### Reinforcing Steel for Straight Wingwall Abutments

**Design Diagrams**

- **Type 1**
- **Type 2**
- **Type 3**
- **Type 4**

**General**

Details shown are typical for a steel beam or girder bridge with elastomeric bearings.

**Limitations:** These abutment details are intended for use on straight alignment structures with skew not greater than 45 degrees. A bridge expansion length up to 200'-0" and a total length of 400'-0" for skew greater than 45 degrees, a special design shall be performed as the abutment beam seats shown on these plans, would not be specific enough for that beam to accommodate the bearing retenirse assemblies.

**Seismic and Internal Abutment Details:** Can be used on wall type abutments, spill into the type abutments on two or more rows of piles, spread-footing type abutments founded on rock or abutments on drilled shafts. This abutment design should not be used on new structures with spread-footings founded on soil or existing structures where spread-footings on soil are expected to continue to make settlement.

**Hole Locations:** The designer shall detail the hole locations in the project plans. Field cutting of the holes in the field will not be permitted.

**Bearing Retainers:**

**General:** Retainers are required for any bridge structure with a skew greater than 10 degrees. New and rehabilitated bridge structures without phased construction require two retaining assemblies at each abutment. One located at each of the outside (fascia) beam lines. Structures that require phased construction shall have retaining assemblies located at each of the outside beam lines for the first phase of construction and additional retaining assemblies located at the new outside beam of each additional phase of construction.

**Construction Procedure:** Field drill anchor bolt holes. Install anchor bolts and place epoxy grout after the erection of structural steel beams. When spilling holes, take precautions to avoid interrupting with the positioning of the retainers. Position and tighten the retainers and install a block of polyurethane filler material. Dimensions as shown on Sheet S-6 of 1, over the top of the retaining assembly before concrete placement for the beam end encasement.

**Materials:** The steel retaining assembly and the square plate washers shall be the same grade of steel as the main structural members. Anchor bolts and nuts shall be ASTM A325. Steel retaining assemblies shall have the same protective coating as the main structural steel anchor bolts. Nuts and square plate washers shall be galvanized according to A17.1. The thread length requirements of ASTM A325 may be waived. The grout shall be a non-shrink, epoxy or quarts cementitious material meeting the requirements of T03-20.

The costs for furnishing and installing the steel retaining assemblies, including the polyurethane, will be included for payment in the unit price bid for the elastomeric bearings.

**Steel Load Plate and the HP Shape (Support Member):** The designer shall specify the steel material for the load plate. The HP shape support member shall be attached to the load plate and the HP shape. The bearings shall be furnished and installed according to T06. The designer shall show all bearing details, including notes, in the project plans. The HP shape is considered a component of the bearing.

### Reinforcing Steel for U-Type Abutments

**Design Diagrams**

- **Type 1**
- **Type 2**
- **Type 3**
- **Type 4**

**General**

Details shown are typical for a steel beam or girder bridge with elastomeric bearings.

**Limitations:** These abutment details are intended for use on straight alignment structures with skew not greater than 45 degrees. A bridge expansion length up to 200'-0" and a total length of 400'-0" for skew greater than 45 degrees, a special design shall be performed as the abutment beam seats shown on these plans, would not be specific enough for that beam to accommodate the bearing retenirse assemblies.

**Seismic and Internal Abutment Details:** Can be used on wall type abutments, spill into the type abutments on two or more rows of piles, spread-footing type abutments founded on rock or abutments on drilled shafts. This abutment design should not be used on new structures with spread-footings founded on soil or existing structures where spread-footings on soil are expected to continue to make settlement.

**Hole Locations:** The designer shall detail the hole locations in the project plans. Field cutting of the holes in the field will not be permitted.

**Bearing Retainers:**

**General:** Retainers are required for any bridge structure with a skew greater than 10 degrees. New and rehabilitated bridge structures without phased construction require two retaining assemblies at each abutment. One located at each of the outside (fascia) beam lines. Structures that require phased construction shall have retaining assemblies located at each of the outside beam lines for the first phase of construction and additional retaining assemblies located at the new outside beam of each additional phase of construction.

**Construction Procedure:** Field drill anchor bolt holes. Install anchor bolts and place epoxy grout after the erection of structural steel beams. When spilling holes, take precautions to avoid interrupting with the positioning of the retainers. Position and tighten the retainers and install a block of polyurethane filler material. Dimensions as shown on Sheet S-6 of 1, over the top of the retaining assembly before concrete placement for the beam end encasement.

**Materials:** The steel retaining assembly and the square plate washers shall be the same grade of steel as the main structural members. Anchor bolts and nuts shall be ASTM A325. Steel retaining assemblies shall have the same protective coating as the main structural steel anchor bolts. Nuts and square plate washers shall be galvanized according to A17.1. The thread length requirements of ASTM A325 may be waived. The grout shall be a non-shrink, epoxy or quarts cementitious material meeting the requirements of T03-20.

The costs for furnishing and installing the steel retaining assemblies, including the polyurethane, will be included for payment in the unit price bid for the elastomeric bearings.

**Steel Load Plate and the HP Shape (Support Member):** The designer shall specify the steel material for the load plate. The HP shape support member shall be attached to the load plate and the HP shape. The bearings shall be furnished and installed according to T06. The designer shall show all bearing details, including notes, in the project plans. The HP shape is considered a component of the bearing.