

# Sample Specification

## STEEL PLATE, TRENCH PLATE; BRIDGING UTILITY PROVISIONS

Temporary Steel Plate Bridging: When approved by the Engineer or Contracting Agency, the Contractor may use steel plates to bridge excavated trenches in areas where the roadway surface is to be opened to traffic. When backfilling operations of an excavation in the traveled way, whether transverse or longitudinal, cannot be properly completed within a work day, steel plate bridging may be required to preserve unobstructed traffic flow. In such cases, the following conditions shall apply:

1. Plates shall be of steel construction capable of supporting HS-20 loading.
2. The plates must extend beyond the edge of the trench wall to adequately support the traffic loads on it. All steel trench plates shall extend beyond the edges of the trench wall a minimum of twelve (12") inches.
3. For trenches and excavations with spans greater than four feet (4'), a structural design shall be prepared by a registered civil engineer and approved by the City.
4. Trenches and excavations shall be adequately shored and braced to withstand highway traffic loads.
5. Each plate must be fully supported around the perimeter to prevent wobbling or rocking with non asphaltic shims and installed to operate with minimum noise.
6. Plates shall be secured and ramped on all sides with a trench plate securing device, to ensure a smooth transition from the road surface to the top of the plate surface and back to the road surface.
7. Temporary paving or cold-mix asphalt concrete (cutback) shall not be allowed to secure or to prevent movement of trench plates.
8. A STEEL PLATE sign with black lettering on an orange background will be used in advance of steel plate bridging. This sign is used along with any other required construction signing.
9. During months when snowfall may be expected, mark steel plates with a 2 inch square stake painted International Orange and extending at least 4 feet above the ground, placed adjacent to edge of roadway in addition to a STEEL PLATE sign with black lettering on an orange background in advance of steel plate bridging.
10. The contractor is responsible for maintenance of the steel plates, shoring, and trench plate securing systems, and ensuring that they meet minimum specifications. If jurisdictional or Commission forces must correct emergency condition due to excavation and plate placement and or movement, Contractor will be charged for cost of corrective measures required.

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11. The plates shall be secured to prevent any movement. As required by the district, steel plate bridging and shoring shall be installed using either Method (1) or (2):

Method 1: Roadways with posted speeds greater than 45 mph –

The pavement shall be cold-planed to a depth equal to the thickness of the plate and to a width and length equal to the dimensions of the plate(s). The approach and ending plates shall be attached to the roadway by a minimum of 2 dowels pre-drilled into the corners of the plate and drilled 3 inches into the pavement; subsequent plates shall be butted to each other.

Method 2: Roadways with posted speeds equal to or less than 45 mph –

One pre-approved method of securing steel trench plates involves a perimeter restraint consisting of polypropylene (PP). This method involves placing a 6" wide strip of PP along the edges of the trench plate which are exposed to traffic. The adjacent edges of multiple trench plates do not require additional edge restraint along those edges. The PP strips shall be tapered from a nominal 1" thickness to approximately 1/4" to provide a ramped surface for vehicles to enter and exit the trench plate. The PP perimeter restraint shall be safety orange in color to provide high visibility and help alert drivers to the presence of trench plates. The perimeter restraint shall be secured to the pavement with 4" long Simpson – Titan H.D. 3/8" concrete anchors (or equal) with washers. Anchors shall be spaced at intervals of 36" or less. The ends of the perimeter restraint shall be anchored a minimum 4" and a maximum of 8" from each end. The horizontal gaps between the sides of the perimeter restraint and the trench plate shall not exceed 1/2".

Vertical differences in elevation between the top of the perimeter restraint and the top of the trench plate shall not exceed 1/2". Plates shall be shimmed with PP shims to prevent vertical movement of the trench plate of more than 1/4" at any location. Shims, as required, shall be secured below the perimeter restraint at the anchor locations used to secure the frame. Shim thicknesses shall be limited to a total of 3/4". Gaps that require greater than 3/4" thick shims shall be corrected by reorienting trench plates to reduce the size of vertical gaps between the bottom of the trench plate and the street surface. Holes in the PP perimeter restraint and shims shall be pre-drilled and oversized to allow for PP expansion and contraction. Holes in the perimeter restraints shall be counter sunk to minimize exposure of bolt heads to traffic. Trench plates may be removed and replaced as necessary to complete utility work in the street without removal of the PP perimeter restraint. Upon completion of construction and permanent removal of trench plates and frames, the anchor screw holes shall be filled with liquid asphalt during the trench patching operation or with high strength grout or other material approved or directed by the engineer. Patch material shall be struck smooth with the street surface.

The PP securing system shall be substantially similar, or equal to, the Plate Lock Trench Plate Securing System which is pre-approved for use. The trench plate securing system shall be installed per manufactures direction and continuously maintained around all outside edges of the trench plates until removal of the plates.