SDD 14b7-a  Concrete Barrier Temporary Precast

DEPARTMENT OF TRANSPORTATION
STATE OF WISCONSIN

DETAILS OF BARRIER CONNECTION

CONNECTION PIN
DETAIL "A"
TEMPORARY PRECAST, 12'-6"

SEE DETAIL "A"
ACCEPTABLE PLATE DETAIL
CONCRETE BARRIER FOR CONNECTION PIN DETAILS
ƒ" OR 1" CHAMFER
1/2" TOP PLATE CENTERED ON PLATE
1/2" TOP PLATE DETAIL

DETAIL "B"
LIFTING SLOT DETAIL

GENERAL NOTES

These general notes apply to sheets 14B7-15(a) thru 14B7-15(i).

Do not intermix Concrete Barrier Temporary Precast, 12'-6" (CBTP12.5) with other temporary concrete barriers.

Use ASTM A-615, Grade 60, deformed steel bars for bars 4A1, 6A2, 5B1 and 4C1 in the barrier section and for 4G2, 4G3, 4G4, 4G6, 4G7 and 4F2 in the barrier section.

Loop bars 6D1, 6D2, and 6D3 shall be 3/16 smooth steel bars with a minimum yield strength of 50 ksi, a tensile strength of not less than 65 ksi, and passing a 360 degree bend test using a 3-½" pin bend diameter for bend tests. The loops shall be installed within ⅞ of the plan dimension.

Construct lifting slots as specified on the plans to facilitate the drainage of water after installation.

Place barrier on a paved surface. Remove all loose dirt and sand from the roadway surface prior to placement of the barrier.

Install mechanical or adhesive anchors per manufacturer's recommendations. Provide manufacturer's information to project engineer.

Mark one end of each barrier permanently by forming into the barrier the following information:
- Type: WI CBTP
- Manufacturer
- Date manufactured: month and year
- ⅛" chamfer to prevent spalling.
- A ¾" hole in the connection pin at the location shown is acceptable, but not required.
- ⅝" slot D is optional.
- The ⅛" chamfer, if used, shall be smooth steel round mechanical tubing sleeve for lifting.
- Never use loop bars 6D1, 6D2, or 6D3 for lifting, move or reposition the barrier.
- Use steel bars conforming to Section 3.3.3 of the Standard Specifications. Contractor may use alternate shapes and housing, install, and adjust accordingly to the specifications. Install yellow reflectors whenever barrier is located to the left of traffic and white reflectors when barrier is located to the right of traffic. Steel brackets or hardware are used to mount reflectors. Provide yellow reflectors in addition to the green mounted reflectors on all barrier installations located on a curved alignment greater than 200 feet and on barriers used to separate opposing traffic.
- See sheet D for how to anchor barriers. See sheet E forumer to anchor barrier.
- ⅛" chamfer optional.

See sheet D for general notes on anchor barriers. See sheet E for information on anchor barriers.

Concrete Barrier Temporary Precast, 12'-6"
GENERAL NOTES

1. Mark one end of each barrier permanently by forming into the barrier the following information:
   a. Type: CBTP
   b. Manufacturer
   c. Date manufactured (month and year)

2. 1" Chamfer to prevent spalling.

3. Never use loop bars (6D1, 6D2 or 6D3) to lift, move or reposition the barrier.

DETAIL "B" LIFTING SLOTT DETAIL

SIDE ELEVATION
- Loop bar assembly inverted for opposite end.
- Void area for lifting.
- Detail "B" lifting slot detail.

PLAN VIEW
- Center of gravity
- 40'-0"
- 5'-0"

END SECTION
- 2 equal spaces
- 3" radius allowed

FRONT ELEVATION
- 10% offset
- 5" max.

BARRIER ON CURVE
- Flare rate
  - 40 or less: RE
  - 45 or greater: BS

FLARE AT BARRIER END
- 12'-0"
- 12'-4"
- 12'-4"
GENERAL NOTES

1. NEVER USE LOOP BARS (6D1, 6D2 OR 6D3) TO LIFT, MOVE OR REPOSITION THE BARRIER.

TAPER BARRIER SECTION

BILL OF MATERIALS
(PER 12'-6" BARRIER TAPER SECTION)

<table>
<thead>
<tr>
<th>Bar</th>
<th>Bar Size</th>
<th>No. of Bars</th>
<th>Length FT.</th>
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<td>2'-11&quot;</td>
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<td>4V3</td>
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</tr>
<tr>
<td>4V4</td>
<td>4</td>
<td>2</td>
<td>2'-1'</td>
</tr>
<tr>
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<tr>
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<td>4C1</td>
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LOOP ASSEMBLY

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ELEVATION VIEW

LOOP BAR ASSEMBLY

PLAN VIEW

LOOP BAR ASSEMBLY

BARREL END SHOWN, INVERT FOR OTHER END

TAPER BARRIER SECTION

BILL OF MATERIALS
(PER 12'-6" BARRIER SECTION)

<table>
<thead>
<tr>
<th>Bar</th>
<th>Bar Size</th>
<th>No. of Bars</th>
<th>Length FT.</th>
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<td>7'-7&quot;</td>
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<td>4C1</td>
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CONCRETE BARRIER TEMORARY PRECAST. 12'-6"

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION
GENERAL NOTES

SEE SHEET E FOR WHEN TO ANCHOR. OTHER PARTS OF THE PLAN MAY SHOW ADDITIONAL LOCATIONS REQUIRING ANCHORING.

REMOVE ALL ANCHORS WHEN NO LONGER NEEDED. FULL CONCRETE PAVEMENTS, DECKS AND APPROACH SLABS WITH NON-SHRINK COMMERCIAL GROUT FROM THE APPROVED PRODUCT LIST. FULL ASPHALT PAVEMENTS WITH ASTM D6690 TYPE I BARRIERS ADD ADHESIVE ANCHORS.

1. 5/8" DIAMETER ASTM A307 THREADS, 3" x 3" SQUARE PLATE WASHER WITH ASTM A36 STEEL, ASTM A307 HEAVY HEX NUT.

2. ADHESIVE ANCHORS WITH A MINIMUM BOND STRENGTH OF 1,800 PSI AND 5/8" EMBEDMENT, SEE 603.2.1 AND 603.2.2 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR MORE INFORMATION ON ADHESIVE ANCHORS.

3. A193/B7 NON-TRAFFIC ANCHOR PIN MINIMUM 3" LONG, CONTRACTOR MAY DRILL THROUGH CONCRETE PAVEMENTS AND PLACE ASPHALT ANCHOR PIN.

TREATMENT AT BRIDGE DECK EXPANSION JOINTS

NO SINGLE CONCRETE BARRIER SECTION SHALL BE ANCHORED TO BOTH THE BRIDGE DECK AND THE APPROACH SLAB. ALL ANCHOR BOLT LOCATIONS SHALL BE ANCHORED TO THE DECK IN ACCORDANCE WITH THE DETAIL. NO MORE THAN ONE ANCHOR BOLT SHALL BE ELIMINATED FROM A BARRIER SECTION WHEN SPANNING AN EXPANSION JOINT.

THROUGH BOLTED ANCHOR INSTALLATION ON BRIDGE DECK

DO NOT USE ON CONCRETE BRIDGE DECK WITH ASPHALT OVERLAY.

REMOVABLE ADHESIVE ANCHOR INSTALLATION ON CONCRETE BRIDGE DECK, CONCRETE APPROACH SLAB, OR CONCRETE PAVEMENT

DO NOT USE ON CONCRETE WITH AN ASPHALTIC OVERLAY.

FREE STANDING TRANSITION TO TIED-DOWN SYSTEM

PLACE TRANSITION IN A TANGENT SECTION OF BARRIER PARALLELED TO THE ROADWAY. THIS TRANSITION OCCURS ON STRUCTURAL SLAB, AS SHOWN.

CONCRETE BARRIER TEMPORARY PRECAST, 12'-6"
GENERAL NOTES

1. When objects extend above the grade, a minimum of 1 foot is required from back of barrier to objects. See other details for the maximum offset from back of barrier to slopes or vertical drops.
2. Objects are not to be placed on, mounted to, or leaned against the barrier without permission of the project engineer.
3. See other detail on Sheet 10 for space requirements.
4. See bolt through deck, removable adhesive anchor, or a stake down for asphaltic surface treatment details. Asphaltic anchor shown.
5. Depth of 3 feet or more.

12'-6" CONCRETE BARRIER
S.D.D. 14B7-e

FREE STANDING BARRIER SPACE REQUIREMENTS
FOR HAZARDS EXTENDED ABOVE THE GRADE LINE

POSTED SPEED

X

MPH

45 OR GREATER
4'

40 OR LESS
2'

ANCHORED BARRIER SPACE REQUIREMENTS
ON VERTICAL DROP OFFS

ANCHORED BARRIER SPACE REQUIREMENTS
ON SLOPES

AREA FREE OF WORKERS, OBJECTS AND MOUNTED BARRIER

S.S.D. 14 B 7-15e
STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

CONCRETE BARRIER
TEMPORARY PRECAST, 12'-6"
GUSSETS

NOTES

1. FOUR GUSSETS AND END PLATE ARE STITCH WELDED ON THREE SIDES.
2. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE, AND GUSSETS.

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

SIDE. TOP AND END PLATES FOR CAP FROM TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

SIDE PLATE

TOP PLATE

END PLATE

CONTINUOUS WELD ON TOP EDGES AND END PLATE

NOTES

1. FOUR GUSSETS AND END PLATE ARE STITCH WELDED ON THREE SIDES.
2. TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE, AND GUSSETS.

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 42" PERMANENT CONCRETE BARRIER

STATE OF WISCONSIN
DEPARTMENT OF TRANSPORTATION

SDD 14b7-g  Concrete Barrier Temporary Precast

SDD 14b7-g  Concrete Barrier Temporary Precast
GUSSET DIMENSIONS

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SIDE PLATES, TOP PLATE, END PLATE AND GUSSETS ARE 12 GAUGE ASTM A36 STEEL AND GALVANIZED.
GUSSETS AND END PLATE ARE STITCH WELDED ON 3 SIDES.
TWO TRIANGULAR SIDE PLATES ARE STITCH WELDED TO TOP PLATE, END PLATE AND GUSSETS.

GUSSET LOCATION

CAP DETAILS FOR TEMPORARY CONCRETE BARRIER TO 56" PERMANENT CONCRETE BARRIER
Cap Details for Temporary Concrete Barrier to 56" Permanent Concrete Barrier

**Section D-D**

**Plan View**
- Top Plate
- Side Plates 1 and 2
- Dimensions: 2'-0" to 9'-11.5"
- Angles: 168.617°, 11'-5.5", 2'-3.5"
- Diameters: 3/8" (Typ.)
- Heights: 9'-11" for Top Plate, 3.5" for Side Plates

**End View**
- Top Plate
- Side Plates 1 and 2
- Dimensions: 10'-1.5" for Top Plate, 3/8" for Side Plates
- Angles: 5.84°, 3.5°, 1.13°
- Heights: 6.5" for Top Plate, 2" for Side Plates

**Side View**
- Top Plate
- Side Plates 1 and 2
- Dimensions: 2'-0" for Top Plate, 9'-11.5" for Side Plates
- Angles: 168.617°, 11'-5.5", 2'-3.5"
- Diameters: 3/8" (Typ.)
- Heights: 9'-11" for Top Plate, 3.5" for Side Plates

**Notes:**
- SDD 14b7-i  Concrete Barrier Temporary Precast
- DEPARTMENT OF TRANSPORTATION
- STATE OF WISCONSIN
- APPROVED
- FHWA
- DATE
- ROADWAY STANDARD DEVELOPMENT
- June 2017
- S.D.D. 14 B 7-i
- UNIT SUPERVISOR
- STATE OF WISCONSIN
- DEPARTMENT OF TRANSPORTATION
- APPROVED DATE
- FHWA
- ROADWAY STANDARD DEVELOPMENT
- June 2017
- S.D.D. 14 B 7-i
- UNIT SUPERVISOR
References:

- Standard Spec 603
- Standard Spec 614
- FDM 11-45-50
- FDM 11-45-30
- AASHTO Roadside Design Guide
- Midwest Roadside Safety Facility (MwRSF) Report No. 06-1276
- MwRSF Report No. TRP-03-208-10
- TRP-03-291-14

Bid items associated with this drawing:

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<tr>
<th>ITEM NUMBER</th>
<th>DESCRIPTION</th>
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<td>Concrete Barrier Temporary Precast Delivered</td>
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<td>603.8125</td>
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<td>603.8505</td>
<td>Anchoring Concrete Barrier Temporary Precast on Bridge Decks</td>
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<td>614.0700</td>
<td>Sand Barrel Array</td>
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Standardized Special Provisions associated with this drawing:

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Other SDDs associated with this drawing:

- SDD 14B8     Crash Cushion/Sand Barrel Array and Other Temporary Barrier Layout Details (Required)
- SDD 15D3     Traffic Control, Lane Closure, Speeds Greater than 40 M.P.H. with Barrier
- SDD 15D5     Traffic Control, Single Lane Crossover Entrance with Barrier
- SDD 15D10    Traffic Control, Single Lane Crossover Exit with Barrier
- SDD 15D32    Traffic Control, One Lane Road Stop Condition
- SDD 15D33    Traffic Control, One Lane Road with Temporary Signals

Design Notes:

Each section of the barrier weighs approximately 2.7 tons. The mass of the barrier and the friction between the barrier and the underlying surface tend to limit lateral and overturning movements of the barrier when struck by an errant vehicle.

Freestanding temporary concrete barriers are often placed adjacent to drop offs (e.g. the edge of a bridge deck during deck replacement, repair, maintenance, or reconstruction). When temporary concrete barriers are used on the edge of a bridge deck, or other drop-offs greater than 2 feet, the risk of the entire line of barriers falling off of the deck or drop-off, requires that deflection of the barrier be limited to the gap between the backside of the barrier and the edge of the bridge deck or drop-off. Anchor the traffic side of the concrete barrier temporary if the distance to a 2-foot or greater drop off that is steeper than 3 H : 1 V, for example the edge of a bridge deck or a drop off at the edge of pavement, is less than 4 feet from the side of the barrier closest to the drop off and the posted speed is 45 mph or greater, or if the distance to a 2-foot or greater drop off that is steeper than 3 H : 1 V, for example the edge of a bridge deck or a drop off at the edge of pavement, is less than 2 feet from the side of the barrier closest to the drop off and the posted speed is 40 mph or less. Locate the line of anchored barrier on the deck such that the gap between the backside of the barrier and the bridge deck is at least 6-inches.

Place temporary barrier on paved surface that is no steeper than 10:1. Provide approach grades to the temporary barrier that are 10:1 or flatter. Barrier may not operate as intended or errant vehicle may not engage barrier correctly if grading is not provided.

Use the following methods to treat the blunt end(s) of the barrier:

a) Flare approach end of the barrier away from the traffic lane.
b) Use an approved crash cushion or sand barrel array to terminate the temporary barrier installation.

c) Overlap barriers (see SDD 14B8)

d) Connect temporary barrier to permanent barrier (see SDD 14B8)

When posted speed is over 30 mph, use temporary crash cushion or sand barrier array (see Approved Products List, FDM 11-45-30.4.4.1.3). Provide individual construction drawing detailing the installation crash cushions and sand barrel arrays.

If a freestanding temporary concrete barrier system is connected to a rigid barrier, such as a concrete bridge parapet, there needs to be a transition in the relative stiffness and deflection of the systems. Otherwise, there is a serious potential for pocketing of the barrier, snagging of the wheels or other vehicle components on the rigid barrier, as well as problems with vehicle stability. SDD has been updated to reflect this change.

The tie-down system is not recommended for use on bridge decks with an asphalt overlay. The asphalt overlay may induce high bending moments in the anchor bolts at the interface between the asphalt layer and the concrete surface, causing failure at much lower dynamic loads. Coordinate with BPD.

Where an expansion joint falls between two anchor bolts of a single barrier, one anchor bolt adjacent to the joint may be omitted to allow for free movement of the slab underneath. Provide a transition section whenever a freestanding section is connected to an anchored section of barriers.

Anchoring temporary barrier on bridge decks may require bolting completely through the deck. Avoid placing anchored temporary barrier over girder and beams on bridge decks. Review epoxy anchoring requirements and barrier locations on structures during the initial design of the traffic control plan with structural engineer.

No other methods to anchor temporary barrier are to be used without preapproved by BPD. No other bid items, special provisions, or detail drawings are to be use for temporary barrier without preapproval of BPD.

Review payment of concrete barrier bid items after traffic control plans are developed. Staging of the plan, location of barrier and other factors can influence how temporary barrier is paid for. Some general considerations on payment items are:

- Pay Concrete Barrier Temporary Precast Delivered and Concrete Barrier Temporary Precast Installed when barrier is initially installed on a project.
- Barrier is a hazard. Remove temporary barrier from the right of way that is no longer needed to shield hazards or being used to delineate between phases (e.g., over a winter shut down the barrier is not needed to shield hazards or delineate traffic). If temporary barrier is to remain within right of way when not shielding hazards or providing delineation, provide documentation in DSR.
- Pay Concrete Barrier Temporary Precast Delivered and Concrete Barrier Temporary Precast Installed if barriers are required to move across a live lane of travel in the next traffic control phase (e.g., Don’t swing barrier over live lanes. Have contractor load barrier on to a truck).
- Pay Concrete Barrier Temporary Precast Installed when shifting a barrier laterally. Do not pay for a delivery unless the lateral shift is a significant distance (e.g., if it needs to be loaded into a truck).
- Pay Concrete Barrier Temporary Precast Delivered and Concrete Barrier Temporary Precast Installed if barrier is moved longitudinally (e.g., up or down station by putting it on a truck).

Temporary barrier is not intended for permanent applications. Contact BPD if intending on using temporary barrier for permanent applications.

Contact Person:

Erik Emerson (608) 266-2842