$S \ E \ C \ T \ I \ O \ N \quad 9 \ 0 \ 5 \ -- \ P \ R \ O \ P \ O \ S \ A \ L \quad (CONTINUED)$

I (We) hereby certify by digital signature and electronic submission via Bid Express of the Section 905 proposal below, that all certifications, disclosures and affidavits incorporated herein are deemed to be duly executed in the aggregate, fully enforceable and binding upon delivery of the bid proposal. I (We) further acknowledge that this certification shall not extend to the bid bond or alternate security which must be separately executed for the benefit of the Commission. This signature does not cure deficiencies in any required certifications, disclosures and/or affidavits. I (We) also acknowledge the right of the Commission to require full and final execution on any certification, disclosure or affidavit contained in the proposal at the Commission's election upon award. Failure to so execute at the Commission's request within the time allowed in the Standard Specifications for execution of all contract documents will result in forfeiture of the bid bond or alternate security.

Bidder acknowledges receipt of and has added to and made a part of the proposal and contract documents the following addendum (addenda):

ADDE	NDUM NO.	1	DATED	11/14/2	016	ADDENDUM NO.		DATED		
ADDE	ENDUM NO		DATED			ADDENDUM NO.		DATED		
Number 1	Revised Table 6741; Revised Amendment EB	Descrip of Conte Suppleme S Downloa	tion hts; Added N ht to SP 907 d Required.	ITB No. -804-19;	TOTAI (Must a Respec DATE BY TITLE ADDR CITY, PHON FAX _ E-MAI	L ADDENDA:	1 enda issued p Contractor Signature	prior to opening of	bids)	
(To be fi	lled in if a corp	oration)								
titles and	Our corporatio l business addre	n is charte esses of th	ered under the executives	e Laws of t are as follo	he State	of		and	the r	names,
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The follo	owing is my (ou	ır) itemize	d proposal.							
ST	P/EXB-0070-03	8(022) / 10	3164301							
Pa	nola County(ie	s)								

Revised 01/26/2016

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(REVISIONS TO THE ABOVE WILL BE INDICATED ON THE SECOND SHEET OF SECTION 905 AS ADDENDA) 11/15/2016 09:57 AM

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SECTION 904 - NOTICE TO BIDDERS NO. 6741

CODE: (SP)

DATE: 11/14/2016

SUBJECT: Self-Consolidating Concrete

PROJECT: STP/EXB-0070-03(022) 103164301– Panola County

Bidders are advised that the Supplement to 907-804-19 has been revised in this proposal to include Drilled Shaft Concrete requirements. All drill shaft concrete associated with this project shall be Self-Consolidating Concrete. The Contractor shall abide by the requirements set forth in the revised supplement to the special provision.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

SUPPLEMENT TO SPECIAL PROVISION NO. 907-804-19

DATE: 11/09/2016

SUBJECT: Concrete Bridges and Structures

SPECIAL PROVISION 907-804-19 AS AMENDED BY THE FOLLOWING IS APPLICABLE TO SELF-CONSOLIDATING CONCRETE ONLY.

Delete the first sentence of the first paragraph of Subsection 907-804.02.10 on page 5 and substitute the following.

At least 30 days prior to production of concrete, the Contractor shall submit to the Engineer proposed concrete mixture designs complying with the Department's *Concrete Field Manual*.

Delete the Notes under Table 3 of Subsection 907-804.02.10 on pages 6 & 7, and substitute the following:

- * Maximum size aggregate shall conform to the concrete mix design for the specified aggregate.
- ** Portland cement shall be Type II meeting the requirements of Subsection 907-701.02. The replacement of Portland cement by other cementitious materials shall be either GGBFS in accordance with Subsection 907-714.06 or Class F fly ash in accordance with Subsection 907-714.05. The replacement of Portland cement by weight by GGBFS shall be 70%. The replacement of Portland cement by weight by Class F fly ash shall be 35%. Other supplementary cementitious materials shall not be used. Mixture designs containing only Portland cement shall not be used.
- *** The slump may be increased up to eight (8) inches with:
 - an approved water-reducing admixture,
 - an approved water-reducing/set-retarding admixture, or
 - a combination of an approved water-reducing admixture and an approved setretarding admixture, in accordance with 907-713.02. Minus slump requirements shall meet those set forth in Table 3 of AASHTO Designation: M157.
- **** Entrained air is not required except for concrete exposed to seawater. For concrete exposed to seawater, the total air content shall be 3.0 % to 6.0%. For concrete not exposed to seawater, the total air content shall not exceed 6.0%.
- ***** For Class DS, the maximum slump flow shall be 24 inches. The minus slump flow tolerance shall be six (6) inches.

Delete the last paragraph of Subsection 907-804.02.10 on page 7 and substitute the following.

At least one water-reducing admixture shall be used in all classes of concrete in accordance with the manufacturer's recommended dosage range. Other admixtures for developing specific performance characteristics may be used in accordance with Special Provision 907-713-2. Any combinations of admixtures shall be approved by the Engineer before their use.

Delete Subsection 907-804.02.10.1 on page 7 and substitute the following.

<u>907-804.02.10.1--Proportioning of Portland Cement Concrete Mixture Design</u>. Proportioning of Portland cement concrete shall be based on an existing mixture of which the producer has field experience and documentation or based on a recently batched laboratory mixture tested according to the required specifications.

Additionally, only proposed mixtures meeting the following additional requirements shall be tentatively approved for use in construction of drilled shafts.

a) Compressive Strength/Maturity Relationship. The compressive strength/maturity relationship shall be developed for the mixture design for a minimum of 28 days following the requirements of Subsection 907-804.03.15. The compressive strength/maturity relationship information shall be submitted with the mixture design information. Depending on the rate at which the mixture develops compressive strength, it may be necessary to develop the relationship for a minimum of 56 days.

Delete the first sentence of subparagraph c) of Subsection 907-804.02.10.1.1 on page 7, and substitute the following.

c) Consist of 10 consecutive tests, average of two cylinders per test, tested at 28 days, including the slump, air content, and temperature data recorded for the plastic concrete for each strength test. For Class DS, the test data for the plastic concrete shall include the slump flow data, J-ring data, and at least one test to determine the static segregation. For all mixture designs, for each of these tests on the plastic concrete the test data shall meet the acceptance criteria of Subsection 804.02.13.1.

Delete paragraph b) of Subsection 907-8804.02.10.1.2 on page 8 and substitute the following,

b) Trial mixtures having proportions and consistencies suitable for the proposed work shall be made using ACI 207.1, ACI 211.1, and ACI 237 as guides to proportion the mixture design.

Add the following paragraph after the first paragraph of subparagraph c) in Subsection 907-804.02.10.1.2 on page 8.

For Class DS, the mixture shall be designed to produce a slump flow within ± 2 inches of the maximum permitted, a maximum difference between the slump flow and the J-ring flow of two inches (2"), and a maximum static segregation of 10.0 percent. The slump flow and J-ring tests shall be conducted using Filling Procedure B with the inverted slump cone. The concrete shall not be rodded or vibrated during casting the test specimens.

Delete paragraph of subparagraph d) in Subsection 907-804.02.10.1.2 on page 8, and substitute the following.

For each proposed mixture, at least three compressive test cylinders shall be made and cured in accordance with AASHTO Designation: T 126. Each change of water-cementitious ratio shall be considered a new mixture. The cylinders shall be tested for strength in accordance with AASHTO Designation: T 22 and shall be tested at 28 days. Depending on the rate at which the mixture develops compressive strength, it may be necessary to develop the relationship for a minimum of 56 days.

For Class DS, test specimens shall be made in accordance with the above listed specifications with the exception that the concrete shall not be rodded or vibrated during casting the test specimens.

Delete the second paragraph and table of Subsection 907-804.02.10.3 on page 9, and substitute the following.

Aggregates and concrete tests during the first placement shall be as follows.

<u>Aggregates</u>	<u>Concrete</u>
Bulk Specific Gravity	Water Content
Moisture	Slump Flow
Gradation	J-Ring
	Air Content
	Unit Weight
	Yield
	Static Segregation

Delete the 3^{rd} , 4^{th} , 5^{th} and 6^{th} paragraphs of Subsection 907-804.02.10.3 on pages 9 & 10, and substitute the following.

For all Classes of concrete, the mixture shall be verified to yield within 2.0% of the correct volume when all the mix water is added to the batch.

For all Classes of concrete other than DS, F, and FX, the mixture shall produce a slump within a minus 1¹/₂-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2¹/₂-inch tolerance of the maximum permitted

for mixtures with a maximum permitted slump of greater than three inches (3"), and producing a total air content within a minus $1\frac{1}{2}$ percent tolerance of the maximum allowable air content in Table 3.

For Class DS, the slump flow shall be within the requirements in Note ***** below Table 3, the difference between the slump flow and the J-ring flow shall not exceed two inches (2"), and the static segregation shall not exceed 10.0%. For Class DS exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Class DS not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

For Classes F and FX, the slump shall be within a minus 1½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of three inches (3") or less or within a minus 2½-inch tolerance of the maximum permitted for mixtures with a maximum permitted slump of greater than three inches (3"). For Classes F and FX exposed to seawater, the total air content shall be within a minus 1½ percent tolerance of the maximum allowable air content in Note **** below Table 3. For Classes F and FX not exposed to seawater the total air content shall be within the requirements in Note **** below Table 3.

Delete the fourth paragraph of Subsection 907-804.02.12 on page 11, and substitute the following.

The Contractor's Quality Control program shall encompass the requirements of AASHTO Designation: M 157 into concrete production and control, equipment requirements, testing, and batch ticket information. The requirement of AASHTO Designation: M 157, Section 11.7 shall be followed except, on arrival to the job site, a maximum of 1½ gallons per cubic yard is allowed to be added. Water shall not be added at a later time. If the maximum permitted slump flow is exceeded after the addition of water at the job site, the concrete shall be rejected.

Delete line C. of Table 4 in Subsection 907-804.02.12.5 on page 15 and substitute the following.

C. PLASTIC CONCRETE		
1. Sampling		T 141
2. Air Content	First load then one per 50 yd3	T 152* or T 196*
Slump Flow*	First load then one per 50 yd ³	C 1611*
4. J-Ring*	First load then one per 50 yd ³	C 1621*
Static Segregation*	2500 yd ³ Concrete	C1610*
6. Compressive Strength	A minimum of one set (two cylinders)	T 22*, T 23*, T 231
	for each 100 yd ³ and one set for each	
	additional 100 yd ³ or fraction thereof	
	for each class concrete delivered and	
	placed on a calendar day from a	
	single supplier. A test shall be the	
	average of two cylinders.	
7. Yield	Each 400 yd ³	T 121*
8. Temperature	with each sample	C 1064

* For Class DS the following requirements shall apply:

1. Substitute the appropriate AASHTO Designation for references to other ASTM Designations listed in ASTM Designations C1610, C1611, and C1621.

- 5 -

- 2. Test specimens shall be made in accordance with the above listed specifications with the exception that the concrete shall not be rodded or vibrated during casting the test specimens.
- 3. The slump flow test shall only be performed on SCC mixtures in accordance with ASTM Designation C1611. For these mixtures AASHTO Designation T119 is not required. For the slump flow and J-ring tests, the filling procedure used shall be Procedure B. Additionally, for each slump flow test, determine the T50 and VSI values in accordance with the information in Appendix X1 of ASTM Designation C1611. There are no acceptance criteria for the T50 or VSI determinations.
- 4. The static segregation test shall only be performed on SCC mixtures.

Delete line B. of Table 5 in Subsection 907-804.02.13 on page 16 and substitute the following.

B. PLASTIC CONCRETE		
1. Sampling		T 141
2. Air Content	Every 100 yd ³	T 152* or T 196*
Slump Flow*	Every 100 yd ³	T 119 or C 1611*
4. Compressive Strength	One set (two cylinders) for every	T 22*, T 23*,
	100 yd ³ inclusive. A test shall be	T 231
	the average of two cylinders.	
5. Temperature	With each sample	C 1064

For Class DS the following requirements shall apply:

- 1. Substitute the appropriate AASHTO Designation for references to other ASTM Designations listed in ASTM Designation C1611.
- 2. Test specimens shall be made in accordance with the above listed specifications with the exception that the concrete shall not be rodded or vibrated during casting the test specimens.
- The slump flow test shall only be performed on SCC mixtures in accordance with ASTM Designation C1611. For these mixtures AASHTO Designation T119 is not required. For the slump flow test, the filling procedure used shall be Procedure B.

Delete Subsection 907-804.02.13.1 on pages 17, 18 & 19, and substitute the following.

907-804.02.13.1--Basis of Acceptance.

<u>907-804.02.13.1.1--Sampling</u>. Sampling of concrete mixture shall be performed in accordance with the latest edition of the Department's *Concrete Field Manual*.

907-804.02.13.1.2--Slump Flow and J-Ring Flow. Slump flow of plastic concrete shall meet the requirements of Table 3: MASTER PROPORTION TABLE FOR STRUCTURAL CONCRETE DESIGN. The difference between the slump flow and the J-ring flow shall meet the requirements of Subsection 907-804.02.10.1.2. A check test shall be made on another portion of the sample before rejection of any load.

<u>907-804.02.13.1.3--Air</u>. Total air content of concrete shall be within the specified range for the class of concrete listed in Table 3: MASTER PROPORTION TABLE FOR STRUCTURAL CONCRETE DESIGN. A check test shall be made on another portion of the sample before rejection of any load.

<u>907-804.02.13.1.4--Yield</u>. If the yield of the concrete mix design is more than plus or minus 3% of the designed volume, the mix shall be adjusted by a Class III Certified Technician representing the Contractor to yield the correct volume plus or minus three percent (\pm 3%). If batching of the proportions of the mix design varies outside the batching tolerance range of the originally approved proportions by more than the tolerances allowed in Subsection 804.02.12.1, the new proportions shall be field verified per Subsection 804.02.10.3.

<u>907-804.02.13.1.5--Temperature</u>. Cold weather concreting shall follow the requirements of Subsection 907-804.03.16.1. Hot weather concreting shall follow the requirements of Subsection 804.03.16.2. The maximum acceptance temperature for Class DS concrete shall be determined from the in-place concrete temperatures measured during the installation of the trial shaft(s) in accordance with Subsection 907-804.03.6.4.1. Based on these results, the maximum acceptance temperature shall be the lesser of the following.

- 95°F, or
- T_{max} (°F) = 150°F-($T_{maxTrialShaft}$ - $T_{acceptanceTrialShaft}$)

where:

 $T_{maxTrialShaft}$ - $T_{acceptanceTrialShaft}$ = the increase in concrete temperature in the shaft between the maximum internal shaft temperature and initial concrete acceptance temperature;

 $T_{maxTrialShaft}$ = the maximum internal shaft temperature determined in Subsection 907-804.03.6.4.1; and

 $T_{acceptanceTrialShaft}$ = the jobsite acceptance temperature of the Class DS concrete used to construct the trial shaft prior to placement in the shaft hole, not to exceed 95°F

Concrete with a temperature exceeding the maximum acceptance temperature shall be rejected and not used in Department work.

<u>907-804.02.13.1.6--Compressive Strength</u>. Laboratory cured concrete compressive strength tests shall conform to the specified strength (f'_c) listed in the specifications. Concrete represented by compressive strength test below the specified strength (f'_c) may be removed and replaced by the Contractor. If the Contractor elects not to remove the material, it will be evaluated by the Department as to the adequacy for the use intended. All concrete evaluated as unsatisfactory for the intended use shall be removed and replaced by the Contractor at no additional cost to the Department. For concrete allowed to remain in place, reduction in payment will be as follows.

Projects with 1000 Cubic Yards and More. When the evaluation indicates that the work may remain in place, a statistical analysis will be made of the QC and QA concrete test results. If this statistical analysis indicates at least 93% of the material would be expected to have a compressive strength equal to or greater than the specified strength (f'_c) and 99.87% of the material would be expected to have a compressive strength at least one standard deviation above the allowable design stress (f_c), the work will be accepted. If the statistical analysis indicates that either of the two criteria are not met, the Engineer will provide for an adjustment in pay as follows for the material represented by the test result.

Total Pay on Material in Question = Unit Price - (Unit Price x % Reduction)

% Reduction =
$$\frac{(f'_c - X)}{f'_c - (f_c + s)} \times 100$$

where:

 f'_c = Specified 28-day compressive strength, psi

- X = Individual compressive strength below f'_c , psi
- $s = \text{standard deviation, psi}^*$
- f_c = allowable design stress, psi
- * Standard deviation used in the above reduction of pay formula shall be calculated from the applicable preceding compressive strengths test results plus the individual compressive strength below f'_c . If below f'_c strengths occur during the project's first ten compressive strength tests, the standard deviation shall be calculated from the first ten compressive strength tests results.

Projects of More Than 200 but Less Than 1000 Cubic Yards. When the evaluation indicates that the work may remain in place, a percent reduction in pay will be assessed based on a comparison of the deficient 28-day test result to the specified strength. The Engineer will provide for an adjustment in pay as follows for the material represented by the test result.

Total Pay on Material in Question = Unit Price - (Unit Price x % Reduction)

% Reduction =
$$\frac{(f'_c - X)}{f'_c} \times 100$$

where:

 f'_c = Specified 28-day compressive strength, psi X = Individual compressive strength below f'_c , psi

907-804.02.13.1.7--Static Segregation. For Class DS the static segregation of the plastic concrete shall meet the requirements of Subsection 907-804.02.10.1.2. If the static segregation of the concrete mix design exceeds this requirement, the mix shall be adjusted by a Class III Certified Technician representing the Contractor to ensure a static segregation less than the maximum allowable. If batching of the proportions of the mix design varies outside the batching tolerance range of the originally approved proportions by more than the tolerances allowed in Subsection 804.02.12.1, the new proportions shall be field verified per Subsection 804.02.10.3.

Add the following after the first paragraph of Subsection 907-804.03.6.4.1 on page 23.

The internal temperature of trial shaft(s) will be monitored by the Department.

Add the following to the sentence in Subsection 907-804.03.14.2.2 on page 31.

All welds shall be performed by certified welders meeting the requirements of the approved shop drawings.

Delete the first sentence of Subsection 907-804.03.16.1 on page 35, and substitute the following.

907-804.03.16.1--Cold Weather Concreting.

At the option of the Contractor with the approval of the Engineer, when concrete is placed during cold weather and there is a probability of ambient temperatures lower than 40 Degrees Fahrenheit, an approved maturity meter may be used to determine concrete strengths by inserting probes into concrete placed in a structure.

SPECIAL PROVISION 907-804-19 AS AMENDED BY THE FOLLOWING IS APPLICABLE TO BRIDGE DECK CONCRETE.

Delete the second and third paragraphs of Subsection 907.804.03.16.2 on page 37, and substitute the following.

For bridge decks when the ambient temperature is above 90° F, the forms, reinforcing steel, steel beam flanges, and other surfaces which will come in contact with the concrete shall be cooled to below 90° F by means of a water spray or other approved methods. Additionally, when the atmospheric temperature is predicted to be 90° F or above based on the latest information available from the National Weather Service any time during the day of placement or day after placement, the time of placement shall not begin until 5:00 p.m. on the day of placement and shall be completed by 6:00 a.m. the following day.