4-1 Preliminary Data

Preliminary Data is the essential information fundamental to the design of structures. Preliminary Data includes information about existing site conditions, planned geometrics, scope of structure work, design and construction constraints, and other factors on which structure designs are based.

This section highlights the Bridge Site Data Submittal Package and other checklists available for consultants use to compile pertinent preliminary information. Consultants may utilize their own forms in addition to the forms and checklists described.

As the minimum preliminary information for projects that involve state highway structures, consultants must prepare a Bridge Site Data Submittal (BSDS) package for each structure in the project. Ordinarily, the roadway designers should prepare BSDS package(s) for the structure designers’ use and consultant contracts should account for this task accordingly.

Bridge Site Data Submittal Package

The BSDS package consists of completed BSDS forms and associated attachments. The BSDS forms are essentially checklists of pertinent layout, environmental, site information and other constraints needed to design structures. The checklist requires the attachment of various site drawings, layouts, and other information to make the BSDS package complete. An example of a BSDS form is shown in Attachment 4-1.1.

The BSDS forms can be downloaded through the OSFP website. There are different forms for bridges, soundwalls, and retaining walls. When a project involves one or more of these features, the corresponding forms shall be used. One BSDS package is required for each structure on the project. Before preparing BSDS packages, the most current forms should be downloaded.

The BSDS shall be prepared in accordance with the instructions on the forms. Though the forms were developed for Caltrans in-house use, consultants must use the forms in a similar fashion. Generally, references in the forms to the District and Structures correspond to the Roadway Design and Structure Design Consultants, respectively. The forms should be filled in electronically to utilize the standardized entries via dropdown menus many fields contain.

On the first page of the BSDS forms, in the table that shows the information/documents provided, instead of writing the name of the file in the “File Name” column, the consultant may write “Provided to Structure Designer” or “Not Provided to Structure Designer”.
BSDS packages should be completed with sufficient lead time to allow for Caltrans review and approval before the structure designer develops General Plans for the structures.

Once prepared, the BSDS packages must be submitted to the District and the OSFP Liaison Engineer for review. Unless otherwise requested, only the following attachments need to be submitted with the BSDS checklist for review:

- Strip Map
- Aerial photo of site
- Bridge Site Plan
- Profile Grade
- Superelevations
- Typical Sections
- Detour or stage construction plans
- Utility map & Utility information sheets
- Lane Closure Charts

The District has the primary approval responsibility for BSDS checklists and attachments. The Liaison Engineer will provide support as necessary.

Approved BDSD packages must be submitted to the Liaison Engineer with the Type Selection Report.

Other Preliminary Information Checklists

For consultants’ use and reference, following are four other checklists used by Caltrans to help scope the structure work. These checklists are not required submittals but may serve to help identify additional design parameters and other useful project related data. The most current checklists are available through the OSFP web site.

- Bridge or Structure Field Site Investigation Checklist
- Railroad Separation Field Site Investigation Checklist
- Bridge or Structure Hydraulic Site Survey Checklist
- Foundation Plan Preparation Checklist
## Deliverables

<table>
<thead>
<tr>
<th>Item</th>
<th>To District</th>
<th>To OSFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSDS Checklists and Attachments&lt;sup&gt;1&lt;/sup&gt;</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Approved BSDS Checklists and Attachments&lt;sup&gt;2&lt;/sup&gt;</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

<sup>1</sup> Submit sufficiently in advance for review and approval prior to submitting Type Selection Packages.

<sup>2</sup> Submitted with Type Selection Package.

### Attachments

4-1.1 Bridge Site Data Submittal
4-1.2 Bridge or Structure Field Site Investigation Checklist
4-1.3 Railroad Separation Field Site Investigation Checklist
4-1.4 Bridge or Structure Hydraulic Site Survey Checklist
4-1.5 Foundation Plan Preparation Checklist
<table>
<thead>
<tr>
<th>Information Provided</th>
<th>Code</th>
<th>File name[a3]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. PSR/PR</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>(Bullet Synapsis only &amp; per project)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Include all A.P.S's</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>3. E.I.R. (per project)</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>Synapsis only</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>4. Strip Map (per project)</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>5. 2-D Mapping file (per project)</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>(photometric-separated from strip map)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Alignment traverse sheet</td>
<td>(D)</td>
<td>[04]</td>
</tr>
<tr>
<td>7. Aerial photo of site (1:500 scale is acceptable)</td>
<td>(S)</td>
<td></td>
</tr>
<tr>
<td>8. Bridge site plan (real world coordinates)</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>9. Profile/Grade</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>10. Super elevation</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>11. Typical Section</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>12. Detour or stage construction plans(?)</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>13. Highway Layouts</td>
<td>(B)</td>
<td>[66]</td>
</tr>
<tr>
<td>14. Utility map &amp; Utility information sheets (DS-PS8/?)</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>15. Lane closure charts(?)</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>16. District milestone schedule</td>
<td>(D)</td>
<td></td>
</tr>
<tr>
<td>(include all primary District and District Survey contacts and functional unit contacts with their responsibilities)</td>
<td>(D)</td>
<td></td>
</tr>
</tbody>
</table>
### GENERAL INFORMATION

#### A. Location

<table>
<thead>
<tr>
<th>District</th>
<th>County</th>
<th>Route</th>
<th>Post km</th>
</tr>
</thead>
</table>

This structure is located in the city of [__] is the nearest city or town located [__] km down the street of the structure. is the nearest city or town located [__] km up the structure.

#### B. Project Description

- [ ] New Structure
- [ ] Replacement
- [ ] Modification
  - [ ] Widening (Looking up station)
    - Width: [__] m left of centerline.
  - [ ] Lengthening
    - [__] m beyond BB. Final Stationing: [__] Explain: [__]
    - [__] m beyond EB. Final Stationing: [__] Explain: [__]
  - [ ] Scour mitigation
    - Explain: [__]
  - [ ] Rail replacement
    - Current rail type:
    - Replacement type:
    - Length: [__] m on [__] side(s). (Looking up station)
    - Explain: [__]
  - [ ] Earthquake retrofit
    - Explain: [__]
  - [ ] Permit Load Strengthening
    - Explain: [__]
  - [ ] Abandonment
    - Explain: [__]
  - [ ] Other
    - Explain: [__]

- [ ] Retaining wall: [__] Not Applicable
  - Location: [__]
- [ ] Soundwall: [__] Not Applicable
  - Wall is on structure.
  - Wall is off structure.
  - Other:
II. Design & Construction

A. Access

- Access limitations: 
  - [ ] No Restrictions
  - [ ] Due to:
  - [ ] [ ]
  - [ ] Legal access to site is available for ES for site review & foundation drilling from [ ] to [ ]
  - [ ] Legal access not available. ES to contact [ ] at [ ] before fieldwork.
  - [ ] Access to the site is restricted by environmental considerations.
  - [ ] Contact [ ] at [ ] before any work is done at the site.
  - [ ] Time constraints:
  - [ ] Explain: [ ]

B. Permits for access to site for preliminary Foundation work:

- [ ] Have been obtained and expires on [ ]
- [ ] Permits have not yet been obtained but should be provided by [ ]
- [ ] Not needed. Explain:

C. Staging area:

- [ ] Has not been identified for construction (contractor).
  - Explain: [ ]
- [ ] Has been identified for construction (contractor). Preliminary information on the location:
  - [ ]

D. Structure clearance calculations (B):

- [ ] Not required. Explain:

See below:

VERTICAL CLEARANCE CALCULATIONS AT:

Eg. 5.67 m right of "A" Line at Station 2091+12.9 permanent

Use supplemental form on web site for additional local info:

UPPER ROADWAY

Station: [ ]

Distance of Profile Grade:

Cross Slope:

Profile Grade Elevation: [ ]

Corrections for Cross Slope:

Upper Roadway Elevation = [ ] m

LOWER ROADWAY

Station: [ ]
### BRIDGE SITE DATA SUBMITTAL (Sheet 5 of 14)

**Distance [m]:** Profile Grade: ___ m  
**Cross Slope:**  
Traveled Way: ___ %  
Shoulder: ___ %  
Profile Grade Elevation: ___ m  
Corrections for Cross Slope: ___ m  
**Lower Roadway Elevation =** ___ m  

**Difference between roadway elevations:** ___ m  
**Less required minimum clearance:** ___ m  
*(Check Bridge Design Aids 10-4 to 10-5 or Highway Design Manual 309.2)*  

**Available for structure depth:** ___ m  

**FALSEWORK CLEARANCE**  
Difference between roadway elevations: ___ m  
**a)** Less minimum falsework clearance: ___ m  
*(Check BDA 10-8 to 10-9 or HDM)*  
**b)** Less falsework depth: ___ m  
*(Check BDA 10-8 & 10-9 or HDM Table 204.6)*  

*(The sum of a + b)* Total falsework clearance required: ___ m  
*(Check BDA 10-6 or HDM 200-28 to 200-29)*  
**Available for structure depth:** ___ m  
**Minimum structure depth required:** ___ m  
*(Check BDA 10-25 to 10-29 or HDM 204.6)*  

**E. Construction window**  
- **[ ]** No known constraints on construction.  
- **[ ]** A limited construction window exists:  
  - [ ] Environmental concerns (list periods and concerns):  
  - [ ] Fish & Game restrictions (list period & restrictions):  
  - [ ] Traffic (list restrictions):  
  - [ ] Fish migration (list period):  
  - [ ] Corps of Engineers (list restrictions & period):  
  - [ ] Other (specify cause & period of restriction):  

*Bridge Site Submittal.doc REV 04/01 Page 5 of 16 CSP*
F. Falsework

- No restriction. No traffic. Not Applicable
- Falsework not allowed over traffic.
- Stage construction required as detailed under “Additional Data” and attached plans.
  Build above Final Elevation, lower to Final Profile (B). Explain:

Falsework openings (S):
- Must have Type K temporary railings adjacent to traffic.
- Must have Crash Cushions adjacent to end of railings.
- Guard posts are required (if work is within 7.62 m (25 ft) of centerline of RR track).
- Crash walls required for permanent structural elements within 7.62 m (25 ft) of centerline of RR track.
- Profile Grades are set to provide minimum falsework depths per Highway Design Manual:
  - Provide _____ opening(s) in falsework: _____ m wide
    by ______ m high.
    Located: ______.
  - Covered pedestrian passageways to be ______ m wide
    by ______ m high.
    Located: ______.

- Falsework lighting required.
- Traffic is not to be interrupted between the hours of _____ to _____ on weekdays and _____ to _____
  on weekdays and not at all on Saturdays, Sundays, and Holidays. Exception shall be made for
  erection of prefabricated girders, erection or removal of falsework or removal of portions of existing
  structure or other: ______.
- Lane closure charts provided.
- Future maintenance painting could be performed without excessive interruptions or hazards to traffic.

G. Railroad traffic will be carried

- Not Applicable
- On new alignment. ES’s involvement – e.g. structural walls
  Explain: ______
- On shortley. ES’s involvement – e.g. structural walls
  Explain: ______
- Through bridge construction area.

H. Waterways

- Falsework or Sheet piles cannot be present in waterway or environmentally sensitive area between the
  following defined dates: from ______ to ______.

I. Detour

- None required.
- Traffic to use existing facilities.
- Traffic can be detoured.
- Required.
- Traffic to ______.
- Stage construction required. See “Additional Data”. (Include proposed traffic handling and Sequence
  of Operations),
BRIDGE SITE DATA SUBMITTAL (Sheet 7 of 14)

STATE OF CALIFORNIA | DEPARTMENT OF TRANSPORTATION
Division Engineering Service, Office of Structures Design

J. Storage facilities
- No restrictions.
- Restricted:
  - Explain: [ ]
- On-site storage of fabricated girders is not available due to physical restrictions and hazards to traffic in the immediate vicinity of the bridge construction site.
- Fabrication of girders or storage of material should not be allowed within [ ____ ] m of edge of shoulder of freeway or [ ____ ] m of other roads.

K. Coordination:
- Copies of pertinent correspondence from authorities are attached.
- Copies of pertinent correspondence from authorities are not attached.

The following entities have an interest in this structure: (name/phone):

<table>
<thead>
<tr>
<th>State/Federal</th>
<th>Local/Private</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] FHWA, (_____/____)</td>
<td>[ ] None.</td>
</tr>
<tr>
<td>[ ] Corps of Engineers, (_____/____)</td>
<td>[ ] Local Agency, (agency/ name/ phone), (<em><strong><strong>/</strong></strong></em>/____)</td>
</tr>
<tr>
<td>[ ] Coast Guard; contact, (_____/____)</td>
<td>[ ] Railroad, (_____/____) Specify RR:</td>
</tr>
<tr>
<td>[ ] Fish &amp; Game; contact, (_____/____)</td>
<td>[ ] Coastal Commission; contact, (_____/____)</td>
</tr>
<tr>
<td>[ ] State Board of Reclamation, (_____/____)</td>
<td>[ ] BCDC (Bay Conservation and Development); Contact, (_____/____)</td>
</tr>
<tr>
<td>[ ] Department of Water Resources, (_____/____)</td>
<td>[ ] Other; (specify/ name/ phone), (_____/____)</td>
</tr>
<tr>
<td>[ ] Other; (specify/ name/ phone), (_____/____)</td>
<td>[ ] Other; (specify/ name/ phone), (_____/____)</td>
</tr>
</tbody>
</table>

Water Related:
- [ ] Local Agency, (agency/ name/ phone), (_____/_____/____) |

District Requirements:
1. District shall notify ES before ES proceeds with structure design.
2. District shall request Department of Fish and Game approval upon receiving notification of the design alternative chosen by ES (when applicable).
3. District shall submit Soundwall General Plan to local authorities for approval:
   - Local Authority:
BRIDGE SITE DATA SUBMITTAL (Sheet 8 of 14)

III. Structure Information

A. Alignment and Grade attachments

- [ ] Already included - See 1st page of this submittal
- [ ] Alignment traverse sheet including, Coordinates, Station values, Curve and tangent information.
- [ ] Lower roadway toe of slope grid grades.
- [ ] Fixed grade lines
- [ ] Adjustable grade lines
- [ ] Edge of deck grades (AC and PCC).
- [ ] Super-elevation Diagram.
- [ ] List of Profile Grades.
- [ ] ES to expedite General Plan to District for final grade determination or for Survey Lines and/or Construction Centerline to be staked upon request.
- [ ] Staking already done. Explain:
- [ ] Other

B. Structure Approaches

- [ ] None.
- [ ] Needed for new construction (ES will determine the need).
- [ ] Needed for rehabilitation, full width or specific lanes (District Pavement Rehabilitation Review Team).
- [ ] PCC pavement will be used on road approaches.
- [ ] AC pavement will be used on road approaches.
- [ ] Full slope paving on approach fills recommended. PS&E by:
  - [ ] ES
  - [ ] District
  - [ ] Other:

C. Bank Protection

- [ ] Not Applicable
- [ ] District anticipates providing bank protection.
- [ ] Specify type & location:
- [ ] Other:

D. Channel Excavation

- [ ] Not Applicable
- [ ] District anticipates providing a channel for the conveyance of water.
- [ ] Provide details (side slope, typical section, Elevations, etc.)
- [ ] See drawing(s):
- [ ] Temporary Railing required. Explain:

E. Bridge Rail / Guard Rail

- [ ] Not applicable.
- [ ] District recommends Type as shown on enclosed drawings. Explain:
### F. Sidewalk on structure

- None required.
- Sidewalk(s) required:
  - Sidewalk type: _____ Width: _____ m.
  - Drawing with details provided. See drawing: _____.
  - Temporary sidewalks are required through construction zone.
  - Sidewalk(s) are required to connect to existing sidewalk system.

- Subdivision activities in the immediate area indicates that construction of a connecting system of sidewalks is imminent.
- Overcrossing screening required on [ ] (PS&E by ES).
- Specify type of screen required: _____.
- Sidewalk and railing as shown (specify drawing: [ ] ) conforms to requirements of local authorities and/or sight distance requirements.
- A school / schools exist(s) within 1.61 km of structure.
- Children [ ] be using the structure routinely.
- Shuttle service around structure required during construction.
- District shall provide details of non-standard sidewalk configuration.
- Raised median on structure. See [ ].

### G. Clearances

- Clearances [ ] in accordance with ES Advance Planning Study dated [ ]
- [ ] Designer has a non-standard job with special requirements

  - [ ] Minimum horizontal clearance to column or abutment from right edge of pavement.
  - [ ] Minimum vertical clearance from left edge of pavement with respect to direction of traffic.

- Vertical clearance of [ ] m required over initial and ultimate traveled ways, [ ] m over shoulders (includes [ ] m additional clearance required under Pedestrian or Cyclist Overcrossings).

- Vertical clearance controls per attached calculations. Structure depths used in established grades are listed below in “Additional Data”.

  - See Hydraulic Data for estimated peak High Water elevations.
  - Match existing.
  - Columns or pier permitted in the median.
  - Railroad off-track Maintenance Road and/or future track requirements shown on Site Plan.

### H. Corrosion Classification

- Site is not considered corrosive.
- Site is considered corrosive. Corrosion test sheets are attached.
- Site is within 400 meters of ocean or tidal water.
### I. Hazardous Material at Site

- **Site is not considered hazardous.**
- Excavated material can be used in embankment fills.
- Hazardous material at site is type __ __ classification.
- Encountered groundwater must be transported off site or filtered.  
  **Explain:**
- Excavated material must have special handling.  
  **Explain:**
- Data not available at this time. Will be furnished by __ on __.

### J. Deck Protection/Deck Rehabilitation (B)

- The structure __ __ be exposed to de-icing salts or chemicals.  
  **Specify which:**
- The structure’s riding surface will be exposed to chain use.
- The Structures deck will be rehabilitated.  
  The rehab strategy is: (Based on concurrence from Structure Maintenance)

### K. Design speed

- **NOT APPLICABLE**  
  Design speeds shown on plans.  
  See drawing  
  Design speeds are: __ km/h.  
  *(Used in calculating centrifugal forces on curves BDS 3.10.1)*

### L. Factors affecting sight distance

- **None.**
- Driveways/Access roads located near either end of bridge.  
  See drawing
- Other, see “Additional Data”

### M. Disposal of Old Bridge

- **Not Applicable**  
  Traffic can be kept for bridge removal.
- No restrictions.
- Removal can be accomplished after construction (PS&E by ES).
- Existing structure to remain in place for __ traffic.
- Disposition of salvageable material to be handled by ES. The following item(s) should be salvaged:
- Protective cover over lower roadway is needed (PS&E by ES).

### N. Drainage

- **Not Applicable**  
  District will provide shoulder drains on approaches near high end(s) of structure to prevent drainage crossing end(s) of structure.
- Accumulated surface water to be carried on structure across freeway. Special sealing at structure ends and seat type abutments to be provided by ES. *(This may be expensive. Should be discussed by District and Structure Designer).*
### O. Crash Cushions on Structure

- **Not needed.**
- **Explain:**
  - Type: __________
  - Location: __________
- **Details shown on drawing:** __________
- **Details will be provided by:** __________

### P. Loading

- **No special construction loading.**
- **Structure is on “EXTRALEGAL LOAD NETWORK” Route:** __________
  (Revised as of 10/00 – See HQ Traffic Ops network maps).
- **Structure is on Strategic Highway Corridor Network (STRAHNET):** __________
- **Structure is on state wide list of Life Line Routes:** __________
  (PI will answer this)
- **The Local Transportation Authority considers this a primary emergency or evacuation route:** __________
- **Structure(s) to carry construction overloads:** __________
- **Structure will carry railway:** __________
- **Specify:** __________
- **Structure will carry special loads:** __________
- **Specify:** __________

### Q. Obstructions

- **None existing other than those stated in utility requirements.**
- **Potential obstructions:**
  - __________
  - __________
  - __________
  - __________
  - __________
- **Other:** __________

*For marked item(s) in this section (O), please explain the obstruction in “Additional Data” and include drawing number and depths where applicable.*

- **Listed below are those obstructions that are to remain in place or will be moved to locations where they could interfere with design or construction:**
  - __________
  - __________
  - __________

### R. Retaining Walls

- **None needed.**
- **Explain:**
  - **Needed, PS&E by:** __________
  - **Type:** __________
- **Sound Wall on Retaining Wall:** __________
- **Sound Wall on Structure:** __________
- **Rail on Retaining Wall:**
  - **Type:** __________
- **Shown on District site plan. See drawing:** __________
BRIDGE SITE DATA SUBMITTAL (Sheet 12 of 14)

### S. Structure type recommendations
- [ ] None, ES to recommend type.
- [ ] Is an aesthetic consideration to be consistent with neighboring structures? Yes No
- [ ] Type selection to accommodate anticipated future widening:
  - Closure wall(s) required.\(^{[14]}\) to determine.
  - Bin type abutment required.\(^{[15]}\) to determine.
  - Open-end type closure wall system with \(\_\_\_\_\_\_\_\_\) end slopes starting \(\_\_\_\_\_\_\_\_\) m minimum from edge of pavement.
- [ ] See “Additional Data” for unusual or special aesthetic considerations.

### T. Utility Requirements
- [ ] Not Applicable
- [ ] All existing utilities are shown on District Site Plan
- [ ] Title:
  - Plan \(^{[16]}\) based on project coordinates.
- [ ] A complete coordinate based map of all existing utilities will be provided by
  - Specify date:
- [ ] All existing utilities in conflict with the structure except as listed below will be removed or relocated by District during construction.
- [ ] All existing utilities in conflict with the structure except as listed below will be removed or relocated by District prior to construction.
- [ ] Existing utilities to \(^{[17]}\)
  - Clearance required. Explain:
- [ ] Utilities already staked.
- [ ] No utilities to be carried on structure. ES \(^{[18]}\) provide details for future utility openings.
- [ ] All utilities to be carried on structure are identified & listed on the attached utility information sheet, (including all bridge lighting) DS - P58.
BRIDGE SITE DATA SUBMITTAL (Sheet 13 of 14)

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Division Engineering Service, Office of Structures Design

Preliminary Investigations
Revise 04/01

U. Water Line Requirements for Landscaping

☐ None required.

☐ Data to be furnished by District upon receipt of Bridge General Plan.

☐ Water piping system should be composed of:
  ☐ Galvanized or ductile pipe (Mandatory for length of pipe carried through structure).
  ☐ Plastic pipe.

V. Width

The roadway width of the bridge [ ] Headquarters Design Reviewer.
Name: ____________________________ Date: __________

Bridge roadway widths will be ______ m between railings or sidewalks when viewed in the direction of ______.

W. Hydraulic Data Section [ ] Not Applicable; structure not over water.

Please Complete

Waterway/owned by: [ ]
Contact Person(s): [ ]
Phone #: [ ]

Discharge records: [ ]
Rainfall records, for this site or, adjacent sites: [ ]
High water elevations: [ ]
Low water elevations: [ ]

Please select all that applies:

☐ Waterway is lined. Liner material:

☐ Confluence, reservoir, or check dams exist on this waterway. Specify (include location):

☐ Flow Gage is located nearby (within 50 miles).

DEcription and Location: [ ]

☐ There is an apparent scour problem or history of scour at this site.

Explain: [ ]

☐ There is history of channel aggregation or degradation at this site.

DEStribution:

Bridge Site Submittal.doc: REV 04/01
There are active mining operations or active gravel quarry operations on this waterway.
(Briefly describe and give an approximate location):

There are levees present.
Location:

Future levee work planned:
Explain:
Minimum freeboard required:

There is history of debris collecting at this site.
Type and size:

Site affected by tides (please attach a copy of current tide chart with maximum elevations and date):

A minimum vertical clearance (soffit to water surface) of m is required to maintain adequate waterway.

Future flood control project(s) is (are) planned.

Agency:
Contact Person:
Phone:
Brief description:

A previous PI report for this site exists.

FEMA Maps and/or FEMA studies attached:
Contact Name(s):
Agency:
Phone:

IV. Additional Data
## BRIDGE OR STRUCTURE FIELD SITE INVESTIGATION CHECKLIST (Sheet 1 of 5)

<table>
<thead>
<tr>
<th>Project Description:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dist: County: Route: KP (PM):</td>
</tr>
<tr>
<td>EA: Date:</td>
</tr>
<tr>
<td>Bridge Name and Number:</td>
</tr>
</tbody>
</table>

### 1. FIELD INVESTIGATION OBJECTIVE

a) To check Consultant or District data
b) To obtain additional data as needed to make a complete Site Plan
c) To note obstructions, problems, etc. which may affect design or construction.
d) To get information to solve design and construction problems and to deal with obstructions.
e) To take photographs and notes, make sketches, etc. that will aid in the proposed design.
f) To verify that the line and grade points are available for the Engineering Geologist.

**NOTE:**

If bridge or structure is entirely in Fill or Cut, very few survey details are needed since the original ground will not affect the structure. If the existing walls, roads, sidewalk, culvert, railroad etc. are to remain in the area of the structure, they should be located horizontally and vertically in detail and with the accuracy that is in proportion to their effect on structure design and construction. A Site Plan resulting from a survey should show the site as it exists with roads, railroads, sidewalks, ditches, walls, trees, banks, etc. Site details should be sketched on the Consultant or District Project Site Plans and be eye-balled or be surveyed to 0.01 foot, depending upon their importance.

### 2. JOB FOLDERS

a) Contains preliminary data, letters, drawings, etc. essential for survey and report.
b) Specific Field Data required noted on the cover.
3. LINE: Use Tangent Survey Line Consisting of:
   a) District Line 1. Found (Fd) staked in field ___ Prop ___ Survey ___
      2. Set ___ line from Dist ref pts ___
      Dist monument (mon) ___ Scaled ___ Survey (Sur) ___
   b) Bridge Line 1. Tied to District reference points (Dist ref pts) ___
      2. Assumed ____ Set of reference points ___ Mag bear ___

   NOTE: Dist Drawings - Provide complete line data ___
      - Line graphic ___ Line Data Missing ___

4. GRADE: Bench Mark
   1. Found (Fd) 1 ___ 2 ___ Set 1 ___ 2 ___
   2. Datum: NGVD ___ Dist ___ Assumed ___
   3. Grade graph ___ Grade data missing ___

5. SECTION:
   a) Existing Roads: Dirt ___ Gravel ___ AC ___ PCC ___
   b) Bridge ___ Sidewalk ___ Channel ___ Railroad ___
   c) Dist drawings provide proposed Section, Grades, Details, etc.

6. TRAFFIC:
   a) None ___ Light ___ Medium ___ Heavy ___ Very Heavy ___
   b) Speed: Slow ___ Average ___ Fast ___
   c) Pedestrian: None ___ Light ___ Medium ___ Heavy ___
   c) Distance to school (grade, high or college). ______

2 of 5
BRIDGE OR STRUCTURE FIELD SITE INVESTIGATION CHECKLIST (Sheet 3 of 5)

7. DETOUR
   a) None ____ Use exist ____ To be constructed ____
   b) Traffic to pass through constr ____ Min openings ____
   c) Stage construction required ____ Other ____

8. AESTHETICS
   a) None ____ Required ____
      a) Structure: None ____ Required ____ Special Design ____
      b) Railing: Standard ____ Special ____

9. FOUNDATIONS by a Certified Engineering Geologist (CEG), or a Registered Professional Civil Engineer (PE, Civil) specializing in foundations.
   a) Adjacent bridge on piles ____ Spread footing ____
   b) Estimate: Piles ____ Spread footings ____
   c) Existing ground supporting approximate fill: 0’ - 5’ high ____
      to 30’ high ____ unlimited ____
   d) Slip outs ____ High ground water ____
   e) Line and elevation points available for Engineering Geologist or Civil Engineer (with foundation specialty) ____

10. DRAINS
    a) Drainage adequate at site ____
    b) Special drains required ____
    c) Flow line elevation and sizes of all existing drains, catch basins, drop inlets, headwalls, etc.
BRIDGE OR STRUCTURE FIELD SITE INVESTIGATION CHECKLIST (Sheet 4 of 5)

11. OBSTRUCTIONS

a) List obstructions remaining after completing of earthwork that will affect design and construction.

b) Concrete removal required __________

12. UTILITIES

a) Roughly locate all utilities at bridge site.

b) Accurately locate both horizontally and vertically all utilities which may remain and which may affect design and construction, including all known overhead and underground utilities, valves, manholes, transformers, meters, wires, cables, guys, signals, lights, etc. Determine size and elevation of manholes and flow line elevations of sewer drains.

c) Provide: Type, Name, size, number and owner of electrical high voltage lines (above 220 k-volts), electrical low voltage lines 110' to 220 k-volts, telephone lines, cables, lights, signals, fire alarms, water lines, gas lines, communication lines etc.

d) Utilities to be carried on Structure __________

13. SITE PLAN

a) Show: Lines, bench marks, contours, topography, utilities, obstructions, road surface, sidewalks, drains, curbs, buildings, business, cellars, walls, stairs, ditches, trees, fences, etc.
BRIDGE OR STRUCTURE FIELD SITE INVESTIGATION CHECKLIST (Sheet 5 of 5)

14. MISCELLANEOUS FIELD DATA

a) _____ Miles to the nearest town or city limits of

b) Type of adjacent area: Open country, mountains, hills, valley, swamp, tidelands, residential, business, industrial, metropolitan, potential development, etc.

c) Access __________________________

d) Max. length of material haul to site _________________

e) Material storage at site _________________________

f) Photos: Get ample to cover job. As a rule of thumb: If one will cover job, that is sufficient, but if 16 are required to cover job, do not stop at 14.

g) Note any special construction sequence that may be required.

h) ________________________________

15. HYDRAULIC SURVEY

a) Use the HYDRAULIC SITE SURVEY CHECKLIST for all bridge or structure sites with adjacent streams or waterways, which may affect design or construction.

16. RAILROAD SEPARATION

a) Use the RAILROAD SEPARATION FIELD SITE INVESTIGATION CHECKLIST for recording supplement information when railroad structure is involved

5 of 5
### RAILROAD SEPARATION FIELD SITE
#### INVESTIGATION CHECKLIST (Sheet 1 of 4)

<table>
<thead>
<tr>
<th>Project Description:</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Dist:</td>
<td></td>
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<tr>
<td>County:</td>
<td></td>
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<tr>
<td>Route:</td>
<td></td>
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<tr>
<td>PM:</td>
<td></td>
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<tr>
<td>EA:</td>
<td></td>
</tr>
<tr>
<td>Date:</td>
<td></td>
</tr>
<tr>
<td>Bridge Name and Number:</td>
<td></td>
</tr>
</tbody>
</table>

**STUDY, CHECK, GET, CIRCLE, FILL-IN OR CROSS OUT APPROPRIATE ITEMS**

1. **FIELD INVESTIGATION OBJECTIVE**
   a) Obtain all data necessary for the designer and specification writer to prepare a complete structural design package. If the information is not obtainable in the field or in the office, make appropriate notes which indicate who should get or provide the required information.

2. **SITE PLAN**
   a) Field work: Control lines, two benchmarks, profiles, contours by cross-section, topography, utilities, obstructions, drains, etc.
   b) Verify District or consultant Site Plan, if available and supplement with such details and with such accuracy to cover a minimum area of 75 feet on either side of the proposed structure.
   d) Topography: Type of road surface, curbs, walls, buildings, cellars, sidewalks, utilities, obstructions, etc.
   e) Locate: Railroad R/W, switches, signals, wires, utilities, rail details, etc. within 200 feet of bridge and roadway centerline.
   f) General: Name of railroad, main line, branch, spur, between city or town of, and actual railroad standard, or M.P. tied to site, site of railroad yard or within mile(s) of a switch (maximum 1 mile).

Horizontal and vertical clearance of existing adjacent structures.
RAILROAD SEPARATION FIELD SITE
INVESTIGATION CHECKLIST (Sheet 2 of 4)

3. **LINE**
   a) Stationing, bearing, curves, coordinates, line intersections, and ties for the following:
      Railroad (500 feet each side of the structure center line): Existing ____, Proposed ____
      Highway or roadway __________________________
      Ramps __________________________
      Surveys __________________________

4. **GRADE**
   a) Grades, P.I. elevation, vertical curve data, location of profile and datum for the following:
      Railroad (500 feet each side of the structure center line): Existing ____, Proposed ____
      Highway or roadway __________________________
      Ramps __________________________

5. **TYPICAL SECTION**
   a) Existing ____, Proposed ____ Future widening ____ clearance for the following:
      Railroad __________________________
      Highway or roadway __________________________
      Ramps __________________________
      Sidewalk __________________________

6. **SUPERELEVATION AND TRANSITION**
   a) Structure ____ railroad ____ highway ____ ramps ____

7. **TRAFFIC**
   a) Railroad: Type ________
   b) Railroad speed ________, Number of trains ________
   c) Highway ____ , Permit ____ , Pedestrians ________
   d) Other __________________________

8. **DETOUR**
   a) None ________
   b) Stage Construction ________

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<table>
<thead>
<tr>
<th>9. SHOEFLY</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Location</td>
<td></td>
</tr>
<tr>
<td>b) Trestle</td>
<td>Construct under traffic</td>
</tr>
<tr>
<td>c) Etc.</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>10. FOUNDATION</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>By Certified Engineering Geologist or Registered Professional Civil Engineer specializing in foundations</td>
<td></td>
</tr>
<tr>
<td>a) Estimate: Piles</td>
<td>Spread footings</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>11. CLEARING</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) None</td>
<td>Moderate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12. UTILITIES</th>
<th></th>
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<td>a) Roughly locate all utilities at bridge site.</td>
<td></td>
</tr>
<tr>
<td>b) Accurately locate both horizontally and vertically all utilities which may remain and which may affect design and construction, including all known overhead and underground utilities, valves, manholes, transformers, meters, wires, cables, guys, signals, lights, etc. Determine size and elevation of manholes and flow line elevations of sewers/drains.</td>
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<td>c) Provide: Type, Name, size, number and owner of electrical high voltage lines (above 220 k-volts), electrical low voltage lines 110 to 220 k-volts, telephone lines, cables, lights, signals, fire alarms, water lines, gas lines, communication lines etc.</td>
<td></td>
</tr>
<tr>
<td>d) Utilities to be carried on structure</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>13. OBSTRUCTIONS</th>
<th></th>
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<tbody>
<tr>
<td>Remaining after clearing and removal of utilities.</td>
<td></td>
</tr>
<tr>
<td>a) List those affecting design:</td>
<td></td>
</tr>
<tr>
<td>b) List those affecting construction:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>14. AESTHETICS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Structure: None</td>
<td>Required</td>
</tr>
<tr>
<td>b) Railing: Standard</td>
<td>Special</td>
</tr>
</tbody>
</table>

3 of 4
15. DRAINS
a) Pump plants: None _____, Required _____, designed by _____
b) Boat Section _____, structure drains _____, surface drains _____
c) Ground water elevation _____

16. MISCELLANEOUS DATA
a) _____ Miles to the nearest town or city limits of _____
b) Present access at site _____
c) Nearest railroad siding _____
d) Max. length of material haul to site _____
e) Special sequence of operations _____
f) Storage facilities _____
g) Electrical power _____, Telephone _____, Water _____
h) Temperature range _____, Snow depth _____
i) Photographs. Get ample to cover job _____
j) Other problems or observations _____

17. HYDRAULIC SURVEY
k) Use the HYDRAULIC SITE SURVEY CHECK LIST for all bridge or structure sites with adjacent streams or waterways which may affect design or construction.
BRIDGE OR STRUCTURE
HYDRAULIC SITE INVESTIGATION CHECKLIST (Sheet 1 of 3)

BRIDGE OR STRUCTURE
HYDRAULIC SITE SURVEY CHECK LIST

Project:
Description:
Dist: ____________  County: ____________  Route: ____________  PM: ____________
EA: ____________  Date: ____________

Bridge Name and Number: ____________

STUDY, CHECK, GET, CIRCLE, FILL-IN OR CROSS OUT APPROPRIATE ITEMS
This Check List may be used in conjunction with the FIELD SITE INVESTIGATION CHECK LIST when applicable.

1. SITE PLAN SURVEY
   a) Appropriate checks made in accordance with the applicable items of the Field Site Investigation Checklist.
   b) Because channel alignment, scour, bank erosion etc. are important, get such additional survey information as may be required.
   c) Check for need of larger site plan coverage due to stream control other than bridge. (Skew, channel change, etc.)
   d) Survey data should include present water surface.
   e) General rough sketch of channel alignment within structure profile length may be useful.

2. BASIN
   a) Steep ____________  Rolling ____________  flat ____________  Brush ____________  Barren ____________
   b) Dams ____________  Lakes ____________  Weirs ____________  Flood area ____________ etc.
   c) Estimate runoff: 10-20-30-40-50 etc. ____________% (Best estimate) Segment area if necessary.
   d) Regulations ____________

3. FLOODS
   a) Records of flood flow from residents, highway maintenance crews, newspapers, old photographs etc.
   b) Notes of flood damage ____________  Overflow area ____________

4. STAGE
   a) Locate Horizontal and vertical control and make a soft pencil imprint on any bench mark near the site. (USED, USGS, DWR, TIDAL, etc.)
   b) Elevation and location of description of high water mark, high drift strains, etc. Talk with residents, maintenance crews etc.
BRIDGE OR STRUCTURE

HYDRAULIC SITE INVESTIGATION CHECKLIST (Sheet 2 of 3)

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c) Set tidal GAUGES and record hourly during site survey of tidal waters. Get maximum and minimum elevations and times they occur.
d) Stage control due to adjacent stream, weir, drops, or other man-made or natural barriers.
e) Duration of HW _____, Elevation of LW _____
f) Period when channel is dry ______

5. VELOCITY
   a) Float measured velocity _____ fps. Estimated HW velocity _____ fps.
   b) Survey: Bottom of channel, water surface, high water, drift etc. and top of banks for minimum of 1000 feet up and down the stream or as necessary to determine channel flow. Estimate "n" for each change along profile, consider high stage, head loss at structures, bends, obstructions etc.

6. STREAM BED
   a) Straight __, meandering __, fixed __, shifting __
   b) Channel change needed ______
   c) Estimated scour ______ Estimated erosion ______
   d) Stream bed material ______ Bank material ______
   e) Dikes ______ levees ______ bars ______ obstructions ______ etc.
   f) Survey: As needed to cover all possible channel changes including existing channel intersection. Estimate "n" ______
   g) Stadia channel as needed to determine skew center line of flow at low and stages, special conditions overflow data, etc.

7. DRIFT
   a) Quantity ______ Size ______, Photos ______
   b) Past problems _____________
   c) Span lengths of all adjacent bridges _____________
   d) Need for smooth bridge soffit _____ closed or open bents _____ stream lining _____ size of vertical drift way ______
   e) Detritus _____, flowing silt _____ sand _____, gravel _____, rock __, etc.
   f) Drift way satisfactory _____ Recommended size by residents _____ maintenance crews _____, others _____
   g) Recommended minimum clearance for normal span ______

---

2 of 3
BRIDGE OR STRUCTURE
HYDRAULIC SITE INVESTIGATION CHECKLIST (Sheet 3 of 3)

8. WATERWAY
   a) Existing channel adequate? ______ Too large? _______, Too small ______.
   b) Channel improvement ______ change ______, levees ______.
   c) Effect of piers, obstructions, backwater, valuable property etc.
   d) Survey: Normal channel x-sections about 500 feet and 1000 feet up and
downstream if needed. Channel section should include overflow areas,
including roads. All adjacent bridge elevations, clearance lines, decks, spans,
profile, high water, scour, skew, photos, adequacy, etc. Description of bents,
piers, and percent of span blocked by brush. Etc.

9. BANK PROTECTION
   a) Existing ______, Adequate ______, Other locations ______.
   b) Protection of approach fill ______, abut ______, wingwalls ______.
   c) Protection for channel only ______, riverments ______, spur ______, dikes
   ______, drops ______, etc.
   d) Protection provided by vegetation ______.
   e) Abutments or open ends at adjacent structures ______.
   f) Photos of adjacent protections ______.

10. NAVIGATION DATA
    a) Boat traffic, Type ______, Size ______, Speed ______.
    b) Opening: Existing Vertical ______, Horizontal ______.
    c) Channel: Width ______, depth ______.
    d) Tide relations ______.
    e) Levee grade ______, Flood plain grade ______.
    f) Harbor line ______, Wharf line ______.
    g) Fenders ______, dolphins ______, lights ______, signals ______.
    h) Number of openings ______.
    i) Time of openings ______.
    j) Current velocity ______, direction ______.
    k) Recommended false work opening for boats ______.