Prepavement Conference Caltrans/ FHWA / WSC

2004

Western States Chapter

American Concrete Pavement Association

Tom Salata, Director

10-1. CONCRETE PAVEMENT

- “Portland cement concrete pavement shall be constructed in conformance with the provisions in Section 40, "Portland Cement Concrete Pavement," of the Standard Specifications and these special provisions, and as shown on the plans.
- Insert method for forming joints in pavement shall not be used. .”

Prepaving Conference

- Supervisory personnel of the Contractor and subcontractors who are to be involved in the concrete paving work shall meet with the Engineer at a prepaving conference, at a mutually agreed time, to discuss methods of accomplishing the paving work.

Prepaving Conference

- The Contractor shall provide a facility for the prepaving conference within 5 km of the construction site or at a nearby location agreed to by the Engineer. Attendance at the prepaving conference is mandatory for the Contractor's project superintendent, paving construction foreman, subcontractor's workers, including foremen and personnel performing saw cutting, joint sealing, concrete plant manager, and concrete plant operator. Conference attendees shall sign an attendance sheet provided by the Engineer. Production and placement shall not begin nor proceed unless the above-mentioned personnel have attended the mandatory prepaving conference.

Just-in-Time Training

- Attending a 4-hour Just-In-Time Training (JITT) shall be mandatory, and consist of a formal joint training class on portland cement concrete and paving techniques. Construction operations for portland cement concrete paving shall not begin until the Contractor's and the Engineer's personnel have completed the mandatory JITT.

- The Contractor's personnel included in the list of participants for the prepaving conference as well as the Engineer's representatives shall attend JITT. JITT shall be in addition to the prepaving conference.

- The JITT class will be conducted for not less than 4 hours on portland cement concrete pavement and paving techniques. The training class may be an extension of the prepaving conference and shall be conducted at a project field location convenient for both the Contractor and the Engineer. The JITT class shall be completed at least 15 days, not including Saturdays, Sundays or holidays, prior to the start of portland cement concrete paving operations. The class shall be held during normal working hours.

- The JITT instructor shall be experienced in the construction methods, materials, and test methods associated with construction of portland cement concrete pavement and paving techniques. The instructor shall not be an employee of the Contractor or a member of the Engineer's field staff. A copy of the course syllabus, handouts, and presentation material shall be submitted to the Engineer at least 7 days before the day of the training.

- The Contractor and the Engineer shall mutually agree to course instructor, the course content, and training site. The instructor shall issue a certificate of completion to the participants upon completion of the class. The certificate of completion shall include the course title, date and location of the class, the name of the participant, instructor's name, location and telephone number.

- The Contractor's or Engineer's personnel involved with portland cement concrete paving operations will not be required to attend JITT if they have completed equivalent training within the previous 12 months of the date of the JITT for this project. The Contractor shall provide a certificate of class completion as described above for each staff member to be excluded from the JITT class. The Engineer will provide the final determination for exclusion of staff member's participation. Attendees of the JITT shall complete, and submit to the Engineer, an evaluation of the training. The Engineer will provide the course evaluation form.
- Just-In-Time Training shall not relieve the Contractor of responsibility under the contract for the successful completion of the work in conformance with the requirements of the plans and specifications.

TEST STRIP

- At the beginning of paving operations, the Contractor shall construct an initial test strip of concrete pavement from 200 m to 300 m in length. The paving width for the test strip shall be the same as that intended by the Contractor for production work. The Contractor shall use the same equipment used to construct the test strip for the remainder of the paving operations, except as specified in this section. The Contractor shall not perform further paving until the test strip is evaluated in conformance with the provisions in Section 40-1.10, "Final Finishing," of the Standard Specifications regarding surface straight edge requirements, and "Profile Index" in this section; for dowel and tie bar alignment verification; concrete quality (except modulus of rupture); and pavement thickness.

. Additional test strips will be required when:

A. A portion of a test strip fails to conform to the provisions in Section 40-1.10, "Final Finishing," of the Standard Specifications for straight edge requirements;

B. A portion of the test strip fails to conform to profile requirements;

C. The Contractor proposes different paving equipment, including a batch plant, paver, dowel inserter, tie bar inserter, tining, or curing equipment;

D. The dowel bar tolerances are not met;

E. The pavement thickness deficiency is greater than 15 mm after grinding; or

F. A change in concrete mix proportions has occurred.

- The Contractor shall perform coring of the test strips, as directed by the Engineer, as part of the dowel and tie bar placement tolerance verification, and pavement thickness verification. The Engineer will select a minimum of six dowels and six tie bars that will be cored for each test strip. After removal of cores, voids in concrete pavement shall be cleaned and filled with hydraulic cement grout conforming to the provisions in "Core Drilling for Dowel Placement Alignment Assurance Testing" in this section.
- Before mechanical dowel inserters are used, the Contractor shall demonstrate that the insertion equipment will not leave surface irregularities such as depressions, dips, or high areas adjacent to the dowel bar insertion point, or voids or segregation around dowels.

- Prior to placement of the test strip, the Contractor shall submit a written procedure to locate transverse weakened plane joints that will coincide with the center of the dowels being placed. This procedure shall be submitted prior to the prepaving conference, and shall describe the control of inadvertent covering of paint markings after applying curing compound, excessive paint spray producing too large a paint dot marking for the accuracy required, misalignment by transferring marking spots, and inadequate staking of joints.

- Construction of concrete pavement shall not proceed until the Engineer has completed an evaluation of the test strip. The Engineer shall be allowed three days, not including Saturdays, Sundays and legal holidays, to evaluate the test strip. If, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of the Engineer not completing the evaluation of the test strip within the time specified, the delay will be considered a right of way delay in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications. Test strips failing to conform to the specifications for concrete pavement shall be removed. Additional test strips shall be constructed until the Contractor constructs a test strip that conforms to the specifications for concrete pavement. Additional test strips shall conform to the requirements in this section, except the test strip shall be 200 m in length.

- Prior to constructing additional test strips, the Contractor shall change methods or equipment to construct a test strip that conforms to the provisions in Section 40-1.10, "Final Finishing," of the Standard Specifications, "Profile Index" of this section, and dowel bar alignment verification, without grinding or other corrective work.
- The Engineer may waive the initial test strip if the Contractor proposes to use a batch plant mixer and paving equipment with the same personnel that were satisfactorily used on a Department project within the preceding 12 months. The personnel shall be individuals listed in the prepaving conference used on a preceding Department project.

- Materials resulting from the construction and removal of rejected test strips shall become the property of the Contractor and shall be removed and disposed of in conformance with the provisions in Section 7-1.13, "Disposal of Material Outside the Highway Right of Way," of the Standard Specifications.

Brief Conference Outline

- Registration
- Introduction of individuals
- Description of duties, responsibilities
- Design Considerations - What’s Important
- Concrete Fundamentals
- Construction Fundamentals
- Project Details
- General Discussion

At least 14 days prior to field qualification, the Contractor shall submit the proposed pavement concrete mix proportions with laboratory test reports. …shall include MR determined for each trial mixture at ages of 7, 14, 28 and 42 days ...

A concrete mix design will be field qualified when the test results of 5 beams from a single batch of concrete indicate the average modulus of rupture is at least 3.9 Mpa, with no single beam lower than 3.8 Mpa at an age of the Contractor's choice but not later than 28 days.


SOFF-CUT
X-2500

Sawing Window

- Weather conditions
  - Ambient temperature
  - Wind
  - Humidity
  - Cloud cover
  - Season

Various types of cracks

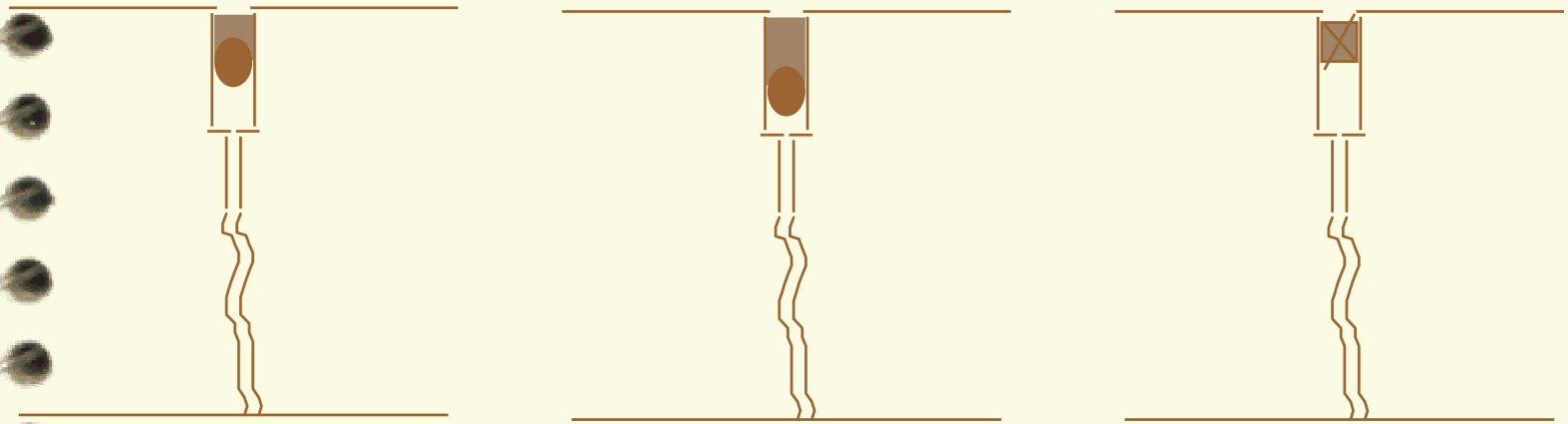
- Volunteer Cracks - previously discussed, usually are full depth, full width
- Plastic Shrinkage Cracks - varying length, seldom full depth or full width
- Reflection Cracks - induced upward from the underlying layer
- Craze Cracking - “chicken wire” pattern, usually from over finishing, very shallow in depth

Joint Ravelling

- Early sawing
- Surface texturing
- Compatible equipment
- Equipment condition

Need for Sealing

- Joint Performance - Seal



Cold Applied Silicone

Hot Applied

Preformed

40-1.10 Final Finishing

- Edges of initial paving widths rounded to 12 mm radius: transverse contact joints to 6 mm radius.
- Initial texturing with a burlap drag or a broom device: final texturing with a spring steel tine device to produce grooves parallel with the centerline.
- Down pressure of broom or tine device must be controllable.

Final Finishing (Cont.)

- Spring steel tines shall be rectangular in cross-section 2.4 mm to 3.2 mm wide, on 19-mm centers and of sufficient length, thickness and resilience to form grooves approx. 5 mm deep in the fresh concrete surface. The resultant surface shall have a coefficient of friction not less than 0.30 as determined by CT 342. Test will be made at least 7 days after placement.

Final Finishing - Profiles

- Surface to not vary more than 6 mm from the lower edge of a 3.6 m straight edge.
- Surface shall be profiled by the Con-tractor using a California Profilograph as per CT 526. Profiles to be made 1.0 meter from and parallel with each edge of pavement and at each longitudinal joint.
- Main line to have a Profile Index of 11mm or less for each 0.1-km.

Final Finishing - Profiles

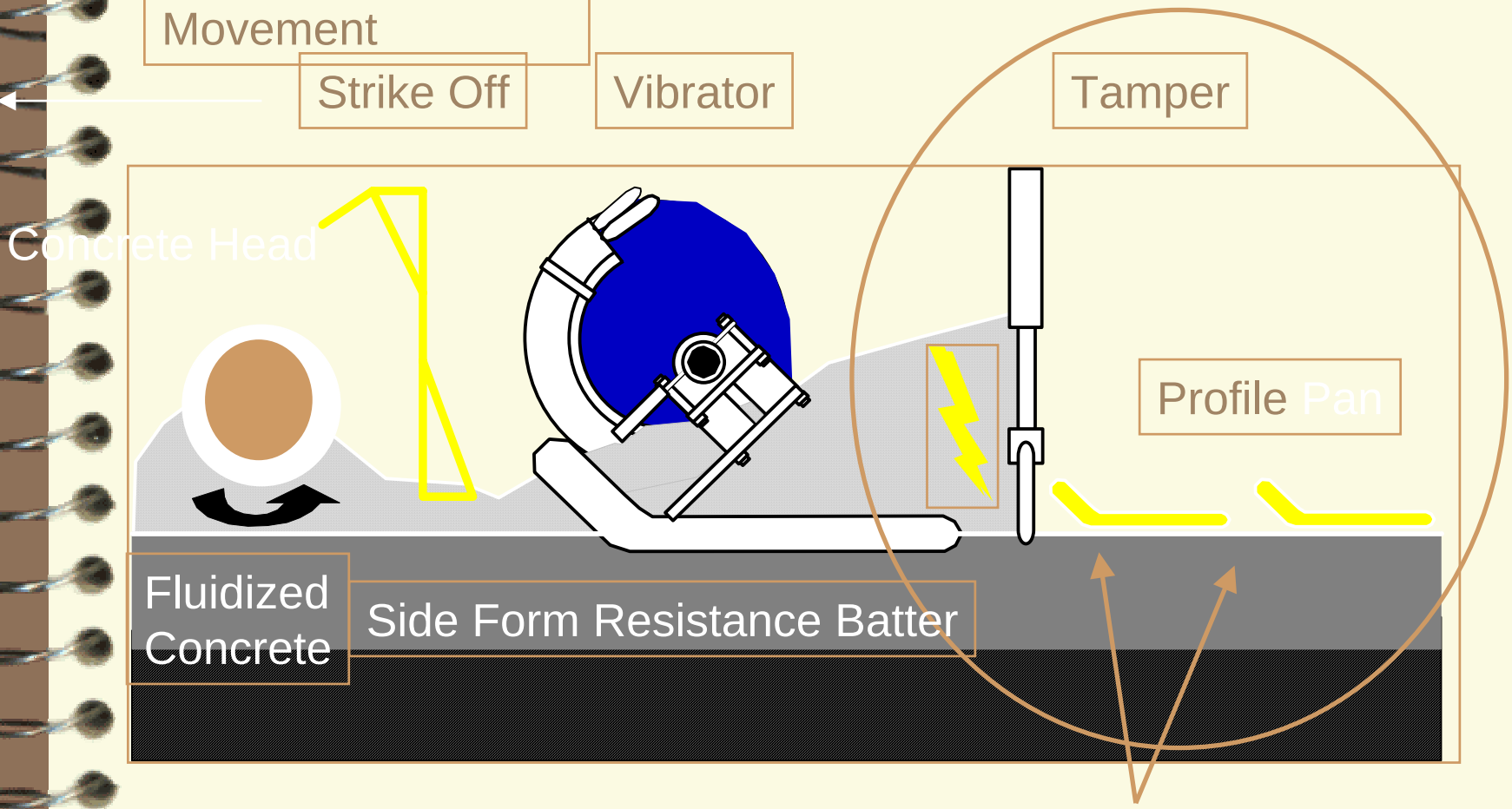
- Individual high points in excess of 7.5 mm as defined in CT 526 shall be reduced by grinding, until compliance is indicated by reruns of CT 526. After grinding has been completed to reduce individual bumps additional grinding shall be performed to reduce the PI to the general PI requirements.
- All ground areas shall be neat rectangular areas of uniform surface appearance.

Slipform Paving

TO EXTRUDE:

"To shape a material by forcing it through a mold."

Extrusion Envelope



Purpose of Vibration

- Consolidate Concrete Mass
- Fluidize the Concrete Mass


5107


TARGET
60197

Concrete Paving Necessities

- Consistent Delivery
- Consistent Quantity
- Consistent Quality
- Consistent Motion

Placing Dowel Bars

- Basket assemblies
- Dowel bar inserters

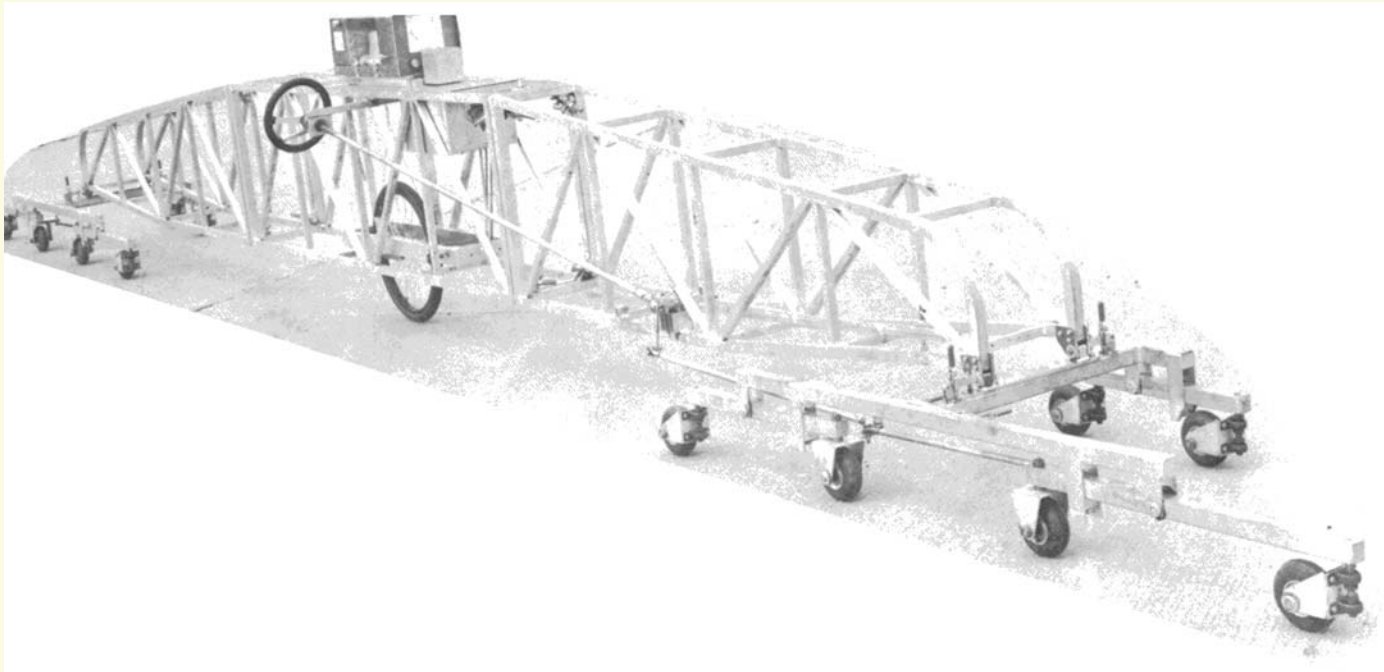

Maintainer
GUNTERT
& ZIMMERMA
CALIFORNIA


AUTOMATIC EQUIPMENT
MAY START
AT ANYTIME

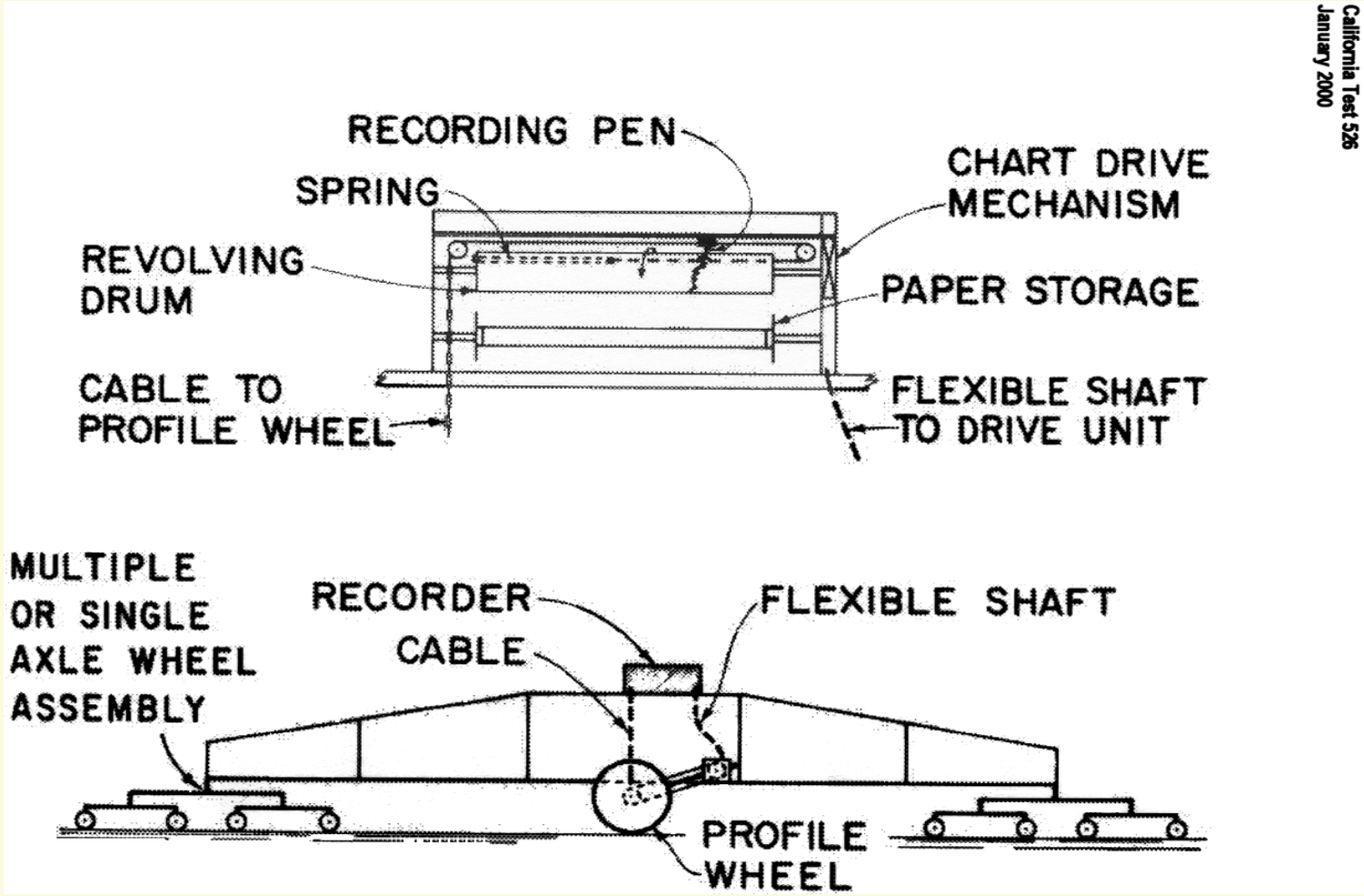
Curing

- Uniform Application
- Timely - as the surface sheen evaporates from the pavement surface
- Check application rates and yield
- Make sure compound thoroughly mixed in field
- Check “empty” totes for presence of pigment

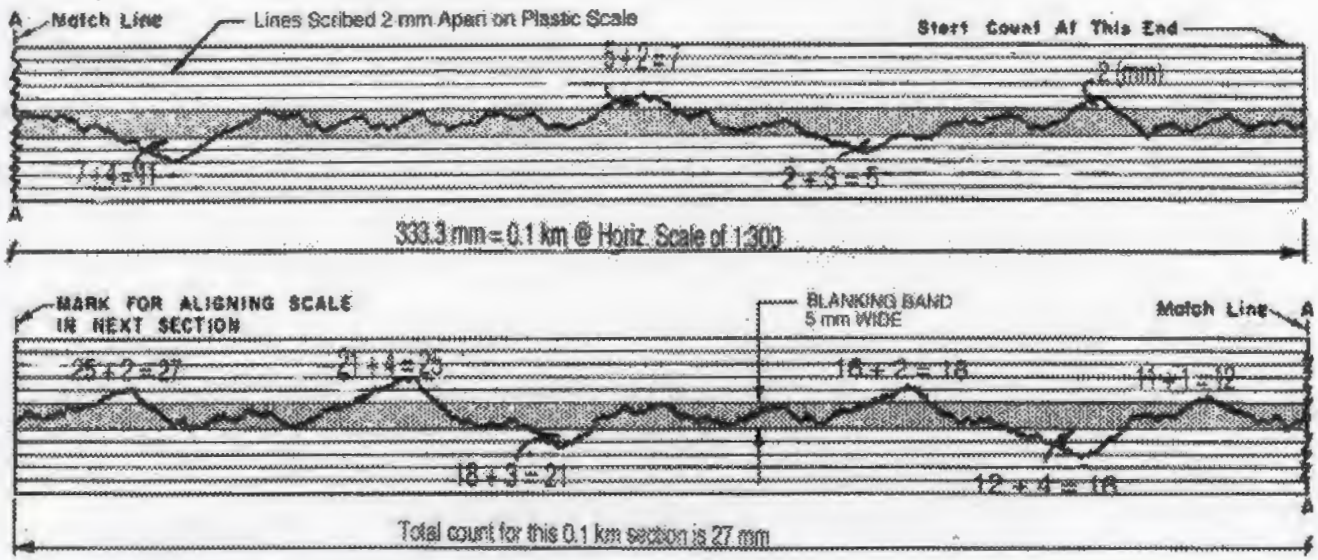
California Profilograph



California Profilograph



EXAMPLE SHOWING METHOD OF DERIVING PROFILE INDEX FROM PROFILOGRAMS



California Portable Skid Tester

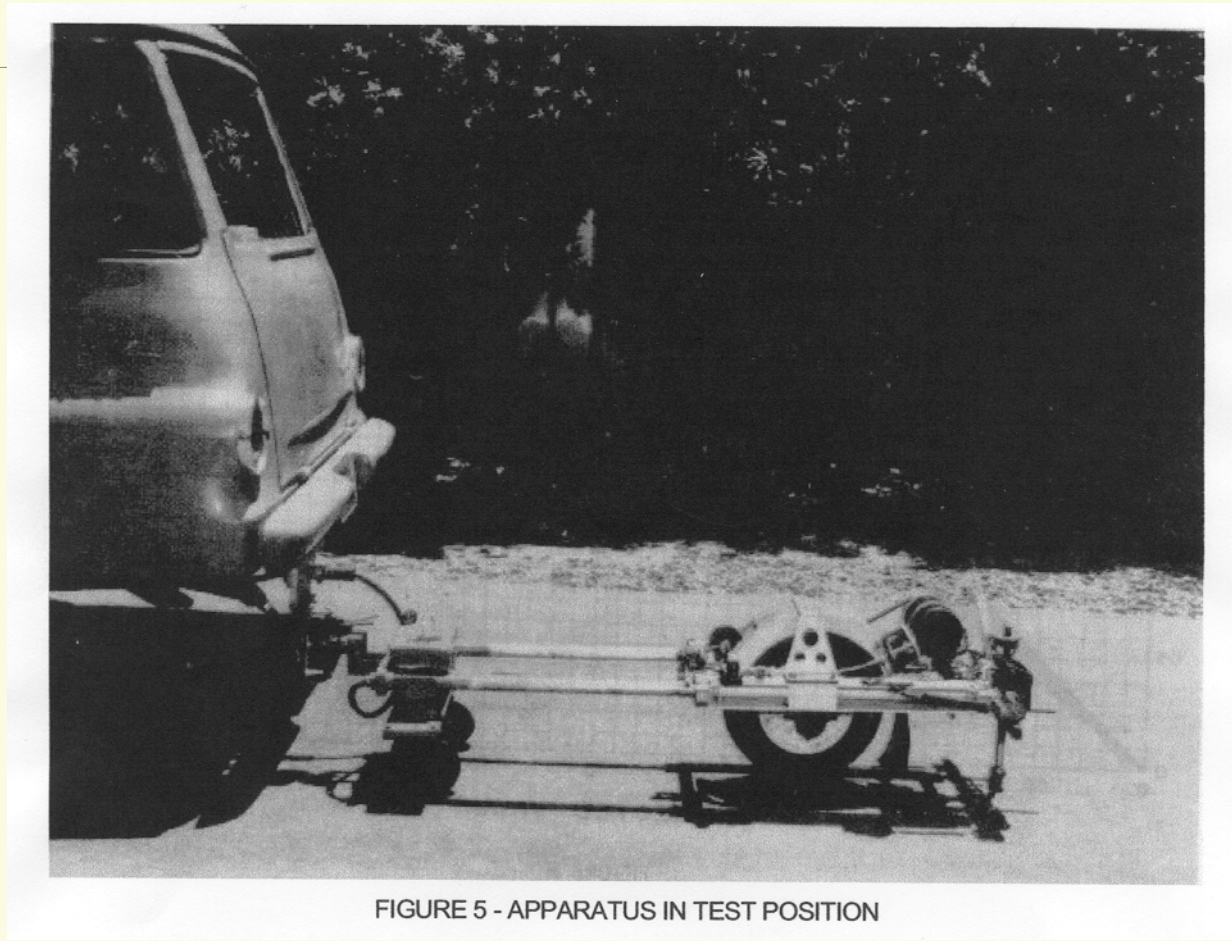
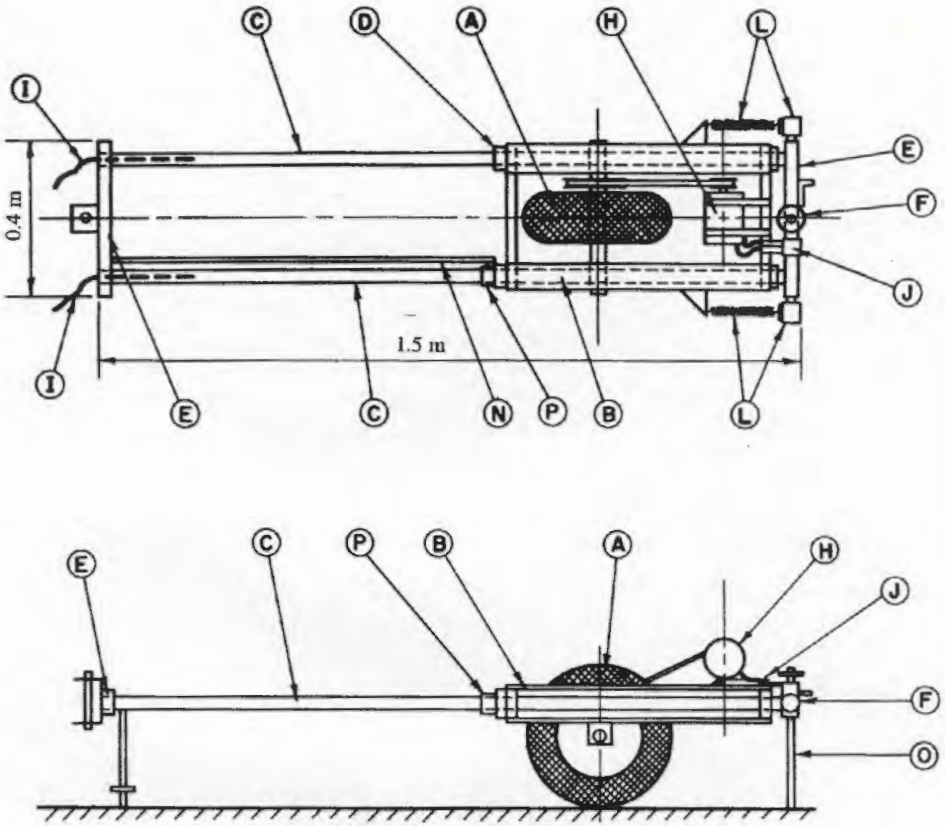


FIGURE 5 - APPARATUS IN TEST POSITION



LETTER REFERENCE	DESCRIPTION
A	TEST TIRE
B	CARRIAGE COLLAR
C	CARRIAGE GUIDE RODS
D	BEARING ASSEMBLY
E	END FRAME BARS
F	ADJUSTMENT KNOB
G	RELEASE ARM
H	MOTOR
I	POWER CABLES
J	STARTING SWITCH
K	TACHOMETER
L	CALIBRATED SPRINGS
M	TIRE CIRCUMFERENCE
N	GAGE
O	REAR SUPPORT ROD
P	SLIDING GAGE INDICATOR

FIGURE 1 - DIAGRAM OF SKID TESTER

Construction Manual

- This manual establishes policy and procedure for the construction phase of contract work and describes the duties of field personnel assigned to construction projects.
- This manual is not a contract document. It is a book of reference and instruction to be used in the administration of contract projects.

Construction Manual

- Refer to Chapter VI, CONSTRUCTION DETAILS, Section 6-40-Portland Cement Concrete Pavement for a description of paving operations, responsibilities, extent of authority and proper channels for communication.
- Refer to Section 6-90-Portland Cement Concrete technical matters and for a description of actions required of field engineers.

Construction Manual, Ch. 6, Construction Details - for:

- Section 6-40-Portland Cement Concrete Pavement
- Section 6-90-Portland Cement Concrete

Highway Design Manual

- Provides current information on design considerations, background information, and design standards to be used for all aspects of highway design. Both asphaltic and concrete pavements are thoroughly covered.

Test Manuals

- California Test Methods - For widely used tests on California projects. Written primarily as a technicians test manual
- American Society for Testing and Materials
- American association of State Highway and Transportation Officials
- Above two organizations produce test procedures and specifications for a wide variety of items

Standard Plans

- Provide details for standard items of hardware to be used in highway construction as well as standard details for the construction of actual construction. In pavements they include matters primarily relating to jointing details, end anchors, tie bar placement and dowel placement.

Special Provisions

- Specific clauses setting forth conditions or requirements peculiar to the work and supplementary to matters covered in the Standard Specifications
- In general, used to reflect changes in thinking on specification matters or to address new materials or procedures

6-1.07 Certificates of Compliance

- Shall be furnished prior to the use of any material for which the specifications or special provisions require that a certificate be furnished.
- Shall be signed by the manufacturer of the material or the manufacturer of assembled materials and shall state the the material comply in all respects with the requirement of the specifications.

Certificates, continued

- Materials may be sampled and tested at any time
- Contractor always responsible for supplying materials that fully comply with requirements
- The Department reserves the right to refuse to permit the use of material on the basis of a Certificate of Compliance

Standard Specifications

- The basic contract document for the construction of transportation facilities
- The Standard Specifications, Standard Plans, project plans, special provisions, contract change orders, and supplementary documents are all essential parts of the contract, and a requirement in one is as binding as though occuring in all.

Priority

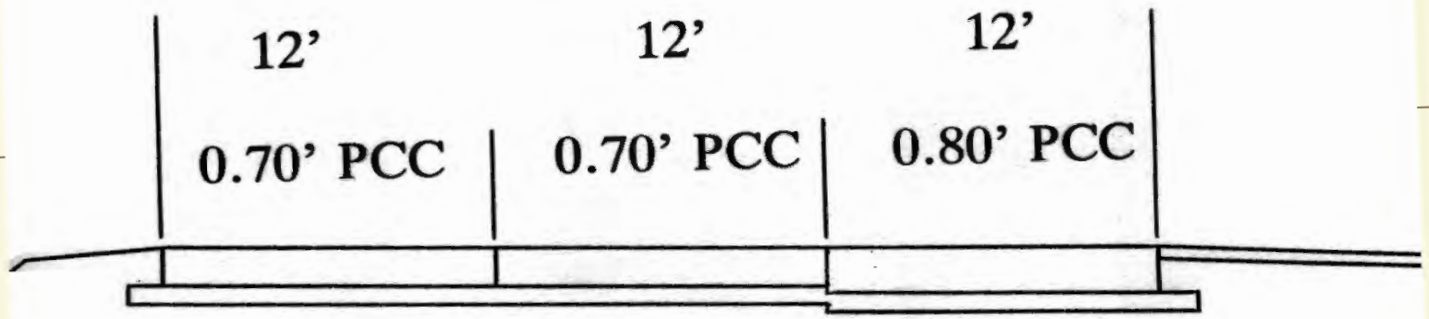
- Project plans shall govern over Standard Plans; Standard Plans and project plans shall govern over the Standard Specifications; and the special provisions shall govern over both the Standard Specifications and the plans.

Inspector Requirements

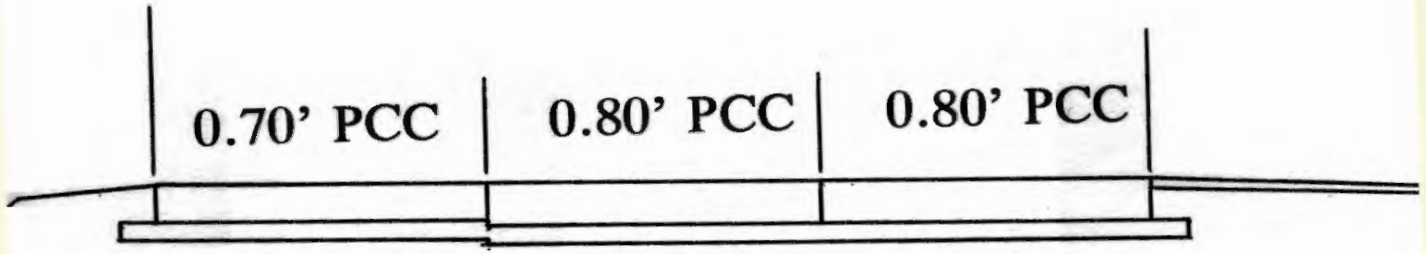
- Full knowledge of project documents and the Construction Manual that applies to the given assignment
- Ability to take fair and firm action when required
- Ability to work as a “partner” with the goal of achieving a successful project
- Provides prompt information regarding test results and decisions affecting the work

Case Histories

New pavement As Constructed

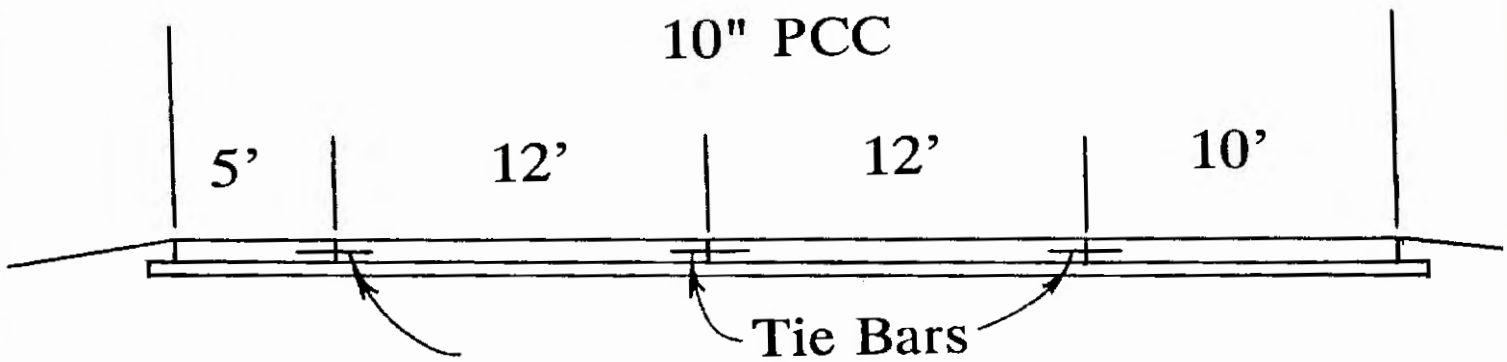


What s Wrong With This Section?

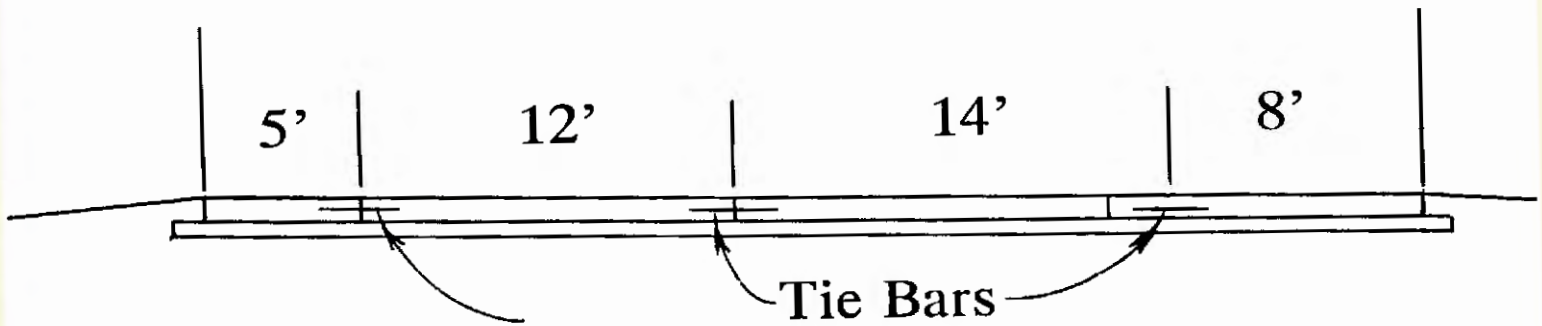


Section As Planned

Project With Various Typical Sections



Typical Section "A"



Typical Section "B"