



# Illinois Department of Transportation

2300 South Dirksen Parkway / Springfield, Illinois / 62764

June 3, 2013

SUBJECT: FAP Route 673(IL 116)  
Section (102 B-1) BR  
Tazewell County  
Contract No. 68671  
Item No. 062, June 14, 2013 Letting  
Addendum A

## NOTICE TO PROSPECTIVE BIDDERS:

Attached is an addendum to the plans or proposal. This addendum involves revised and/or added material.

1. Revised schedule of prices.
2. Revised pages Table of Contents pages i, ii & iii.
3. Revised pages 2, 15 & 133-142, of the Special Provisions.
4. Added pages 237-241 of the Special Provisions.
5. Revised plans sheets No. 1,2,7,10,20,21,24,27,35,39,40,41,42,83&86
6. Added sheet 43A to the plans

Prime contractors must utilize the enclosed material when preparing their bid and must include any Schedule of Prices changes in their bidding proposal.

Bidders using computer-generated bids are cautioned to reflect any and all Schedule of Prices changes, if involved, into their computer programs.

Very truly yours,

John D. Baranzelli, P. E.  
Acting Engineer of Design and Environment

A handwritten signature in cursive script, appearing to read "Ted B. Walschleger P.E.".

By: Ted B. Walschleger, P. E.  
Engineer of Project Management

cc: Joseph E. Crowe, Region 3, District 4; Mike Renner; D. Carl Puzey;  
Estimates

dp

ILLINOIS DEPARTMENT OF TRANSPORTATION  
 SCHEDULE OF PRICES  
 CONTRACT  
 NUMBER - 68671

State Job # - C-94-214-06

Project Number

Route

County Name - TAZEWELL - -

FAP 673

Code - 179 - -

\*REVISED: JUNE 4, 2013

District - 4 - -

Section Number - (102B-1)BR

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
*ADD X0325749	FIBER WRAP	SQ FT	322.000				
X4400110	TEMP PAVT REMOVAL	SQ YD	1,107.000				
X4401198	HMA SURF REM VAR DP	SQ YD	1,422.000				
X5860110	GRANULAR BACKFILL STR	CU YD	233.000				
X7050167	TEMP TRBT T1 SPL TAN	EACH	1.000				
X7200056	TEMP SIGN PANEL ASBLY	SQ FT	66.000				
X8410102	TEMP LIGHTING SYSTEM	L SUM	1.000				
Z0001002	GDRL AGG EROS CONT	TON	229.000				
Z0013798	CONSTRUCTION LAYOUT	L SUM	1.000				
Z0034105	MATL TRANSFER DEVICE	TON	132.000				
Z0046304	P UNDR FOR STRUCT 4	FOOT	180.000				
Z0062456	TEMP PAVEMENT	SQ YD	1,741.000				
20100500	TREE REMOV ACRES	ACRE	0.250				
20200100	EARTH EXCAVATION	CU YD	1,876.000				
20300100	CHANNEL EXCAVATION	CU YD	5,935.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
21101615	TOPSOIL F & P 4	SQ YD	3,059.000				
25000210	SEEDING CL 2A	ACRE	1.250				
25000400	NITROGEN FERT NUTR	POUND	113.000				
25000500	PHOSPHORUS FERT NUTR	POUND	113.000				
25000600	POTASSIUM FERT NUTR	POUND	113.000				
25000750	MOWING	ACRE	4.250				
25100115	MULCH METHOD 2	ACRE	1.250				
25100630	EROSION CONTR BLANKET	SQ YD	1,422.000				
28000250	TEMP EROS CONTR SEED	POUND	100.000				
28000305	TEMP DITCH CHECKS	FOOT	48.000				
28000400	PERIMETER EROS BAR	FOOT	1,075.000				
28000500	INLET & PIPE PROTECT	EACH	2.000				
28100107	STONE RIPRAP CL A4	SQ YD	287.000				
28100109	STONE RIPRAP CL A5	SQ YD	3,732.000				
28200200	FILTER FABRIC	SQ YD	4,019.000				

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30300112	AGG SUBGRADE IMPR 12	SQ YD	1,850.000				
40600115	P BIT MATLS PR CT	GALLON	147.000				
40600827	P LB MM IL-4.75 N50	TON	44.000				
40600982	HMA SURF REM BUTT JT	SQ YD	267.000				
40603565	P HMA SC "E" N70	TON	88.000				
42001420	BR APPR PVT CON (PCC)	SQ YD	58.000				
44000100	PAVEMENT REM	SQ YD	266.000				
44000500	COMB CURB GUTTER REM	FOOT	15.000				
44004250	PAVED SHLD REMOVAL	SQ YD	2,412.000				
48101500	AGGREGATE SHLDS B 6	SQ YD	152.000				
48203100	HMA SHOULDERS	TON	1,732.000				
50100100	REM EXIST STRUCT	EACH	1.000				
50102400	CONC REM	CU YD	0.800				
50105220	PIPE CULVERT REMOV	FOOT	33.000				
50200100	STRUCTURE EXCAVATION	CU YD	349.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
50200300	COFFERDAM EXCAVATION	CU YD	164.000				
50201121	COFFERDAM TYP 2 LOC 1	EACH	1.000				
50300225	CONC STRUCT	CU YD	160.500				
50300255	CONC SUP-STR	CU YD	422.200				
50300260	BR DECK GROOVING	SQ YD	1,025.000				
50300265	SEAL COAT CONC	CU YD	64.200				
50300280	CONCRETE ENCASEMENT	CU YD	8.800				
50300300	PROTECTIVE COAT	SQ YD	1,258.000				
50500105	F & E STRUCT STEEL	L SUM	1.000				
50500505	STUD SHEAR CONNECTORS	EACH	3,564.000				
50800205	REINF BARS, EPOXY CTD	POUND	120,810.000				
50800515	BAR SPLICERS	EACH	94.000				
51202100	FUR STL PILE HP14X117	FOOT	1,774.000				
51202305	DRIVING PILES	FOOT	1,774.000				
51204100	TEST PILE ST HP14X117	EACH	3.000				

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Section Number - (102B-1)BR

Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
51500100	NAME PLATES	EACH	1.000				
52100520	ANCHOR BOLTS 1	EACH	36.000				
550A0070	STORM SEW CL A 1 15	FOOT	364.000				
*ADD 59000200	EPOXY CRACK INJECTION	FOOT	20.000				
59100100	GEOCOMPOSITE WALL DR	SQ YD	118.000				
60240301	INLETS TB T8G	EACH	1.000				
60500060	REMOV INLETS	EACH	1.000				
60603800	COMB CC&G TB6.12	FOOT	45.000				
63000001	SPBGR TY A 6FT POSTS	FOOT	662.500				
63100085	TRAF BAR TERM T6	EACH	4.000				
63100167	TR BAR TRM T1 SPL TAN	EACH	4.000				
63200310	GUARDRAIL REMOV	FOOT	421.000				
63801100	MOD BLADE TY GLAR SCR	FOOT	850.000				
66600105	FUR ERECT ROW MARKERS	EACH	10.000				
66700205	PERM SURV MKRS T1	EACH	6.000				

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67000400	ENGR FIELD OFFICE A	CAL MO	9.000				
67100100	MOBILIZATION	L SUM	1.000				
70100320	TRAF CONT-PROT 701422	L SUM	1.000				
70100410	TRAF CONT-PROT 701416	EACH	1.000				
70103815	TR CONT SURVEILLANCE	CAL DA	26.000				
70106800	CHANGEABLE MESSAGE SN	CAL MO	2.000				
70300100	SHORT TERM PAVT MKING	FOOT	1,116.000				
70300520	PAVT MARK TAPE T3 4	FOOT	8,437.000				
70301000	WORK ZONE PAVT MK REM	SQ FT	3,190.000				
70400100	TEMP CONC BARRIER	FOOT	1,178.000				
70500100	TEMP SPBGR TY A	FOOT	287.500				
70500655	TEMP TR BAR TERM T5	EACH	1.000				
70500665	TEMP TR BAR TERM T6	EACH	1.000				
78003130	PREF PL PM TB LINE 6	FOOT	608.000				
78004230	PREF PL PM TB INL L6	FOOT	175.000				

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Item Number	Pay Item Description	Unit of Measure	Quantity	x	Unit Price	=	Total Price
78009000	MOD URETH PM LTR-SYM	SQ FT	27.000				
78009004	MOD URETH PM LINE 4	FOOT	6,266.000				
78009008	MOD URETH PM LINE 8	FOOT	271.000				
78100100	RAISED REFL PAVT MKR	EACH	30.000				
78100200	TEMP RAIS REF PVT MKR	EACH	98.000				
78200410	GUARDRAIL MKR TYPE A	EACH	17.000				
78200530	BAR WALL MKR TYPE C	EACH	18.000				
78201000	TERMINAL MARKER - DA	EACH	4.000				
78300100	PAVT MARKING REMOVAL	SQ FT	1,429.000				
78300200	RAISED REF PVT MK REM	EACH	117.000				



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## **INTERIM COMPLETION DATES**

The completion date for the proposed fiber wrap work will be based upon 30 calendar days. The completion date will be determined by adding 30 calendar days to the date the Contractor begins work, or to the date ten days after execution of the contract, whichever is the earlier, unless a delayed start is granted by the Engineer.

All the Stage I work as described in the "Sequence of Construction" in the plans shall be completed by November 26, 2013.

## **CONCRETE SUPERSTRUCTURE AGGREGATE OPTIMIZATION**

Effective: August 4, 2006      Revised: August 3, 2012

Delete Note 8/ of Article 1004.01(c) and replace Article 1004.02(d)(1) with the following:

For the bridge superstructure and bridge approach slab, the Class BS concrete shall be uniformly graded.

This may be accomplished by using a uniformly graded single coarse aggregate, or by blending two or more coarse aggregate sizes. As a minimum for multiple coarse aggregate sizes, CA 7 or CA 11 shall be blended with CA 13, CA 14, or CA 16. The final single coarse aggregate or combined coarse aggregate gradation shall have minimum 45 percent and maximum 60 percent passing the 1/2 in. (12.5 mm) sieve. However, the Contractor may propose for approval by the Engineer an alternate uniformly graded concrete mixture using the information in the "Portland Cement Concrete Level III Technician Course – Manual of Instructions for Design of Concrete Mixtures".

Concrete Superstructures Aggregate Optimization will not be paid for separately, but shall be considered as included in the unit cost of CONCRETE SUPERSTRUCTURES.

## **HOT-MIX ASPHALT - MIXTURE DESIGN VERIFICATION AND PRODUCTION**

Effective: August 3, 2012      Revised: April 26, 2013

Description. This special provision states the requirements for Hamburg Wheel and Tensile Strength testing for High ESAL, IL-4.75, and SMA hot mix asphalt (HMA) mixes during mix

Revised 6-3-13

System for Hydrated Lime Addition. Revise the last sentence of the third paragraph of Article 1030.04(c) of the Standard Specifications to read:

“The method of application shall be according to Article 1102.01(a)(10).”

Revise the first three sentences of the second paragraph of Article 1102.01(a)(10) of the Standard Specifications to read:

“When hydrated lime is used as the anti-strip additive, a separate bin or tank and feeder system shall be provided to store and accurately proportion the lime onto the aggregate either as a slurry, as dry lime applied to damp aggregates, or as dry lime injected onto the hot aggregates prior to adding the liquid asphalt cement. If the hydrated lime is added either as a slurry or as dry lime on damp aggregates, the lime and aggregates shall be mixed by a power driven pugmill to provide a uniform coating of the lime prior to entering the dryer. If dry hydrated lime is added to the hot dry aggregates in a drum plant, the lime will be added in such a manner that the lime will not become entrained into the air stream of the dryer and that thorough dry mixing will occur prior to the injection point of the liquid asphalt. When a batch plant is used, the hydrated lime shall be added to the mixture in the weigh hopper or as approved by the Engineer.”

Basis of Payment. Revise the seventh paragraph of Article 406.14 of the Standard Specifications to read:

“For mixes designed and verified under the Hamburg Wheel criteria, the cost of furnishing and introducing anti-stripping additives in the HMA will not be paid for separately, but shall be considered as included in the contract unit price of the HMA item involved.

If an anti-stripping additive is required for any other HMA mix, the cost of the additive will be paid for according to Article 109.04. The cost incurred in introducing the additive into the HMA will not be paid for separately, but shall be considered as included in the contract unit price of the HMA item involved.

No additional compensation will be awarded to the Contractor because of reduced production rates associated with the addition of the anti-stripping additive.”

Revised 6-3-13

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Revised 6-3-13



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Revised 6-3-13

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Revised 6-3-13

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## REMOVAL AND DISPOSAL OF REGULATED SUBSTANCES (BDE)

Effective: January 1, 2012

Revised: November 2, 2012

Revise Article 669.01 of the Standard Specifications to read:

**“669.01 Description.** This work shall consist of the transportation and proper disposal of contaminated soil and water. This work shall also consist of the removal, transportation, and proper disposal of underground storage tanks (UST), their content and associated underground piping to the point where the piping is above the ground, including determining the content types and estimated quantities.”

Revise Article 669.08 of the Standard Specifications to read:

**“669.08 Contaminated Soil and/or Groundwater Monitoring.** The Contractor shall hire a qualified environmental firm to monitor the area containing the regulated substances. The affected area shall be monitored with a photoionization detector (PID) utilizing a lamp of 10.6eV or greater or a flame ionization detector (FID). Any field screen reading on the PID or FID in excess of background levels indicates the potential presence of contaminated material requiring handling as a non-special waste, special waste, or hazardous waste. No excavated soils can be taken to a clean construction and demolition debris (CCDD) facility or an uncontaminated soil fill operation with detectable PID or FID meter readings that are above background. The PID or FID meter shall be calibrated on-site and background level readings taken and recorded daily. All testing shall be done by a qualified engineer/technician. Such testing and monitoring shall be included in the work. The Contractor shall identify the exact limits of removal of non-special waste, special waste, or hazardous waste. All limits shall be approved by the Engineer prior to excavation. The Contractor shall take all necessary precautions.

Based upon the land use history of the subject property and/or PID or FID readings indicating contamination, a soil or groundwater sample shall be taken from the same location and submitted to an approved laboratory. Soil or groundwater samples shall be analyzed for the contaminants of concern, including pH, based on the property's land use history or the parameters listed in the maximum allowable concentration (MAC) for chemical constituents in uncontaminated soil established pursuant to Subpart F of 35 Illinois Administrative Code 1100.605. The analytical results shall serve to document the level of soil contamination. Soil and groundwater samples may be required at the discretion of the Engineer to verify the level of soil and groundwater contamination.

Samples shall be grab samples (not combined with other locations). The samples shall be taken with decontaminated or disposable instruments. The samples shall be placed in sealed containers and transported in an insulated container to the laboratory. The container shall maintain a temperature of 39 °F (4 °C). All samples shall be clearly labeled. The labels shall indicate the sample number, date sampled, location and elevation, and any other observations.

Revised 6-3-13

## **FIBER WRAP**

Effective: May 31, 2007

Revised: April 30, 2013

### Description

This work shall consist of furnishing and installing fiber-reinforced polymer (FRP) wraps at the locations shown in the plans. The FRP wraps shall be of the size, type, layer, materials, tension, and spacing shown in the plans. The Contractor shall submit drawings of the FRP wrap system, showing materials, components, and installation procedures to the Engineer for approval prior to ordering materials and commencing work.

All other concrete repairs and/or modifications shall be completed prior to performing this work. Concrete placed in areas receiving FRP wraps shall have a maximum moisture content of 4% before wrapping begins. All manufacturer's recommendations for surface preparation and installation of FRP wraps shall be followed.

### Submittals

The following submittals, but not limited to, shall be required of the FRP system manufacturer, installation contractor and inspection agency. All submittals, except daily installation data logs, shall be given to the Engineer for review.

#### Submittals required of the *FRP system manufacturer*:

- Product information and data sheets indicating physical, mechanical and chemical properties and limitations of the FRP system and all its components.
- Net fiber and gross laminate tensile properties of the FRP system, all test techniques, methods and calculations used for determining properties.
- Durability test data and structural test reports of the FRP system for the proposed application in the expected environmental conditions.
- Installation and maintenance instructions and general recommendations regarding each material used in the FRP system. Note that surface preparation requirements shall be included in the installation procedures.
- Material Safety Data Sheets of each product used and certification that all materials abide by all local, state, and federal environmental and worker's safety laws and regulations.
- Quality control procedures for tracking FRP materials and material certifications.
- List of projects where similar FRP system has been implemented.

#### Submittals required of the *FRP system installation Contractor*:

- Documentation from the FRP system manufacturer stating the Contractor has been trained to install the FRP system show on the design plans.
- List of completed projects by the Contractor where similar FRP system has been implemented. Include location, owner, engineer and contact numbers associated with each project.
- Documentation showing that the Contractor is experienced in surface preparation techniques required for the project.
- Quality control procedures, daily installation data logs, and any other inspection forms used by the Contractor.

Added pages 6-3-13



If an independent inspection agency is used, the following submittals are required of the FRP system inspection agency:

- Qualifications and a list of each inspector used on the project.
- Sample inspection forms to be used during inspection.
- List of prior inspections performed by each inspector used on the project.

Material Requirements

The Contractor shall inspect and ensure all materials meet specifications, conform to design plans and are undamaged upon job-site arrival. All products shall be delivered to the job-site in their original, un-opened containers with the Manufacturer's name, labels, product identification, and batch numbers. Ensure FRP system materials are protected from chemicals, dirt, extreme temperatures, moisture, and physical damage, by storing, handling, and applying materials according to manufacturer and OSHA recommendations.

FRP shall be high modulus, high strength fiber fabric of the type, size, layer, materials, tension, spacing and location as specified on the design plans. FRP Reinforcement shall meet the requirements as listed below.

*Minimum FRP Reinforcement Requirements*

	Glass Fiber	Carbon Fiber	
<b>Property</b> Prior to testing, laminate samples shall be cured at least 7 days at 70°F then post-cured at 140°F for 48 hours			ASTM Test Method
<b>Laminate Tensile Strength</b>	3240 lbs/layer	4160 lbs/layer	D3039
<b>Laminate Tensile Modulus</b>	3.5 x 10 <sup>6</sup> psi	9.4 x 10 <sup>6</sup> psi	D3039
<b>Laminate Elongation</b> at break	2.23%	0.98%	D3039
<b>Dry Fabric Weight</b> , Minimum, per square yard	27 oz./yd <sup>2</sup>	18 oz./yd <sup>2</sup>	
<b>Percent Laminate Tensile Strength</b> Retained after:			
7 days, 100% humidity, 100°F	90%	90%	
3,000 hrs exposure to alkali	90%	90%	
3,000 hrs exposure to salt water	90%	90%	
3,000 hrs exposure at 140°F	90%	90%	
<b>Visual Defects</b>	None	None	D2563

Fabric saturant (saturating resin) and concrete primer shall be two component, 100% solids, tolerant to moisture, high strength and high modulus epoxy. Manufacturer's recommendations for mixing shall be followed. Dilution of components will not be permitted and mixing of components shall not be divided into smaller units and shall be mixed using full units only. Mixtures shall be used within its pot life.

*Minimum Requirements for Concrete Primer*

Properties	Minimum Requirement	ASTM Test Method
<b>Tensile Strength, 7 day</b>	3,600 psi	D638
<b>Tensile Modulus, 7 day</b>	6.5 x 10 <sup>5</sup> psi	D638
<b>Elongation at Break, 7 day</b>	1.0%	D638
<b>Flexural Strength, 14 day</b>	6,800 psi	D790
<b>Shear Strength, 14 day</b>	3,600 psi	D732
<b>Heat Deflection Temperature</b>	118°F	D648

*Minimum Requirements for Fabric Saturant*

Properties	Minimum Requirement	ASTM Test Method
<b>Tensile Strength</b>	8,000 psi	D638
<b>Tensile Modulus</b>	250,000 psi	D638
<b>Elongation at Break</b>	3.0%	D638
<b>Flexural Strength</b>	11,500 psi	D790
<b>Flexural Modulus</b>	500,000 psi	D790
<b>Heat Deflection Temperature</b>	120°F	D648

A vapor permeable, UV resistant polymer or acrylic based protective coating shall be used. The protective coating shall be applied according to the manufacturer's recommendations.

Construction Requirements

A technical representative from the manufacturer shall be on site during installation of FRP wraps. All costs associated with providing a technical representative shall be the responsibility of the Contractor.

The Contractor shall maintain a Daily Installation Log. The log shall be available for review by the Engineer, and a copy shall be furnished to the Engineer at completion of installation and construction for each day's production. The Log shall provide material traceability and process records for each wrap and shall include all the following information:

- (a) Date, time and specific location of installation.
- (b) Construction and installation requirements, including plans and drawings and references thereto.
- (c) Surface preparation methods.
- (d) Widths and lengths of cracks not injected with epoxy.
- (e) Material information including product description, data of manufacturer, product and fiber batch numbers, mixture ratios, mixing times, appearance description of mixed resins (i.e. primers, putties, saturants, adhesives, and protective coatings used for the day)
- (f) Ambient temperatures, humidity, and general weather observations at the beginning, middle and end of each wrap installation shift.
- (g) Concrete surface temperature, concrete moisture content and surface cleanliness.
- (h) Heat sources used for increase surface temperature or curing.
- (i) Number of FRP layers used, composite thickness measurements, curing progress of resins including full documentation of curing temperature ramping and final curing temperature and thickness measurements of protecting coating used.

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- (j) Location and size of FRP debonding or air voids.
- (k) Documentation stating installation procedures were followed.
- (l) Pull off test results including bond strength, failure mode, and location.
- (m) Other general work progress.

#### Surface Preparation:

FRP wraps shall be placed on sound concrete having a maximum moisture content of 4%. All bond inhibiting and foreign materials, including but not limited to dust, laitance, paint, grease, curing compounds, impregnations and waxes, shall be removed from the concrete surface by blast cleaning or other appropriate mechanical means. All surface irregularities and deteriorated concrete shall be removed and repaired in such a manner as to not damage the existing structure. See special provision for Structural Repair of Concrete for concrete repair at bottom flanges of beams. See special provision for Polymer Modified Portland Cement Mortar for the concrete repair of exposed vertical reinforcement at side faces of beam. When wrapping FRP around corners of rectangular cross sections, the corners should be rounded to a minimum of ½" radius. After concrete surface preparation has been completed, adhesive strength of the concrete shall be verified by random pull-off testing according to ACI 503R as per the direction of the Engineer.

All cracks greater than 0.007 in. shall be injected with epoxy according to Section 590 of the Standard Specifications for Road and Bridge Construction and paid for as Epoxy Crack Injection.

#### Constituent Material Application:

All materials shall be applied according to conditions (i.e. surface temperature of the concrete, air temperature, relative humidity, and corresponding dew point) recommended by the FRP manufacturer.

Primer should be applied uniformly on the prepared surface to all areas of concrete receiving the FRP wrap according to the manufacturer's specifications. Primed surfaces shall be protected from all contaminants (e.g. dust, moisture, etc.) prior to the application of the FRP wraps. Any type of putty used for the FRP system shall follow the manufacturer's recommended thicknesses and sequences. Surface depressions/irregularities shall be filled with a system-compatible epoxy filler or ground smooth using appropriate means prior to the application of any other materials. Allow putty and primer to cure as per manufacturer's requirements before applying the saturating resin or adhesive.

Components of saturating resin may be proportioned and mixed by hand or by automatic equipment. Provision shall be made for checking the accuracy of proportions and mixing. The resin-to-fabric ratio shall be verified and documented on the daily installation data log. Saturating resin shall be applied uniformly to prepared surfaces. FRP-ply orientation shall not deviate from the orientation shown on the design plans. Fiber wraps shall be handled in a manner to maintain fiber straightness and prevent fiber damage. Any kinks, folds, or severe waviness should be reported to the Engineer. If multiple fabric layers are being placed, successive layers shall be placed before the complete curing of the previous layer to ensure complete bonding between layers. Entrapped air beneath each layer of fabric shall be rolled out before the saturating resin sets.

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Subject to approval by the Engineer, the Contractor may provide suitable enclosures to permit application and curing of the fiber wrap during inclement weather. Provisions shall be made to control atmospheric conditions artificially within the enclosures within the limits specified for application and curing of the fiber wrap.

The FRP system shall be protected from rain, sand, dust, and other foreign particles during and after curing as per the Engineer and manufacturer's recommendations.

The Contractor shall inspect the cured FRP system to ensure saturating resin has completely cured. The Contractor must check for defects such as voids, delaminations, external cracks, chips, cuts, loose fibers, external abrasions, blemishes, foreign inclusions, depressible raised areas, or fabric wrinkles. All defects with a dimension greater than 1½ inch, or an area greater than one square inch, or defects with any dimension greater than 1 inch within one foot from another defect area of similar size, shall be repaired or replaced as determined by the Engineer. Repairs shall be made according to manufacturer's recommendations and as specified by the Engineer. For large defected areas, additional layers of FRP maybe required as per the Engineer.

A vapor permeable, UV resistant polymer or acrylic based protective coating shall be used. The protective coating shall be compatible with the FRP system and applied according to the manufacturer's recommendations. Any solvents used to clean the FRP surface prior to the application of the protective coating shall be approved by the FRP manufacturer since solvents can have harmful effects on the polymer fabric. Two layers of protective coating shall be applied to all surfaces of the fiber wrap. In addition, one layer of protective coating shall also be applied to the exterior vertical surface and bottom surface of the fascia beams in areas where the fiber wrap is not applied. The cost of the protective coating shall be paid for as Acrylic Coating.

#### Method of Measurement

FRP wraps will be computed for payment in place in square feet based on the surface area measurements of the substrate to be repaired and the number of FRP layers shown on the design plans.

The areas upon which the protective coat is applied will be measured for payment in place and the area computed in square yards.

#### Basis of Payment

This work will be paid for at the contract unit price per square foot for FIBER WRAP. Payment shall constitute full compensation for all materials, labor, tools, equipment, and incidentals necessary to complete the work.

Full compensation for any additional testing, materials, enclosures, or work required because of the use of a particular type of fiber wrap, shall be considered as included in the item FIBER WRAP.