

# Guidelines for an Inspection-in-Depth of Bridge Deck Construction

## Purpose & Scope

The purpose of this inspection-in-depth was to determine the adequacy of the State's construction inspection procedures for concrete bridge deck construction. The inspection also reviewed various project aspects to determine if (STA) provided proper contract administration and maintained the required quality control relative to the bridge construction operations.

## PROJECT DATA

Project No. \_\_\_\_\_ Contract No. \_\_\_\_\_

Project Title \_\_\_\_\_

Date of Inspection \_\_\_/\_\_\_/\_\_\_ District \_\_\_\_\_

Contract Amount \_\_\_\_\_

Inspection Made By \_\_\_\_\_

In Company With \_\_\_\_\_

% Time Elapsed \_\_\_\_\_ % Work Completed \_\_\_\_\_

Narrative of Work Done:

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## OFFICE REVIEW

- A. Evaluation of State's Staffing
  - 1. List staffing and experience of personnel assigned to this phase of 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             | 1-100 cy          | 1-1000 cy        |
| Air Content       | 1-100 cy          | 1-1000 cy        |
| Cylinders(28 day) | 1-100 cy          | 1-1000 cy        |
| Yield             | 1-100 cy          | 1-1000 cy        |
| Cement            | Cert.             | 1-1000 ton       |

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

D. Mix Design

1. Is the mix design per Std Spec's or Contractor's design?

**MIX DESIGN FIELD TEST RESULTS**  
(from batch plant)

|               |           |           |
|---------------|-----------|-----------|
| Course aggr.  | _____ #   | _____ #   |
| Fine aggr.    | _____ #   | _____ #   |
| Cement        | _____ #   | _____ #   |
| Air           | _____ oz  | _____ oz  |
| Water         | _____ gal | _____ gal |
| Water Reducer | _____ oz  | _____ oz  |
| Accel/Retard  | _____ oz  | _____ oz  |

2. How does it compare to the field test results?

E. Quality Level Analysis

SPECS.

| Element(quantity) | Test Results | UL | LL |
|-------------------|--------------|----|----|
| Slump             |              |    |    |
| Air               |              |    |    |
| Strength          |              |    |    |

|                            |  |  |  |
|----------------------------|--|--|--|
| W/C (# cement/(gal*8.345)) |  |  |  |
|----------------------------|--|--|--|

## BATCH PLANT OPERATIONS

- A. Materials Handling and Storage
  - 1. Are the stockpiles separated to prevent intermingling? What is the time between stockpiling and using? Are stockpiles covered? Are they free draining?
  - 2. If the plant was inspected by District:
    - a. Date of inspection? \_\_/\_\_/\_\_
    - b. Were any discrepancies found? If so, were they corrected?
  - 3. When were plant scales last certified? \_\_/\_\_/\_\_
- B. Sampling and Testing
  - 1. What sampling & testing is done at the batch plant?

## DECK PLACEMENT OPERATIONS

- A. Forming
  - 1. Describe method of forming deck.
  - 2. Are deck forms adequately cleaned out?
  - 3. Are forms oiled or wetted prior to pour?
- B. Reinforcing Steel
  - 1. Is reinforcing steel clean?
  - 2. Are rebars adequately tied?
  - 3. Was reinf. checked for clearance, and how?
  - 4. Was horizontal & vertical spacing checked?
  - 5. Is steel adequately supported? Describe.
  - 6. Are appropriate bars epoxy-coated? Is coating damaged?
- C. Concrete Placement
  - 1. How many cubic yards is the pour? \_\_\_\_\_ C.Y.
  - 2. Is the contractor positioned and prepared @ the beginning of the pour?
  - 3. Are screed rails anchored properly as approved by the Engineer?
  - 4. Was a dry run made with the screed?
  - 5. What is the evaporation rate? Is it recorded? Is there noticeable wind during placement?
  - 6. What was the temperature when concrete placed? Ambient:  
Deck:
  - 7. Does the contractor have enough manpower on pour?
  - 8. Describe how the concrete is being placed:
    - a. Placed by chute/bucket/pump/conveyor
    - b. Adequate vibration? How many vibrators?
  - 9. Are the concrete delivery tickets properly filled out:
    - a. What is the delivery time to the job?
    - b. Is added water noted? Are at least 40 additional revolutions required to mix the added water?
    - c. Are mixer drum revolutions recorded & less than 250?
    - d. Are test results & cylinder numbers noted?

10. Pour should be continuous, if stopped for one hour did they place a header?
  11. Describe the finishing process.
    - a. Are they adding water to the surface?
    - b. Are they over working the surface?
    - c. Is the surface closed by the screed finishing or by hand work?
  12. Describe the curing process.
- D. 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?
3. If pumps or conveyors are used, were correlation tests performed & results incorporated into acceptance criteria?
4. Are the concrete cylinders properly made? Is their method of curing the cylinders according to the (STA) Construction Manual, i.e., buried in moist earth?

**GENERAL COMMENTS:**