



# Bureau of Materials Materials Approval Procedures

MAP Number: **136**

Effective Date: February 1, 2021

Approved By: Edward Inman

## PROCEDURE FOR APPROVAL OF JOINTED PRECAST CONCRETE PAVEMENT (JPrCP) SYSTEMS

### **PURPOSE:**

To establish a procedure to approve Jointed Precast Concrete Pavement (JPrCP) Systems.

### **REFERENCES:**

*NJDOT Standard Specifications for Road and Bridge Construction*  
Section 456 – Full Depth Concrete Pavement Repair, Precast  
Section 904.03 – Structural Precast Concrete  
*NPCA Manual for Jointed Precast Concrete Pavement*

### **PROCEDURE:**

#### **A. Manufacturer's Request for Approval.**

The manufacturer shall request in writing the approval of the JPrCP System.

To be qualified as a JPrCP System, the system shall meet the requirements of SECTION 456 - FULL DEPTH CONCRETE PAVEMENT REPAIR, PRECAST and the NPCA Manual for Jointed Precast Concrete Pavement. The following information shall be included in the request for approval:

1. The name, address, and contact information for the manufacturer.
2. The name or designation of the JPrCP System that is to be evaluated.
3. Information as required in the attached checklist.

Mail the request for approval to the following:

#### **Mailing Address (USPS):**

Manager, Bureau of Materials (Thiokol Bldg. 4)  
New Jersey Department of Transportation  
P.O. Box 607  
Trenton, NJ 08625-0607

#### **Street Address (UPS, FedEx, etc.):**

Manager, Bureau of Materials (Thiokol Bldg. 4)  
New Jersey Department of Transportation  
930 Lower Ferry Road  
West Trenton, NJ 08628

#### **B. Pavement Design & Technology Unit Engineering Review**

The Pavement Design & Technology Unit will review the manufacturer's submittal for completeness according to the checklist. If the submittal is incomplete, it will be rejected. The Pavement Design & Technology Unit will review the design criteria to verify that it meets the requirements in SECTION 456 - FULL DEPTH CONCRETE PAVEMENT REPAIR, PRECAST, NPCA Manual for Jointed Precast Concrete Pavement and NJDOT design parameters. The Pavement Design & Technology Unit will make the final determination on the approval of the JPrCP system.

**PROJECT ACCEPTANCE REQUIREMENTS:**

Qualification of a JPrCP System does not constitute a blanket approval of the JPrCP system. On a project to project basis, the final design of the JPrCP system shall be submitted for approval according to the Working Drawing procedures of the *NJDOT Standard Specifications*.

**DISQUALIFICATION:**

The ME may remove a JPrCP system for non-conformance with design and construction specification requirements or for a documented history of poor field performance. The manufacturer shall notify the ME, in writing, of any change in product formulation. Failure to notify the ME of changes in product formulation will result in disqualification.

**REQUALIFICATION:**

The ME will reevaluate a product which has been disqualified only after submission of a formal request along with acceptable evidence that the problems causing the disqualification have been resolved.

The ME may require the manufacturer for any of the following reasons:

1. If the formulation of the JPrCP system has changed, the ME may require that the new formulation be requalified.
2. If the NJDOT Specifications SECTION 456 - FULL DEPTH CONCRETE PAVEMENT REPAIR, PRECAST or the NPCA Manual for Jointed Precast Concrete Pavement change, or if any referenced ASTM or AASHTO standards change, the ME may require requalification to ensure that the product meets new criteria.

# Submittal Check List

## JOINTED PRECAST CONCRETE PAVEMENT (JPrCP) SYSTEMS

### INSTRUCTIONS

To expedite the evaluation of the JPrCP system, applicants must furnish information as indicated in the Checklist. The Checklist items should be referenced to assure that the submittal package includes all of the listed information. The submittal package should be organized according to the numbered items in the Checklist. The completed Checklist should be included with the submitted package.

### Part One:

Identify material specification designations that govern the materials that are used in furnishing the JPrCP system components. Provide product literature or other documentation that describes the JPrCP system, its components and adequately addresses the checklist items. Identify PCI certified precast concrete facilities that have experience with fabricating the concrete components of the JPrCP system.

#### 1.1 JPrCP Materials

Yes	No	N/A	
___	___	___	Concrete
___	___	___	Precast concrete strength ( $f'c = 5500$ psi minimum)
___	___	___	Steel reinforcement
___	___	___	Dowel bars
___	___	___	Joint Ties
___	___	___	Bedding aggregate
___	___	___	Bedding grout
___	___	___	Dowel grout
___	___	___	other system materials

### Part Two: Design

Clearly identify that the design conforms to the specification SECTION 456 - FULL DEPTH CONCRETE PAVEMENT REPAIR, PRECAST and the NPCA Manual for Jointed Precast Concrete Pavement. Identify design assumptions and procedures with specific references (e.g., design code sections) for each of the listed items.

## 2.1 Recommended System Design Elements by NPCA Manual for Jointed Precast Concrete Pavement

Yes	No	N/A	
___	___	___	Structural design criteria
___	___	___	Thickness design
___	___	___	Reinforcement design
___	___	___	Transverse joint system design (dowels and slots design)
___	___	___	longitudinal joint design (joint ties)
___	___	___	Slab support system design (bedding material, grout)
___	___	___	other details including but not limited to grout ports, lifting mechanisms, bedding grout distribution systems

## 2.2 Performance Criteria

Yes	No	N/A	
___	___	___	Slab placement tolerances
___	___	___	Design life or ESAL's
___	___	___	relative deflection limit

## 2.4 Drawings

Provide representative drawings (may be on 8 ½ x 11 paper size) showing all standard details along with any alternate details, including the following:

Yes	No	N/A	
___	___	___	details for JPrCP elements
___	___	___	connection details
___	___	___	appurtenance connection details
___	___	___	obstruction detail (utilities, Manholes, inlets or other)
___	___	___	corrosion/durability protection details
___	___	___	construction details

## 2.5 Specifications

Provide sample specifications for:

Yes	No	N/A	
___	___	___	JPrCP system component materials

## 2.6 Example Calculations

Provide sample calculations for the design items listed in Part 2.1 above.

Yes      No      N/A

\_\_\_      \_\_\_      \_\_\_

## 2.7 Computer Support

If a computer program is used for design or distributed to customers, provide representative computer printouts of design calculations for the above typical applications demonstrating the reasonableness of computer results.

Yes      No      N/A

\_\_\_      \_\_\_      \_\_\_

## Part Three: Construction

Provide the following information related to the construction of the system:

### 3.1 Fabrication of Facing Units

All materials/manufacturing facilities in system (precast plant, aggregates, cement, steel reinforcement, etc...) must be approved by BOM and **Fabricator must be listed on NJDOT QPL.**

Yes      No      N/A

\_\_\_      \_\_\_      \_\_\_      curing methods

\_\_\_      \_\_\_      \_\_\_      concrete surface finish requirements

### 3.2 Field Construction Manual

Provide a documented field construction manual describing in detail and with illustrations as necessary the step-by-step construction sequence, including requirements for:

Yes      No      N/A

\_\_\_      \_\_\_      \_\_\_      quality control plan for installation staff

\_\_\_      \_\_\_      \_\_\_      training and certification

\_\_\_      \_\_\_      \_\_\_      all equipment and special tools

\_\_\_      \_\_\_      \_\_\_      measurement of repairs and mark out

\_\_\_      \_\_\_      \_\_\_      sawcut and removal

\_\_\_      \_\_\_      \_\_\_      base preparation

\_\_\_      \_\_\_      \_\_\_      leveling lift devices (if required for system)

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	load transfer dowels
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	joint ties
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	slab installation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	steps to maintain horizontal and vertical alignment
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	dowel and joint tie grouting
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	bedding grouting
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	trafficking or staging of JPrCP slab
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	erosion mitigation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	quality acceptance plan for inspection staff

### 3.3 Contractor or Subcontractor Prequalification Requirements

List any contractor or subcontractor pre-qualifications.

Yes	No	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	training
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	certification
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	experience

## Part Four: Performance

Provide the following information related to the performance of the system:

### 4.1 Project Performance History

Reference a minimum of at least 3 successful projects in service for at least 3 years or longer with a minimum of 10 million 18-kip equivalent single axle load's (ESAL's) endured and without any failure of any parts of the system including but not limited to slab cracking, slab deterioration, joint failure, dowel slot grout failure, grade change or settlement. If the project requires higher ESAL performance, then meet or exceed the 10 year ESAL's for the proposed roadway or 10 million ESAL's, whichever is greater, without any failure of any parts of the system including but not limited to slab cracking, slab deterioration, joint failure, dowel slot grout failure, grade change or settlement. Provide a well-documented history of performance with photos, agency contacts, including:

Yes	No	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	number of successful projects and details
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	oldest installation
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	highest 18-kip Equivalent Single Axle Load's (ESAL'S)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	demonstrated aesthetics possibilities

\_\_\_ \_\_\_ \_\_\_ maintenance history

#### 4.2 Accelerated Loading Facility (ALF) or Heavy Vehicle Simulator (HVS) Performance History

In lieu of 4.1 above, provide documentation of testing of the JPrCP system in an accelerated loading facility which simulates heavy vehicles and provide results. The JPrCP system is required to meet the 10 million ESAL's or 10-year ESAL's for the proposed roadway, whichever is greater, without any failure of any parts of the system including, but not limited to, slab cracking, slab deterioration, joint failure, dowel slot grout failure, grade change or settlement. Ensure to provide documentation of the design, testing and performance results of the JPrCP system with photos, agency contacts, including:

Yes	No	N/A	
___	___	___	description and details of testing facility
___	___	___	description, design and details of JPrCP test section
___	___	___	description and details of JPrCP system testing
___	___	___	highest 18-kip Equivalent Single Axle Load's (ESAL'S)
___	___	___	maintenance requirements during testing
___	___	___	failure description
___	___	___	demonstrated performance