1. Did you use user-defined creep/shrinkage model?
   We used the built-in CEB-FIP 1990 model code
2. How did you verify the vales obtained from the Midas?
   The creep and shrinkage values were verified using another software. The creep & Shrinkage comparison was similar between the 2 software's.
3. How did you verify the values obtained from the Midas?
   The verification was done using another software. The results comparison was similar between the 2 software's.
4. Was there any particular pouring pattern prepared to plan the sequence of concrete pouring to avoid any formation of cold joints?
   The casting sequence and direction of deck pour for the cast-in-place deck are shown in the plans, and it is typically sequenced to pour the positive moment regions first, and the negative moment regions second.
5. How long did it take to create the global model? Specifically, how long did it take to model the tendons and their deviations.
   The time for modeling tendons depends on the complexity of the tendons. Typically, the first tendon will take a bit longer, but since the tendon geometry is repetitive, the remainder tendon modelling is much faster.
6. Is connection between both tub girders ensured by using passive rebars only?
   The connection between tubs is achieved with threaded bars and shear interface using high strength grout in the space between the two vertical webs over the full length of the segments.
7. If the passive rebars are used to connect both tub girders, since the range of stresses generated by live loads in this case is particularly aggressive (HSR), did you check the fatigue of these rebars under live loads?
   Yes, the design criteria for this project required fatigue details to be checked for the cyclic loading of the high-speed train fleet (LLV).
8. The diaphragm segments here are monolithic or consisting of two tub girders transverse connected as well?
   The diaphragm segments also consisted of two tubs connected transversely using PT bars after cast in place concrete pour.
9. In the transverse analysis, did you consider the transverse temperature gradient in your model or only the vertical one?
   Only the vertical temperature gradient was considered.
10. In the longitudinal analysis, did you consider the stiffness matrices of the foundations or did you consider a fixity depth only?
    The foundations including drilled shafts and piles to the depth of fixity were included in the longitudinal model.
11. Are the location of the anchorage plates for the post-tensioning located at the same sections for both tub girders or do you have a dissymmetry of the prestressing between both tub girders?
12. Are the location of the anchorage plates for the post-tensioning located at the same sections for both tub girders or do you have a dissymmetry of the prestressing between both tub girders?

The anchorages are located at the same sections for both tub girders.

13. Why the pretensioned cables are different in the left and right segment?
    The prestressing strands are the same in the left and right segments, they only vary depending on the segment location along the spans.
14. Did you use a special element for modeling the grout in the FEA solid model?
    The grout was modeled as solid concrete elements.
15. Did you conduct a dynamic analysis to calculate the resonance speed for different spans/trains? and what was the range of critical speed for resonance?
    Yes, the design criteria for this project required a dynamic structural analysis of high-speed train passage (LLV) to determine resonance induced dynamic impact (ILLV) effects and limit vertical deck accelerations.
16. can you please explain the seismic design requirement for the bearings?
    The bearings were designed for the load combination of extreme seismic event using Maximum Considered Earthquake (MCE) results. If the vertical seismic force at bearings results in net uplift, hold-down devices were provided at the bearings to resist the larger of either: 120 percent of the difference between the vertical seismic force and the dead load reaction or ten percent of the dead load reaction.
17. Was there a limit or requirement for maximum allowed LL deflection?
    Deformation limits were developed in the design criteria for limit states based on maintenance, passenger comfort, and track safety requirements. The track serviceability load cases included 5 load combination groups to determine the vertical and transverse deflections as well as rotation deformations due to High-Speed Trainsets, Modified Cooper E-50, and operating Basis Earthquake (OBE). The effects of centrifugal force, stream flow, wind on structure and wind on live loads were included only if it was conservative to do so. These loads were excluded if found to counteract the deflections associated with live loading. The deformation limits are dependent on the spans and the presence of ballast in the structure.
18. What was the maximum vibration allow?
    Frequency recommendations were established in the design criteria for the fundamental mode shapes of Track Structure Interaction (TSI) critical structures, to promote well-proportioned structures and minimize resonancy effects. Upper and lower bound mass and stiffness assumptions were evaluated For ride comfort, maximum lateral and vertical accelerations of 0.05g and 0.045g, respectively.
19. What longitudinal forces like break forces or centrifugal forces considered?
    Both transverse centrifugal (single and multiple trains) and longitudinal (acceleration and braking) forces were considered
20. What is the impact value?
    A dynamic analysis was required to determine impact effects for structures carrying High Speed Trains. To determine the impact value, the maximum dynamic response value, was found using all the trainsets listed in the design criteria for this project over the range of speeds from 90 mph up to maximum speed of 1.2 times the line design speed (or 250 mph, 15 whichever is less), by increment of 10 mph.
21. What was the maximum span length and span to depth ratio?
    The maximum span depth ratio for the precast tub girder structures was 12.85.

22. What was the design speed?
    Design speed 250 mph.
    Sustained operational speed of 220 mph.
23. was derailing considered?
    Yes, several derailment cases were considered.
24. Was there any dynamic analysis performed under high speed train loads?
    Yes, several dynamic track-structure interaction analyses were performed.
25. Have you verified the model outputs with other software, and what was the difference
    The verification was done using another software. The results comparison was similar between the 2 software's.
26. How the hunting loads (transverse moving load) were modeled? Application of series of point transverse loads is an option but it is a very tedious process to do so.
    Lateral forces, also called nosing and hunting effects (NE) of the wheels contacting the rails, were accounted by a horizontal force applied to the top of rail, perpendicular to the track centerline (TCL) at the most unfavorable positions along the structure.
27. What Midas software is used for solid element FEA model, Midas FEA NX or other?
    Midas FEA NX was used for the solid models.
28. Why tub girders were chosen instead of segmental boxes?
    The Contractor's preference was to use precast elements for as much of the superstructure as possible, to limit time on site, assure quality, and take advantage of the higher strengths of concrete that are available for precast elements.
29. Is there any frequency requirement and corresponding analysis done on the superstructure due to dynamic load from the high speed train?
    Yes, track-structure interaction (TSI) analysis was performed to meet the design requirements for structural frequency recommendations, track serviceability limits, rail-structure interaction (RSI) limits, dynamic structural analysis limits, and dynamic vehicle track-structure interaction (VTSI) analysis limits.
30. What spacing of the anchor rod was used along the two mid webs? Are the center two web working fully compositely?
    The typical spacing for the threaded rods was 4 feet. Yes, the two center webs behave fully composite.
31. How you model connection between the Girders and Pier cap? Did you use any elements to represent the bearing? The motion looks like no connection at the joints.
    The connection between the girders and pier cap was modeled using a combination of rigid link elements (linking the top of girder to the top of bearing) and elastic link elements with given vertical and lateral spring stiffness (connection the top of bearing to the top of pier cap).
32. Did you consider rail breach in your structural analysis?
    The design criteria did not require a rail fracture analysis. The Rail Break load is less about the cause/effect of rail break and more an analysis of the moment when the rail snaps since there is a sudden force imposed through the direct fixation track and into the structure. The design requirements included an axial rail stress limit in attempt to make sure there is not concern for fracture. A broken rail is likely to cause a derailment, two (2) derailment cases were considered: Case I-the derailed vehicles remaining in the track

area on the bridge deck with vehicles retained by the adjacent rail or a trackside cable trough wall, and Case II – the derailed vehicles balanced on the edge of the bridge and loading the edge of the superstructure.