

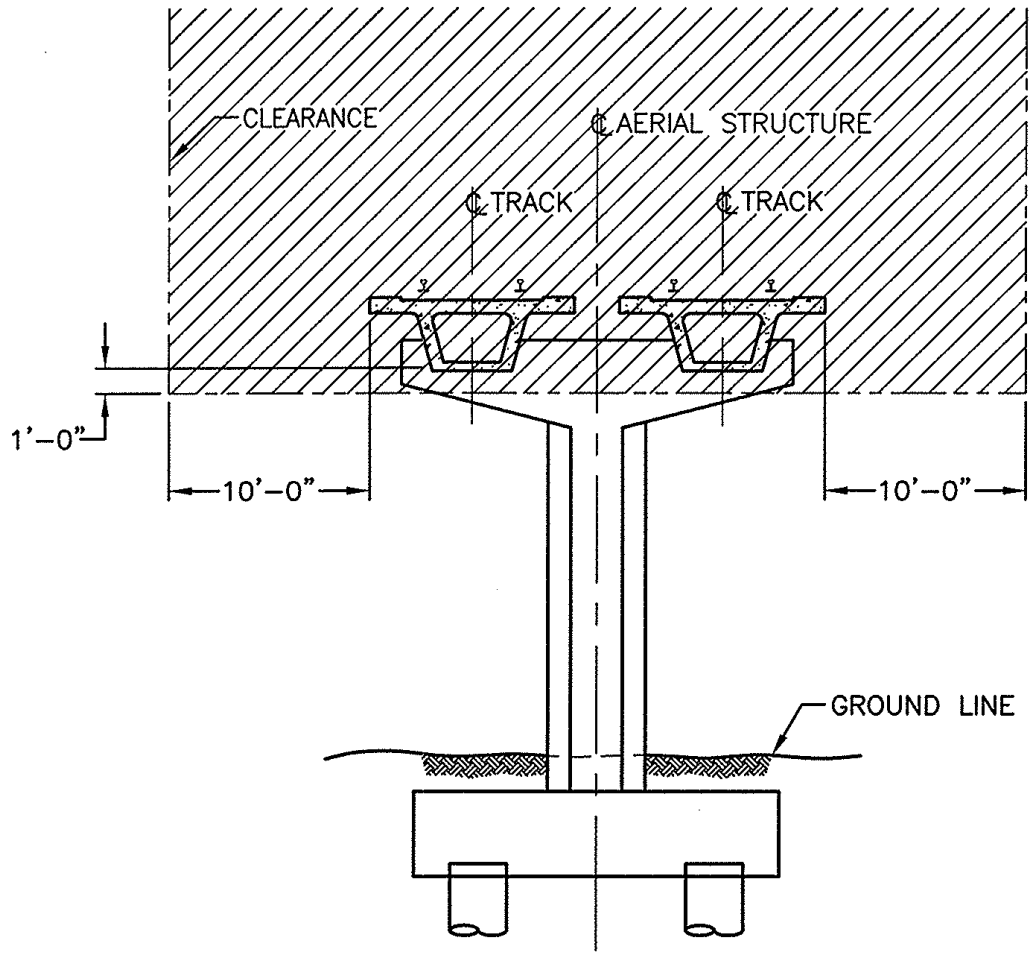


SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT

GENERAL GUIDELINES FOR DESIGN AND CONSTRUCTION OVER OR ADJACENT TO BART'S AT-GRADE AND AERIAL STRUCTURES

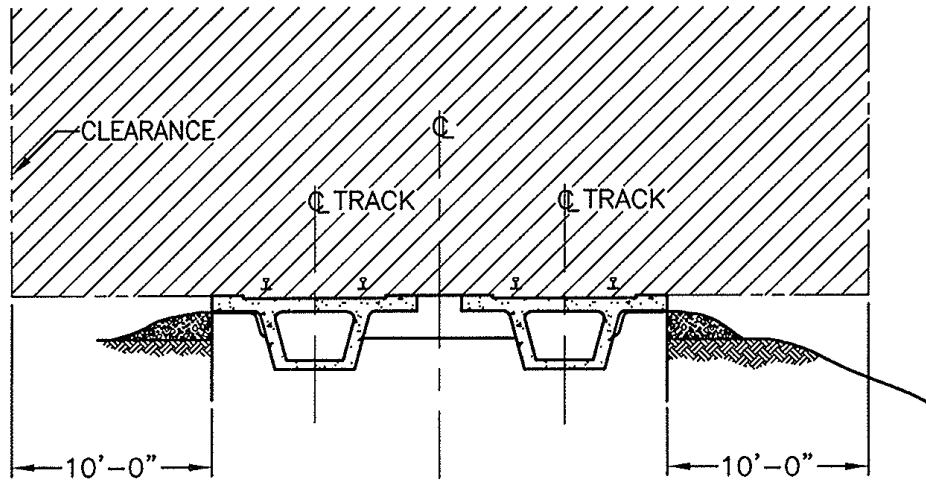
1. Structures over or adjacent to BART's at-grade or aerial structures shall be designed and constructed so as not to impose any temporary or permanent adverse effects on the structures. The minimum clearance between any part of the adjacent structures to exterior face of substructures shall be 7'-6". Existing cover over foundations shall be maintained wherever possible. Analyses are required of the foundation when there is a proposed change to the existing condition.
2. Shoring is required for excavations in the Zone of Influence. Zone of Influence is defined as the area above a positive Line of Influence which is a line from the critical point of substructure at a slope of 1 ½ horizontal to positive 1 vertical (line sloping towards ground level) or the area below a negative Line of Influence which is a line from the critical point of substructure at a slope of 1 ½ horizontal to negative 1 vertical (line sloping away from ground level).
3. Shoring shall be required to maintain at-rest soil condition and monitored for movement.
4. Soil redistribution caused by temporary shoring or permanent foundation system shall be analyzed.
5. Dewatering shall be monitored for changes in groundwater level. Recharging will be required if existing groundwater level is expected to drop more than 2 feet.
6. Piles shall be predrilled to a minimum of 10 feet below the positive Line of Influence. Piles shall be driven in a sequence away from BART structures.
7. BART structures shall be monitored for vibration during pile driving operations for all piles within 100 feet of the structures. Requirements for vibration monitoring will be provided upon request.
8. Existing utilities shall be protected from damage. If relocation is necessary, it shall be accomplished in a manner that will not disrupt revenue service.
9. Construction equipment operating adjacent to BART's Operating Envelope shall be so situated and restrained so it will not damage BART facilities nor violate BART's Operating Envelope. See Attachment 1 for aerial structures operating envelope and Attachment 2 for at-grade structures operating envelope.
10. Falsework over trackways shall be designed to resist a horizontal load equal to 10% of the dead load of falsework plus weight of new concrete.

The above shall be considered as general information only and is not intended to cover all situations. Notwithstanding these guidelines, pertinent design and construction documents, including dewatering monitoring and recharging plans or vibration monitoring plan if applicable, shall be submitted to BART for review and approval.



Attachment 1

CAD01907



Attachment 2

CAD01908