hauling off and stockpiling or otherwise legally disposing of the milled material.

Payments will be made under:

Item No. 327A-0.5-7 Micro Mill Existing Asphalt Pavement 1/2" (Tapered 7 ft. wide) – per square yard  
Item No. 327A-0.5-10 Micro Mill Existing Asphalt Pavement 1/2" (Full Lane) – per square yard  
Item No. 327A-0.75-7 Micro Mill Existing Asphalt Pavement 3/4" (Tapered 7 ft. wide) – per square yard  
Item No. 327A-0.75-10 Micro Mill Existing Asphalt Pavement 3/4" (Full Lane) – per square yard  
Item No. 327A-0.5-10 Micro Mill Existing Asphalt Pavement 1/2" (Full Lane) – per square yard  
Item No. 327A-0.75-7 Micro Mill Existing Asphalt Pavement 3/4" (Tapered 7 ft. wide) – per square yard  
Item No. 327A-1-7 Micro Mill Existing Asphalt Pavement 1" (Tapered 7 ft. wide) – per square yard  
Item No. 327A-1-10 Micro Mill Existing Asphalt Pavement 1" (Full Lane) – per square yard  
Item No. 327A-1.5-10 Micro Mill Existing Asphalt Pavement 1-1/2" (Full Lane) – per square yard  
Item No. 327A-2-10 Micro Mill Existing Asphalt Pavement 2" (Full Lane) – per square yard

**END OF SECTION 327A**

## SECTION 334 SUPERPAVE ASPHALT CONCRETE

### 334-1 Description.

**334-1.1 General:** Construct a Superpave Asphalt Concrete pavement with the type of mixture specified in the Contract Documents, or when offered as alternates, as selected. Superpave mixes are identified as Type SP-9.5, Type SP-12.5 or Type SP-19.0.

Obtain Superpave Asphalt Concrete from a plant that is currently on the Department's Production Facility Listing. Producers seeking inclusion on the list shall meet the requirements of Section 105. Producers must meet the requirements of Section 320 for plant and equipment and the general construction requirements of Section 330.

**334-1.2 Traffic Levels:** The requirements for Type SP Asphalt Concrete mixtures are based on the design traffic level of the project. The traffic levels for the project are as specified in the Contract Documents.

**334-1.3 Gradation Classification:** The Superpave mixes are classified as fine and are defined in 334-3.2.2.

The equivalent AASHTO nominal maximum aggregate size Superpave mixes are as follows:

Type SP-9.5.....	9.5 mm
Type SP-12.5.....	12.5 mm
Type SP-19.0.....	19.0 mm

**334-1.4 Thickness:** The total thickness of the Type SP asphalt layers will be the plan thickness as shown in the Contract Documents. Before paving, propose a thickness for each individual layer meeting the requirements of this specification, which when combined with other layers (as applicable) will equal the plan thickness. For construction purposes, the plan thickness and individual layer thickness will be converted to spread rate based on the maximum specific gravity of the asphalt mix being used, as well as the minimum density level, as shown in the following equation:

$$\text{Spread rate (lbs/yd}^2\text{)} = t \times G_{mm} \times 43.3$$

Where: t = Thickness (in.) (plan thickness or individual layer thickness)

$G_{mm}$  = Maximum specific gravity from the verified mix design

The weight of the mixture shall be determined as provided in 320-3.2. For target purposes only, spread rate calculations should be rounded to the nearest whole number.

Note: Plan quantities are based on a  $G_{mm}$  of 2.540, corresponding to a spread rate of 110 lbs/yd<sup>2</sup>-in. Pay quantities will be based on the actual maximum specific gravity of the mix being used.

**334-1.4.1 Layer Thicknesses:** The allowable layer thicknesses for Type SP Asphalt Concrete mixtures are as follows:

Type SP-9.5.....	1 to 1-1/2 inches
Type SP-12.5.....	1-1/2 to 2-1/2 inches
Type SP-19.0.....	2 to 4 inches

In addition to the minimum and maximum thickness requirements, the following restrictions are placed on mixes when used as a structural course:

Type SP-9.5 - Limited to the top two structural layers, two layers maximum.

Type SP-9.5 – May not be used on Traffic Level D and E applications.

Type SP-19.0 - May not be used in the final (top) structural layer below FC-5 mixtures. Type SP-19.0 mixtures are permissible in the layer directly below FC-9.5 and FC-12.5 mixtures.

**334-1.4.2 Additional Requirements:** The following requirements also apply to Type SP Asphalt Concrete mixtures:

1. A minimum 1-1/2 inch initial lift is required over an Asphalt Rubber Membrane Interlayer (ARMI).

2. When construction includes the paving of adjacent shoulders (less than or equal to 5 feet wide), the layer thickness for the upper pavement layer and shoulder must be the same and paved in a single pass, unless called for differently in the Contract Documents.

3. All overbuild layers must be Type SP Asphalt Concrete designed at the traffic level as stated in the Contract Documents. Use the minimum and maximum layer thicknesses as specified above unless called for differently in the Contract Documents. On variable thickness overbuild layers, the minimum and maximum allowable thicknesses will be as specified below, unless called for differently in the Contract Documents.

Type SP-9.5..... 3/8 to 2 inches

Type SP-12.5..... 1/2 to 3 inches

Type SP-19.0..... 1-1/2 to 4 inches

4. Variable thickness overbuild layers constructed using a Type SP-9.5 or SP-12.5 mixtures may be tapered to zero thickness provided the contract documents require a minimum of 1-1/2 inches of dense-graded mix placed over the variable thickness overbuild layer.

## **334-2 Materials.**

**334-2.1 General Requirements:** Meet the material requirements specified in Division III. Specific references are as follows:

Superpave PG Asphalt Binder .....Section 916

Coarse Aggregate.....Section 901

Fine Aggregate.....Section 902

**334-2.2 Superpave Asphalt Binder:** Unless specified otherwise in the Contract Documents, use an asphalt binder grade as determined from Table 334-1.

### **334-2.3 Reclaimed Asphalt Pavement (RAP) Material:**

**334-2.3.1 General requirements:** RAP may be used as a component of the asphalt mixture subject to the following requirements:

1. When using a PG 76-22 asphalt binder, limit the amount of RAP material used in the mix to a maximum of 20% by weight of total aggregate. As an exception, amounts greater than 20% RAP by weight of total aggregate can be used if no more than 20% by weight of the total asphalt binder comes from the RAP material. RAP is not allowed in mixtures containing High Polymer asphalt binder. High Polymer asphalt is defined in Section 916.

2. Assume full responsibility for the design, production and construction of asphalt mixes which incorporate RAP as a component material.

3. Use RAP from a Department approved stockpile or millings from a Department project.

4. Provide stockpiled RAP material that is reasonably consistent in characteristics and contains no aggregate particles which are soft or conglomerates of fines.

5. Provide RAP material having a minimum average asphalt binder content of 4.0% by weight of RAP. As an exception, when using fractionated RAP, the minimum average asphalt binder content for the coarse portion of the RAP shall be 2.5% by weight of the coarse portion of the RAP. The coarse portion of the RAP shall be the portion of the RAP retained on the No. 4 sieve. The Engineer may sample the stockpiles to verify that this requirement is met.

**334-2.3.2 Material Characterization for Mix Design:** Assume responsibility for establishing the asphalt binder content, gradation, and bulk specific gravity ( $G_{sb}$ ) of the RAP material based on a representative sampling of the material by roadway cores or stockpile samples. For roadway core samples, assume responsibility for the degradation that will occur during the milling operation.

**334-2.3.3 RAP Stockpile Approval:** Prior to the incorporation of RAP into the asphalt mixture, stockpile the RAP material and obtain approval for the stockpile by one of the following methods:

1. Continuous stockpile: When RAP is obtained from one or multiple sources and is either processed, blended, or fractionated, and stockpiled in a continuous manner, assure an adequate number of test results are obtained for stockpile approval. Test the RAP material for gradation and asphalt content at a minimum frequency of one sample per 1000 tons with a minimum of six test results. Test the RAP material for  $G_{mm}$  (for  $G_{sb}$  determination) at a minimum frequency of one sample per 5000 tons with a minimum of two test results. Based on visual inspection and a review of the test data, the Engineer will determine the suitability of the stockpiled material. In addition, address the details and specifics of the processing, sampling, testing and actions to be taken in the Producer Quality Control (QC) Plan.

2. Non-continuous single stockpile: When an individual stockpile is being constructed, obtain representative samples at random locations and test the RAP material for gradation and asphalt content at a minimum frequency of one sample per 1000 tons with a minimum of six test results. Test the RAP material for  $G_{mm}$  (for  $G_{sb}$  determination) at a minimum frequency of one sample per 5000 tons with a minimum of two test results. Based on visual inspection and a review of the test data, the Engineer will determine the suitability of the stockpiled material. Once the RAP stockpile has been approved, do not add additional material without prior approval of the Engineer.

Determine the asphalt binder content and gradation of the RAP material in accordance with FM 5-563 and FM 1-T 030, respectively. Establish the  $G_{sb}$  of the RAP material by using one of the following methods:

a. Calculate the  $G_{sb}$  value based upon the effective specific gravity ( $G_{se}$ ) of the RAP material, determined on the basis of the asphalt binder content and maximum specific gravity ( $G_{mm}$ ) of the RAP material. The Engineer will approve the estimated asphalt binder absorption value used in the calculation.

b. Measure the  $G_{sb}$  of the RAP aggregate, in accordance with FM 1-T 084 and FM 1-T 085. Obtain the aggregate by using a solvent extraction method.



**334-2.3.4 Pavement Coring Report:** When the Contract includes milling of the existing asphalt pavement, the Pavement Coring Report may be available on the Department's website.

**334-2.3.5 Asphalt Binder for Mixes with RAP:** Select the appropriate asphalt binder grade based on Table 334-1. Obtain a sample of the mixture for the Engineer within the first 1,000 tons of production and at a continuing frequency of one sample per 4,000 tons of mix. The Engineer reserves the right to change the asphalt binder grade at design based on the characteristics of the RAP asphalt binder, and reserves the right to make changes during production.

Table 334-1 Asphalt Binder Grade for Mixes Containing RAP	
Percent RAP	Asphalt Binder Grade
0 - 15	PG 67-22
16 - 30	PG 58-22
>30	PG 52-28

**334-2.4 Recycled Crushed Glass:** Recycled crushed glass may be used as a component of the asphalt mixture subject to the following requirements:

1. Consider the recycled crushed glass a local material and meet all requirements specified in 902-6.
2. Limit the amount of recycled crushed glass to a maximum of 15% by weight of total aggregate.
3. Use an asphalt binder that contains a minimum of 0.5% anti-stripping agent by weight of binder. The anti-strip additive shall be one of the products listed on the Approved Product List (APL). The anti-strip additive shall be introduced into the asphalt binder by the supplier during loading.
4. Do not use recycled crushed glass in friction course mixtures or in structural course mixtures which are to be used as the final wearing surface.

### **334-3 General Composition of Mixture.**

**334-3.1 General:** Compose the asphalt mixture using a combination of aggregate (coarse, fine or mixtures thereof), mineral filler, if required, and asphalt binder material. Size, grade and combine the aggregate fractions to meet the grading and physical properties of the mix design. Aggregates from various sources may be combined.

#### **334-3.2 Mix Design:**

**334-3.2.1 General:** Design the asphalt mixture in accordance with AASHTO R 35-12, except as noted herein. Prior to the production of any asphalt mixture, submit the proposed mix design with supporting test data indicating compliance with all mix design criteria to the Engineer. For Traffic Level B through E mix designs, include representative samples of all component materials, including asphalt binder. Allow the Director of the Office of Materials a maximum of four weeks to either conditionally verify or reject the mix as designed.

For a Traffic Level A mixture, meet the mix design criteria for a Traffic Level B mixture and for a Traffic Level D mixture meet the mix design criteria for a Traffic Level E mixture. In addition, a Type SP mix one traffic level higher than the traffic level

specified in the Contract Documents may be substituted, at no cost to the Department. Based on the previous conditions, the following substitutions are allowed:

- Traffic Level E can be substituted for Traffic Level D.
- Traffic Level D or E can be substituted for Traffic Level C.
- Traffic Level C can be substituted for Traffic Level B.
- Traffic Level B or C can be substituted for Traffic Level A.

The same traffic level and binder type that is used for the mainline traffic lanes may be placed in the shoulder at no additional cost to the Department, even if the conditions stated above are not met for the shoulder.

Do not use more than four mix designs per nominal maximum aggregate size per traffic level per binder grade per year, where the year starts at the Notice to Proceed. Exceeding this limitation will result in a maximum Composite Pay Factor (CPF) of 1.00 as defined in 334-8.2 for all designs used beyond this limit.

Warm mix technologies (additives, foaming techniques, etc.) listed on the Department's website may be used in the production of the mix. The URL for obtaining this information, if available, is: <http://www.fdot.gov/materials/mac/production/warmmixasphalt/>

When warm mix technologies are used, for mixtures containing a PG 52-28, PG 58-22, or PG 67-22 binder, a mixture will be considered a warm mix asphalt design if the mixing temperature is 285°F or less. For mixtures containing a PG 76-22 or High Polymer binder, a mixture will be considered a warm mix asphalt design if the mixing temperature is 305°F or less.

The Engineer will consider any marked variations from original test data for a mix design or any evidence of inadequate field performance of a mix design as sufficient evidence that the properties of the mix design have changed, and the Engineer will no longer allow the use of the mix design.

**334-3.2.2 Mixture Gradation Requirements:** Combine the coarse and fine aggregate in proportions that will produce an asphalt mixture meeting all of the requirements defined in this specification and conform to the gradation requirements at design as defined in AASHTO M 323-12, Table 3. Aggregates from various sources may be combined.

**334-3.2.2.1 Mixture Gradation Classification:** Plot the combined mixture gradation on an FHWA 0.45 Power Gradation Chart. Include the Control Points from AASHTO M 323-12, Table-3, as well as the Primary Control Sieve (PCS) Control Point from AASHTO M 323-12, Table 4. Fine mixes are defined as having a gradation that passes above the primary control sieve control point and above the maximum density line for all sieve sizes smaller than the primary control sieve and larger than the No. 100 sieve.

**334-3.2.3 Aggregate Consensus Properties:** For Traffic Level C through E mixtures, meet the following consensus properties at design for the aggregate blend. Aggregate consensus properties do not apply to Traffic Level A and B mixtures.

**334-3.2.3.1 Coarse Aggregate Angularity:** When tested in accordance with ASTM D 5821-01 (2006), meet the percentage of fractured faces requirements specified in AASHTO M 323-12, Table 5.

**334-3.2.3.2 Fine Aggregate Angularity:** When tested in accordance with AASHTO T 304-11, Method A, meet the uncompacted void content of fine aggregate specified in AASHTO M 323-12, Table 5.

**334-3.2.3.3 Flat and Elongated Particles:** When tested in accordance with ASTM D 4791-10, (with the exception that the material passing the 3/8 inch sieve and

retained on the No. 4 sieve shall be included), meet the requirements specified in AASHTO M 323-12, Table 5. Measure the aggregate using the ratio of 5:1, comparing the length (longest dimension) to the thickness (shortest dimension) of the aggregate particles.

**334-3.2.3.4 Sand Equivalent:** When tested in accordance with AASHTO T 176-08, meet the sand equivalent requirements specified in AASHTO M 323-12, Table 5.

**334-3.2.4 Gyratory Compaction:** Compact the design mixture in accordance with AASHTO T 312-12, with the following exception: use the number of gyrations at  $N_{\text{design}}$  as defined in Table 334-2. Measure the inside diameter of gyratory molds in accordance with AASHTO T 312-12.

Table 334-2 Gyratory Compaction Requirements	
Traffic Level	$N_{\text{design}}$ Number of Gyrations
A	50
B	65
C	75
D	100
E	100

**334-3.2.5 Design Criteria:** Meet the requirements for nominal maximum aggregate size as defined in AASHTO M 323-12, as well as for relative density, VMA, VFA, and dust-to-binder ratio as specified in AASHTO M 323-12, Table 6.  $N_{\text{initial}}$  and  $N_{\text{maximum}}$  requirements are not applicable.

**334-3.2.6 Moisture Susceptibility:**

1. For Traffic Level A and B mixtures, use a liquid anti-strip additive, at a rate of 0.5% by weight of the asphalt binder. The anti-strip additive must be listed on the APL. Other rates of anti-strip additive may be used upon approval of the Engineer.

2. For Traffic Level C through E mixtures, test 4 inch specimens in accordance with FM 1-T 283. Provide a mixture having a retained tensile strength ratio of at least 0.80 and a minimum tensile strength (unconditioned) of 100 psi. If necessary, add a liquid anti-stripping agent and/or hydrated lime (meeting the requirements of Section 337) in order to meet these criteria. The anti-strip additive must be listed on the APL.

**334-3.2.7 Additional Information:** In addition to the requirements listed above, provide the following information with each proposed mix design submitted for verification:

1. The design traffic level and the design number of gyrations ( $N_{\text{design}}$ ).
2. The source and description of the materials to be used.
3. The Department source number and the Department product code of the aggregate components furnished from a Department approved source.
4. The gradation and proportions of the raw materials as intended to be combined in the paving mixture. The gradation of the component materials shall be representative of the material at the time of use. Compensate for any change in aggregate gradation caused by handling and processing as necessary.
5. A single percentage of the combined mineral aggregate passing each specified sieve. Degradation of the aggregate due to processing (particularly material passing the No. 200 sieve) should be accounted for and identified.

6. The bulk specific gravity ( $G_{sb}$ ) value for each individual aggregate and RAP component, as identified in the Department's aggregate control program.

7. A single percentage of asphalt binder by weight of total mix intended to be incorporated in the completed mixture, shown to the nearest 0.1%.

8. A target temperature for the mixture at the plant (mixing temperature) and a target temperature for the mixture at the roadway (compaction temperature) in accordance with 320-6.3. Do not exceed a target temperature of 340°F for High Polymer asphalt binder, 330°F for PG 76-22 asphalt binders, and 315°F for unmodified asphalt binders.

9. Provide the physical properties achieved at four different asphalt binder contents. One of which must be at the optimum asphalt content, and must conform to all specified physical requirements.

10. The name of the Construction Training Qualification Program (CTQP) Qualified Mix Designer.

11. The ignition oven calibration factor.

12. The warm mix technology, if used.

**334-3.3 Mix Design Revisions:** During production, the Contractor may request a target value revision to a mix design, subject to meeting the following requirements: the target change falls within the limits defined in Table 334-3, appropriate data exists demonstrating that the mix complies with production air voids specification criteria, and the mixture gradation meets the basic gradation requirements defined in 334-3.2.2.

Table 334-3 Limits for Potential Adjustments to Mix Design Target Values	
Characteristic	Limit from Original Mix Design
No. 8 sieve and Coarser	± 5.0%
No. 16 sieve	± 4.0%
No. 30 sieve	± 4.0%
No. 50 sieve	± 3.0%
No. 100 sieve	± 3.0%
No. 200 sieve	± 1.0%
Asphalt Binder Content <sup>(1)</sup>	± 0.3%
Each Component of Aggregate Blend <sup>(2)</sup>	± 5.0 %
<sup>(1)</sup> Reductions to the asphalt binder content will not be permitted if the VMA during production is lower than 1.0% below the design criteria.	
<sup>(2)</sup> Revisions to FC-5 mixtures to be determined by the Engineer.	

Submit all requests for revisions to mix designs, along with supporting documentation, to the Engineer. In order to expedite the revision process, the request for revision or discussions on the possibility of a revision may be made verbally, but must be followed up by a written request. The verified mix design will remain in effect until the Engineer authorizes a change. In no case will the effective date of the revision be established earlier than the date of the first communication between the Contractor and the Engineer regarding the revision.

A new design mix will be required if aggregate sources change, or for any substitution of an aggregate product with a different aggregate code, unless approved by the Engineer.

### **334-4 Producer Process Control (PC).**

Assume full responsibility for controlling all operations and processes such that the requirements of these Specifications are met at all times. Perform any tests necessary at the plant and roadway for process control purposes. Enter all PC test data into the Department's database. The Engineer will not use these test results in the acceptance payment decision.

Address in the Producer QC Plan how PC failures will be handled. When a PC failure occurs, investigate, at a minimum, the production process, testing equipment and/or sampling methods to determine the cause of the failure, and make any necessary changes to assure compliance with these Specifications. Obtain a follow up sample immediately after corrective actions are taken to assess the adequacy of the corrections. In the event the follow-up PC sample also fails to meet Specification requirements, cease production of the asphalt mixture until the problem is adequately resolved to the satisfaction of the QC Manager.

### **334-5 Acceptance of the Mixture.**

**334-5.1 General:** The mixture will be accepted at the plant with respect to gradation (P<sub>-8</sub> and P<sub>-200</sub>), asphalt content (P<sub>b</sub>), and volumetrics (volumetrics is defined as air voids at N<sub>design</sub>). The mixture will be accepted on the roadway with respect to density of roadway cores. Acceptance will be on a LOT by LOT basis (for each mix design) based on tests of random samples obtained within each subplot taken at a frequency of one set of samples per subplot. A roadway LOT and a plant production LOT shall be the same. Acceptance of the mixture will be based on Contractor QC test results that have been verified by the Department.

**334-5.1.1 Sampling and Testing Requirements:** Obtain the samples in accordance with FM 1-T 168. Obtain samples at the plant of a sufficient quantity to be split into three smaller samples; one for QC, one for Verification testing and one for Resolution testing; each sample at approximately 35 pounds. The split samples for Verification testing and Resolution testing shall be reduced in size and stored in three boxes each. The approximate size of each box must be 12 inches x 8 inches x 4 inches. Provide, label and safely store sample boxes in a manner agreed upon by the Engineer for future testing.

The asphalt content of the mixture will be determined in accordance with FM 5-563. The gradation of the recovered aggregate will be determined in accordance with FM 1-T 030. Volumetric testing will be in accordance with AASHTO T 312-12 and FM 1-T 209. Prior to testing volumetric samples, condition the test-sized sample for one hour, plus or minus five minutes, at the target roadway compaction temperature in a shallow, flat pan, such that the mixture temperature at the end of the one hour conditioning period is within plus or minus 20°F of the roadway compaction temperature. Test for roadway density in accordance with FM 1-T 166.

**334-5.1.2 Acceptance Testing Exceptions:** When the total combined quantity of hot mix asphalt for the project, as indicated in the Plans for Type SP and Type FC mixtures only, is less than 2000 tons, the Engineer will accept the mix on the basis of visual inspection. The Engineer may require the Contractor to run process control tests for informational purposes, as defined in 334-4, or may run independent verification tests to determine the acceptability of the material.

Density testing for acceptance will not be performed on widening strips or shoulders with a width of 5 feet or less, open-graded friction courses, variable thickness overbuild courses, leveling courses, any asphalt layer placed on subgrade (regardless of type), miscellaneous asphalt pavement, shared use paths, crossovers, gore areas, or any course with a specified thickness less than 1 inch or a specified spread rate that converts to less than 1 inch as

described in 334-1.4. Density testing for acceptance will not be performed on asphalt courses placed on bridge decks or approach slabs; compact these courses in static mode only per the requirements of 330-7.7. In addition, density testing for acceptance will not be performed on the following areas when they are less than 500 feet (continuous) in length: turning lanes, acceleration lanes, deceleration lanes, shoulders, parallel parking lanes or ramps. Do not perform density testing for acceptance in situations where the areas requiring density testing is less than 50 tons within a subplot.

Density testing for acceptance will not be performed in intersections. The limits of the intersection will be from stop bar to stop bar for both the mainline and side streets. A random core location that occurs within the intersection shall be moved forward or backward from the intersection at the direction of the Engineer.

Where density testing for acceptance is not required, compact these courses (with the exception of open-graded friction courses) in accordance with the rolling procedure (equipment and pattern) as approved by the Engineer or with Standard Rolling Procedure as specified in 330-7.2. In the event that the rolling procedure deviates from the procedure approved by the Engineer, or the Standard Rolling Procedure, placement of the mix shall be stopped.

The density pay factor (as defined in 334-8.2) for areas not requiring density testing for acceptance will be paid at the same density pay factor as for the areas requiring density testing within the same LOT. If the entire LOT does not require density testing for acceptance, the LOT will be paid at a density pay factor of 1.00.

**334-5.2 Full LOTs:** Each LOT will be defined (as selected by the Contractor prior to the start of the LOT) as either (1) 2,000 tons, with each LOT subdivided into four equal sublots of 500 tons each, or (2) 4,000 tons, with each LOT subdivided into four equal sublots of 1,000 tons each. As an exception to this, the initial LOT of all new mix designs shall be defined as 2,000 tons, subdivided into four equal sublots of 500 tons each. Before the beginning of a LOT, the Engineer will develop a random sampling plan for each subplot and direct the Contractor on sample points, based on tonnage, for each subplot during construction.

**334-5.3 Partial LOTs:** A partial LOT is defined as a LOT size that is less than a full LOT. A partial LOT may occur due to the following:

1. The completion of a given mix type or mix design on a project.
2. Closure of the LOT due to time. LOTs will be closed 30 calendar days after the start of the LOT. Time periods other than 30 calendar days may be used if agreed to by both the Engineer and the Contractor, but under no circumstances shall the LOT be left open longer than 60 days.
3. A LOT is terminated per 334-5.4.4.

All partial LOTs will be evaluated based on the number of tests available, and will not be redefined. If a LOT is closed before the first plant random sample is obtained, then the LOT will be visually accepted by the Engineer and the LOT pay factor will be 1.00.

**334-5.4 QC Sampling and Testing:** Obtain all samples randomly as directed by the Engineer.

Should the Engineer determine that the QC requirements are not being met or that unsatisfactory results are being obtained, or should any instances of falsification of test data occur, acceptance of the Producer's QC Plan will be suspended and production will be stopped.

**334-5.4.1 Lost or Missing Verification/Resolution Samples:** In the event that any of the Verification and/or Resolution asphalt mixture samples that are in the custody of the



Contractor are lost, damaged, destroyed, or are otherwise unavailable for testing, the minimum possible pay factor for each quality characteristic as described in 334-8.2 will be applied to the entire LOT in question, unless called for otherwise by the Engineer. Specifically, if the LOT in question has more than two sublots, the pay factor for each quality characteristic will be 0.55. If the LOT has two or less sublots, the pay factor for each quality characteristic will be 0.80. If only the roadway cores are lost, damaged, destroyed, or are otherwise unavailable for testing, then the minimum possible pay factor for density will be applied to the entire LOT in question. In either event, the material in question will also be evaluated in accordance with 334-5.9.5.

If any of the Verification and/or Resolution samples that are in the custody of the Department are lost, damaged, destroyed or are otherwise unavailable for testing, the corresponding QC test result will be considered verified, and payment will be based upon the Contractor's data.

**334-5.4.2 Plant Sampling and Testing Requirements:** Obtain one random sample of mix per subplot in accordance with 334-5.1.1 as directed by the Engineer. Test the QC split sample for gradation, asphalt binder content and volumetrics in accordance with 334-5.1.1. Complete all QC testing within one working day from the time the samples were obtained.

**334-5.4.3 Roadway Sampling and Testing Requirements:** Obtain five 6 inch diameter roadway cores within 24 hours of placement at random locations as directed by the Engineer within each subplot. Test these QC samples for density ( $G_{mb}$ ) in accordance with 334-5.1.1. Obtain a minimum of three cores per subplot at random locations as identified by the Engineer in situations where the subplot/LOT was closed or terminated before the random numbers were reached or where it is impractical to cut five cores per subplot. Do not obtain cores any closer than 12 inches from an unsupported edge. The Engineer may adjust randomly generated core locations for safety purposes or as the Engineer deems necessary. Do not perform density testing for acceptance in a subplot if the plant random sample for that subplot has not been obtained. Maintain traffic during the coring operation; core the roadway, patch the core holes (within three days of coring); and trim the cores to the proper thickness prior to density testing.

Density for the subplot shall be based on the average value for the cores cut from the subplot with the target density being a percentage of the maximum specific gravity ( $G_{mm}$ ) of the subplot, as defined in the Contract. Once the average density of a subplot has been determined, do not retest the samples unless approved by the Engineer. Ensure proper handling and storage of all cores until the LOT in question has been accepted.

**334-5.4.4 Individual Test Tolerances for QC Testing:** Terminate the LOT if any of the following QC failures occur:

1. An individual test result of a subplot for air voids does not meet the requirements of Table 334-4,
2. The average subplot density does not meet the requirements of Table 334-4,
3. Two consecutive test results within the same LOT for gradation or asphalt binder content do not meet the requirements of Table 334-4,

When a LOT is terminated due to a QC failure, stop production of the mixture until the problem is resolved to the satisfaction of the QC Manager and/or Asphalt Plant Level II technician responsible for the decision to resume production after a QC failure, as identified in Section 105. In the event that it can be demonstrated that the problem can immediately be or already has been resolved, it will not be necessary to stop production. When a LOT is terminated, make all necessary changes to correct the problem. Do not resume production

until appropriate corrections have been made. Prior to resuming production, inform the Engineer of the problem and corrections made to correct the problem. After resuming production, sample and test the material to verify that the changes have corrected the problem. Summarize this information and provide it to the Engineer prior to the end of the work shift when production resumes.

In the event that a QC failure is not addressed as defined above, the Engineer's approval will be required prior to resuming production after any future QC failures.

Address any material represented by a failing test result, as defined above in this subarticle, in accordance with 334-5.9.5. Any LOT terminated under this subarticle will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for all quality characteristics and will include all material placed up to the point when the LOT was terminated.

In the event that a  $G_{mm}$  test result differs by more than 0.040 from the mix design  $G_{mm}$ , investigate the causes of the discrepancy and report the findings and proposed actions to the Engineer.

Table 334-4 Master Production Range	
Characteristic	Tolerance <sup>(1)</sup>
Asphalt Binder Content (%)	Target $\pm 0.55$
Passing No. 200 Sieve (%)	Target $\pm 1.50$
Air Voids (%)	2.30 – 6.00
Density (minimum % $G_{mm}$ ) <sup>(2)</sup>	89.50
(1) Tolerances for sample size of $n = 1$ from the verified mix design	
(2) Based on an average of 5 randomly located cores	

**334-5.5 Verification Testing:** In order to determine the validity of the Contractor's QC test results prior to their use in the Acceptance decision, the Engineer will run verification tests.

**334-5.5.1 Plant Testing:** At the completion of each LOT, the Engineer will test a minimum of one Verification split sample randomly selected from the LOT. Results of the testing and analysis for the LOT will be made available to the Contractor within one working day from the time the LOT is completed. Verification samples shall be reheated at the target roadway compaction temperature for 1-1/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. In lieu of the 1-1/2 hours reheating procedure, the mixture may be reheated to within plus or minus 20°F of the roadway compaction temperature using a microwave oven. Stir the mixture as necessary during the reheating process to maintain temperature uniformity. Subsequently, condition and test the mixture as described in 334-5.1.1.

The Verification test results will be compared with the QC test results based on the between-laboratory precision values shown in Table 334-5.

Table 334-5 Between-Laboratory Precision Values	
Property	Maximum Difference
$G_{mm}$	0.016
$G_{mb}$ (gyratory compacted samples)	0.022
$G_{mb}$ (roadway cores)	0.014



Table 334-5 Between-Laboratory Precision Values	
Property	Maximum Difference
P <sub>b</sub>	0.44%
P <sub>-200</sub>	FM 1-T 030 (Figure 2)
P <sub>-8</sub>	FM 1-T 030 (Figure 2)

If all of the specified mix characteristics compare favorably, then the LOT will be accepted, with payment based on the Contractor's QC test data for the LOT.

If any of the results do not compare favorably, then the Resolution samples from the LOT will be sent to the Resolution laboratory for testing, as described in 334-5.6.

**334-5.5.2 Roadway Testing:** At the completion of each LOT, the Engineer will determine the density ( $G_{mb}$ ) of each core (previously tested by QC) as described in 334-5.1.1 from the same subplot as the plant samples. For situations where roadway density is not required for the random subplot chosen, then another subplot shall be randomly chosen for roadway density cores only. Results of the testing and analysis for the LOT will be made available to the Contractor within one working day from the time the LOT is completed.

The individual Verification test results will be compared with individual QC test results by the Engineer based on the between-laboratory precision values given in Table 334-5.

If each of the core test results compare favorably, then the LOT will be accepted with respect to density, with payment based on the Contractor's QC test data for the LOT.

If any of the results do not compare favorably, then the core samples from the LOT will be sent to the Resolution laboratory for testing as specified in 334-5.6.

### **334-5.6 Resolution System:**

**334-5.6.1 Plant Samples:** In the event of an unfavorable comparison between the Contractor's QC test results and the Engineer's Verification test results on any of the properties identified in Table 334-5, the Resolution laboratory will test all of the split samples from the LOT for only the property (or properties) in question. Resolution samples shall be reheated at the target roadway compaction temperature for 1-1/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. In lieu of the 1-1/2 hours reheating procedure, the mixture may be reheated to within plus or minus 20°F of the roadway compaction temperature using a microwave oven. Stir the mixture as necessary during the reheating process to maintain temperature uniformity. Subsequently, condition and test the mixture as described in 334-5.1.1.

**334-5.6.2 Roadway Samples:** In the event of an unfavorable comparison between the Contractor's QC test data and the Engineer's Verification test data on the density results, the Resolution laboratory will test all of the cores from the LOT. Testing will be as described in 334-5.1.1.

**334-5.6.3 Resolution Determination:** The Resolution test results (for the property or properties in question) will be compared with the QC test results based on the between-laboratory precision values shown in Table 334-5.

If the Resolution test results compare favorably with all of the QC results, then acceptance and payment for the LOT will be based on the QC results, and the Department

will bear the costs associated with Resolution testing. No additional compensation, either monetary or time, will be made for the impacts of any such testing.

If the Resolution test results do not compare favorably with all of the QC results, then acceptance and payment for the LOT will be based on the Resolution test data for the LOT, and the costs of the Resolution testing will be deducted from monthly estimates. No additional time will be granted for the impacts of any such testing.

In addition, the material failure requirements of 334-5.4.4 apply to the Resolution test data. Address any material represented by the failing test results in accordance with 334-5.9.5. For this situation, the LOT will be limited to a maximum Pay Factor of 1.00 (as defined in 334-8.2) for all quality characteristics.

In the event of an unfavorable comparison between the Resolution test results and QC test results, make the necessary adjustments to assure that future comparisons are favorable.

### **334-5.7 Independent Verification (IV) Testing:**

**334-5.7.1 Plant:** The Contractor shall provide sample boxes and take samples as directed by the Engineer for IV testing. Obtain enough material for three complete sets of tests (two samples for IV testing by the Engineer and one sample for testing by the Contractor). If agreed upon by both the Engineer and the Contractor, only one sample for IV testing by the Engineer may be obtained. IV samples will be reheated at the target roadway compaction temperature for 1-1/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. The Contractor's split sample, if tested immediately after sampling, shall be reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. If the Contractor's sample is not tested immediately after sampling, then the sample shall be reheated at the target roadway compaction temperature for 1-1/2 hours, plus or minus 5 minutes, reduced to the appropriate testing size, and conditioned and tested as described in 334-5.1.1. For the IV and Contractor's samples, in lieu of the 1-1/2 hours reheating procedure, the mixture may be reheated to within plus or minus 20°F of the roadway compaction temperature using a microwave oven. Stir the mixture as necessary during the reheating process to maintain temperature uniformity. Subsequently, condition and test the mixture as described in 334-5.1.1. The Contractor's test results shall be provided to the Engineer within one working day from the time the sample was obtained.

If any of the IV test results do not meet the requirements of Table 334-4, then a comparison of the IV test results and the Contractor's test results, if available, will be made. If a comparison of the IV test results and the Contractor's test results meets the precision values of Table 334-5 for the material properties in question, or if the Contractor's test results are not available, then the IV test results are considered verified and the Contractor shall cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Address any material represented by the failing test results in accordance with 334-5.9.5.

If a comparison of the IV test results and the Contractor's test results does not meet the precision values of Table 334-5 for the material properties in question, then the second IV sample shall be tested by the Engineer for the material properties in question. If a comparison between the first and second IV test results does not meet the precision values of Table 334-5 for the material properties in question, then the first IV test results are considered unverified for the material properties in question and no action shall be taken.

If a comparison between the first and second IV test results meets the precision values of Table 334-5 for the material properties in question, then the first IV sample is considered verified and the Contractor shall cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Address any material represented by the failing test results in accordance with 334-5.9.5.

The Engineer has the option to use the IV sample for comparison testing as specified in 334-6.

**334-5.7.2 Roadway:** Obtain five 6 inch diameter roadway cores within 24 hours of placement, as directed by the Engineer, for IV testing. In situations where it is impractical to cut five cores per subplot, obtain a minimum of three cores per subplot at random locations, as identified by the Engineer. These independent cores will be obtained from the same LOTs and sublots as the Independent Verification Plant samples, or as directed by the Engineer. The density of these cores will be obtained as described in 334-5.1.1. If the average of the results for the subplot does not meet the requirements of Table 334-4 for density, then a comparison of the IV Gmm test results and the Contractor's Gmm test results, if available, will be made in accordance with the procedure provided in 334-5.7.1. Address any material represented by the failing test results in accordance with 334-5.9.5.

**334-5.8 Surface Tolerance:** The asphalt mixture will be accepted on the roadway with respect to surface tolerance in accordance with the applicable requirements of 330-9.

**334-5.9 Minimum Acceptable Quality Levels:**

**334-5.9.1 PFs Below 0.90:** In the event that an individual pay factor for any quality characteristic of a LOT falls below 0.90, take steps to correct the situation and report the actions to the Engineer. In the event that the pay factor for the same quality characteristic for two consecutive LOTs is below 0.90, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Actions taken must be approved by the Engineer before production resumes.

**334-5.9.2 CPFs Less Than 0.90 and Greater Than or Equal to 0.80:** If the composite pay factor for the LOT is less than 0.90 and greater than or equal to 0.80, cease production of the asphalt mixture until the problem is adequately resolved (to the satisfaction of the Engineer), unless it can be demonstrated to the satisfaction of the Engineer that the problem can immediately be (or already has been) resolved. Actions taken must be approved by the Engineer before production resumes.

**334-5.9.3 CPFs Less Than 0.80 and Greater Than or Equal to 0.75:** If the CPF for the LOT is less than 0.80 and greater than or equal to 0.75, address the defective material in accordance with 334-5.9.5.

**334-5.9.4 CPFs Less Than 0.75:** If the CPF for the LOT is less than 0.75, remove and replace the defective LOT at no cost to the Department, or as approved by the Engineer.

**334-5.9.5 Defective Material:** Assume responsibility for removing and replacing all defective material placed on the project, at no cost to the Department.

As an exception to the above and upon approval of the Engineer, obtain an engineering analysis in accordance with Section 6 by an independent laboratory (as approved by

the Engineer) to determine the disposition of the material. The engineering analysis must be signed and sealed by a Professional Engineer licensed in the State of Florida.

The Engineer may determine that an engineering analysis is not necessary or may perform an engineering analysis to determine the disposition of the material.

Any material that remains in place will be accepted with a CPF as determined by 334-8, or as determined by the Engineer.

If the defective material is due to a gradation, asphalt binder content or density failure, upon the approval of the Engineer the Contractor may perform delineation tests on roadway cores in lieu of an engineering analysis to determine the limits of the defective material that may require removal and replacement. Prior to any delineation testing, all sampling locations shall be approved by the Engineer. All delineation sampling and testing shall be monitored and verified by the Engineer. For materials that are defective due to air voids, an engineering analysis is required.

When evaluating defective material by engineering analysis or delineation testing, at a minimum, evaluate all material located between passing QC, PC or IV test results. Exceptions to this requirement shall be approved by the Engineer.

### **334-6 Comparison Testing.**

At the start of the project (unless waived by the Engineer) and at other times as determined necessary by the Engineer, provide split samples for comparison testing with the Engineer. The purpose of these tests is to verify that the testing equipment is functioning properly and that the testing procedures are being performed correctly. In the event that the Engineer determines that there is a problem with the Contractor's testing equipment and/or testing procedures, immediately correct the problem to the Engineer's satisfaction. In the event that the problem is not immediately corrected, cease production of the asphalt mixture until the problem is adequately resolved to the satisfaction of the Engineer.

If so agreed to by both the Contractor and the Engineer, the split sample used for comparison testing may also be used for the QC sample. The split sample used for comparison testing must also meet the requirements for IV testing described in 334-5.7.

### **334-7 Method of Measurement.**

For the work specified under this Section (including the pertinent provisions of Sections 320 and 330), the quantity to be paid for will be the weight of the mixture, in tons. For each pay item, excluding overbuild, the pay quantity will be based on the quantity placed on the project, limited to 105% of the adjusted plan quantity for the pay item. The adjusted plan quantity will be determined by dividing the pay item's original plan quantity (including any Engineer approved quantity revisions) by the design  $G_{mm}$  stated in 334-1.4, then multiplying it by the tonnage-weighted average  $G_{mm}$  of the mixes used for the pay item.

The bid price for the asphalt mix will include the cost of the liquid asphalt and the tack coat application as directed in 300-8. There will be no separate payment or unit price adjustment for the asphalt binder material in the asphalt mix. For the calculation of unit price adjustments of bituminous material, the average asphalt content will be based on the percentage specified in 9-2.1.2. The weight will be determined as provided in 320-3.2 (including the provisions for the automatic recordation system).

Prepare and submit a Certification of Quantities to the Engineer in accordance with 9-2.1.2.

### 334-8 Basis of Payment.

**334-8.1 General:** Price and payment will be full compensation for all the work specified under this Section (including the applicable requirements of Sections 320 and 330).

For materials accepted in accordance with 334-5, based upon the quality of the material, a pay adjustment will be applied to the bid price of the material as determined on a LOT by LOT basis. The pay adjustment will be assessed by calculating a Pay Factor for the following individual quality characteristics: pavement density, air voids, asphalt binder content, and the percentage passing the No. 200 and No. 8 sieves. The pay adjustment will be computed by multiplying a Composite Pay Factor (CPF) for the LOT by the bid price per ton.

#### 334-8.2 Pay Factors:

**334-8.2.1 Partial LOTs:** For Partial LOTs where no random sample is obtained due to insufficient tonnage, a CPF of 1.00 shall be applied.

**334-8.2.2 Two or Less Sublot Test Results:** In the event that two or less sublot test results are available for a LOT, Pay Factors will be determined based on Table 334-6, using the average of the accumulated deviations from the target value. (Deviations are absolute values with no plus or minus signs.) Use the 1-Test column when there is only one sublot test result and use the 2-Tests column when there are two sublots.

Table 334-6 Small Quantity Pay Table		
Pay Factor	1 Sublot Test Deviation	2 Sublot Test Average Deviation
Asphalt Binder Content		
1.05	0.00-0.23	0.00-0.16
1.00	0.24-0.45	0.17-0.32
0.90	0.46-0.55	0.33-0.39
0.80	>0.55	>0.39
No. 8 Sieve		
1.05	0.00-2.25	0.00-1.59
1.00	2.26-4.50	1.60-3.18
0.90	4.51-5.50	3.19-3.89
0.80	>5.50	>3.89
No. 200 Sieve		
1.05	0.00-0.55	0.00-0.39
1.00	0.56-1.10	0.40-0.78
0.90	1.11-1.50	0.79-1.06
0.80	>1.50	>1.06
Air Voids		
1.05	0.00-0.50	0.00-0.35
1.00	0.51-1.00	0.36-0.71
0.90	1.01-1.70	0.72-1.20
0.80	1.71-2.00	1.21-1.41
0.70	2.01-2.50	1.42-1.77
0.55	>2.50	>1.77
Density <sup>(1)</sup>		
1.05	0.00-0.50	0.00-0.35

Table 334-6 Small Quantity Pay Table		
Pay Factor	1 Sublot Test Deviation	2 Sublot Test Average Deviation
1.00	0.51-1.00	0.36-0.71
0.95	1.01-2.00	0.72-1.41
0.90	2.01-3.00	1.42-2.12
0.80	>3.00	>2.12

(1). Each density test result is the average of five cores. The target density is 93.00 percent of  $G_{mm}$  (92.00 percent when compaction is limited to the static mode or for layers specified to be one inch thick). When compaction is limited to the static mode, no vibratory mode in the vertical direction will be allowed. Other vibratory modes will be allowed, if approved by the Engineer. In this case, the target density is 92.00 percent of  $G_{mm}$ .

**334-8.2.3 Three or More Sublot Test Results:** When three or more sublot test results are available for a LOT, the variability-unknown, standard deviation method will be used to determine the estimated percentage of the LOT that is within the specification limits. The number of significant figures used in the calculations will be in accordance with requirements of AASHTO R11-06, Absolute Method.

**334-8.2.3.1 Percent Within Limits:** The percent within limits (PWL) and Pay Factors for the LOT will be calculated as described below. Variables used in the calculations are as follows:

x	= individual test value (sublot)
n	= number of tests (sublots)
s	= sample standard deviation
$\Sigma(x^2)$	= summation of squares of individual test values
$(\Sigma x)^2$	= summation of individual test values squared
$Q_U$	= upper quality index
USL	= upper specification limit (target value plus upper specification limit from Table 334-7)
$Q_L$	= lower quality index
LSL	= lower specification limit (target value minus lower specification limit from Table 334-7)
$P_U$	= estimated percentage below the USL
$P_L$	= estimated percentage above the LSL

1. Calculate the arithmetic mean  $(\bar{X})$  of the test values:

$$\bar{X} = \frac{\sum x}{n}$$

2. Calculate the sample standard deviation (s):

$$s = \sqrt{\frac{n \sum (x^2) - (\sum x)^2}{n(n-1)}}$$

3. Calculate the upper quality index ( $Q_U$ ):

$$Q_U = \frac{USL - \bar{X}}{s}$$

4. Calculate the lower quality index ( $Q_L$ ):

$$Q_L = \frac{\bar{X} - LSL}{s}$$

5. From Table 334-8, determine the percentage of work below the USL ( $P_U$ ).

6. From Table 334-8, determine percentage of work above the LSL ( $P_L$ ) Note: If USL or LSL is not specified; percentages within (USL or LSL) will be 100.

7. If  $Q_U$  or  $Q_L$  is a negative number, then calculate the percent within limits for  $Q_U$  or  $Q_L$  as follows: enter Table 334-8 with the positive value of  $Q_U$  or  $Q_L$  and obtain the corresponding percent within limits for the proper sample size. Subtract this number from 100.00. The resulting number is the value to be used in the next step (Step 8) for the calculation of quality level.

8. Calculate the percent within limits ( $PWL$ ) = ( $P_U + P_L$ ) - 100

9. Calculate the Pay Factor (PF) for each quality characteristic using the equation given in 334-8.2.3.2.

Table 334-7 Specification Limits	
Quality Characteristic	Specification Limits
Passing No. 8 sieve ( percent)	Target $\pm$ 3.1
Passing No. 200 sieve ( percent)	Target $\pm$ 1.0
Asphalt Content ( percent)	Target $\pm$ 0.40
Air Voids ( percent)	4.00 $\pm$ 1.20
Density, vibratory mode ( percent of $G_{mm}$ ):	93.00 + 2.00, - 1.20
Density, static mode ( percent of $G_{mm}$ ):	92.00 + 3.00, - 1.50 <sup>(1)</sup>
(1): No vibratory mode in the vertical direction will be allowed. Other vibratory modes will be allowed, if approved by the Engineer.	

Table 334-8 Percent Within Limits				
Quality Index	Percent within Limits for Selected Sample Size			
	n = 3	n = 4	n = 5	n = 6
0.00	50.00	50.00	50.00	50.00
0.05	51.38	51.67	51.78	51.84
0.10	52.76	53.33	53.56	53.67
0.15	54.15	55.00	55.33	55.50
0.20	55.54	56.67	57.10	57.32



Table 334-8  
Percent Within Limits

Quality Index	Percent within Limits for Selected Sample Size			
	n = 3	n = 4	n = 5	n = 6
0.25	56.95	58.33	58.87	59.14
0.30	58.37	60.00	60.63	60.94
0.35	59.80	61.67	62.38	62.73
0.40	61.26	63.33	64.12	64.51
0.45	62.74	65.00	65.84	66.27
0.50	64.25	66.67	67.56	68.00
0.55	65.80	68.33	69.26	69.72
0.60	67.39	70.00	70.95	71.41
0.65	69.03	71.67	72.61	73.08
0.70	70.73	73.33	74.26	74.71
0.75	72.50	75.00	75.89	76.32
0.80	74.36	76.67	77.49	77.89
0.85	76.33	78.33	79.07	79.43
0.90	78.45	80.00	80.62	80.93
0.95	80.75	81.67	82.14	82.39
1.00	83.33	83.33	83.64	83.80
1.05	86.34	85.00	85.09	85.18
1.10	90.16	86.67	86.52	86.50
1.15	97.13	88.33	87.90	87.78
1.20	100.00	90.00	89.24	89.01
1.25	100.00	91.67	90.54	90.19
1.30	100.00	93.33	91.79	91.31
1.35	100.00	95.00	92.98	92.37
1.40	100.00	96.67	94.12	93.37
1.45	100.00	98.33	95.19	94.32
1.50	100.00	100.00	96.20	95.19
1.55	100.00	100.00	97.13	96.00
1.60	100.00	100.00	97.97	96.75
1.65	100.00	100.00	98.72	97.42
1.70	100.00	100.00	99.34	98.02
1.75	100.00	100.00	99.81	98.55
1.80	100.00	100.00	100.00	98.99
1.85	100.00	100.00	100.00	99.36
1.90	100.00	100.00	100.00	99.65
1.95	100.00	100.00	100.00	99.85



Table 334-8 Percent Within Limits				
Quality Index	Percent within Limits for Selected Sample Size			
	n = 3	n = 4	n = 5	n = 6
2.00	100.00	100.00	100.00	99.97
2.05	100.00	100.00	100.00	100.00
2.10	100.00	100.00	100.00	100.00
2.15	100.00	100.00	100.00	100.00
2.20	100.00	100.00	100.00	100.00
2.25	100.00	100.00	100.00	100.00
2.30	100.00	100.00	100.00	100.00
2.35	100.00	100.00	100.00	100.00
2.40	100.00	100.00	100.00	100.00
2.45	100.00	100.00	100.00	100.00
2.50	100.00	100.00	100.00	100.00
2.55	100.00	100.00	100.00	100.00
2.60	100.00	100.00	100.00	100.00
2.65	100.00	100.00	100.00	100.00

**334-8.2.3.2 Pay Factors (PF):** Pay Factors will be calculated by using the following equation:

$$\text{Pay Factor} = (55 + 0.5 \times \text{PWL}) / 100$$

The PWL is determined from Step (8) of 334-8.2.3.1.

**334-8.3 Composite Pay Factor (CPF):** A CPF for the LOT will be calculated based on the individual PFs with the following weighting applied: 35% Density (D), 25% Air Voids ( $V_a$ ), 25% asphalt binder content ( $P_b$ ), 10% Passing No. 200 ( $P_{-200}$ ) and 5% Passing No. 8 ( $P_{-8}$ ). Calculate the CPF by using the following formula:

$$\text{CPF} = [(0.350 \times \text{PF } D) + (0.250 \times \text{PF } V_a) + (0.250 \times \text{PF } P_b) + (0.100 \times \text{PF } P_{-200}) + (0.050 \times \text{PF } P_{-8})]$$

Where the PF for each quality characteristic is determined in either 334-8.2.2 or 334-8.2.3, depending on the number of subplot tests. Note that the number after each multiplication will be rounded to the nearest 0.01.

The pay adjustment shall be computed by multiplying the CPF for the LOT by the bid price per ton.

**334-8.4 Payment:** Payment will be made under:

- Item No. 334- 1- Superpave Asphaltic Concrete - per ton.
- Item No. 334- 2- Superpave Fiber Reinforced Asphaltic Concrete - per ton.
- Item No. 334- 3- Asphalt Street Repair (Hamptons) - per square yard.
- Item No. 334- 4- Asphalt Street Repair (Pinetree Trail) - per square yard.
- Item No. 334- 5- Asphalt Street Repair (Cinquez Park Road West) - per square yard.