

## SECTION 02843

# CRASH CUSHIONS

## PART 1 GENERAL

### 1.1 SECTION INCLUDES

- A. Furnish and install crash cushions
  - 1. Reference Standard Drawings
    - a. Types A, B, & D: CC 4
    - b. Type C: CC 5
    - c. Type E: CC 6
    - d. Type F: CC 7
    - e. Type G: CC 7
    - f. Type H: CC 8
  
- B. Furnish and install crash cushion markings
  - 1. Reference Standard Drawing: CC 1

### 1.2 RELATED SECTIONS

- A. Section 02891: Traffic Signs

### 1.3 REFERENCES

- A. UDOT Guidelines for Crash Cushions

### 1.4 SUBMITTALS

- A. Installer Certification.
  - 1. Manufacturer certified installer.
  - 2. Provide proof of certification prior to installation.
  
- B. Provide a letter of certification for each system location, affirming that each system is installed according to Department's and the manufacturer's specifications.
  - 1. Location as per Project Number and Station Number and indicating median, left or right shoulder or gore area application.

## PART 2 PRODUCTS

### 2.1 CRASH CUSHION

- A. Select from the current approved products list, UDOT Guidelines for Crash Cushions.
  - 1. Refer to the current UDOT Guidelines for Crash Cushions, Maintained by the Division of Traffic and Safety available through the UDOT Internet home page. Refer to <http://www.udot.utah.gov/index.php/m=c/tid=719>.
- B. Types:
  - 1. Type A:
    - a. Protect fixed hazards greater than 3 ft wide within 15 ft of traveled way, with less than 100 ft. of longitudinal space in front of the hazard.
    - b. Use to protect concrete barrier ends, bridge parapets or piers, and other hazards as a stand alone system.
    - c. Use a transition element when used in conjunction with single or double faced guardrail. Use two transition elements when installed with double faced guardrail.
    - d. Use on shoulders or in medians where a recover area behind system and hazard is unattainable.
    - e. Use in areas where minimal impacts are anticipated, one impact every three or more years.
    - f. Refer to CC series Standard Drawings.
  - 2. Type B:
    - a. To protect fixed hazards up to 3 ft wide or less and within 15 ft. of traveled way, with less than 100 ft of longitudinal space in front of the hazard.
    - b. Use to protect concrete barrier ends, bridge parapets or piers, and other hazards as a stand alone system.
    - c. Use a transition element when used in conjunction with single or double faced guardrail. Use two transition elements when installed with double faced guardrail.
    - d. Use on shoulders or in medians where a recover area behind system and hazard is unattainable.
    - e. Use in areas where minimal impacts are anticipated, one impact every three or more years.
    - f. Refer to CC series Standard Drawings.
  - 3. Type C:
    - a. To protect fixed objects 3 ft wide or less within 15 ft of traveled way, and longitudinal space in front of the hazard greater than 100 ft.

- b. Use with single or double faced guardrail, transition element(s) required for concrete barrier or bridge parapet.
  - c. May be used on shoulders. Shoulder application requires a recovery area of 75 ft by 20 ft.
  - d. Can be used on medians as per CC series Standard Drawings.
  - e. Use in area where minimal impacts are anticipated, one impact every three or more years.
4. Type D:
- a. To protect fixed hazards within 15 ft of traveled way.
  - b. Use to protect concrete barrier ends, bridge parapets or piers, or other hazards as a stand alone system.
  - c. Use a transition element when used in conjunction with single or double faced guardrail. Use two transition elements when installed with double faced guardrail.
  - d. Can be used on shoulders or in medians.
  - e. Use in areas where one impact per year is anticipated or when repair history indicates two or more impacts over a three year period.
  - f. Refer to CC series Standard Drawings.
5. Type E - Sand Barrel Arrays:
- a. To protect fixed hazards outside 15 ft of traveled way and there is an unlimited amount of space.
  - b. Can be configured to meet most width requirements.
  - c. For use to protect concrete barrier ends, bridge parapets or piers, or other hazards as a stand alone system.
  - d. Refer to CC series Standard Drawings.
6. Type F:
- a. Use to protect concrete barrier or bridge parapets with less than 125 ft of longitudinal space in front of the hazard.
  - b. Refer to CC series Standard Drawings Type F Detail.
7. Type G:
- a. Use to protect the approach end of single face w-beam guardrail.
  - b. Use to protect concrete barrier or bridge parapet with unlimited longitudinal space (greater than 125 ft) in front of the hazard with transition element, and is installed where a tangent system is desired.
  - c. Use with guardrail systems running tangent to the roadway.
  - d. Refer to CC series Standard Drawings Type G Detail.
8. Type H:
- a. Use to protect the approach end of single face w-beam guardrail.
  - b. Use to protect concrete barrier or bridge parapet with unlimited longitudinal space (greater than 125 ft) in front of the hazard with transition element, and is installed where a flared system is desired.
  - c. Use with flared guardrail systems.
  - d. Refer to CC series Standard Drawings Type H Detail.

## **2.2 CRASH CUSHION MARKINGS**

- A. Marker Plate: Standard Drawing CC 1.
  - 1. Construct marker plate 18 inches X 18 inches using 0.032 gage aluminum with appropriate object marker sheeting.
    - a. Type C systems require a 24 inches X 14 inches object marker plate. Sheeting will be in compliance with Section 02891.
      - 1) Drill four 7/16-inch holes in each corner of plate.
    - b. Self adhesive object marker sheeting 18 inches X 18 inches or 24 inches X 14 inches may be substituted.
  - 2. Marker Post: CC series Standard Drawings.
    - a. Construct marker post, 60 inches long and 2 inches OD, using black polyethylene material.
      - 1) Apply three 4-inch bands of yellow sheeting.
      - 2) Drill three 7/16-inch mounting holes.
      - 3) Close top of marker post.

## **PART 3 EXECUTION**

### **3.1 INSTALLATION**

- A. Complete all site preparation prior to installation.
  - 1. Construct approach areas and recover areas to meet UDOT Standards and system requirements.
    - a. See CC series Standard Drawings for system type being installed.
  - 2. Construct concrete pad to meet system requirements.
    - a. Use manufactures specification for concrete pad construction.
- B. Install in accordance with:
  - 1. The Department's Guidelines for Crash Cushions
  - 2. Manufacturer's specifications and recommendations.
  - 3. Use manufacturer certified installer to perform the installation.
- C. Complete repair or replacement of any crash cushion damaged during construction within 24 hours of notification of damage.
  - 1. Contractor is responsible for the cost of any repair or replacements until completion of the project.

END OF SECTION