

Guidelines for an Inspection-in-Depth of Latex Modified Concrete Overlay Construction

PROJECT DATA

Project No. _____ Contract No. _____

Project Title _____

Date of Inspection ___/___/___ District _____

Contract Amount _____ Contractor _____

Inspection Made By _____

In Company With _____

% Time Elapsed _____ % Work Completed _____

(Total WD =)

Narrative of Work Done:

-

-

-

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PURPOSE & SCOPE

The purpose of this inspection-in-depth was to determine whether or not the latex modified concrete overlay is being constructed in accordance with applicable plans and specifications, if the State's construction inspection procedures are adequate and if the resultant product is satisfactory. The inspection reviewed various project aspects to determine if (STA) procedures provided proper contract administration and maintained the required quality control necessary to produce a good LMC overlay.

OFFICE REVIEW

A. Evaluation of State's Staffing

1. List staffing and experience of personnel assigned to the phase of work:
2. Discuss delegation of authority:

3. List training staff has had in Bridge work:
4. List training staff has had in LMC work:

B. Diaries and Inspection Reports

1. Do the diaries and inspection reports contain the following:
 - a. Instructions to contractor? _____
 - b. Work day charges? _____
 - c. Contractor's operations, men, equip? _____
 - d. Date, weather, etc.? _____
 - e. Signed or initialed? _____

C. Test Reports

1. Are they meeting the sampling and testing frequencies for the amount of material produced?

TEST	ACCEPTANCE SAMPLE	ASSURANCE SAMPLE
Course Aggregate	1-1000 ton	1-5000 ton
Fine Aggregate	1-500 ton	1-2500 ton
Slump	1/Truck/Charge	20 % Accept.
Air Content	1/Truck/Charge	20 % Accept.
Cylinders (28 day)	1/Truck/Charge	20 % Accept.
Yield	1/Truck/Pour	20 % Accept.
Cement	Cert.	1-1000 ton
Latex admixture	Cert.	

2. Is there a comparison of acceptance and assurance samples?
3. If material is out of specification what corrective action is taken?

D. Documentation for Payment

1. Describe method of documentation for payment. (i.e., tickets, ledgers)
2. Is documentation process adequate?

E. Mix Design

1. Is the mix design approved and do the calibration results conform to the design?

MIX DESIGN (parts by weight)	FIELD TEST RESULTS (from mixer calibrations)
Course aggr. 1.75-2.00 #	_____
Fine aggr. 2.50-2.75 #	_____
Cement 1.00 #	_____
Air 6.00 % max	_____
Max. w/c 0.33	_____

2. How does it compare to the field test results?
3. If changes were made to the mix design, on what basis were they made?

F. Quality Level Analysis

1. A quality level analysis was performed on the following:

SPECS.			
Element	Test Results	UL	LL
Slump		7.0	5.0
Air		6.0	0.0
Strength		N/A	2500

Note: If gradient is in excess of 6%, slump spec. limits are 2-4".

MATERIAL SOURCE REVIEW

A. Materials Handling and Storage

1. Are the stockpiles separated to prevent intermingling? What is the time between stockpiling and using? Are stockpiles covered?
2. Are various sizes of aggregate intermingled in filling the compartments of haul vehicle?
3. Is the material stored and handled in such a manner as to prevent variation of more than 1.0% moisture content? (Spec, CA≤1.0%, FA≤3.0%, over SSD)
4. Where are they storing the latex admixture to protect it from freezing, temperature>85 F, and exposure to sunlight?
5. How long has latex been stored in tank? Any agitation? Are filters used when transferring latex from tank to mixer?

B. Sampling and Testing

1. What sampling & testing is done at the material source?
2. Have samples of latex been tested for per cent solids?

DECK PREPARATION

- A. Is the rotary milling machine capable of scarifying a minimum width of 4'?
 1. Is deck scarified to depth of 1/4"?

- B. Describe cleaning method (compressed air, waterjet, or vacuum). Followed by sand or waterblast, then detergent cleaning (if necess.), then compressed air or vacuum?
- C. If further deck preparation is necessary and rebar are exposed, have they chipped 3/4" clearance around bars?
 - 1. Were jack hammers heavier than 30# class used?
 - 2. Were power driven hand tools operated at angles less than 45 degrees to plane of deck?
 - 3. Are the areas adequately cleaned out?

DECK POUR OPERATIONS

A. Contractor's Mobile Mixing Operations

- 1. Is there a minimum of two mixers on the pour when pour volume is greater than amount one mixer can hold?
- 2. Prior to the pour has the state inspected the mobile mixer?
- 3. Has the state checked the calibration of the mobile mixer? Describe how this was accomplished.
 - a. Was run check made on latex throttling valve?
 - b. Was check made on water flow meter (3gal/min)?
 - c. Was run made on aggregate lines?
 - d. Did they run a trial mix?

B. Overlay Placement

- 1. How many square yards is the pour? _____ S.Y.
- 2. What is the depth of the LMC overlay?
- 3. Is the contractor positioned and prepared @ the beginning of the pour?
- 4. Who is the latex manufacturer and is their representative present during the pour?
- 5. How does contractor assure that deck is not contaminated by oil & debris from equipment during pour?
- 6. Are screed rails anchored properly as approved by the Engineer?
- 7. Was a dry run made with the screed?
- 8. What is the evaporation rate? Is it recorded? Is there noticeable wind during placement?
- 9. Is concrete placed within 24 hours of deck preparation?
- 10. Does the contractor have enough manpower on pour?
- 11. Was deck soaked with water for 2 hours prior to pour?
- 12. Did they screed latex ahead of placement? How far ahead? (10-15' max. for best results)
- 13. What was the temperature when concrete placed? Ambient:
Deck: LMC:
(75F>=Temp>=45F)
- 14. Pour should be continuous, if stopped for one hour did they place a header?
- 15. If a night pour, is lighting adequate?
- 16. Are the batch tickets written ?
- 17. How is the LMC consolidated? Is the vibrator frequency of the screed checked periodically while in the concrete? (A Vibrotak instrument is most commonly used. Specs, 6000>freq>3000 vib/min.)
- 18. Describe the finishing process.
 - a. Are they adding water to the surface? If so, by what means?

- b. Are they over working the surface?
 - c. Is the surface closed by the screed finishing or by hand work?
 - d. Is the deck textured before the latex films over?
 - e. What type surface texture are they putting on deck?
19. Describe the curing process.
- 1. How long is the wet cure?
(Spec, 42 hrs + 6 hrs transition)
 - 2. How long is the dry cure?
(Spec, 48 hrs)
 - 3. Is the burlap thoroughly saturated? Wetted again just prior to placing plastic? Is it free from dirt & oil and placed without wrinkles? Is it applied immediately after tining (within 10-15' of screed)?
20. Did they check for bonding after required cure time?

C. Sampling and Testing

- 1. Is the field testing done properly?

TEST	RESULTS	PROCEDURES
Air	_____	_____
Slump	_____	_____
Yield	_____	_____

- 2. Is the inspector knowledgeable of the test procedures?

D. Completed Overlay

Are any cracks observed in completed overlay? If so:

- 1. What are the widths, depths, lengths & locations?
- 2. When did they appear?
- 3. What is the method of repair?
 - . cover with latex slurry (not recommended)
 - a. paint the crack with epoxy sealer
 - b. inject an epoxy resin into the crack with a low-pressure applicator
 - c. apply high molecular weight methacrylate resin on cracks
 - d. other

GENERAL COMMENTS