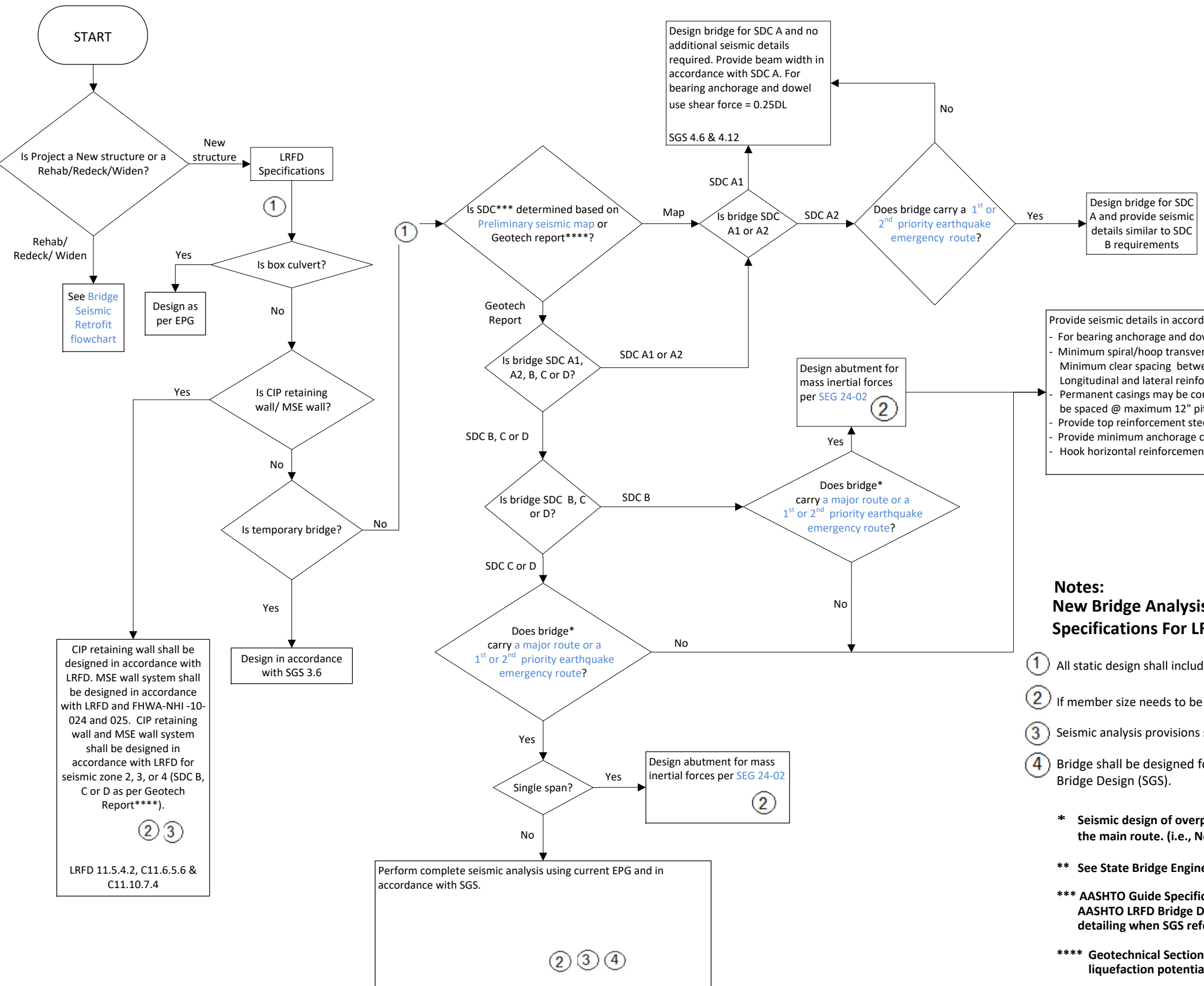


**Bridge Seismic Design Flowchart  
(does not include Major Bridges) \*\*  
March 2024**



Provide seismic details in accordance with SGS for SDC B, C or D:

- For bearing anchorage and dowel use shear force = max (0.25DL, A<sub>s</sub>\*DL) and beam width ≥ 1.5 x N. N = Minimum support length. SGS 4.6 & 4.12
- Minimum clear spacing between transverse reinforcement shall not be less than 1 1/2" for column and 5" for drilled shaft/rock socket.
- Longitudinal and lateral reinforcement including development and splice lengths shall be in accordance with SGS 8.8.
- Permanent casings may be considered effective in resisting shear forces and providing confinement. Spiral/ hoop transverse reinforcement shall be spaced @ maximum 12" pitch/spacing in the permanent casing.
- Provide top reinforcement steel in footings and pile cap footings.
- Provide minimum anchorage connections, i.e. Pile anchorage clips (EPG 751.36.4).
- Hook horizontal reinforcement of wing at beam end.

**Notes:  
New Bridge Analysis and Design Procedure (Based on AASHTO Guide Specifications For LRFD Seismic Bridge Design) and LRFD specifications**

- ① All static design shall include SDC A (seismic zone 1) detailing requirements per SGS and LRFD.
- ② If member size needs to be increased to meet SDC B, C or D then re-check SDC A/Static design requirements.
- ③ Seismic analysis provisions shall not be ignored for walls that support abutment fill for a bridge or other structure in SDC B, C and D.
- ④ Bridge shall be designed for displacement-based procedure in accordance with AASHTO Guide Specifications for LRFD Seismic Bridge Design (SGS).

\* Seismic design of overpass should be considered when overpass bridge collapse would greatly impede emergency traffic for the main route. (i.e., No access ramps).

\*\* See State Bridge Engineer for Major Bridges.

\*\*\* AASHTO Guide Specifications for LRFD Seismic Bridge Design (SGS) uses Seismic Design Categories ("SDC") and AASHTO LRFD Bridge Design Specifications (LRFD) uses "Seismic Zone". They are categorically equivalent for purpose of detailing when SGS refers to LRFD.

\*\*\*\* Geotechnical Section (GS) is responsible for the determination of SDC, S<sub>D1</sub>, A<sub>s</sub>, soil site class and the liquefaction potential as required by Bridge Seismic Planning Flowchart.