

Materials Procedures Committee Regular Meeting

Meeting Time/Date: 9:00am, August 17, 2022

Meeting Location: MCST – 190 Dry Branch Drive, Charleston WV 25306

Online Meeting: Google Meet Video Conference

Online Link - (<https://meet.google.com/apa-rvti-ndx?authuser=0&hs=122>)

Files Available on ProjectWise for DOT users – See Invite or Follow P/W path:

MCST->Materials Procedure Committee->MP Committee Files->2022->2022 08 17 MP Meeting Files

Files Available on Webpage - <https://transportation.wv.gov/highways/mcst/Pages/MP-Committee-Page.aspx>

Materials Procedures approved at the last meeting (7/20/22)

1. 709.01.51 – *Acceptance Criteria for Epoxy Coated Reinforcing Steel*
2. 110.00.40 – *District Lab Inspections*
3. 100.00.00 – *Preparing Materials Procedures*
4. Reconfirmation of Various MPs

Actions from the last meeting on Materials Procedures pending approval (7/20/22)

1. ~~661.03.40~~ 661.02.40 - *Criteria to Approve Finished Aluminum Roadway Signs*. Number changed. Voted to Table pending updates from Ted Whitmore. Expecting vote at August or September MP Meeting.
2. 700.00.52 – *Guide for Source Rating System Relative to Maintenance Contracts*. July was first time at committee. No comments received, expecting to vote at August MP Meeting.

Materials Procedures - Old Business

Number	Champion	Title	Description
1-661.02.40*	Lipscomb	Criteria to Approve Finished Aluminum Roadway Signs.	This MP was created to make the acceptance and approval process for finished signs more streamlined. MP 661.03.40 is dead, and will not be carried forward, but instead MP 661.02.40 will be presented as a re-write.
2-700.00.52*	Moffitt	Guide For Source Rating System Relative to Maintenance Contracts	This change updates the testing frequency for aggregate approved sources. Since we have changed to site manager, we can no longer grade the producers on the last 20 samples. We now look at the weighted average of the past year. If a producer is removed from the A-1 list, we have come up with a way to place them back on quicker if they begin to meet compliance. Also, the evaluation calculations are shown and explained.

Materials Procedures - New Business

3-106.03.51&	Brown	Policy for Materials Certification Reciprocity	The revision is to take the Apprentice Certification out of the MP. and clean up the language for the Provisional Path.
4-601.40.20&	Perrow	Curing Concrete Test Specimens in The Field	Various updates to standards references, removed language about cardboard molds.
5-603.06.20*/&	Thaxton	Test Method for the Determination of Bond Strength Between Prestressing Steel Strand and Self-Consolidating Concrete (SCC)	Minor language cleanups, editorial changes only. Possibly up for vote. (Thaxton to discuss).

Note 1: * Denotes this MP is up for Vote

Note 2: & Denotes this MP is not up for Vote

Comments

Comments due August 10th so the Champion may review and address them. Submit comments to Adam Nester (adam.w.nester@wv.gov)

Next Meeting

Meeting Time/Date: 9:00am, September 21, 2022

Meeting Location: MCST – 190 Dry Branch Drive, Charleston WV 25306

Online Meeting: Google Meet Video Conference (Link TBD)

Additional MP Committee Meeting Information

For details of previous meetings, please visit the MCST MP Committee Webpage

<https://transportation.wv.gov/highways/mcst/Pages/MP-Committee-Page.aspx>

Tentative MP Committee Dates for 2022:

September 21, October 26, November 16, December 21

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS & TESTING DIVISION

MATERIALS PROCEDURE

CRITERIA TO APPROVE FINISHED ALUMINUM ROADWAY SIGNS.

1. PURPOSE

- 1.1 To establish procedures for approving finished aluminum roadway signs or project markers acceptable for use on West Virginia Division of Highways (WVDOH) projects.
- 1.2 To establish a procedure for maintaining a record of such information.

2. SCOPE

- 2.1 This procedure shall apply to all fabricators who assemble and produce aluminum roadway signs "henceforth referred to as Fabricator" either flat sheet or extruded and related hardware used in installation.

3. APPLICABLE DOCUMENTS

- 3.1 *WVDOH Specifications for roads and bridge section 661*
- 3.2 *WVDOH Sign Fabrication Manual.*
- 3.3 *WVDOH Design Guide for Signing.*
- 3.4 *WVDOH Approved products list "APL" for Aluminum Sheeting for traffic signs.*
- 3.5 *WVDOH Approved products list "APL" for retroreflective sign sheeting.*

4. ACCEPTANCE PROCEDURE

- 4.1 With each shipment, of aluminum signs or sign hardware to a WVDOH project, the sign Fabricator shall provide shipping documents which contain a laboratory approval number reflecting materials have been inspected meeting quality specified by the WVDOH.

5. ACCEPTANCE PROCEDURE

- 5.1 For sign materials to be evaluated for acceptance, the Fabricator must comply with the following requirements.
- 5.2 An on-site investigation and evaluation will be conducted by a WVDOH Inspector at the Fabricator's distribution location prior to materials being shipped.
- 5.3 All bare aluminum blank sign material shall be obtained from the WVDOH APL for aluminum sheeting for traffic signs.
- 5.4 All retroreflective materials shall be obtained from the WVDOH APL for retroreflective sign sheeting.

Commented [BDA1]: Look into contract usage of temporary signs. Review 636. Dave L to check to see if this is applicable.

Commented [BDA2]: Verify process for getting these on the APLs (reference the MP)

- 5.5 The Inspector shall verify the finished sign to be free of any visible defects to the reflective sheeting in the form of bubbling or misaligned borders or any defect in relation to the WVDOH Sign Fabrication Manual or the Design Guide for Signing issued by the WVDOH Traffic Engineering Division.
- 5.6 The Inspector is to verify that the finished sign matches the approved shop drawings from Traffic Engineering Division of the WVDOH
- 5.7 The Inspector will examine the workorder or invoice to verify items and quantities are correctly listed, and the Inspector will verify the document has listed the contract ID number to which the materials will be delivered.
- 5.8 The Inspector will examine the work order or invoice to verify APL numbers used for aluminum sheeting and retroreflective sheeting are listed, plus for tracking purposes the workorder or invoice must have a unique date or invoice number from the Fabricator.
- 5.9 If the evaluation of sign materials meets the above requirements, the Inspector shall approve the work order or invoice and issue a seven-digit Laboratory approval number indicating all sign materials and or hardware have been inspected.
- 5.10 If the evaluation of sign materials does not meet the above requirements, the Inspector shall issue a failing Laboratory number, plus report the reasons for not meeting specifications, Also, the Inspector shall inform the Fabricator not to ship items until the failing issues have been resolved.

Ronald L. Stanevich, P.E.
Director
Materials Control, Soils and Testing Division

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS, AND TESTING DIVISION

MATERIALS PROCEDURE

GUIDE FOR SOURCE RATING SYSTEM RELATIVE TO MAINTENANCE CONTRACTS

1.0 PURPOSE

- 1.1 To set forth a standard method of source rating that will directly influence sampling and testing frequency requirements.

2.0 SCOPE

- 2.1 This procedure will apply only to aggregate ~~and bituminous concrete~~ sources when supplying material for Division pickup relative to Maintenance Contracts.

3.0 GENERAL COMMENTS

- 3.1 The capability to perform a sustained level of Quality Control in most producer plants ~~has~~ have been established. In this regard, it is desirable to pursue a Quality Assurance Program that recognizes this level of Quality Control.

4.0 DEFINITIONS

4.1 A-1 Source

- 4.1.1 This source must have at least 20 pieces of data ~~(on any combination of items (within one-year preceding the evaluation date and have a compliance rating (based on the most recent 20 pieces of data) of at least 90%. The compliance rating evaluation will be based on data gathered from the preceding year.~~
- 4.1.2 The sampling and testing frequency shall be one sample per each week of shipment per item.
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4.2 ~~A-2 Source~~

~~4.2.1 This source shall encompass all production plants within the scope of this procedure that do not satisfy the requirements of 4.1.1.~~

~~4.2.2 The sampling and testing frequency shall be as per current specifications.~~

5.0 EVALUATION GUIDELINES

5.1 The evaluation of the level of Quality Control established by each plant will be performed and maintained current by Materials Control, Soils and Testing Division. Evaluation will be ~~monthly~~ **quarterly** and will be based on the availability of data and its compliance to controlling limits of acceptability.

5.2 The item data shall include all source item data and be calculated using a weighted average formula as follows:

$$W = \frac{\sum_{i=1}^n w_i X_i}{\sum_{i=1}^n w_i}$$

5.3 In the event that a source fails to meet the compliance rating criteria the following protocol may be instated to expedite the process of reinstating the source to the A-1 list.

5.3.1 The source may request the item data used to determine if the source meets the compliance rating criteria for personal evaluation.

5.3.2 The source shall then use this data to evaluate the items and make any necessary corrections. Once the source maintains the corrections have been made it can request to be evaluated on item data collected quarterly.

5.3.3 If the quarterly data meets the compliance rating criteria the source will be returned to the A-1 source list. This process shall continue for the following three quarters at which point the source will then return to being evaluated on the preceding years item data.

~~5.2 Two lists will be generated each month:~~

~~5.2.1 Aggregate suppliers designated A-1~~

~~5.2.2 Bituminous suppliers designated A-1~~

- 5.3 Distribution of the updated A-1 lists will be made available online, viewable at the WV DOH materials website under APL's quarterly. ~~to the District Materials Sections quarterly. Further distribution will be as necessitated.~~

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

POLICY FOR MATERIALS CERTIFICATION
RECIPROCITY ~~AND APPRENTICE CERTIFICATION~~

1. PURPOSE

- 1.1 This Materials Procedure is for certifying applicants who do not hold current materials certifications from West Virginia. Details for the Technician program can be found in MP 106.03.50 on the Materials Division [Website](#)¹.
- 1.2 This Materials Procedure establishes a path for those applicants who wish to become certified PCC Inspectors and/or Aggregate Technicians ~~materials inspectors~~ in the state of West Virginia. For those who currently hold certifications in surrounding states or recognized industrial certifications the Provisional Path is available. This path is available only if the West Virginia Division of Highways deems the certification(s) transferable into the West Virginia certification program. ~~For those who do not hold any certifications, the Apprentice Path is available.~~
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2. PROVISIONAL PATH

- 2.1 This certification path is for applicants who hold a current, applicable certification from another state, or recognized industrial certification and wish to become a certified West Virginia Inspector. To become certified through this path, the applicant must take the West Virginia certification exam. ~~(which may be subject to a testing fee.)~~ The applicant will be given only one (1) attempt to test-out and receive a passing score. The applicant may only test-out for disciplines that the West Virginia Division of Highways deems as a comparable certification. ~~The applicant shall take the next available opportunity to take the West Virginia certification exam. The Division of Highways will notify the applicant by email of the next available date.~~
- 2.2 If a passing score is not obtained on the test-out, the Provisional Certification will be revoked ~~and applicant will be required to take the respectful class to be certified in West Virginia., and the applicant may be issued an Apprentice Certification. The requirements for West Virginia certification will then revert to the Apprentice Certification guidelines.~~ If a passing score is obtained the applicant will become a

¹ <https://transportation.wv.gov/highways/mcst/Pages/MaterialProcedures.aspx>

West Virginia certified inspector and be bound by the rules of the West Virginia Certification Program.

- 2.3 To request a Provisional Certification, the following steps are required:
- 2.3.1 ~~Fill out the Certification Request Form, which is available on the Materials Division~~
Error! Hyperlink reference not valid.².
- 2.3.2 The applicant must attach copies of all current, applicable certification cards / certificates.
- 2.3.3 Email the ~~completed form~~attachment(s) to qaschoolscoordinator@wv.gov
- 2.3.4 The West Virginia Division of Highways will review the application and will notify the applicant within 30 days by email if the application has been approved or rejected. The applicant shall then be required to create an online learning account. (See Section ~~43~~.)

~~3. APPRENTICE PATH~~

- 3.1 ~~For applicants that do not hold any applicable West Virginia or other states material certifications. The applicant may apply for an Apprentice Certification card. The Apprentice Certification will allow them to learn and become familiar with the West Virginia material testing procedures prior to attending the West Virginia certification classes.~~
- 3.2 ~~The Apprentice shall work directly under a West Virginia certified inspector or their designee. The Apprentice shall not work in any area that the West Virginia inspector is not certified. The certified inspector shall sign off on and be the responsible party for all completed test results and work. The certified inspector shall observe all testing that is performed and shall remain in close proximity to the Apprentice in order to render assistance during all testing. Disciplinary action, which may include revocation of certifications, may be taken by the West Virginia Division of Highways Certification Board as Defined in MP 106.03.50 for failure to follow these requirements.~~
- 3.3 ~~The Apprentice shall take the first available certification class that is held by the West Virginia Division of Highways. The class schedule will be posted on the Materials Division web page a minimum of four (4) weeks prior to the class. If the Apprentice fails the exam, or does not take the first available class, their Apprentice Certification will be revoked, and they shall not participate in any testing until they obtain a West~~

²~~Error! Hyperlink reference not valid.~~

~~Virginia Certification. The Apprentice Certification shall only be available once per applicant.~~

~~3.3.1 To request an Apprentice Certification the following steps are required:~~

~~3.3.2 Fill out the Certification Request Form, which is available on the Materials Division Error! Hyperlink reference not valid.³.~~

~~3.3.2.1 Email the completed Apprentice application to Error! Hyperlink reference not valid.~~

~~3.3.3 The West Virginia Division of Highways will review the application, and then notify the applicant by email if the application has been approved or rejected. The applicant will then be required to create an online learning account. (See Section 4.)~~

4.3. CREATING AN ACCOUNT AND SCHEDULE THE EXAM

~~4.13.1~~ To create an online learning account, visit the [How to create an online learning account](#)⁴ Page at the Materials Control, Soils and Testing Division website and follow the instructions. The applicant shall notify qaschoolscoordinator@wv.gov by email that the account has been established.

~~4.23.2 After (10) working days and notifying the Error! Hyperlink reference not valid. that the account has been established, the Provisional Applicant may schedule the exam. The exams will be held at locations determined by the WVDOH and the locations will be posted on the Materials Control, Soils and Testing Division website.~~

~~4.33.3~~ After passing the exam, the Provisional Applicant may go to [The technician certification search portal](#)⁵ at the Materials Control, Soils and Testing Division website and print out the Apprentice / Provisional Certification Card. The card may also be saved as a screenshot on a smart phone, which may be used in-lieu of a printed card.

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Director

³. **Error! Hyperlink reference not valid.**

⁴ [http://transportation.wv.gov/highways/mcst/Documents/Technician School Documents/Coursemill new account instructions.pdf](http://transportation.wv.gov/highways/mcst/Documents/Technician%20School%20Documents/Coursemill%20new%20account%20instructions.pdf)

⁵ <https://transportation.wv.gov/highways/mcst/Pages/Technician-Directory-Portal.aspx>

Materials Control, Soils and Testing Division

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WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

CURING CONCRETE TEST SPECIMENS IN THE FIELD

1. PURPOSE

- 1.1 The purpose of this procedure is to modify the curing requirements for cylindrical and prismatic specimens that have been made in the field.
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2. BACKGROUND

- 2.1 The Division's Standard Specifications (501.4 and 601.4) require that the making and curing of concrete test specimens in the field be done in accordance with AASHTO Designation ~~T-23~~R100.
- 2.2 Section 910 of AASHTO Designation ~~T-23~~R100 covers curing of the test specimens until time of test.
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3. APPLICABLE DOCUMENT

- 3.1 *AASHTO Designation ~~T-23~~R100*
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4. PROCEDURE

- 4.1 Curing of cylindrical and prismatic specimens made in the field shall be in accordance with Section 910 of AASHTO Designation ~~T-23~~R100 with modifications as follows.
- 4.1.1 Delete the section that covers initial curing (10.1.2 in ~~T23-04~~R100-21) and substitute the following:

10.1.2 Initial Curing - Immediately after molding and finishing, the specimens shall be stored for a period of 24 ± 8 hours in a temperature range from 60 to 80°F (16 to 27°C), and in an environment preventing moisture loss from the specimens. For concrete mixtures with a specified strength of 6000 psi (40 MPa) or greater, the initial curing temperature shall be between 68 and 78°F (20 and 26°C). Various procedures are capable of being used during the initial curing period to maintain the specified moisture and temperature conditions. An appropriate procedure or combination of procedures shall be used (Note 68). Shield all specimens from direct sunlight and, if used, radiant heating devices. The storage temperature shall be controlled by the use of heating and cooling devices, as necessary. Record the temperature using a maximum-minimum thermometer. ~~If cardboard molds are used, protect the outside surface of the molds from contact with wet burlap or other sources of water.~~

- 4.2 Delete the section that covers transportation of specimens to the laboratory (11.1 in ~~T23-04~~R100-21) and substitute the following:

11.1 Prior to transporting, cure and protect specimens as required in Section 910. When standard curing is used, specimens shall be transported within 24 ± 8 hours after molding. When field curing is used, specimens shall not be transported to the laboratory until just prior to testing. During transporting, protect the specimens with suitable cushioning material to prevent damage from jarring. During cold weather, protect the specimens from freezing with suitable insulation material. Prevent moisture loss during transportation by wrapping the specimens in plastic, wet burlap, by surrounding them with wet sand or tight-fitting plastic caps on plastic molds. Transportation time shall not exceed 4 hours.

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Materials Control, Soils and Testing Division

MP 601.04.20 Steward – Cement and Concrete Section
RLS:T

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

TEST METHOD FOR THE DETERMINATION OF BOND STRENGTH BETWEEN
PRESTRESSING STEEL STRAND AND SELF-CONSOLIDATING CONCRETE (SCC)

1. PURPOSE

- 1.1 To establish a test method for the determination of the bond strength between prestressing steel strand and self-consolidating concrete (SCC).

2. SCOPE

- 2.1 The test method set forth in this MP shall be used as part of the mix design qualification and approval process for SCC mixes used in the fabrication of prestressed concrete bridge members fabricated for the WVDOH.

3. PETERMAN BEAM TEST

- 3.1 The Peterman Beam Test shall be used to determine the bond capacity of AASHTO M203 Grade 270 0.520-inch (½-inch “oversize”) diameter 7-wire steel strand (area of steel = 0.167 in²) and AASHTO M203 Grade 270 0.600-inch diameter 7-wire steel strand (area of steel = 0.217 in²) when used in conjunction with SCC. Each size of strand which will be used during the fabrication of prestressed concrete bridge members for the WVDOH must be tested.
- 3.2 An 8-inches wide x 6-inches tall x 11-ft 6-inches long concrete test beam, containing a single prestressing strand of the size being qualified, shall be constructed as shown in Figures 1, 2, & 3. The SCC mix being qualified and the Fabricator’s standard batching, placement, curing, and de-tensioning methods shall be used to fabricate this test beam. The single prestressing strand shall be embedded along the centerline of the beam at a depth of 4.5-inches from the top.

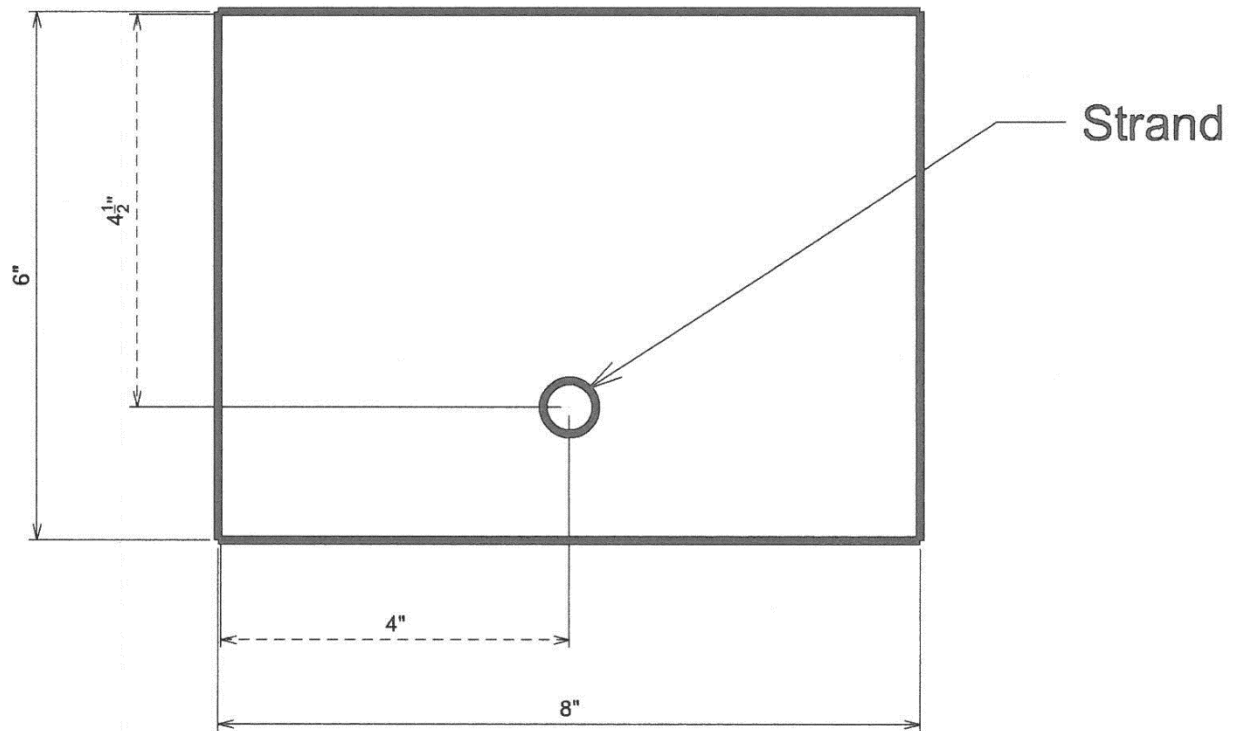


Figure 1. This drawing shows a cross section of the quality assurance test beam.
(1 in = 25.4 mm) Dimensional tolerance: +/- 1/8 inch

- 3.3 After de-tensioning, the ends of the strand shall be ground flush with the concrete at the ends of the test beam. Figure 1 shows the cross section at the end of beam.
- 3.4 Gradually load the test beam to $P_{85\%}$, which is the load necessary to produce 85% of the calculated nominal moment capacity of the section as shown in Figure 2. This can be accomplished by slowly lowering concrete dead-weight blocks using a forklift or other lifting device. The use of nylon slings to suspend the blocks facilitates the gradual loading process, as the nylon stretches during the loading process. Alternatively, several smaller weights may be sequentially loaded onto the beam.

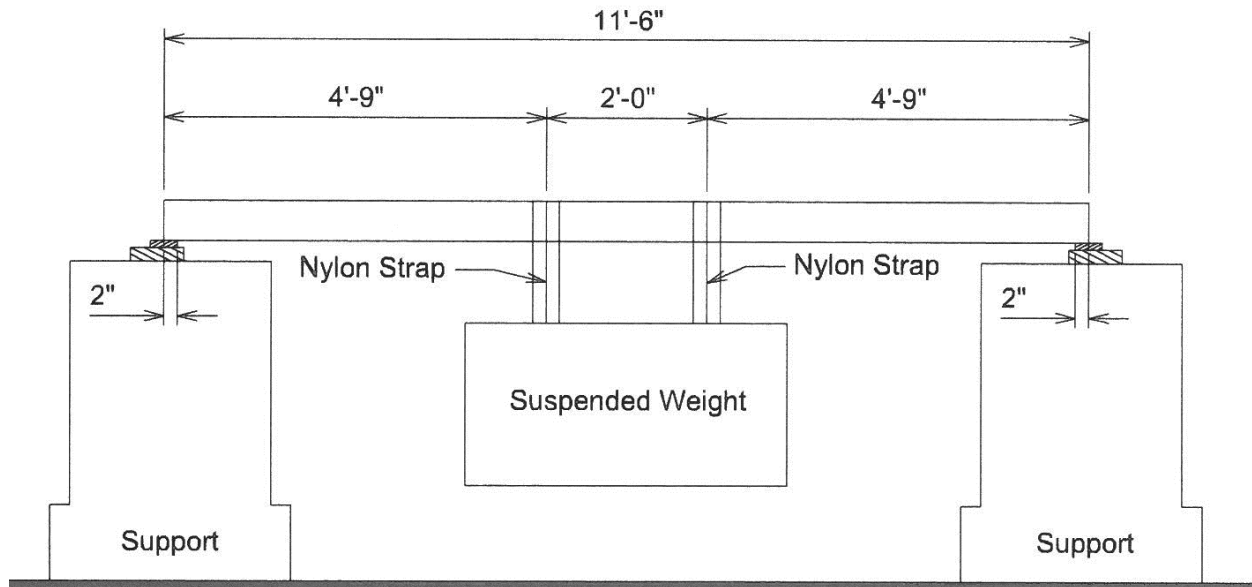


Figure 2. Test Setup

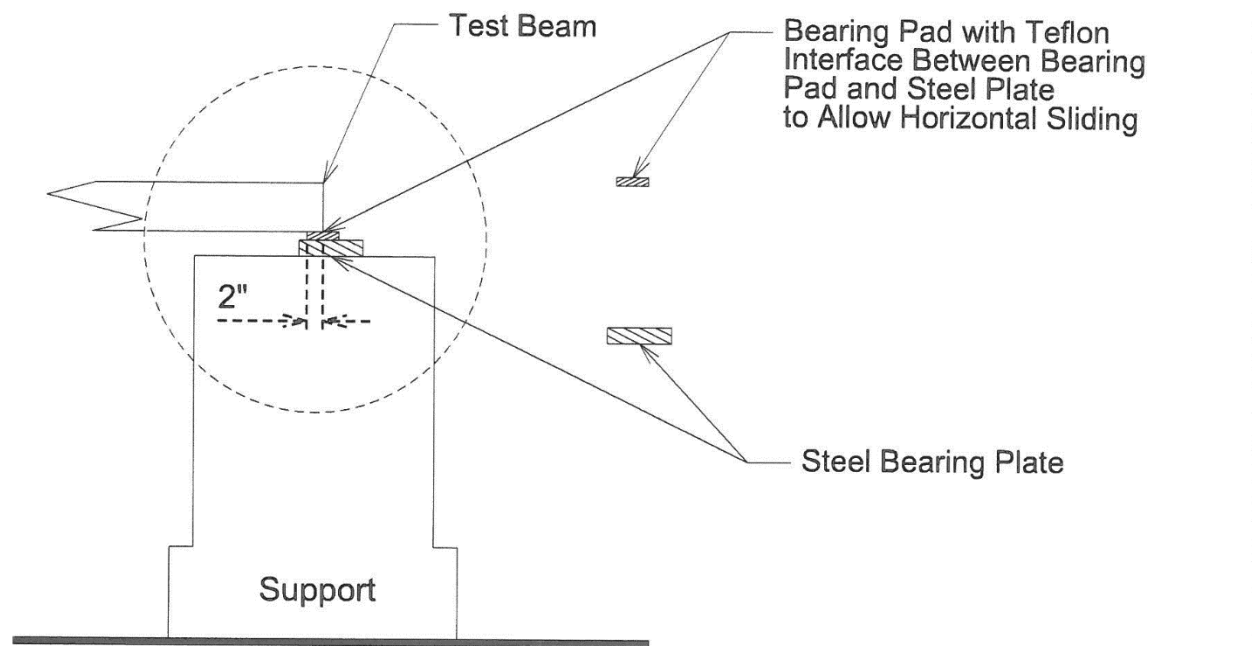


Figure 3. The test setup can be with neoprene bearing pads and bearing plates at each end, or one end of the test setup can have a slide bearing or roller (3 inches diameter minimum), while the other end has a standard neoprene bearing pad. The bearing pad (1 inch thickness minimum) has a Teflon interface on top of a stainless steel bearing plate (1/2 inch thickness minimum).

Note: When this test is carried out at an actual facility, a protective fence and other safety measures should be used. (1 in = 25.4 mm. 1 ft = 0.305m). Dimensional Tolerance: +/- 1/4 inch

- 3.5 Inspect the beam and document cracks and strand end-slip if present. With the ends of the strand ground initially flush with the end of the beam end, additional strand slip can be visually detected by noting any draw-in at the ends.
- 3.6 Sustain the load for a minimum of 24 hours to see if there are increasing signs of distress, such as increased strand slippage at the ends, increased cracking, concrete crushing, and the like.
- 3.7 Load the beam with the additional 15% of the load ($P_{15\%}$) which will give the total load ($P_{100\%}$) required to give a full nominal moment (M_n) of the section and hold that load for at least 10 minutes. If the beam has not collapsed, it has successfully passed the test, and the SCC mix being qualified shall be considered to have acceptable bonding characteristics to the size of strand being tested.
- 3.8 Tables 1 and 2 are the prescribed loads for specified compressive strengths of concrete for Areas of Steel Reinforcement of 0.167 inch² and 0.217 inch² respectively. Note the specified minimum compressive strength of concrete at the time of initial prestress is 4000 psi.

Table 1. Prescribed Loadings for ~~Specified Compressive Strength of Concrete for when the Area of~~ Reinforcement Area is of 0.167 inch² per specified compressive strength.

f_c (psi)	$P_{85\%}$ (lbs)	$P_{15\%}$ (lbs)	$P_{100\%}$ (lbs)
5000	4440	840	5280
6000	4560	860	5420
7000	4650	880	5530
8000	4720	890	5570
9000	4770	900	5670
10000	4820	910	5730

Table 2. Prescribed Loadings for ~~Specified Compressive Strength of Concrete for~~
~~when the Area of~~ Reinforcement Area is of 0.217 inch² per specified compressive
strength.

f_c (psi)	P _{85%} (lbs)	P _{15%} (lbs)	P _{100%} (lbs)
5000	5580	990	6570
6000	5780	1020	6800
7000	5920	1040	6960
8000	6020	1060	7080
9000	6100	1080	7180
10000	6170	1090	7260

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