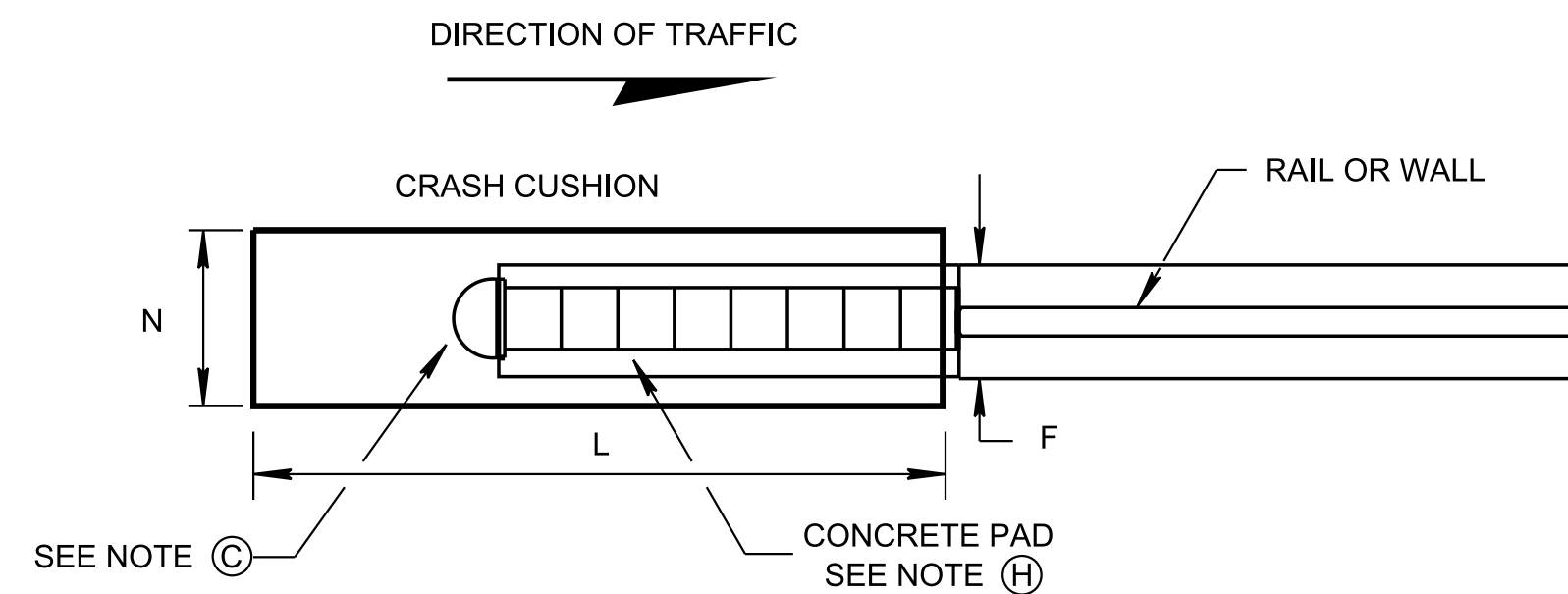
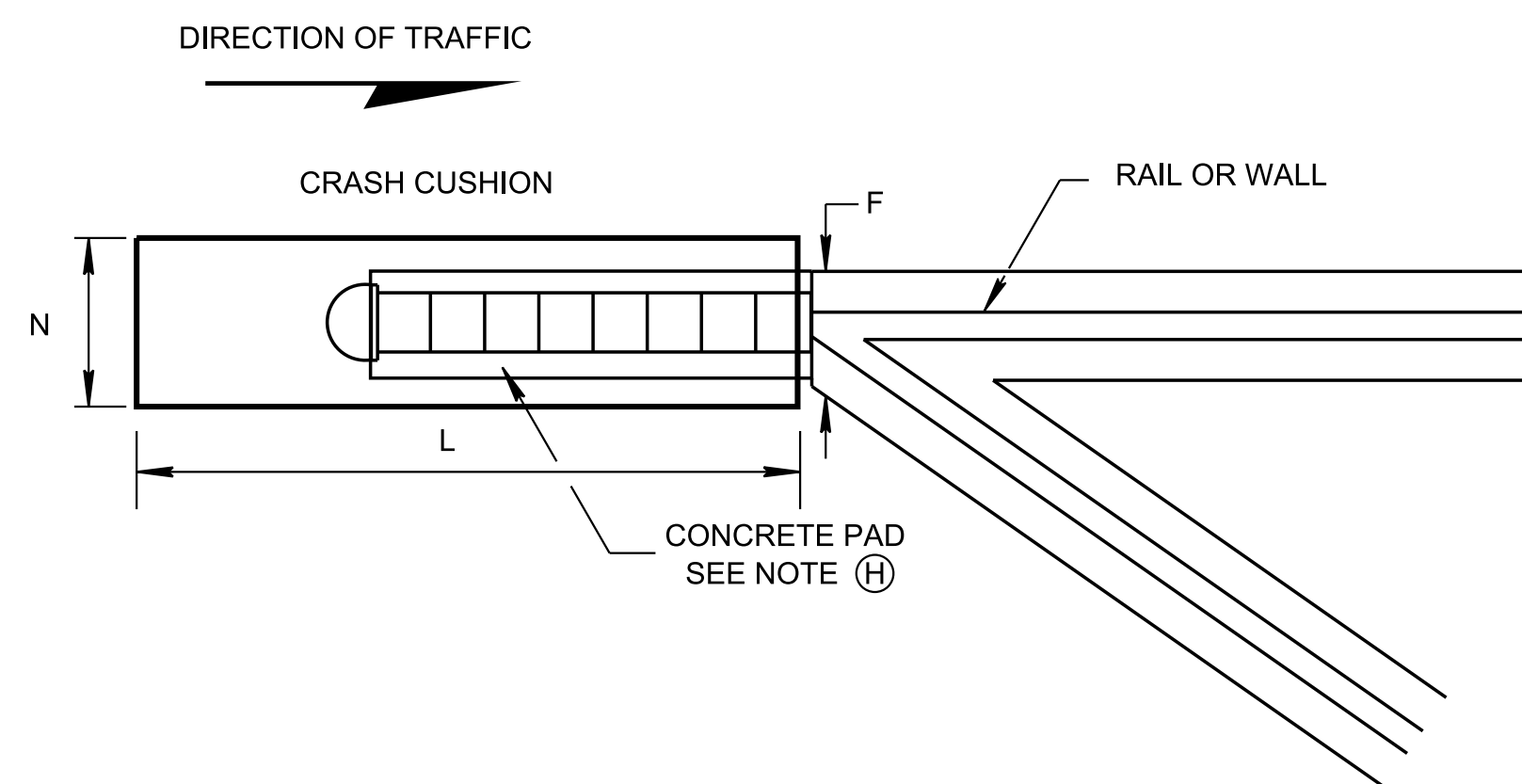


3/8/2024 2:56:15 PM P:\StandDraw\DESIGN STANDARDS\Standards Drawings\Standard Roadway Drawings - CURRENT\In Progress\10-107.00 Safety Design and Guardrails IP\107.03 Crash Cushions IP\SCC1-20240109.DGN



CRASH CUSHION AT THE END OF GUARDRAIL OR BARRIER WALL



CRASH CUSHION AT THE END OF DIVERGING GUARDRAILS OR BARRIER WALLS

LEGEND	
N:	APPROXIMATE WIDTH OF SPACE NECESSARY FOR THE PLACEMENT OF A CRASH CUSHION.
L:	APPROXIMATE LENGTH.
F:	WIDTH OF A FIXED OBJECT THAT WILL BE SHIELDED WITH A CRASH CUSHION.

MINIMUM CRASH CUSHION RESERVE AREA (FT)						
DESIGN SPEED MPH (MAIN LINE)	MINIMUM DIMENSIONS ①				DESIRABLE DIMENSIONS	
	RESTRICTED DIMENSIONS ②		UNRESTRICTED DIMENSIONS			
	N	L	N	L	N	L
30	6	8	8	11	12	17
50	6	17	8	25	12	33
70	6	28	8	45	12	55

- ① MINIMUM DIMENSIONS SHOULD ONLY BE USED AT LOCATIONS WHERE IT IS INFEASIBLE TO PROVIDE THE DESIRABLE AREA. IN CASES WHEN MORE THAN THE MINIMUM AREA CAN BE PROVIDED, AS MUCH SPACE AS POSSIBLE SHOULD BE PROVIDED.
- ② RESTRICTED MINIMUM DIMENSIONS SHOULD ONLY BE USED IF THE MINIMUM UNRESTRICTED DIMENSIONS ARE UNATTAINABLE.

LEGEND: CRASH CUSHION

CRASH CUSHION CLASSIFICATION AND SELECTION CRITERIA OF DEVICES

SELF-RESTORING: THIS DEVICE SHOULD BE CONSIDERED FOR MOST LOCATIONS WHERE A CRASH CUSHION IS REQUIRED. SELF-RESTORING CRASH CUSHIONS ARE DESIGNED TO WITHSTAND MULTIPLE IMPACTS (EQUAL TO OR GREATER THAN 3 PER YEAR) WITH MINIMAL REPAIRS (WITH REDUCED CAPACITY), WHERE ADT IS EQUAL TO OR GREATER THAN 25000 VEHICLES/DAY AT LOCATIONS WHERE IMPACTS OCCUR FREQUENTLY, AND RESPONSE TIME IS CRUCIAL.

LOW-MAINTENANCE: LOW-MAINTENANCE CRASH CUSHIONS ARE DESIGNED TO BE USED AT LOCATIONS WHERE THE IMPACTS ARE EXPECTED TO BE 1-2 PER YEAR. THE DEVICE IS DESIGNED TO BE EASILY RESET AFTER IMPACT WITH MINIMAL REPAIR AND USED AT LOCATIONS WITH FREQUENT IMPACTS.

REUSABLE: THIS DEVICE IS DESIGNED THAT CAN BE REPAIRED BY SALVAGING MOST OF THE MAJOR COMPONENTS.

GENERAL NOTES

- (A) CRASH CUSHIONS SHOULD ONLY BE USED IF LIMITED SPACE (SUCH AS A GORE AREA) PRECLUDES THE USE OF GUARDRAIL END TERMINALS OR AT OTHER LOCATIONS WHERE GUARDRAIL END TERMINAL WILL NOT FUNCTION.
- (B) CRASH CUSHIONS SHALL BE INSTALLED PER MANUFACTURERS SHOP DRAWINGS. SYSTEMS APPEARING ON THE QPL 45, SECTION C, ONLY MAY BE USED FOR THE SPECIFIED CATEGORY DETERMINED.
- (C) THE NOSE OR FIRST BARREL OF THE CRASH CUSHION SHALL BE MARKED WITH OBJECT MARKER STRIPING TYPE 3 INCLUDED IN THE COST OF THE SYSTEM.
- (D) SYSTEMS SHALL BE INSTALLED ON HARD, SMOOTH SURFACES WITH SLOPES LESS THAN 5% AND VARIATION OF CROSS SLOPE LESS THAN 2% CHANGE FOR THE LENGTH OF RESERVE AREA.
- (E) MASH TL-2 OR TL-3 CRASH CUSHION SHALL BE USED ON TDOT PROJECTS.
- (F) CURBS SHALL NOT BE INSTALLED IN AREAS NEAR CRASH CUSHIONS, EXISTING CURBS TO BE REMOVED UNLESS OTHERWISE SPECIFIED.
- (G) IF A CRASH CUSHION WOULD COMPROMISE SIGHT DISTANCE A SYSTEM WITH REDUCED HEIGHT (LESS THAN 36" HEIGHT) MAY BE SPECIFIED.
- (H) ALL PERMANENT INSTALLATIONS REQUIRE CONCRETE FOUNDATION AS SHOWN ON MANUFACTURERS SHOP DRAWINGS.
- (I) NON-GATING CRASH CUSHIONS SHALL BE PAID FOR UNDER ITEM NOS.:

REUSABLE CRASH CUSHION:		
705-20.22	REUSABLE CRSH CUSHION NARW (MASH TL-3)	EACH
705-20.23	REUSABLE CRASH CUSHION WIDE (MASH TL-3)	EACH
705-20.59	REUSABLE CRSH CUSHION NARW (MASH TL-2)	EACH
705-20.60	REUSABLE CRASH CUSHION WIDE (MASH TL-2)	EACH

LOW-MAINTENANCE CRASH CUSHION:		
705-20.20	LOW MAINT CRASH CUSHN NARROW (MASH TL-3)	EACH
705-20.21	LOW MAINT CRASH CUSHION WIDE (MASH TL-3)	EACH
705-20.57	LOW MAINT CRASH CUSHN NARROW (MASH TL-2)	EACH
705-20.58	LOW MAINT CRASH CUSHION WIDE (MASH TL-2)	EACH

SELF-RESTORING CRASH CUSHION:		
705-20.61	SELF RESTORING CRASH CUSHN NARROW (MSH TL-2)	EACH
705-20.62	SELF RESTORING CRASH CUSHN WIDE (MSH TL-2)	EACH
705-20.71	SELF RESTORING CRASH CUSHN NARROW (MSH TL-3)	EACH
705-20.72	SELF RESTORING CRASH CUSHN WIDE (MSH TL-3)	EACH

THE PAYMENT OF PERMANENT CRASH CUSHION INCLUDES CONCRETE FOUNDATION.

712-02.60 TEMPORARY WORK ZONE CRASH CUSHION (MASH TL-3), EACH

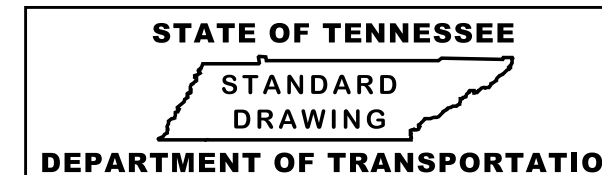
CRASH CUSHION CONCRETE FOUNDATION MAY BE OMITTED WHEN INSTALLED AT TEMPORARY WORK ZONE AREA, AN ALTERNATIVE PINNED INSTALLATION METHOD MAY BE USED FOLLOWING THE MANUFACTURER'S INSTRUCTIONS.

IN-SERVICE NCHRP-350 TL-3 DEVICES (QPL 34) MAY BE USED FOR TEMPORARY WORK ZONE APPLICATIONS, FOR PERMANENT INSTALLATIONS USE ONLY MASH DEVICES (QPL 45).

- (J) PRODUCTS EVALUATED UNDER NCHRP 350 TL-3 MAY CONTINUE TO BE USED THROUGHOUT THEIR NORMAL SERVICE LIFE (DAMAGE BEYOND REPAIR) AFTER DECEMBER 31, 2018. SEE QPL 34 FOR APPROVED NCHRP 350 TL-3 CRASH CUSHION AND QPL 45 FOR MASH APPROVED CRASH CUSHION.
- (K) AT LOCATIONS WHERE THE INSTALLATION OF CRASH CUSHION NARROWS THE ROADWAY TYPICAL SECTION SHOULDER WIDTH (SUCH AS IN GORE AREAS CRASH CUSHION OFFSET TO THE EDGE OF TRAVELLED WAY IS LESS THAN THE SHOULDER WIDTH), INSTALL TYPE 3 OBJECT MARKER STRIPING PATTERN (OM3-L, OM3-C OR OM3-R) COVERING BLUNT FACE OF THE DEVICE. THE USE OF DELINEATION OTHER THAN OBJECT MARKER TYPE 3 MAY BE ACCEPTABLE AT ALL OTHER LOCATIONS.

- REV. 08-26-15: ADDED NOTE (H) AND REVISED NOTE (I)
- REV. 03-28-17: CHANGED PAY ITEM NUMBERS.
- REV. 06-28-19: DELETED SACRIFICIAL DEVICES FROM THE ATTENUATOR CLASSES DESCRIPTION BOX. ADDED GENERAL NOTE (J) AND MODIFIED NOTES (A), (E) AND (I). REDREW SHEET.
- REV. 03-04-21: CHANGED TEMPORARY WORK ZONE CRASH CUSHION PAY ITEM NUMBER.
- REV. 10-29-2021: REVISED GENERAL NOTE (I)
- REV. 03-01-2023: ADDED GENERAL NOTE (K) AND PAY ITEM NUMBERS FOR MASH TL-2 AND SELF RESTORING CRASH CUSHIONS ON GENERAL NOTE (I). REVISED GENERAL NOTES (B) AND (E). ADDED CRASH CUSHION DEVICES DESCRIPTION AND REMOVED THE CRASH CUSHION SELECTION FLOWCHART FROM THE STANDARD DRAWING.
- REV. 01-09-2024 : ADDED ALTERNATIVE PINNED INSTALLATION NOTE ON GENERAL NOTE (I)

MINOR REVISION -- FHWA APPROVAL NOT REQUIRED



CRASH CUSHION