Appendix C: PTFE Spherical Bearings Inspection Guidelines

C-1 Introduction

Polytetrafluoroethylene (PTFE) spherical bearings are called out in the project plans.

This appendix contains inspection guidelines and reminders to assist Structure Construction (SC) staff when preparing for and inspecting the installation of PTFE spherical bearings.

Additional information regarding PTFE spherical bearings is available in the following references:

- Materials Engineering and Testing Services (METS) Office of Quality Assurance & Source Inspection *Quality Assurance and Source Inspection Manual*, Section 51[1], *Concrete Structures*, subsection 51-D, *PTFE Spherical Bearings*.
- Bridge Design Memo to Designers, MTD 7-1, *Bridge Bearings*.

C-2 During Construction Operations

SC staff should review and consider the following in preparation for PTFE spherical bearing installation:

1. PTFE bearings have long lead times, which may require coordination with Bridge Design to ensure the shop drawings are authorized in an expeditious manner.
2. PTFE units are cast in place (usually at the hinge) and must be shipped as a unit and installed intact before concrete is placed (check manufacturer instructions and authorized shop drawings).
3. Check for conflicts between the PTFE spherical bearings and reinforcing steel, restrainer cables, equalization bolts, drains, and future utilities.
4. Field verify that the reinforcement under PTFE spherical bearings has the required minimum concrete cover.
5. A qualified representative of the PTFE spherical bearing manufacturer is required to be present during installation of the first PTFE spherical bearing and

[1] Caltrans internal use only

be available during remaining installations. This representative is an excellent source of experience and knowledge with issues and details of the installation.

6. The Contractor needs to have a plan in place to support the PTFE spherical bearing unit at the proper grade prior to concrete placement (see Figure C-1 below).
7. If the PTFE spherical bearings are disassembled, ensure that the units are reassembled with the same top and bottom sections. See the authorized shop drawings for allowable disassembly and reassembly details. Any damage to the bearings or to their mating surfaces must be repaired in the fabricator's shop.
8. Make sure the PTFE spherical bearings are placed in the correct location, direction, and elevation. You may need to perform a field survey to verify the alignment and orientation.
9. Verify that the PTFE spherical bearing unit is protected from concrete splatters and curing materials (see Figure C-1 below).
10. The concrete mating surfaces to receive the PTFE spherical bearing masonry plate (bottom plate) should be finished level in both directions. Consult the project plans for additional details.
11. Where the PTFE spherical bearings are not cast into the structure (i.e., at bents and abutments), check the dimensions of any block-outs for lugs or studs. Lugs will be required to be grouted into place with a low shrinkage grout mix design. See Figures C-2 and C-3 below for illustrations of bearings installed on top of a pier. Review the project plans and specifications for additional details.
12. Discuss with the Assistant Structure Representatives and the Contractor about releasing the hold down straps between the upper and lower PTFE spherical bearing units once the bridge is cast and prior to stressing (post-tensioning) the bridge.

Figure C-1. Protective Measures Taken to Protect the PTFE from Concrete Intrusion During Concrete Placement (SFOBB Touchdown Project)

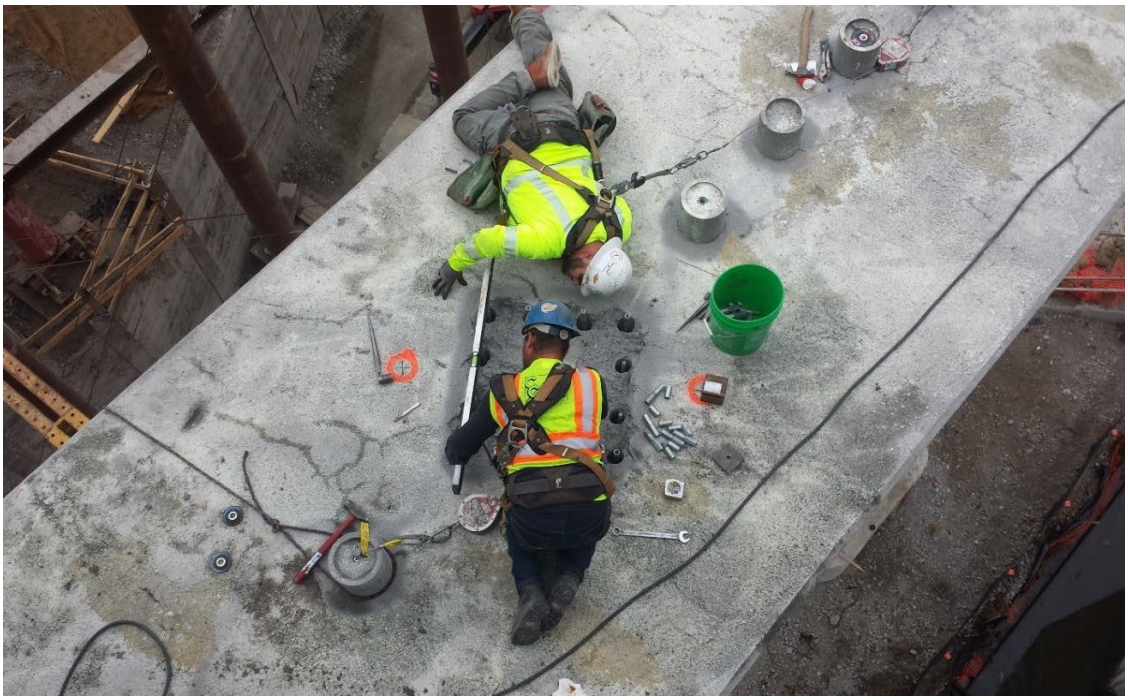

Figure C-2. Lug Installation and Checking the Level of the Concrete Surface to Receive the PTFE Spherical Bearing (Petaluma River Bridge Project)

Figure C-3. Installation of PTFE Spherical Bearings (Petaluma River Bridge Project)