

## ADDENDUM NO. 2

TO: ALL BIDDERS  
PROJECT: ITB PW 75-19 – JAMES LEE PARK PARKING LOT IMPROVEMENTS  
BID TIME AND DATE: 3:15 PM LOCAL TIME, September 25, 2019 (NO CHANGE)

September 17, 2019

The following items are hereby incorporated into the project manual, procurement documents, contract documents, plans and specifications:

### ITEM NO. 1 – SECTION 00410 BID FORM WITH ATTACHMENTS

The Bid Schedule, pages 00410-3 through 00410-4 has been revised: Changes to Item No. 11 thru Item No. 25. Replace pages 00410-3 through 00410-4 with the revised pages 00410-3 through 00410-4 attached herewith and labeled as Addendum No. 2 in the heading.

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### ITEM NO. 2 – PROJECT DRAWINGS

The following project drawings are revised: Sheet Numbers C-3, C-10 and C-11. Copies of the revised drawings are attached herewith and labeled as Addendum No. 2 in the upper left corner.

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### ITEM NO. 3 – TECHNICAL SPECIFICATIONS

The following Technical Specifications are revised: Section 710 Painted Pavement Markings and Section 711 Thermoplastic Pavement Markings are attached herewith and labeled Addendum No. 2 in the Header.

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### ITEM NO. 4– QUESTIONS RECEIVED AT PRE-BID MEETING AND LATER

Question 1 – On the Bid Tab line item 13 and 14, calls out parking lot striping as 710-1 and 710-2. 710 in the FDOT std is paint. On page C-15 in the plans, the detail for parking lot striping says 711-001 which is thermoplastic. Which way does it need to be?

Answer: The parking lot markings shall be in accordance with FDOT Specification 710 for standard paint, and also in accordance with the FDOT Standard Plans 711-001 which is the standard plan identifying the marking dimensions, spacing, and other dimension criteria. The markings within the right-of-way are required to be thermoplastic and in accordance with FDOT Specification 711. The pay items and quantities have been revised to further clarify the modification between the Base Bid and Additive Alternative #1.

Question 2 – Line item 17 Thermoplastic "Preformed" White Arrow, Can it be Thermoplastic "Standard" White Arrow?

Answer: All White Arrows and Messages shall be thermoplastic and standard, not preformed.

END OF QUESTIONS

RECEIPT OF THIS ADDENDUM SHALL BE ACKNOWLEDGED BY WRITING THIS ADDENDUM NUMBER AND DATE IN THE SPACE PROVIDED ON DOCUMENT 00410-8, 'ADDENDUM ACKNOWLEDGEMENT - ATTACHMENT A.'

/s/ Roy Petrey  
Roy Petrey, P.E.  
Project Manager

<b>BASE BID</b>						
Bid Item No.	Item No.	Item Description	Unit	Bid Quantity	Unit Price	Total Amount
1	101-1	Mobilization - Base	LS	1		
2	102-1	Maintenance of Traffic - Base	LS	1		
3	104-1	Erosion & Pollution Control - Base	LS	1		
4	110-1	Misc Demo (Trees, Guardrail, Sawcutting)	LS	1		
5	160-1	6" Stabilized Subgrade	SY	790		
6	285-1	6" Base Course	SY	730		
7	327-1	Pavement Milling, 1" - Base	SY	1,400		
8	334-1	Bituminous Surface Course - Base	TN	125		
9	520-1	Concrete Modified Type "F" Curb	LF	1,460		
10	522-1	Concrete Sidewalk	SY	52		
11	700-1	Parking Lot Signage	LS	1		
12	710-1	Parking Lot Striping (White) - Base	SF	1,480		
13	710-2	Parking Lot Striping (Yellow) - Base	SF	95		
14	SP-1-1*	Shallow Irrigation Well System	EA	2		
		<b>Subtotal of Base Bid</b>				

\* See Sheet C-10 for Specification and Basis of Payment

Note: Total Base Bid amount shall equal the sum of the totals for Bid Items No. 1 through 14.

<b>ADDITIVE ALTERNATIVE #1</b>						
Bid Item No.	Item No.	Item Description	Unit	Bid Quantity	Unit Price	Total Amt./ Item
15	101-2	Mobilization – Alt	LS	1		
16	102-2	Maintenance of Traffic – Alt	LS	1		
17	327-2	Pavement Milling, 1" – Alt	SY	5,000		
18	334-2	1" Bituminous Surface Course – Alt	TN	275		
19	710-3	Parking Lot Striping (White) – Alt	SF	1270		
20	710-4	Parking Lot Striping (Yellow) – Alt	SF	350		
21	710-5	Parking Lot Striping (Handicap) – Alt	EA	6		
22	711-1	Thermoplastic, Standard, White, Solid, 24" - Alt	LF	60		
23	711-2	Thermoplastic, Standard, Yellow, Solid, 6" - Alt	LF	40		
24	711-3	Thermoplastic, Standard, White, Arrow - Alt	EA	3		
25	711-4	Thermoplastic, Standard, White, Arrow With Message - Alt	EA	3		
<b>Subtotal Additive Alternative #1</b>						

Note: Total Additive Alternative #1 Schedule amount shall equal the sum of the totals for the Bid Items No. 15 through 25.

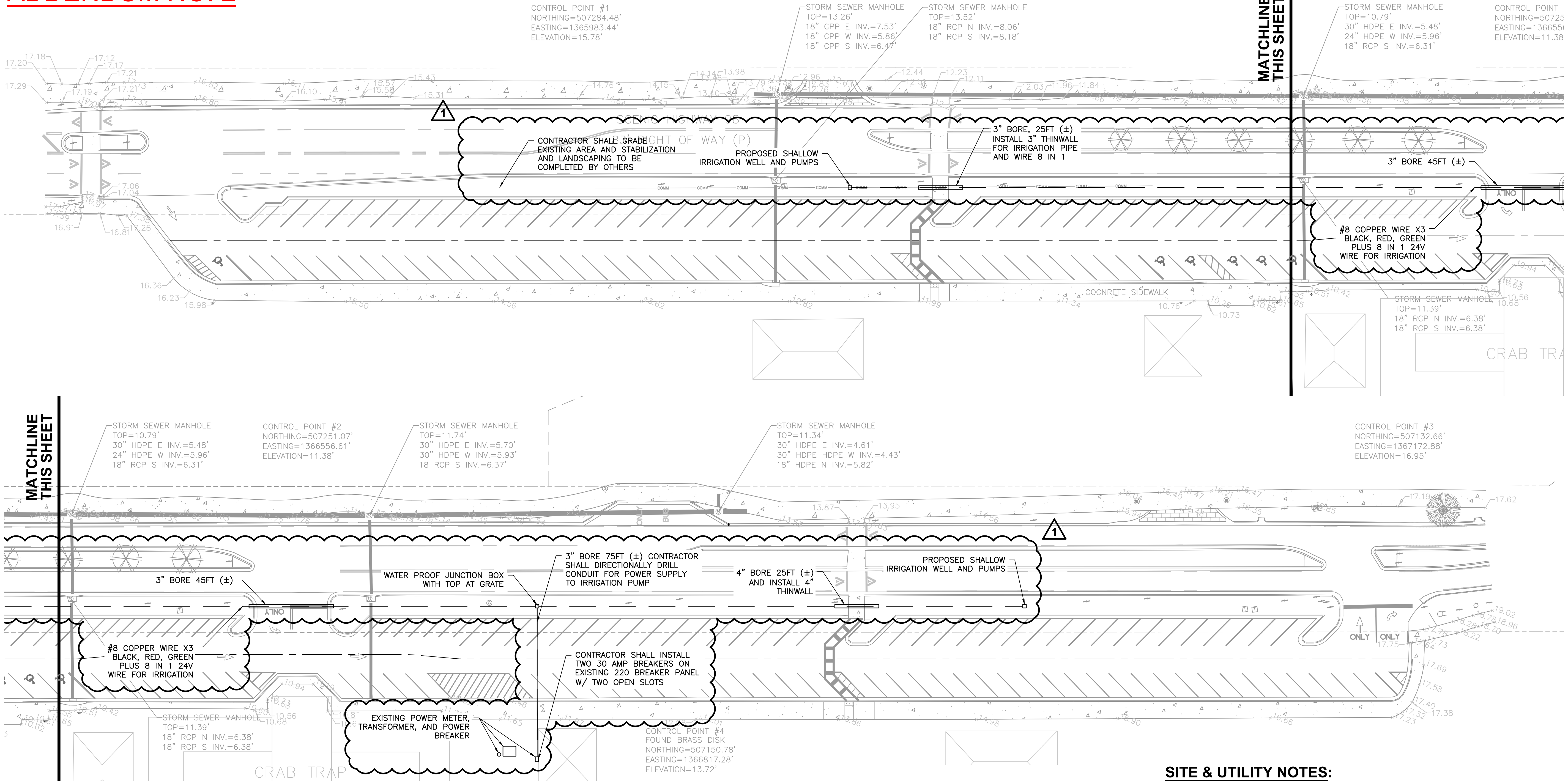
<b>SUMMARY OF COST</b>	
	<b>COST</b>
<b>(A) Subtotal of Base Bid</b>	\$
<b>(B) Subtotal Additive Alternative #1</b>	\$
<b>(C) Total Bid Amount * :</b>	\$

\* The Total Bid Amount (C) shall equal the sum of (A) through (B). The Basis of Award shall be based on the lowest total of either the Base Bid or Total Bid Amount, as determined by the owner based on the availability of funding.





# ADDENDUM NO. 2



### SPECIAL UTILITY NOTE:

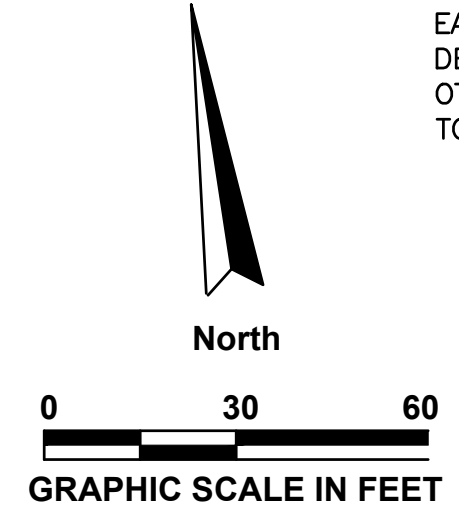
THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE LOCATION OF ALL EXISTING UTILITIES WITHIN THE PROJECT LIMITS. PRIOR TO ANY EXCAVATION OR DEMOLITION, THE CONTRACTOR SHALL PROVIDE A WRITTEN NOTICE (RETURN RECEIPT REQUESTED) TO EACH OF THE UTILITY COMPANIES AFFECTED BY THE PROJECT, ALONG WITH THE VARIOUS DEPARTMENTS OF FLORIDA SUNSHINE ONE CALL AS PRESCRIBED BY STATE LAW. THE CONTRACTOR SHALL PROVIDE THE OWNER AND THE OWNER'S REP WITH A COPY OF THE RECEIPT OF SAID WRITTEN NOTIFICATION TO EACH OF THE UTILITY COMPANIES OR WALTON COUNTY DEPARTMENTS. THIS REQUIREMENT IS IN ADDITION TO ANY OTHER STATE LAWS REGARDING PUBLIC NOTIFICATION PRIOR TO EXCAVATION.

### SPECIFICATION SP-1-1 IRRIGATION WELL NOTES:

- CONTRACTOR TO FURNISH AND INSTALL ALL COMPONENTS FOR A COMPLETELY OPERATIONAL SHALLOW WELL AND IRRIGATION PUMP MEETING THE FOLLOWING MINIMUM REQUIREMENTS:
- 35 GPM AT 120 TOTAL HEAD IN FEET; 1-1/2 HP, 230V, 1PH
  - EQUAL TO STA-RITE HMS SERIES CAST IRON HORIZONTAL MULTI-STAGE CENTRIFUGAL PUMP OR APPROVED EQUAL. PUMP SHALL REST ON A SUITABLY SIZED CONCRETE BASE AND FITTED WITH A FIBERGLASS HOT BOX FOR FREEZE PROTECTION.
  - CONTRACTOR WILL OBTAIN ALL LOCAL PERMITS TO COMPLETE THE WORK INCLUDING THE PERMIT FROM THE NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT TO CONSTRUCT THE SHALLOW WELL. THE COST TO OBTAIN THE PERMITS SHALL BE INCLUDED IN THE LUMP SUM BID FOR THE IRRIGATION WELL.
  - CONDUCTOR FOR WELL SHALL BE SIZED FOR THE RUN AND MAXIMUM LOAD; CONDUCTORS SHALL BE APPROVED FOR THE TYPE OF INSTALLATION. ALL CONDUCTORS SHALL BE CONDUIT.
  - CONTRACTOR TO FURNISH AND INSTALL MOTOR STARTER, IRRIGATION CONTROLLER, AND RAIN SENSOR. THE LOCATION OF THE STARTER AND CONTROLLER SHALL BE AS SPECIFIED BY OWNER AT TIME OF INSTALLATION. CONTROLLER SHALL BE RAINBIRD ESP-ME3 SERIES (4 STATION); RAIN SENSOR SHALL BE RAINBIRD RSDBEX.
  - CONTRACTOR TO LEAVE A MULE TAPE IN ALL INSTALLED CONDUIT FOR USE BY OTHERS.
  - ALL ELECTRICAL WORK SHALL MEET THE REQUIREMENTS OF APPLICABLE NEC AND LOCAL AND STATE BUILDING CODES.
  - IRRIGATION PIPING, VALVES, AND SPRAY HEADS NOT IN CONTRACT.
  - THE LUMP SUM PAYMENT FOR THIS ITEM SHALL BE INCLUSIVE OF ALL LABOR, MATERIAL AND PERMITS FOR A COMPLETE AND OPERATIONAL SHALLOW WELL IRRIGATION PUMP UNDER PAY ITEM SP-1-1.

### SITE & UTILITY NOTES:

- ALL WORK DETAILED IN CONSTRUCTION DRAWINGS SHALL CONFORM TO FDOT STD. INDEXES AND SPECIFICATIONS, LATEST EDITION.
- CONTRACTOR SHALL MAINTAIN PUBLIC ACCESS AT ALL TIMES ALONG ALL PUBLIC RIGHT-OF-WAYS.
- ALL PAVEMENT MARKINGS SHALL CONFORM TO FDOT STD. INDEXES 17346.
- ALL SIGNS AND PLACEMENTS OF SIGNS SHALL CONFORM TO FDOT STD. INDEXES 11860 AND 17302.
- REFER TO STD. INDEXES 600 AND 613 FOR PLACEMENT OF TRAFFIC CONTROL DEVICES.
- ALL DISTURBED AREAS SHALL BE SODDED WITHIN TWO WEEKS AFTER FINAL GRADING IS COMPLETED.
- PAVEMENT SUBGRADE SHALL HAVE ALL UNSUITABLE MATERIALS REMOVED TO A DEPTH OF TWO FEET BELOW TOP OF SUBGRADE, AND 2.5 FEET BEYOND EDGE OF PAVEMENT OR BACK OF CURB. BACKFILL WITH SUITABLE MATERIAL.
- THE SUBGRADE SHALL BE PREPARED IN ACCORDANCE WITH SECTION 160 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
- THE BASE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF THE FLORIDA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS. ALLOWABLE BASE MATERIALS ARE INDICATED ON THE DRAWINGS.
- ALL EXCAVATION AND EMBANKMENT CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 120 OF THE FLORIDA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
- WHERE DAMAGED OR REQUIRED TO BE CUT BY THE CONTRACTOR'S OPERATIONS, SIDEWALKS AND DRIVEWAYS SHALL BE REPAIRED TO CONFORM TO THE EXISTING TYPE OF CONSTRUCTION IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS.
- PROVIDE CONTRACTION JOINTS AT 10' O.C. AND EXPANSION JOINTS AT 50' O.C. ON ALL EXTERIOR SIDEWALKS AND CURBING.
- ALL PERMANENT PAINT STRIPING WITHIN THE RIGHT-OF-WAY SHALL BE THERMO-PLASTIC REFLECTIVE PAINT, AND BE IN ACCORDANCE WITH THE CURRENT EDITION OF THE FDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION. THERMO-PLASTIC PAINT SHALL BE INCIDENTAL TO THE PAVING LOT PAVEMENT MARKING PAY ITEM. NO SEPARATE PAYMENT SHALL BE MADE FOR THERMO-PLASTIC MARKINGS.



**CALL 2 WORKING DAYS BEFORE YOU DIG**

**IT'S THE LAW! DIAL 811** Know what's below. Call before you dig.

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**AVCON, INC.**  
 ENGINEERS & PLANNERS  
 320 BAYSHORE DRIVE, SUITE A  
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 OFFICE: (850) 678-0050  
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NO.	DATE	REVISION	BY

**UTILITY PLAN**  
 90% DESIGN DRAWINGS  
 RELEASE FOR BID

PREPARED FOR  
**JAMES LEE PARK**  
 OKALOOSA COUNTY  
 PUBLIC WORKS

DESIGNED BY: TDN/VMB  
 DRAWN BY: VMB  
 CHECKED BY: TDN  
 APPROVED BY: VCL  
 PROJECT NO: 18.0125.01  
 DATE: AUGUST 2019

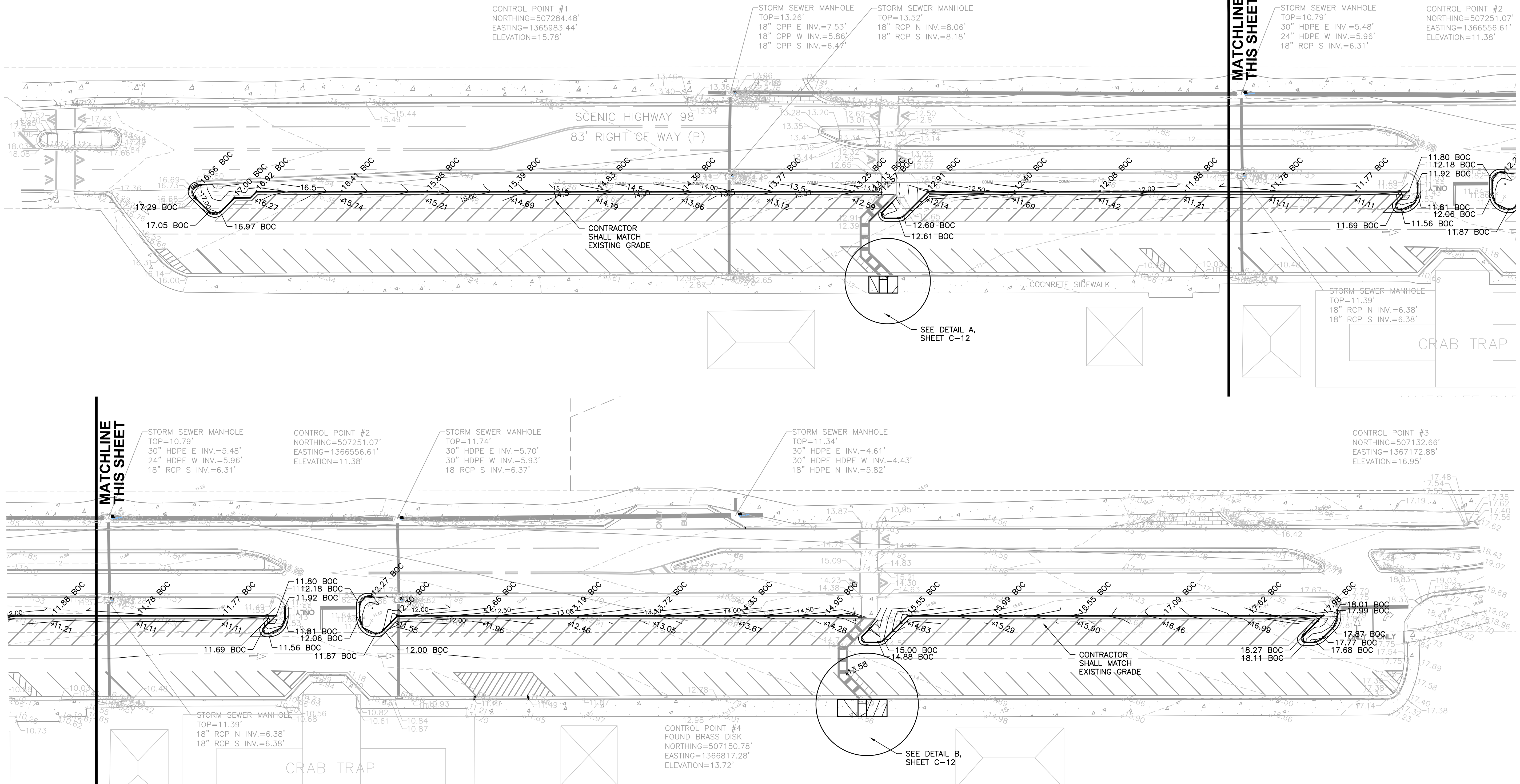
**SHEET NUMBER**  
**C-10**

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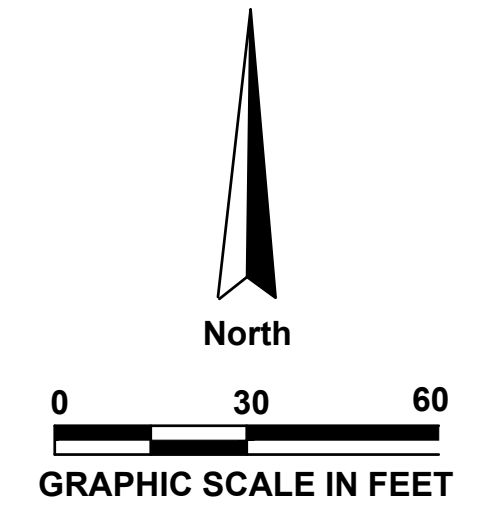


# ADDENDUM NO. 2



- THE OWNER SHALL BE REQUIRED TO PROVIDE ALL NECESSARY OPERATION AND MAINTENANCE ACTIVITIES ASSOCIATED WITH THE PROPOSED STORMWATER POND.
- THE OWNER SHALL BE RESPONSIBLE FOR MAINTAINING AND OPERATION THE STORMWATER INFRASTRUCTURE PROPOSED AS PART OF THIS DEVELOPMENT, AND SHALL NOTIFY THE NWFWD OF COMMENCEMENT OF CONSTRUCTION AND PROVIDE AS-BUILT CERTIFICATION UPON COMPLETION.
- THE PUBLIC WORKS DEPARTMENT AND ENGINEER OF RECORD SHALL INSPECT ALL STORMWATER MANAGEMENT FACILITIES REGARDING CONFORMANCE WITH APPROVED STORMWATER MANAGEMENT PLAN, EROSION, GRADING, RUNOFF CONVEYANCE, AND RETENTION RECOVERY.
- CONTRACTOR SHALL INSTALL SILT FENCE PRIOR TO COMMENCING IN ANY CONSTRUCTION ACTIVITIES AND MAINTAIN SILT FENCE THROUGHOUT CONSTRUCTION AT NO ADDITIONAL COST TO THE OWNER.
- CONTRACTOR SHALL NOTIFY THE ENGINEER IF EROSION CONTROL ISSUES DEVELOP ON-SITE.
- CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION CONTROL MEASURES ON SITE 24 HOURS A DAY THROUGHOUT CONSTRUCTION.
- CONTRACTOR SHALL PROVIDE AND MAINTAIN INLET PROTECTION THROUGHOUT CONSTRUCTION.
- CLEAR AND GRUB TO REMOVE STUMPS, ROOTS, TREES, VEGETATION, ORGANIC MATERIAL, AND OTHER OBSTRUCTIONS TO THE WORK. GRUB OUT ALL ROOTS LARGER THAN 1/4 INCH IN DIAMETER, MATTED ROOTS, AND OTHER ORGANIC MATERIAL AT LEAST 12 INCHES BELOW THE SURFACE WITHIN THE GRADING LIMITS SHOWN ON THE DRAWINGS.
- EXCAVATED MATERIAL THAT IS SUITABLE, AS DETERMINED BY THE ENGINEER, MAY BE USED FOR FILLING AND BACKFILLING. ADDITIONAL MATERIAL, IF NECESSARY, SHALL BE APPROVED BY THE ENGINEER.
- EXCAVATION LIKELY TO DISLOCATE, DAMAGE, OR IMPAIR THE STRENGTH OF OTHER STRUCTURES ALREADY IN PLACE SHALL BE DONE ONLY AFTER ADEQUATE PROTECTION HAS BEEN PROVIDED FOR THE IN-PLACE STRUCTURES.
- STORM DRAINAGE FACILITIES ARE TO BE CONSTRUCTED AS SHOWN ON THE DRAWINGS AND IN ACCORDANCE WITH THE FLORIDA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS
- PROMOTE POSITIVE DRAINAGE TOWARDS SHALLOW WELLS, NO "BIRD BATHS" OR PONDING SHALL BE ACCEPTED.
- ALL INLETS SHALL BE INSTALLED W/ SUMPS IN ACCORDANCE W/ FDOT STND INDEX 201. SUMP SHALL REMAIN DRY DURING NON STORM CONDITIONS.

LEGEND	
---15---	EXISTING CONTOUR
---14.00---	PROPOSED CONTOUR
X	EXISTING SPOT ELEVATION
o	PROPOSED SPOT ELEVATION



NOT FOR CONSTRUCTION

**AVCON, INC.**  
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 FL LICENSE NO.: 64631  
 FBPR CERTIFICATE OF  
 AUTHORIZATION NO. 5057

NO.	DATE	REVISION	BY

**GRADING PLAN**  
 90% DESIGN DRAWINGS  
 RELEASE FOR BID

PREPARED FOR  
**JAMES LEE PARK**  
**OKALOOSA COUNTY**  
**PUBLIC WORKS**

DESIGNED BY: TDN/VMB  
 DRAWN BY: VMB  
 CHECKED BY: TDN  
 APPROVED BY: VCL  
 PROJECT NO: 18.0125.01  
 DATE: AUGUST 2019

**SHEET NUMBER**  
**C-11**

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**SECTION 710**

**PAINTED PAVEMENT MARKINGS**

**710-1 Description.**

Apply painted pavement markings, in accordance with the Contract Documents.

**710-2 Materials.**

Use only materials meeting the following requirements:

Materials for Raised Pavement Markers (RPMs) and Bituminous Adhesive .....	Section 970
Standard Paint .....	971-1 and 971-3
Durable Paint .....	971-1 and 971-4
Glass Spheres.....	971-1 and 971-2

The Engineer will take random samples of all material.

**710-3 Equipment.**

Use equipment that will produce continuous uniform dimensions of pavement markings of varying widths and meet the following requirements:

1. 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.
2. Capable of applying glass spheres to the surface of the completed line by an automatic sphere dispenser attached to the pavement marking 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 that is synchronized with the cut-off of the paint and applies the glass spheres in a manner such that the spheres appear uniform on the entire pavement markings surface.
3. 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:** Remove existing pavement markings, such that scars or traces of removed markings will not conflict with new pavement markings, by a method approved by the Engineer.

Before applying pavement markings, remove any material that would adversely affect the bond of the pavement markings by a method approved by the Engineer.

Apply standard paint to dry surfaces only, and when the ambient air and surface temperature is at least 40°F and rising.

Apply durable paint to dry surfaces only. Do not apply durable paint when the ambient air and surface temperature is below 50°F, relative humidity is above 80% or when the dew point is within 5°F of the ambient air temperature.



Do not apply painted pavement markings when winds are sufficient to cause spray dust.

Apply painted pavement 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. When stencils are used to apply symbols and messages, the areas covered by the stencil reinforcing will not be required to be painted.

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.

Conduct field testing in accordance with FM 5-541. Remove and replace painted pavement markings not meeting the requirements of this Section at no additional cost to the Owner. Apply all pavement markings prior to opening the road to traffic.

**710-4.1.1 Painted Pavement Markings (Final Surface):** On concrete surfaces or newly constructed asphalt, the painted pavement markings (final surface) will include one application of standard paint and one application of Class B RPMs applied to the final surface.

For center line and edge line rumble strip installations where the pavement marking is placed within the grinding, apply a second application of standard paint within 24 hours of each day's grinding operation.

For center line rumble strip installations where RPMs are in conflict with the grinding, install Class D RPMs with the first application of standard paint. Remove Class D RPMs prior to grinding, then install Class B RPMs in an unground area after grinding.

Do not apply final surface paint for bicycle arrows or bicycle messages, 24 inch longitudinal bars in special emphasis crosswalks, or route shields where preformed thermoplastic will be applied.

Install all RPMs in accordance with Standard Plans, Indexes 706-001 and 711-003, prior to opening the road to traffic.

Temporary RPMs must meet the requirements of Section 102.

Permanent RPMs must meet the requirements of Section 706.

**710-4.2 Thickness:** Apply standard paint to attain a minimum wet film thickness in accordance with the manufacturer's recommendations. Apply durable paint to attain a minimum wet film thickness of 0.025 inches or 25 mils. Measure, record, and certify on a form and submit to the Engineer, the thickness of white and yellow durable paint pavement markings in accordance with FM 5-541.

**710-4.3 Retroreflectivity:** Apply white and yellow standard paint 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. Apply white and yellow durable paint that will attain an initial retroreflectance of not less than 450 mcd/lx·m<sup>2</sup> and not less than 300 mcd/lx·m<sup>2</sup>, respectively.

Measure, record and certify on a form and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5-541.

The Owner reserves the right to test the markings within three days of receipt of the Contractor's certification. Failure to afford the Owner opportunity to test the markings will result in non-payment. The test readings should be representative of the Contractor's pavement marking performance. If the retroreflectivity values measure below values shown above, reapply the pavement marking at no additional cost to the Owner.

For standard paint, ensure that the minimum retroreflectance of white and yellow pavement markings are not less than 150 mcd/lx m<sup>2</sup>. If the retroreflectivity values for standard paint fall below the 150 mcd/lx m<sup>2</sup> value within 180 days of initial application, the pavement marking will be reapplied at the Contractor's expense. If the retroreflectivity values for durable paint fall below the initial values of 450 mcd/lx m<sup>2</sup> value for white and 300 mcd/lx m<sup>2</sup> for yellow within 180 days of initial application, the pavement marking will be reapplied at the Contractor's expense.

**710-4.4 Color:** Use paint material that meets the requirements of 971-1.

**710-4.5 Glass Spheres:** Apply glass spheres on all pavement markings immediately and uniformly following the paint application. The rate of application shall be based on the manufacturer's recommendation.

For longitudinal durable paint markings, apply a double drop of Type 1 and Type 3 glass spheres. For transverse durable paint markings, apply a single drop of Type 3 glass spheres.

The rate of application shall be based on the manufacturer's recommendation.

#### **710-5 Tolerances in Dimensions and in Alignment.**

Establish tack points at appropriate intervals for use in aligning pavement markings, and set a stringline from such points to achieve accuracy.

##### **710-5.1 Dimensions:**

**710-5.1.1 Longitudinal Lines:** Apply painted skip line segments with no more than plus or minus 12 inches variance, so that over-tolerance and under-tolerance lengths between skip line and the gap 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 plus or minus 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 pavement markings that will not deviate more than 1 inch from the stringline on tangents and curves one degree or less. Apply painted pavement markings that will not deviate more than 2 inches from the stringline on curves greater than one degree. Apply painted edge markings 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.

Remove and replace at no additional cost to the Owner, pavement markings that deviate more than the above stated requirements.

**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.

**710-6 Contractor's Responsibility for Notification.**

Notify the Engineer prior to the placement of the materials. At the time of notification, submit a certification to the Engineer with the APL number and the batch or Lot numbers of the paint and glass spheres to be used.

**710-7 Protection of Newly Applied Pavement Markings.**

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Owner.

**710-8 Corrections for Deficiencies to Applied Painted Pavement Markings.**

Reapply a 1.0 mile section, centered around any deficiency, at no additional cost to the Owner.

**710-9 Submittals.**

**710-9.1 Submittal Instructions:** Prepare a certification of quantities for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. For Lump Sum pay item 710-90, document the quantity as an estimated percentage (in decimal form) of the total lump sum amount on the daily worksheet. The Owner will not pay for any disputed items until the Engineer approves the certification of quantities.

**710-9.2 Contractor's Certification of Quantities:** Request payment by submitting a certification of quantities no later than Twelve O'clock noon Monday after the estimate cut-off date or as directed by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.

**710-10 Method of Measurement.**

The quantities, authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of solid, 10'-30' skip, 3'-9' dotted, 6'-10' dotted, 2'2' dotted, and 2'-4' dotted lines.
2. The length, in linear feet, of transverse lines, diagonal lines, chevrons, and parking spaces.
3. The number of pavement messages, symbols, and arrows. Each arrow is paid as a complete marking, regardless of the number of "points" or directions.



4. Lump Sum, as specified in 710-4.1.1 (final surface) and 710-9.1.
5. The area, in square feet, for removal of existing markings acceptably removed. Payment for removal of conflicting markings will be in accordance with 102-5.8. Payment for removal of non-conflicting markings will be paid separately.

The gross mile measurement will be taken as the distance from the beginning of the painted line to the end of the painted line and will include the unmarked gaps for skip and dotted lines. The gross mile measurement will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

**710-11 Basis of Payment.**

**710-11.1 General:** Price and payment 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.

**710-11.2 Painted Pavement Markings (Final Surface):** Price and payment for painted pavement markings (final surface) will be full compensation for all applications of painted pavement markings, and all applications and removal of RPMs in accordance with 710-4.1.1 and 710-9.1.

**710-11.3 Payment Items:**

Payment will be made under:

Item 710-1	Parking Lot Striping (White) – Base	-per Square Foot (SF)
Item 710-2	Parking Lot Striping (Yellow) – Base	-per Square Foot (SF)
Item 710-3	Parking Lot Striping (White) – Alt	-per Square Foot (SF)
*Item 710-4	Parking Lot Striping (Yellow) – Alt	-per Square Foot (SF)
*Item 710-5	Parking Lot Striping (Handicap) – Alt	-per Each (EA)

**END OF SECTION 710**

\*Updated per Addendum 2

**SECTION 711**

**THERMOPLASTIC PAVEMENT MARKINGS**

**711-1 711-1 Description.**

Apply new thermoplastic pavement markings, or refurbish existing thermoplastic pavement markings, in accordance with the Contract Documents.

**711-2 711-2 Materials.**

Use only materials meeting the following requirements.

Standard and Refurbishment Thermoplastic .....	971-1 and 971-5
Preformed Thermoplastic.....	971-1 and 971-6
High Friction Thermoplastic .....	971-1 and 971-10
Glass Spheres.....	971-1 and 971-2

Use sand materials meeting the requirements of 971-5.4.

The Engineer will take random samples of all material.

**711-3 711-3 Equipment.**

Use equipment capable of providing continuous, uniform heating of the pavement marking material to temperatures exceeding 390°F, mixing and agitation of the material in the reservoir to provide a homogeneous mixture without segregation. Use equipment that will maintain the pavement marking material in a plastic state, in all mixing and conveying parts, including the line dispensing device until applied. Use equipment which can produce varying width lines and which meets the following requirements:

1. Capable of traveling at a uniform, predetermined rate of speed, both uphill and downhill, to produce a uniform application of pavement marking material and capable of following straight lines and making normal curves in a true arc.
2. Capable of applying glass spheres to the surface of the completed pavement marking by a double drop application for standard thermoplastic pavement markings and a single drop application for recapping and refurbishment thermoplastic pavement markings. The bead dispenser for the first bead drop shall be attached to the pavement marking machine in such a manner that the beads are dispensed closely behind the installed line. The second bead dispenser bead shall be attached to the pavement marking machine in such a manner that the beads are dispensed immediately after the first bead drop application. Use glass spheres dispensers equipped with an automatic cut-off control that is synchronized with the cut-off of the thermoplastic material and applies the glass spheres uniformly on the entire pavement markings surface with 50 to 60% embedment.
3. Equipped with a special kettle for uniformly heating and melting the pavement marking 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.
4. Meet the requirements of the National Fire Protection Association, state, and local authorities.

#### **711-4 711-4 Application.**

**711-4.1 General:** Remove existing pavement markings such that scars or traces of removed markings will not conflict with new pavement markings by a method approved by the Engineer. Cost for removing conflicting pavement markings during maintenance of traffic operations to be included in Maintenance of Traffic, Lump Sum.

Before applying pavement markings, remove any material that would adversely affect the bond of the pavement markings by a method approved by the Engineer.

Before applying pavement markings to any portland cement concrete surface, apply a primer, sealer, or surface preparation adhesive of the type recommended by the manufacturer. Offset longitudinal lines at least 2 inches from any longitudinal joints of portland cement concrete pavement.

Apply pavement markings to dry surfaces only, and when the ambient air and surface temperature is at least 50°F and rising for asphalt surfaces and 60 degrees and rising for concrete surfaces.

Apply pavement markings to the same tolerances in dimensions and in alignment specified in 710-5. When applying pavement markings over existing markings, ensure that no more than 2 inches on either end and not more than 1 inch on either side of the existing line is visible.

Apply thermoplastic material to the pavement by extrusion or other means approved by the Engineer.

Conduct field tests in accordance with FM 5-541. Take test readings representative of the pavement marking performance. Remove and replace pavement markings not meeting the requirements of this Section at no additional cost to the Owner.

With the exception of short-term raised rumble strips, wait at least 14 days after constructing the final asphalt surface course to place thermoplastic pavement markings. Installation of thermoplastic on concrete requires a clean, dry surface. Follow the manufacturer's recommendations for surface preparation for thermoplastic on concrete. Provide temporary pavement markings during the interim period prior to opening the road to traffic.

**711-4.1.1 Preformed Thermoplastic:** Apply markings to dry surfaces only and when ambient air temperature is at least 32°F. Prior to installation, follow the manufacturer's recommendations for pre-heating.

**711-4.1.2 High Friction Thermoplastic:** High friction thermoplastic may be used as an alternative to preformed thermoplastic for special emphasis crosswalk markings. Apply markings only by gravity or air pressure thermoplastic hand liners set-up with double drop bead attachments. Install markings in accordance with the manufacturer's recommendations.

#### **711-4.2 Thickness:**

**711-4.2.1 Standard Thermoplastic Markings:** Apply or recap standard thermoplastic pavement markings for longitudinal lines to attain a minimum thickness of 0.10 inch or 100 mils and a maximum thickness 0.15 inch or 150 mils when measured above the pavement surface.

All chevrons, diagonal and transverse lines, messages, symbols, and arrows, wherever located, will have a thickness of 0.09 inch or 90 mils to 0.12 inch or 120 mils when measured above the pavement surface.



Measure, record and certify on a form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5541.

The Engineer will verify the thickness of the pavement markings in accordance with FM 5-541 within 30 days of receipt of the Contractor's certification.

**711-4.2.2 Refurbishment Thermoplastic Markings:** Apply a minimum of 0.06 inch or 60 mils of thermoplastic material. Ensure that the combination of the existing marking and the overlay after application of glass spheres does not exceed the maximum thickness of 0.150 inch or 150 mils for all lines.

Measure, record and certify on a form and submit to the Engineer, the thickness of white and yellow pavement markings in accordance with FM 5541.

The Engineer will verify the thickness of the pavement markings in accordance with FM 5-541 within 30 days of receipt of the Contractor's certification.

**711-4.2.3 Preformed Thermoplastic:** Apply 0.125 inch or 125 mils of preformed thermoplastic material. Use preformed thermoplastic for bicycle markings, shared use path markings, 24 inch markings of the special emphasis crosswalks, route shields, ramp exit numbers, roundabout informational markings, white dotted lines (2'-4') with trailing black contrast, and black contrast arrows, messages, and symbols.

Measure, record and certify on a form and submit to the Engineer, the thickness of the pavement markings in accordance with FM 5-541.

**711-4.2.4 High Friction Thermoplastic:** Apply lines to attain a minimum thickness of 0.09 inch or 90 mils and a maximum thickness of 0.12 inch or 120 mils, when measured above the pavement surface. Measure, record and certify on a form and submit to the Engineer, the thickness of the pavement markings in accordance with FM 5-541.

**711-4.3 Retroreflectivity:** Apply white and yellow pavement markings that will attain an initial retroreflectivity of not less than 450 mcd/lx·m<sup>2</sup> and not less than 350 mcd/lx·m<sup>2</sup>, respectively for all longitudinal lines. All chevrons, diagonal lines, stop lines, messages, symbols, and arrows will attain an initial retroreflectivity of not less than 300 mcd/lx·m<sup>2</sup> and 250 mcd/lx·m<sup>2</sup> for white and yellow respectively. All crosswalks and bicycle markings shall attain an initial retroreflectivity of not less than 275 mcd/lx·m<sup>2</sup>. Black pavement markings must have a retroreflectance of less than 5 mcd/lx m<sup>2</sup>.

Measure, record and certify on a form and submit to the Engineer, the retroreflectivity of white and yellow pavement markings in accordance with FM 5541.

**711-4.4 Glass Spheres:**

**711-4.4.1 Longitudinal Lines:** For standard thermoplastic markings, apply the first drop of Type 4 or larger glass spheres immediately followed by the second drop of Type 1 glass spheres. For refurbishment thermoplastic markings, apply a single drop of Type 3 glass spheres. Apply reflective glass spheres to all markings at the rates determined by the manufacturer's recommendations.

**711-4.4.2 Chevrons, Diagonal and Transverse Lines, Messages, Symbols, and Arrows:** For standard or refurbishment thermoplastic markings, apply a single drop of Type 1 glass spheres. Apply retroreflective glass spheres to all markings at the rates determined by the manufacturer's recommendations.

Apply a mixture consisting of 50% glass spheres and 50% sharp silica sand to all standard thermoplastic crosswalk lines at the rates determined by the manufacturer's recommendations.

**711-4.4.3 Preformed Markings:** These markings are factory supplied with glass spheres and skid resistant material. No additional glass spheres or skid resistant material should be applied during installation.

**711-5 Contractor's Responsibility for Notification.**

Notify the Engineer prior to the placement of the materials. At the time of notification, submit a certification to the Engineer with the APL number and the batch or Lot numbers of the thermoplastic and glass spheres to be used. Packaging labels that contain the information required by 971-1.1 will be accepted in place of a certification.

**711-6 Protection of Newly Applied Thermoplastic Pavement Markings.**

Do not allow traffic onto or permit vehicles to cross newly applied pavement markings until they are sufficiently dry. Remove and replace any portion of the pavement markings damaged by passing traffic or from any other cause, at no additional cost to the Owner.

**711-7 Observation Period.**

Longitudinal pavement markings are subject to a 180 day observation period under normal traffic. The observation period shall begin with the satisfactory completion and acceptance of the work.

The longitudinal pavement markings shall show no signs of failure due to blistering, excessive cracking, chipping, discoloration, poor adhesion to the pavement, loss of retroreflectivity or vehicular damage. The retroreflectivity shall meet the initial requirements of 711-4.3. The Owner reserves the right to check the retroreflectivity any time prior to the end of the observation period.

Replace, at no additional expense to the Owner, any longitudinal pavement markings that do not perform satisfactorily under traffic during the 180 day observation period.

**711-8 Corrections for Deficiencies.**

Recapping applies to conditions where additional pavement marking material is applied to new or refurbished pavement markings to correct a thickness deficiency. Correct deficiencies by recapping or removal and reapplication of a 1 mile section centered around the deficiency, as determined by the Engineer, at no additional cost to the Owner.

**711-9 Submittals.**

**711-9.1 Submittal Instructions:** Prepare a certification of quantities for each project in the Contract. Submit the certification of quantities and daily worksheets to the Engineer. The Owner will not pay for any disputed items until the Engineer approves the certification of quantities.

**711-9.2 Contractor's Certification of Quantities:** Request payment by submitting a certification of quantities no later than Twelve O clock noon Monday after the estimate cut-off date or as directed

by the Engineer, based on the amount of work done or completed. Ensure the certification of quantities consists of the following:

1. Contract Number, FPID Number, Certification Number, Certification Date and the period that the certification represents.
2. The basis for arriving at the amount of the progress certification, less payments previously made and less any amount previously retained or withheld. The basis will include a detailed breakdown provided on the certification of items of payment.

**711-10 Method of Measurement.**

The quantities, authorized and acceptably applied, under this Section will be paid as follows:

1. The length, in gross miles, of solid, 10'-30' skip, 3'-9' dotted, 6'-10' dotted, 2'2' dotted, and 2'-4' dotted lines.
2. The length, in linear feet, of transverse lines, diagonal lines, chevrons, and parking spaces.
3. The number of pavement messages, symbols, and arrows. Each arrow is paid as a complete marking, regardless of the number of "points" or directions.
4. The area, in square feet, for removal of existing markings acceptably removed. Payment for removal of conflicting markings will be in accordance with 102-5.8. Payment for removal of non-conflicting markings will be paid separately.

The gross mile measurement will be taken as the distance from the beginning of the thermoplastic line to the end of the thermoplastic line and will include the unmarked gaps for skip and dotted lines. The gross mile measurement will not include designated unmarked lengths at intersections, turn lanes, etc. Final measurement will be determined by plan dimensions or stations, subject to 9-1.3.1.

**711-11 Basis of Payment.**

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 711-1	Thermoplastic, Standard, White, Solid, 24"- Alt	-per Linear Foot (LF)
*Item 711-2	Thermoplastic, Standard, Yellow, Solid, 6"- Alt	-per Linear Foot (LF)
*Item 711-3	Thermoplastic, Standard, White, Arrow - Alt	-per Each (EA)
*Item 711-4	Thermoplastic, Standard, White, Arrow with Message - Alt	-per Each (EA)

**END OF SECTION 711**

\*Updated per Addendum 2