

ABC-UTC 2023 In-Depth Web Training: Precast Substructures
Module 1: Available Precast Substructure Specifications and Resources

#	Questions	Responses
1	Are there any new developments in detailing precast pile bent caps to better accommodate piles driven out of tolerance (3" in Florida)?	Yes, there are many new details for pile-supported footings. This is included in the presentation.
2	Are there foundation construction details using ABC?	Yes, there are several options for foundations. This is included in the presentation.
3	What is the most efficient precast driven pile to precast pier cap connection?	The details shown in the presentation did not include a driven pile to pier cap detail. The AASHTO LRFD Guide Specifications for ABC and the PCI Northeast Bridge Technical Committee do not include provisions or details for this scenario. There has not been significant research for this type of structure. If projecting reinforcing can be installed on top of the pile after it is driven, one of the pocket connections shown could be used.
4	Are details available on connections between the substructure and the foundation?	This is included in the presentation.
5	Can you comment on connection details of the precast substructure to the cap?	Several connections are shown in the presentation. All are considered to be acceptable.
6	What is the behavior of precast substructures and superstructures under dynamic loading?	The majority of the AASHTO provisions and the research used to develop the provisions are based on emulation of cast-in-place concrete. This means that the behavior will be the same.
7	For design of precast bent caps, how do you ensure load transfer through the bent cap to the column?	This is included in the presentation.
8	What are the feasibility limits and governing parameters of using precast substructures?	This is included in the presentation.
9	What is a recommended maximum precast weight that can be handled for transport?	This is included in the presentation.

10	Has this application been used in high-rise buildings? How do you deal with continuity around multiple access openings?	To the best of our knowledge, this application has not been used in high-rise buildings.
Questions during Module 1		
11	During the construction, if there are differences between the design drawings and the specifications, which one governs, the drawings or the specifications?	This sort of hierarchy is typically established by the owner in their standard construction specifications.
12	How do you compare the cost of ABC versus cast-in-place concrete construction?	This topic was not included in this webinar. Information on this topic can be found in training modules developed under NCHRP Project 12-102A. These modules can be downloaded from: https://apps.trb.org/cmsfeed/TRBNetProjectDisplay.asp?ProjectID=5433
13	What is the structural purpose of the corrugated metal pipe (CMP) in the void?	Corrugated metal pipe in the void can serve two purposes. First, they are an inexpensive way to form the void. Second, they can transfer force via the corrugations. Research has shown that the void does not affect the integrity of the element once the void is filled with concrete.
14	Have you used or seen precast pile bents being used in recent projects?	Yes, precast pile bents are commonly used.
15	You showed the case of short columns and semi-integral / integral abutments, but how about very long columns (very slender) when we need to increase the rigidity at the bottom to withstand the static and possibly seismic forces (covered in this presentation), and also at the top at the connection to the pier cap when we need to ensure a gradual rigidity. Would it be possible to have a solid section the final 10 feet at the top of the precast columns, or does it need to remain hollow even at the top?	This question covers several topics. We cannot clearly understand all the noted issues; therefore, we do not feel that we can properly answer the question. We suggest referring to the AASHTO LRFD Guide Specifications for ABC to see if any of the connections are applicable to your case.

16	Regarding filling the void under the footing with flowable fill, should this be pumped at low pressure, and how is potential shrinkage of the flowable fill addressed under areas of the footing?	The fill is normally gravity fed through ports in the elements. Shrinkage is an issue if the fill is very thick. In most cases, the thickness of the fill is less than 6 inches, which has proven to work well without significant shrinkage.
17	If you had to core a long grout pocket for post-installed reinforcing bars for use with anchoring grout, is the dimension of the core hole diameter more of a question of constructability or strength? There is not much literature on the maximum / minimum size of the diameter of the core pocket. Can you comment on this?	This was not a topic of this presentation, and we don't have any comments on it.
18	Different types of structural reinforcement are required in civil construction. Among those you mention, which would you consider the most optimal according to your experience?	Most of the research has been completed with conventional reinforcing bars. The use of other types of reinforcing bars was not a topic of this presentation.
19	Are there any QA/QC (Quality Assurance / Quality Control) procedures for coupler connections?	Yes, this is covered in the AASHTO LRFD Guide Specifications for ABC.
20	What is the maximum segment length of a precast column?	This is a function of shipping and handling. It is possible to ship fairly large elements.
21	There has been a lot of discussion related to seismic issues. Can you tell me about developments in the code related to seismic issues?	Refer to the AASHTO LRFD Guide Specifications for ABC for provisions for seismic design.