

APPROVED BY
 BUREAU OF EXPLOSIVES
J.W. Fleishman
 SUPERVISOR, MILITARY & INTERMODAL SERVICES
 DATE 4/29/86

SPECIAL PROVISIONS FOR CONTAINERS,
 CLOSED OR OPEN TOP VAN AND FLAT
 BED TRAILERS FOR TRANSPORTING
 AMMUNITION AND/OR COMPONENTS,
 EXPLOSIVES AND OTHER DANGEROUS
 ARTICLES VIA TRAILER/CONTAINER -
 ON-FLAT-CAR (T/COFC) RAIL
 CARRIER SERVICE

THIS DRAWING SUPERSEDES
 SAVANNA ARMY DEPOT DRAWING
 NO. 19-48-D-ORDJU-2440, DATED
 17 OCTOBER 1960.

DO NOT SCALE

REVISIONS				DRAFTSMAN	dh	PROJ ENG	
				<i>PP</i>		<i>RH/WRF</i>	
				CHECKER		LOG ENG'D OFFICE	
				<i>WJ</i>		<i>WJ</i>	
APPROVED, U.S. ARMY ARMAMENT, MUNITIONS AND CHEMICAL COMMAND							
<i>D.J. Deaton</i>							
APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIAL COMMAND (AMC)							
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U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL							
U.S. ARMY AMC DRAWING							
MAY 1986							
CLASS	DIVISION	DRAWING	FILE				
19	48	4224	15Q1				

GENERAL NOTES

- A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AR 740-1 AND AUGMENTS TM 743-200-1 (CHAPTER 5).
- B. THE RAIL CARS, FOR TOFC AND COFC SERVICE, WHICH HAVE BEEN TESTED AND APPROVED FOR SHIPMENT OF AMMUNITION AND/OR COMPONENTS, EXPLOSIVES AND OTHER DANGEROUS ARTICLES ARE:
 - 1. AMERICAN CAR AND FOUNDRY (A.C.F.), MECHANICAL (TRAILER KING PIN) HITCH CARS.
 - 2. FLEXI-VAN CARS.
 - 3. GENERAL AMERICAN TRANSPORTATION G-SERIES MECHANICAL (TRAILER KING PIN) HITCH (TOFC) AND CUSHIONED BOLSTER (COFC) CARS.
 - 4. PULLMAN-STANDARD MECHANICAL (TRAILER KING PIN) HITCH CARS.
 - 5. PULLMAN-STANDARD PROTECTOFRAME EQUIPPED (COFC) CARS.
 - 6. TRAILER TRAIN (TOFC AND/OR COFC) ALL PURPOSE (TTAX OR TTCK) CARS.
- C. THE "SPECIAL BULKHEAD BRACES", METHODS I AND II, HAVE BEEN TESTED AND APPROVED TO RETAIN LADING WEIGHTS UP TO 42,000 POUNDS. LADING WEIGHTS UP TO 45,000 POUNDS ARE APPROVED IF THE LADING IN DIRECT CONTACT WITH THE "SPECIAL BRACES" DOES NOT EXCEED 42-INCHES IN HEIGHT. THE "SPECIAL BULKHEAD BRACE", METHOD III, HAS BEEN TESTED AND APPROVED TO RETAIN LADING WEIGHTS UP TO 45,000 POUNDS.
- D. THE (LOW-LEVEL) BULKHEAD BRACE FOR FLAT BED TRAILER HAS BEEN TESTED AND APPROVED FOR A MAXIMUM WEIGHT OF LADING.
- E. THE TRAILERS AND CONTAINERS EQUIPPED WITH MECHANICAL BRACING DEVICES WHICH HAVE BEEN TESTED AND APPROVED FOR SHIPMENTS OF AMMUNITION AND/OR COMPONENTS, EXPLOSIVES AND OTHER DANGEROUS ARTICLES ARE:
 - 1. AROQUIP CORPORATION SERIES A (LOGISTIC TRACK AND SHORING BEAMS) SYSTEM.
 - 2. EVANS PRODUCTS CO, TYPE "S" ("DF" BELT RAILS AND CROSS MEMBERS).
 - 3. EVANS PRODUCTS CO, "SLIMLINE" TYPE ("DF" BELT RAILS AND CROSS MEMBERS).
 - 4. KINEDYNE CORPORATION (TRACK AND SHORING BEAMS) SYSTEM: (SINGLE HOLE (NARROW) TRACK AND SHORING BEAMS IDENTIFIED AS KINEDYNE P/N-K 1835-06). (DOUBLE HOLE (WIDE) TRACK AND SHORING BEAMS IDENTIFIED AS KINEDYNE P/N-K 1835-07).
- F. THE "SPECIAL BULKHEAD BRACES", (METHOD I AND II), HAVE BEEN DEPICTED WITH 2" X .050" STEEL STRAPPING HOLDING THE BULKHEADS IN PLACE. HOWEVER IF SPECIAL AUTHORITY IS GRANTED BY THE U.S. ARMY DEFENSE AMMUNITION CENTER AND SCHOOL, ATTN: SMCAC-DEO, SAVANNA, IL, 61074-9639, REUSABLE WEB STRAP ASSEMBLIES MAY BE USED IN LIEU OF THE SPECIFIED 2-INCH STEEL STRAPPING FOR THE SECUREMENT OF THE UPRIGHT BRACES. THESE ASSEMBLIES WILL HAVE A BREAKING STRENGTH OF NOT LESS THAN 15,500 POUNDS AND WILL CONSIST OF WEBBING, END ANCHORING DEVICES, SCUFF SLEEVES, AND A RATCHET/SPOOL TENSIONING DEVICE, IT WILL BE THE RESPONSIBILITY OF THE CARRIER TO FURNISH THE WEB STRAP ASSEMBLIES. THE SHIPPER WILL BE RESPONSIBLE FOR CLOSE INSPECTION DURING INSTALLATION TO ENSURE THAT ASSEMBLIES WHICH HAVE BEEN DAMAGED SUFFICIENTLY TO IMPAIR THEIR STRENGTH WILL NOT BE USED. SCUFF SLEEVES WILL BE POSITIONED TO PROVIDE PADDING WHERE A WEB STRAP IS BEARING ON A METAL SURFACE OF AN UPRIGHT BRACE. THE STRAPPING WILL BE DRAWN TAUT WHEN ASSEMBLIES ARE TENSIONED. AFTER TENSIONING, AND AS A MINIMUM, A WEB STRAP MUST FORM SLIGHTLY MORE THAN ONE COMPLETE WRAP ON A TAKEUP SPOOL OF A TENSIONING DEVICE. A SOCKET WRENCH WITH AN 18" HANDLE CAN BE USED TO ACHIEVE PROPER TENSIONING.
- G. CAUTION: TRAILERS OR CONTAINERS EQUIPPED WITH MECHANICAL BRACING DEVICES MUST NOT BE USED FOR SHIPMENTS OF EXPLOSIVES (SUCH AS TNT, DYNAMITE, BLACK POWDER, BULK PROPELLANT POWDER, AND SIMILAR EXPLOSIVES, EXCEPT AS A COMPONENT PART OF AMMUNITION OR PROPELLING CHARGES) WHICH ARE LIABLE TO SIFT OR BECOME LODGED IN THE MECHANISM (BELT RAILS OR CROSS MEMBERS) IN THE EVENT OF CONTAINER FAILURE.
- H. SUBSEQUENT REFERENCE TO A TRAILER THROUGHOUT THIS DRAWING MEANS EITHER A TRAILER OR A CONTAINER.
- J. IF INITIAL INSTALLATION IS BEING MADE, IT IS RECOMMENDED THAT METHOD II OR III BULKHEAD BRACES BE UTILIZED IN LIEU OF METHOD I, TO FACILITATE THE USE OF MATERIALS HANDLING EQUIPMENT. ALSO, WHEN INSTALLING BULKHEAD BRACES, METHOD I, II, OR III, THEY SHOULD BE POSITIONED AS CLOSE AS POSSIBLE TO THE FRONT AND REAR OF THE VEHICLE AS INDIVIDUAL VEHICLE CONSTRUCTION WILL ALLOW. THIS WILL PERMIT THE USE OF AS MUCH OF THE CUBIC CAPACITY OF THE VEHICLE AS IS POSSIBLE.
- K. FOR LOADING AND BRACING OF A SPECIFIC ITEM FOR T/COFC SERVICE, SEE AMC 19-48 SERIES DRAWINGS OR BUREAU OF EXPLOSIVES PAMPHLET NO. 6C.

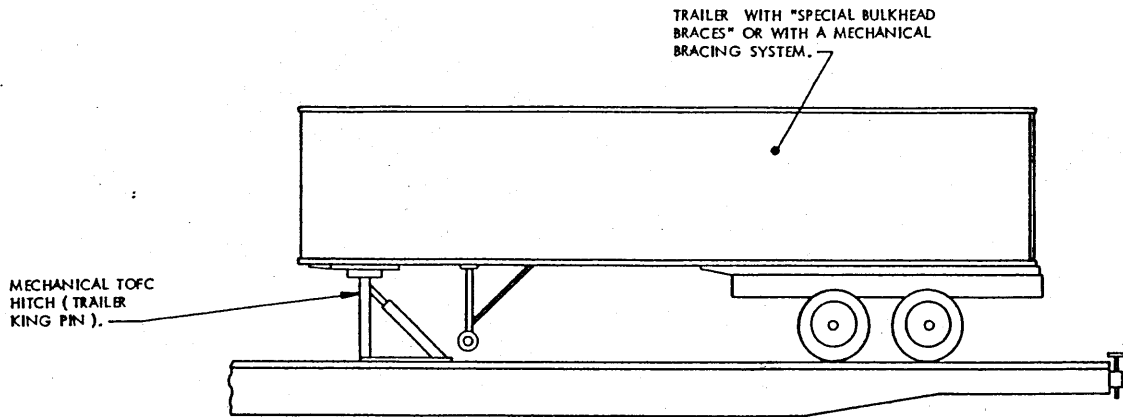
(CONTINUED AT RIGHT)

(GENERAL NOTES CONTINUED)

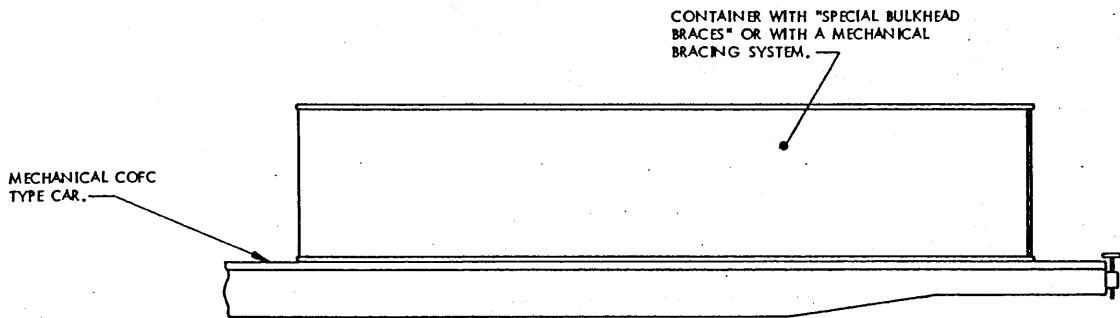
- L. DIMENSIONS OF THE TRAILERS AND MATERIAL IN THIS DRAWING ARE TYPICAL AND SHOULD BE FIELD CHECKED PRIOR TO INSTALLATION IN/ON A TRAILER. DIFFERENT MANUFACTURERS AND MODELS MAY VARY IN SIZE AND NUMBER OF FRAME MEMBERS, CROSS MEMBERS, FLOOR THICKNESS, ETC. THE SPECIFICATIONS SHOULD BE FOLLOWED AS CLOSE AS POSSIBLE.
- M. CONVERSION TO METRIC EQUIVALENTS: DIMENSIONS WITHIN THIS DOCUMENT ARE EXPRESSED IN INCHES, AND WEIGHTS ARE EXPRESSED IN POUNDS. WHEN NECESSARY, THE METRIC EQUIVALENTS MAY BE COMPUTED ON THE BASIS OF ONE INCH EQUALS 25.4MM AND ONE POUND EQUALS 0.454KG.

MATERIAL SPECIFICATIONS

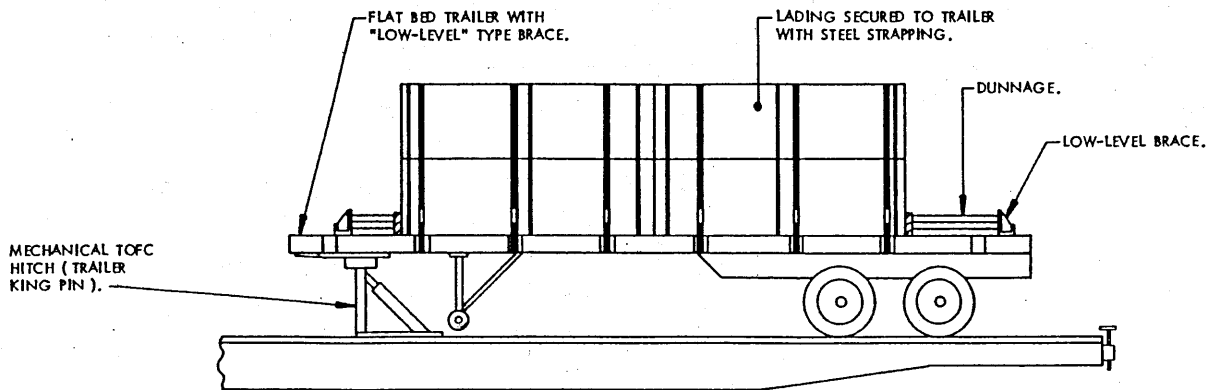
- LUMBER-----: SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.
- LUMBER, HARDWOOD ---: FED SPEC MM-L-736.
- STRAPPING, STEEL -----: CLASS I, TYPE I OR IV, HEAVY DUTY, FINISH A, B (GRADE 2), OR C; FED SPEC QQ-5-781.
- STRAP, SEAL-----: TYPE D, STYLE I, II, OR IV, CLASS II, FINISH A, B (GRADE 2) OR C, FED SPEC QQ-5-781.
- STRUCTURAL SHAPES-----: STEEL, CHANNEL, STRUCTURAL, 4" AT 13.8 LBS X 60" LONG, PER ASTM A36, FSC 9520.
- STEEL, LOW CARBON ---: PLATE, STEEL, LOW CARBON HOT ROLLED, .10/.20, VARIOUS SIZES, PER ASTM A242, FSC 9515.
- STEEL, HIGH STRENGTH---: PLATE, STEEL, HIGH STRENGTH, LOW ALLOY, HOT ROLLED COR-TEN A, VARIOUS SIZES, PER ASTM A242, FSC 9515.
- STEEL ROD-----: BAR, STEEL, ROUND, COLD DRAWN, LOW CARBON, 1117, PER ASTM A-108, 1/2", 5/8", 3/4", AND 1", FSC 9510.
- TUBE, STEEL, HIGH STRENGTH-----: TUBING, STRUCTURAL, RECTANGULAR, CARBON STEEL, 5" X 3" X 3/8", PER ASTM A500, FSC 4720.
- PIPE, HEAVY DUTY-----: PIPE, STEEL, BLACK AND HOT-DIPPED, ZINC-COATED, WELDED AND SEAMLESS, SCHEDULE 40, 3/4", FSC 4710.
- BOLT, STEEL-----: SCREW, CAP, HEXAGON HEAD (FINISHED HEXAGON BOLT), STEEL, GRADE 5; CADMIUM PLATED; 1-1/2", MS90725-10, FSC 5305.
- WASHER, LOCK-----: WASHER, LOCK, SPRING, NONLINK, MED SERIES, NONMAGNETIC, 1/2" AND 3/4", MS35338-48 AND MS35338-51, FSC 5310.
- NUT-----: NUT, PLAIN, HEXAGON-CARBON STEEL, CADMIUM PLATED, 1/2" AND 3/4", MS51967-14 AND MS51967-23, FSC 5310.
- SCREW COUNTERSINK HEAD, THREAD CUTTING---: SCREW, TAPPING-THREAD FORMING, TYPE AB, FLAT 82° COUNTERSUNK HEAD, CROSS RECESSED, 1/4" X 1-1/4", MS51862-59, FSC 5305.
- SPRING-----: SPRING, HELICAL, COMPRESSION, MUSIC WIRE, CADMIUM PLATED, 1-1/4" OD, 9/32" X 5/32" AND 3". MCMASTER-CARR 9624N18, FSC 5340.
- RIVET, ALUMINUM-----: RIVET, SOLID-UNIVERSAL HEAD, ALUMINUM ALLOY AND TITANIUM ALLOY, 1/4" X 3/4", MS20470AD2-12, ALUMINUM 3/4". FSC 5320.
- SQUARE HEAD BOLT-----: BOLT, STEEL, SQUARE HEAD, ZINC COATED, 3/4"-10, PER FED SPEC FF-B-575, FSC 5305.
- WASHER-----: WASHER, FLAT-ROUND, STEEL, GENERAL PURPOSE, 3/4", MS51412-14, FSC 5310.
- NAIL-----: COMMON, FED SPEC FF-N-105.
- WIRE-----: ANNEALED, BLACK; FED SPEC QQ-W-461.
- STEEL ROD-----: BAR, MERCHANT QUALITY, HOT ROLLED, LOW CARBON, 5/8", PER ASTM A575, FSC 9510.



VAN TRAILER ON TYPICAL MECHANICAL (TOFC) CAR



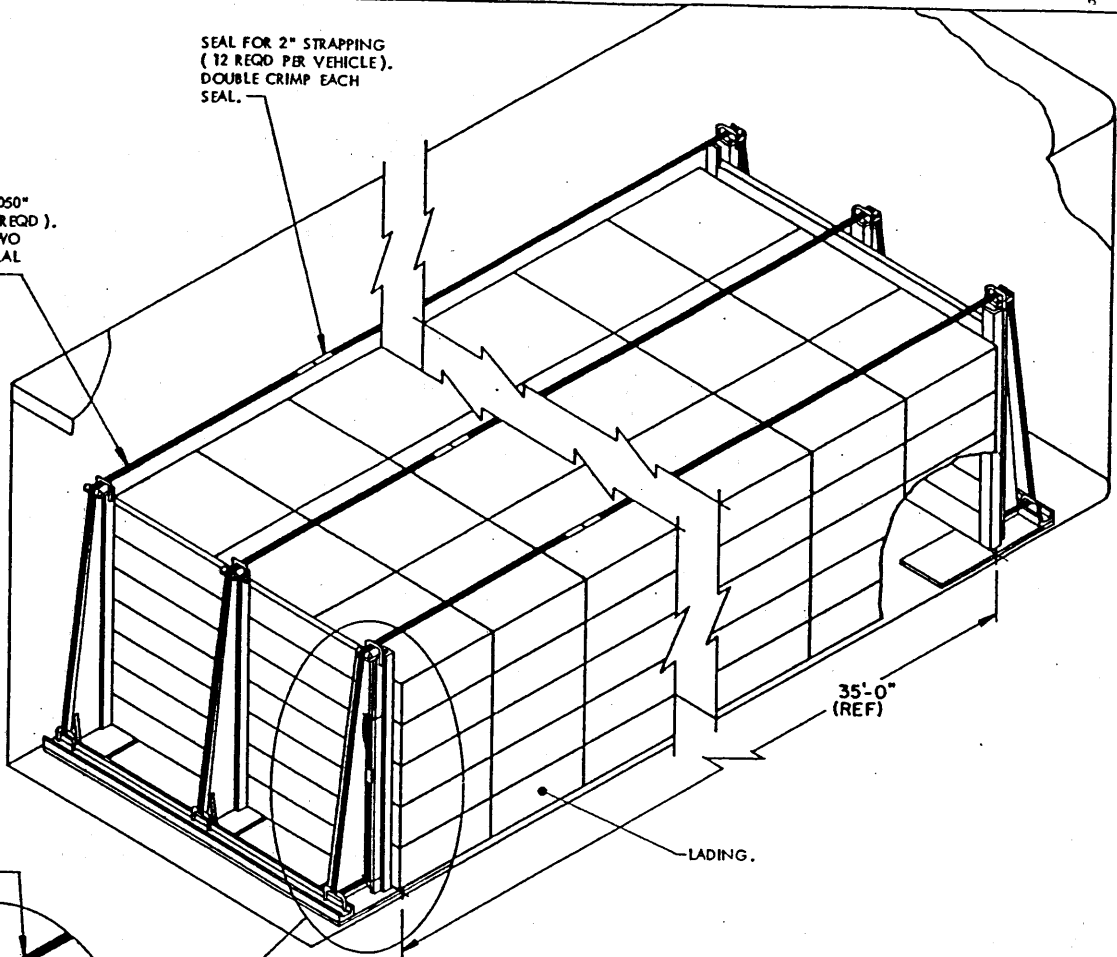
CONTAINER ON TYPICAL MECHANICAL (COFC) CAR



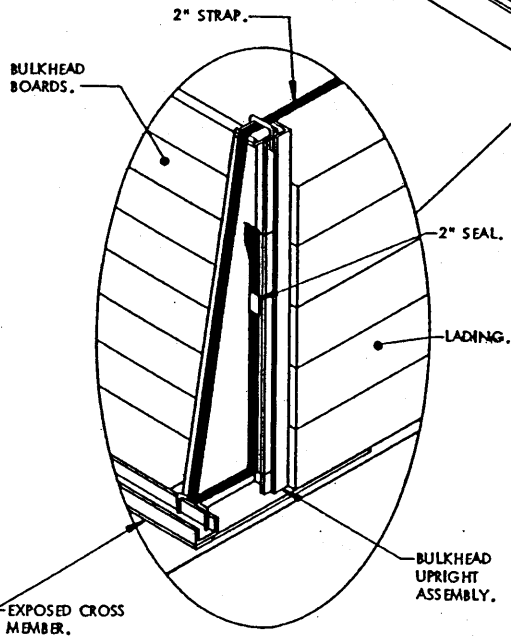
FLAT BED TRAILER ON TYPICAL MECHANICAL (TOFC) CAR

STEEL STRAPPING, 2" X .050"
BY LENGTH TO SUIT (3 REQD).
APPLY EACH STRAP IN TWO
(2) PIECES. SEE GENERAL
NOTE "F" ON PAGE 2.

SEAL FOR 2" STRAPPING
(12 REQD PER VEHICLE).
DOUBLE CRIMP EACH
SEAL.



TYPICAL LOAD

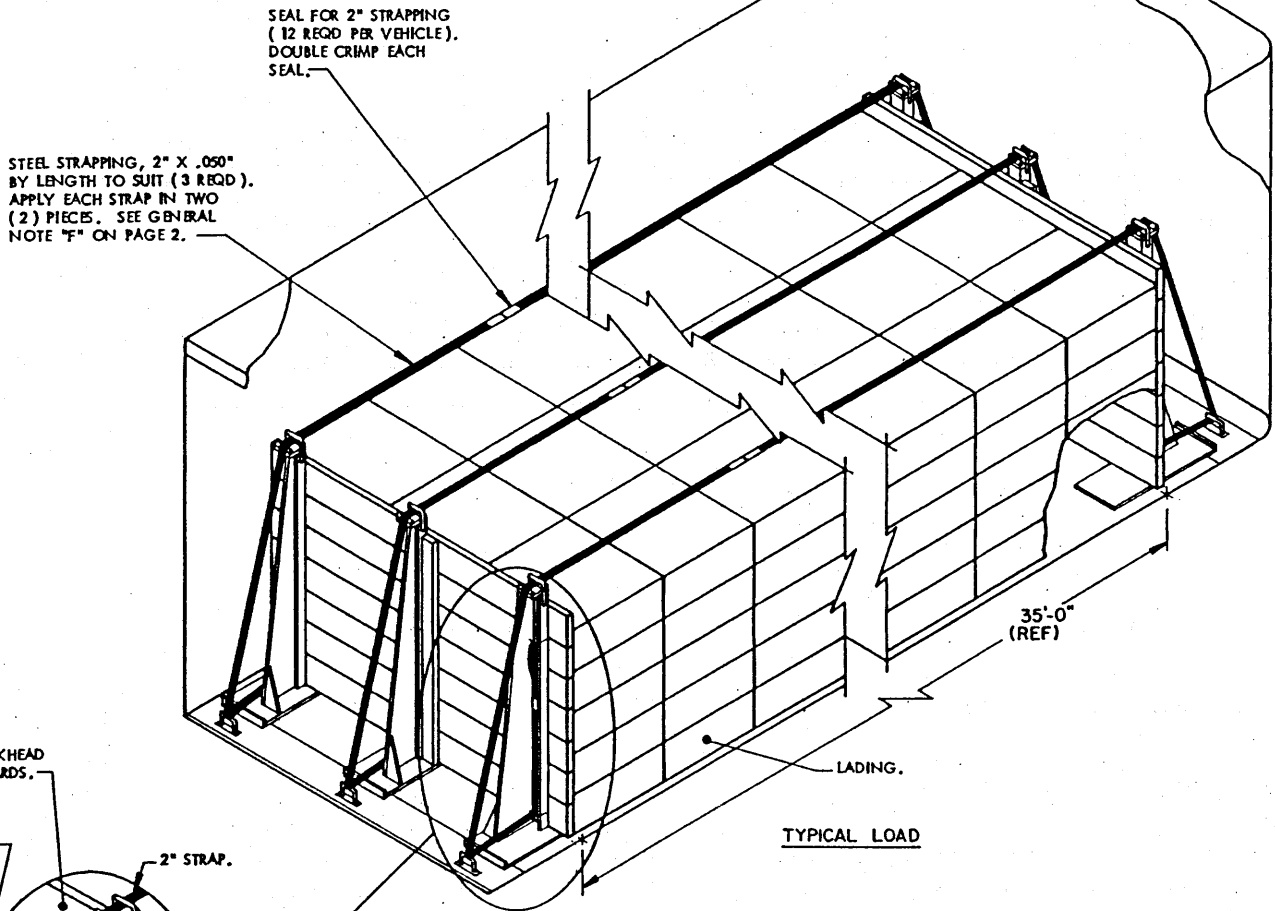


PART LIST FOR METHOD I TYPE BULKHEAD

PC MK	REF PAGE	PART NAME	MATERIAL	SIZE	NO. REQD PER VEHICLE
①	6	EXPOSED CROSS MEMBER	4" STEEL CHANNEL	13.8 #/FT	2
②	6	SPACER	1/2" STEEL PLATE	3" X DIM "A"	2
③	6,7,10	FRONT SLEEPER PLATE	3/8" STEEL PLATE	AS REQD	2
④	6,7,10	REAR SLEEPER PLATE	3/8" STEEL PLATE	AS REQD	2
⑤	6,7,8,10	STRAP ANCHOR LOOP	3/4" STEEL ROD	11-3/8"	12
⑥	7,8	STRAP ANCHOR ANGLE	3/4" STEEL ROD	6-3/4"	12
⑦	8	UPRIGHT	4" STEEL CHANNEL	13.8 #/FT-60"	6
⑧	8	BRACE	1/4" STEEL PLATE	SEE DETAIL	6
⑨	8	BASE	1/4" STEEL PLATE	12" X 30"	6
⑩	8	GUSSET	1/4" STEEL PLATE	SEE DETAIL	6
⑪	8	TOP PLATE	1/4" STEEL PLATE	4-3/4" X 3-3/4"	6
⑫	8	STRAP GUARD	1/2" STEEL ROD	3-3/4"	12
⑬	9,12	BULKHEAD BOARD	2" X 8" (FULL 2" MATL)	AS REQD	14
* ⑭	9,12	RETAINER BOARD	2" X 4" NOMINAL	56"	14
* ⑮	9	BULKHEAD BOARD GUIDE	2-1/2" ANGLE IRON	60"	4
⑯	6,7,18	HOLD DOWN BOLT	SQUARE HEAD BOLT	3/4" DIA	12
⑰	6,7,18	HOLD DOWN	NUT AND LOCK WASHER	3/4"	12 EA

*PC. MK. ⑭ IS AN ALTERNATIVE FOR PC. MK. ⑮ .

NOTE: FOR DIMENSIONS MARKED "A" THRU "G" SEE "DIMENSION CHART" ON PAGE 9.



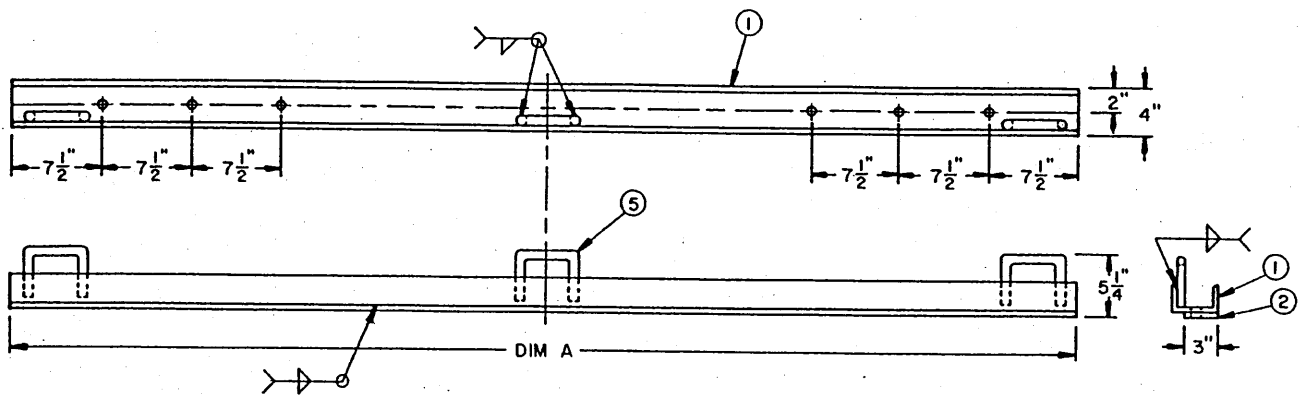
PART LIST FOR METHOD II TYPE BULKHEAD

PC MK	REF PAGE	PART NAME	MATERIAL	SIZE	NO. REQD /VEHICLE
⑤	6,7,8,10	STRAP ANCHOR LOOP	3/4" STEEL ROD	11-3/8"	12
⑥	7,8	STRAP ANCHOR ANGLE	3/4" STEEL ROD	6-3/4"	12
⑦	8	UPRIGHT	4" STEEL CHANNEL	13.8 #/FT-60"	6
⑧	8	BRACE	1/4" STEEL PLATE	SEE DETAIL	6
⑨	8	BASE	1/4" STEEL PLATE	12" X 30"	6
⑩	8	GUSSET	1/4" STEEL PLATE	SEE DETAIL	6
⑪	8	TOP PLATE	3/8" STEEL PLATE	4-3/4" X 3-3/4"	6
⑫	8	STRAP GUARD	1/2" STEEL ROD	3-3/4"	12
⑬	9,12	BULKHEAD BOARD	2" X 8"	AS REQD	14
* ⑭	9,12	RETAINER BOARD	2" X 4", NOMINAL	56"	4
* ⑮	9	BULKHEAD BOARD GUIDE	2-1/2" ANGLE IRON	60"	4
⑯	8	BULKHEAD RETAINER	1" STEEL ROD	12"	6
⑰	8	BULKHEAD HOLD-DOWN	1-1/2" ANGLE	1.8 #/FT-12"	6
⑳	10,11	TOP PLATE	3/8" STEEL PLATE	SEE DETAIL	2
㉑	10,11	SIDE PLATE	1/4" STEEL PLATE	SEE DETAIL	4
㉒	10,11	LONG REINFORCEMENT PIECE	1/4" STEEL PLATE	SEE DETAIL	4
㉓	10,11	SHORT REINFORCEMENT PIECE	1/4" STEEL PLATE	SEE DETAIL	12
㉔	10,11	BOTTOM PLATE	1/4" STEEL PLATE	SEE DETAIL	6
㉕	10	OPTIONAL ANGLE BRACE	2" ANGLE	DIM "E"	2
㉖	10	ADDITIONAL VEHICLE CROSS MEMBER	SAME AS EXISTING	SAME AS EXISTING	2 MAX
㉗	10	CROSS MEMBER BRACE	2" ANGLE	AS REQD	2 OR 4

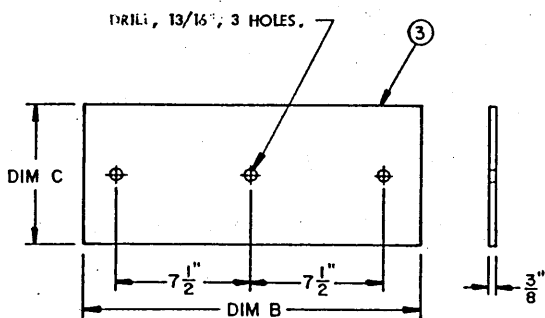
* PC. MK. ⑭ IS AN ALTERNATIVE FOR PC. MK. ⑮ .

NOTE: FOR DIMENSIONS MARKED "A" THRU "G" SEE "DIMENSION CHART" ON PAGE 9.

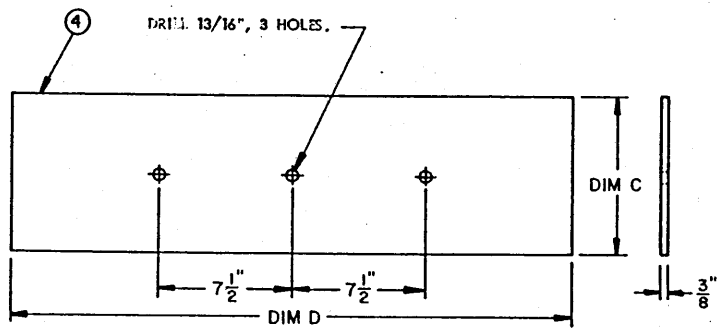
KEY NUMBERS ① THRU ④ ARE NOT APPLICABLE TO THE RECESSED TYPE BULKHEAD.



EXPOSED CROSS MEMBER

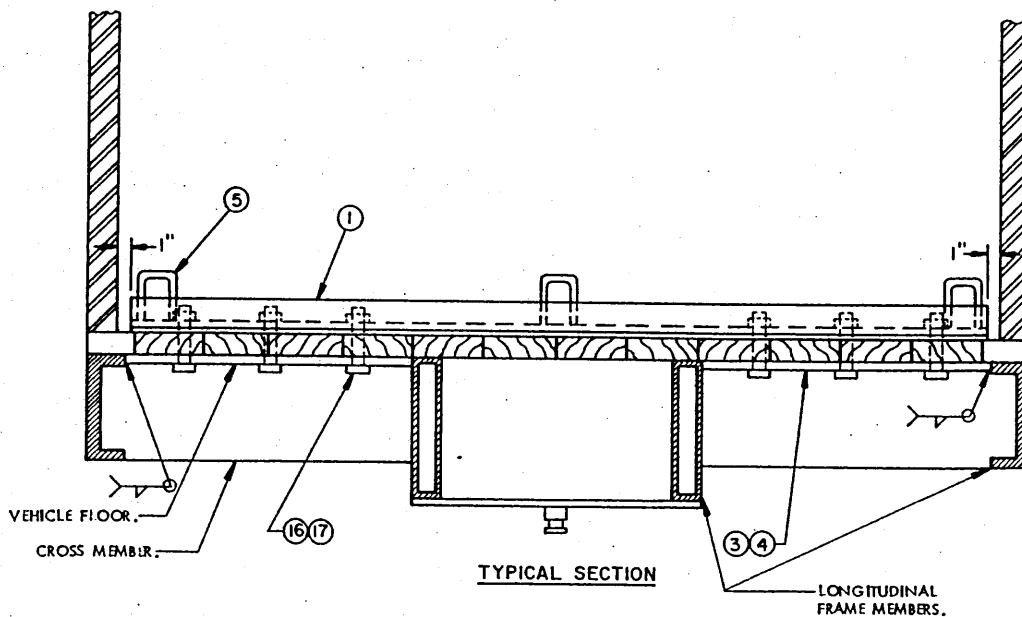


FRONT SLEEPER PLATE

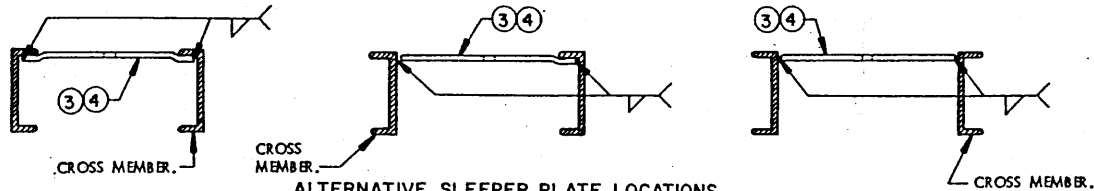
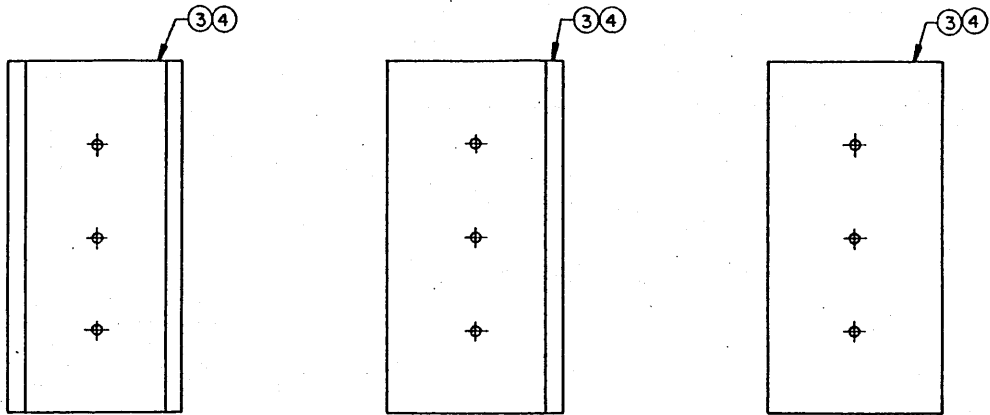


REAR SLEEPER PLATE

TO ASSURE CORRECT ALIGNMENT WITH FITTINGS THAT ARE TO BE INSTALLED ON THE VEHICLE, HOLES SHOULD NOT BE DRILLED IN THE SLEEPER PLATES UNTIL INSTALLATION IS IN PROGRESS.

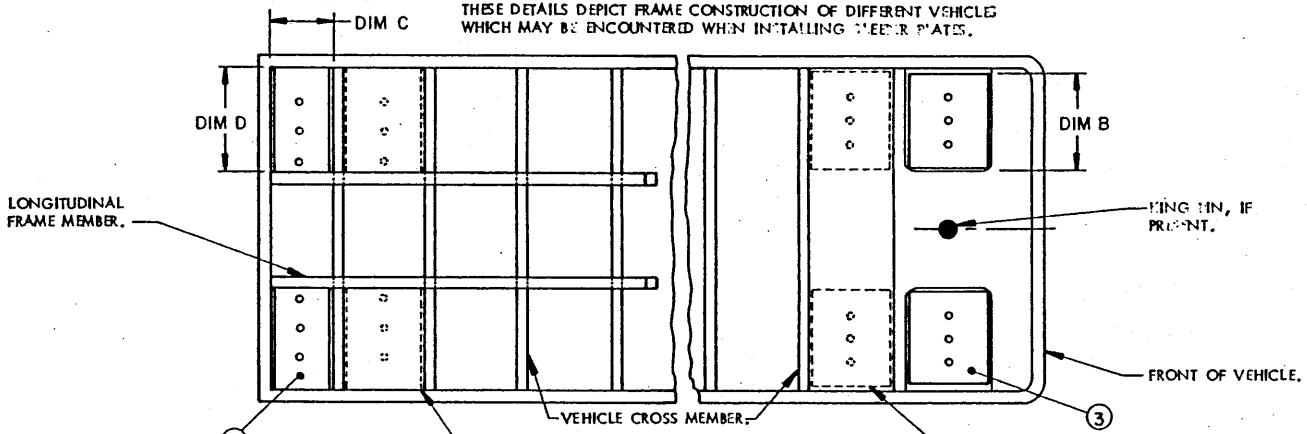


TYPICAL SECTION



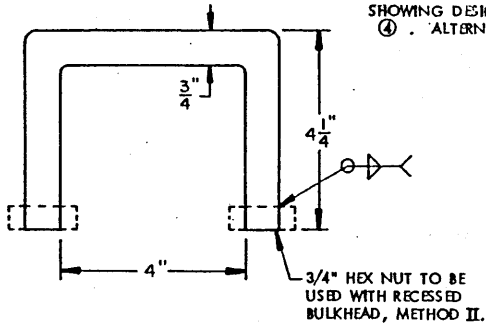
ALTERNATIVE SLEEPER PLATE LOCATIONS

THESE DETAILS DEPICT FRAME CONSTRUCTION OF DIFFERENT VEHICLE WHICH MAY BE ENCOUNTERED WHEN INSTALLING SLEEPER PLATES.

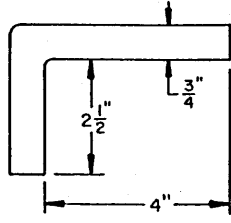


BOTTOM VIEW OF TRAILER

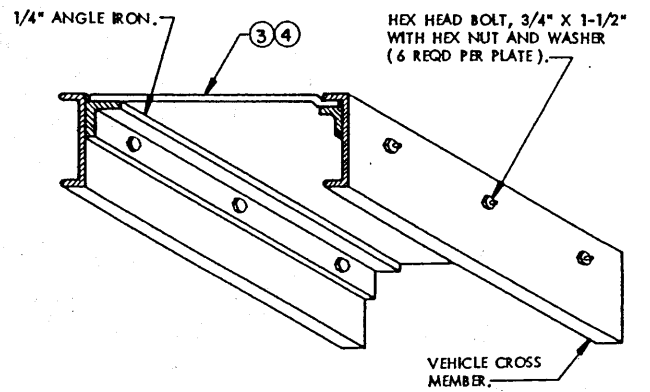
THIS VIEW DEPICTS THE BOTTOM VIEW OF A VEHICLE SHOWING DESIRED LOCATIONS FOR PC MK ③ AND ④. ALTERNATIVE LOCATIONS ARE ALSO DEPICTED.



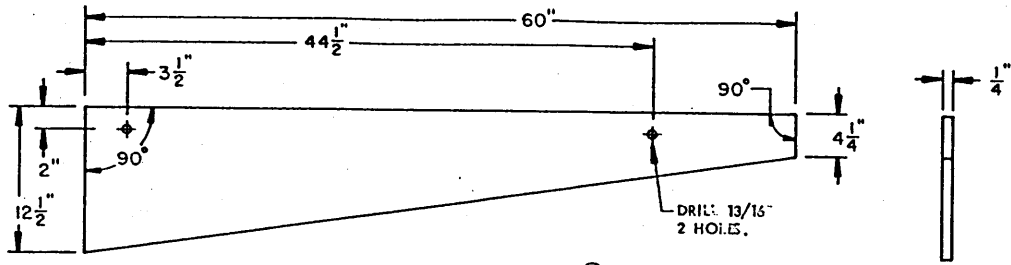
STRAP ANCHOR LOOP
PC. MK. ⑤



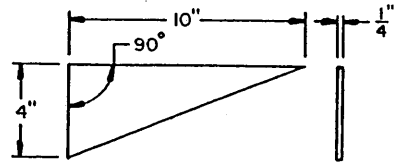
STRAP ANCHOR ANGLE
PC. MK. ⑥



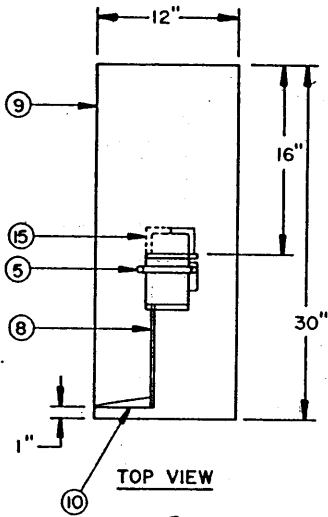
ALTERNATIVE INSTALLATION OF SLEEPER PLATE



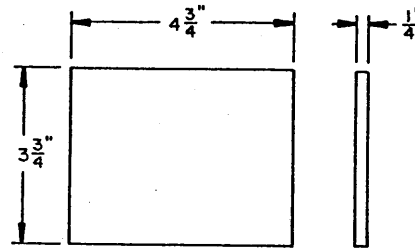
PIECE MARKED ⑧



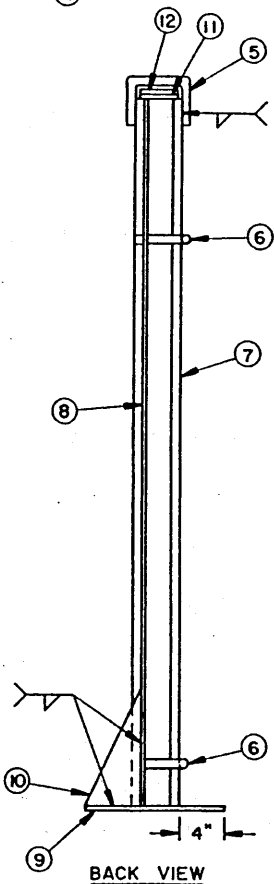
PIECE MARKED ⑩



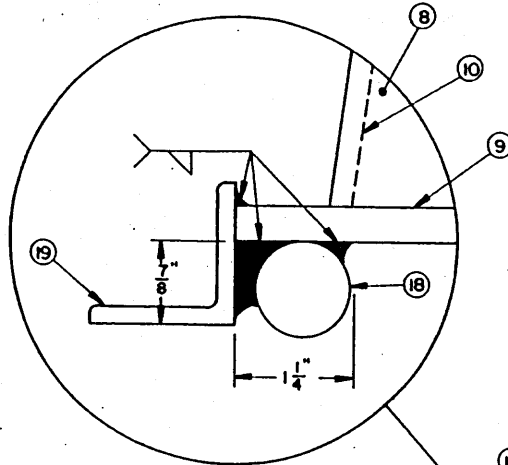
TOP VIEW



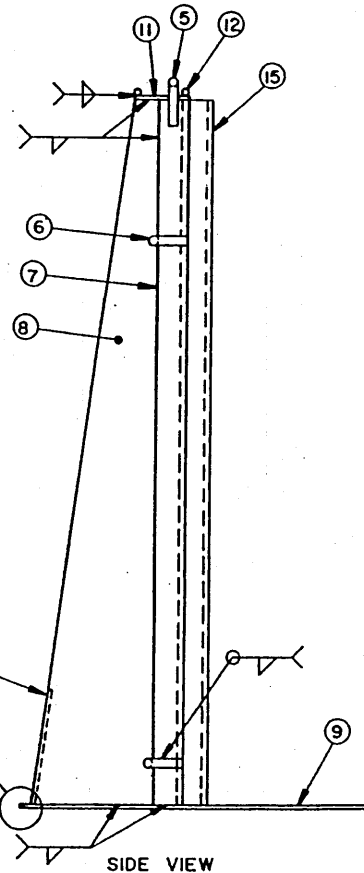
PIECE MARKED ⑪



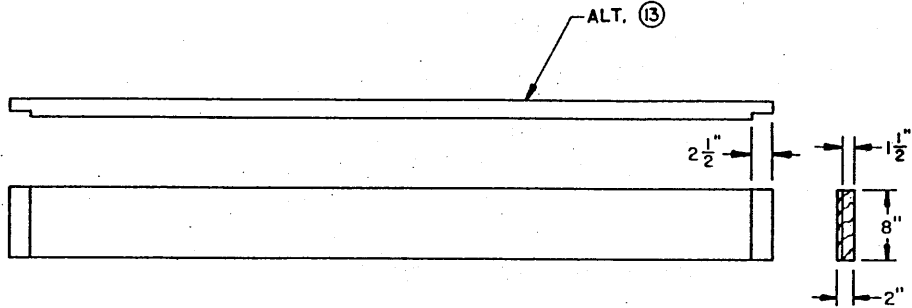
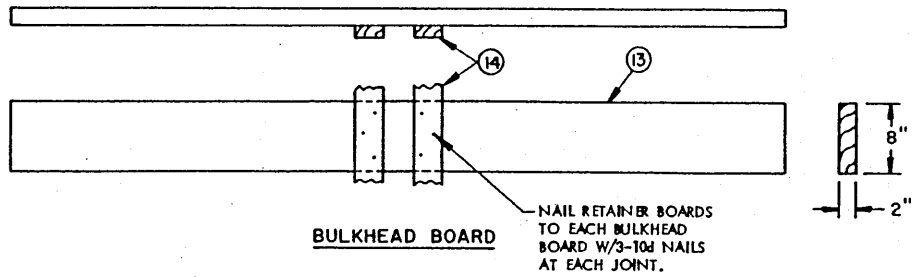
BACK VIEW



THIS VIEW DEPICTS REQUIREMENTS FOR A METHOD II TYPE BULKHEAD BRACE, NOT REQUIRED FOR METHOD I TYPE BRACE.



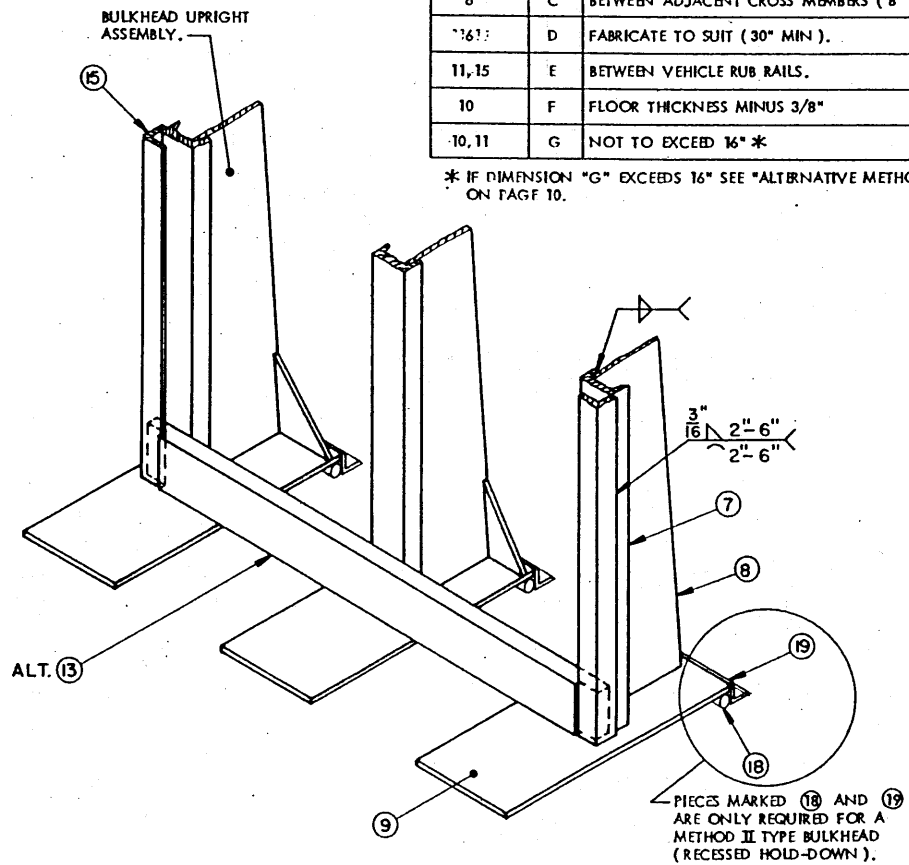
SIDE VIEW



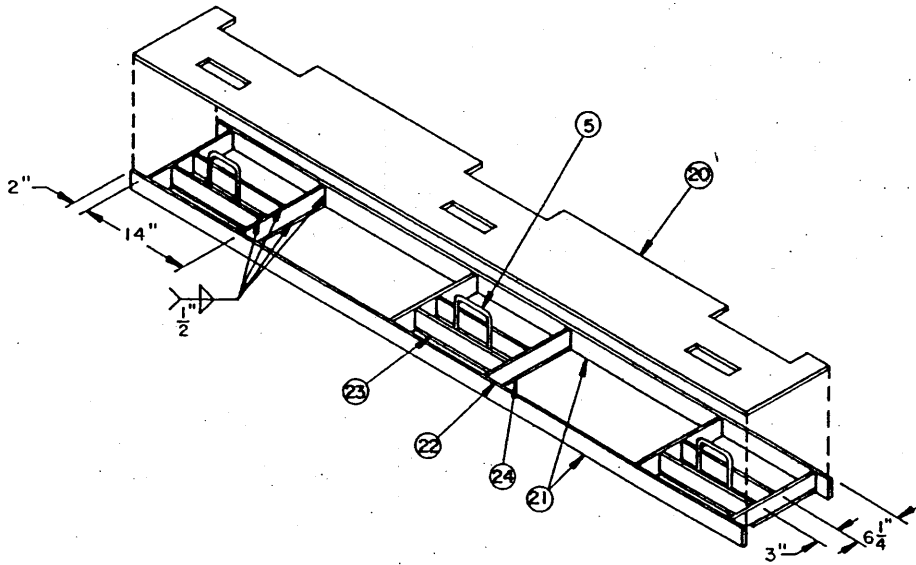
ALTERNATIVE BULKHEAD BOARD

REF PAGE	DIM	DIMENSION CHART
6	A	INSIDE VEHICLE WIDTH MINUS TWO INCHES.
6	B	BETWEEN LONGITUDINAL FRAME MEMBERS; (18" MIN.)
6	C	BETWEEN ADJACENT CROSS MEMBERS (8" MIN.).
16:1	D	FABRICATE TO SUIT (30" MIN.).
11, 15	E	BETWEEN VEHICLE RUB RAILS.
10	F	FLOOR THICKNESS MINUS 3/8"
10, 11	G	NOT TO EXCEED 16" *

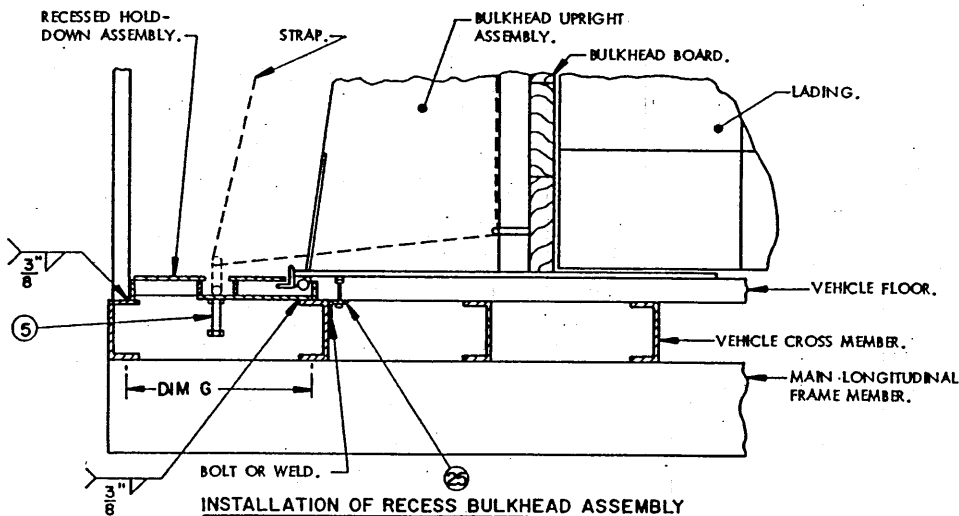
* IF DIMENSION "G" EXCEEDS 16" SEE "ALTERNATIVE METHOD A" DETAIL ON PAGE 10.



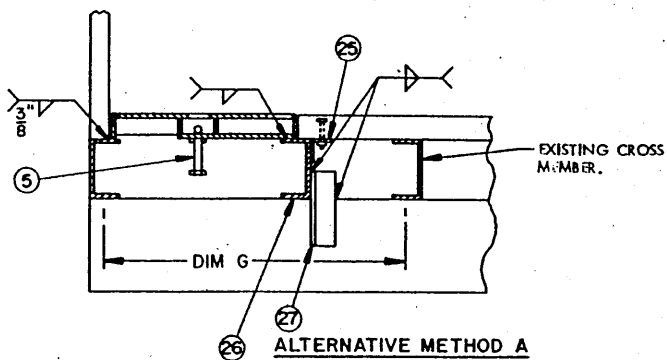
BULKHEAD BOARD INSTALLATION



RECESSED HOLD-DOWN ASSEMBLY

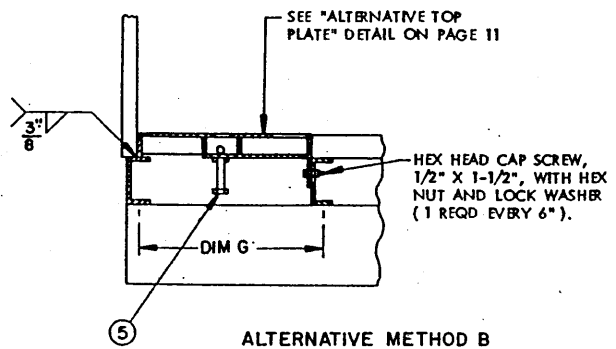


INSTALLATION OF RECESS BULKHEAD ASSEMBLY
 DEPICTS TYPICAL INSTALLATION OF RECESSED HOLD-DOWN ASSEMBLY, BULKHEAD UPRIGHT ASSEMBLY, AND HOLD-DOWN STRAPPING.

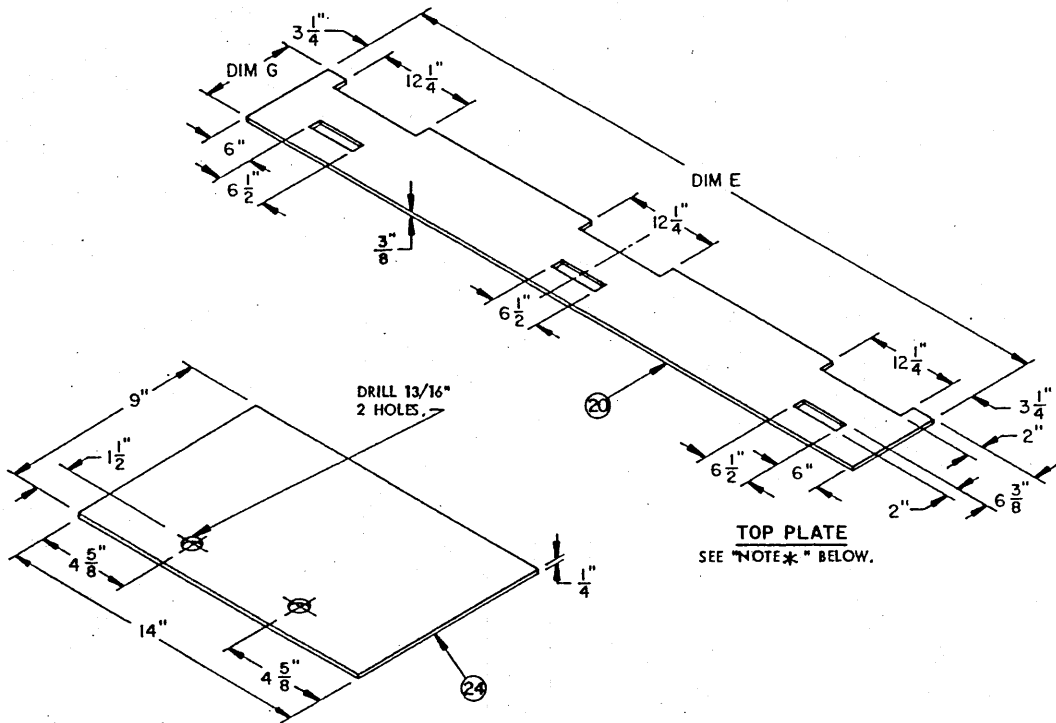


ALTERNATIVE METHOD A

IF DIMENSION "G" EXCEEDS 16", AN ADDITIONAL CROSS MEMBER, P.C. MK. (28), WILL BE REQUIRED TO BE INSTALLED FOR THE SECUREMENT OF THE RECESSED HOLD-DOWN ASSEMBLY.

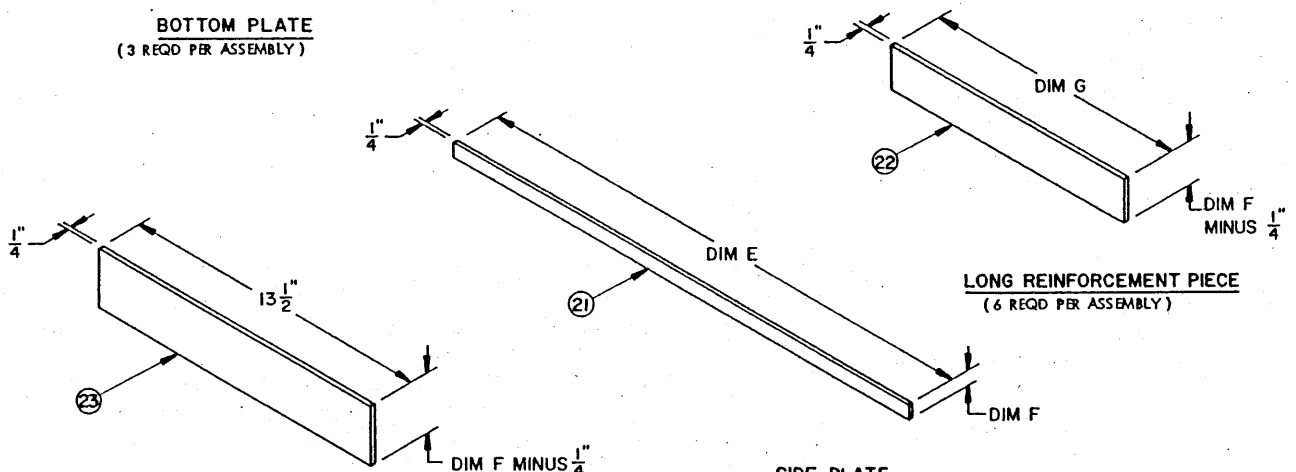


ALTERNATIVE METHOD B



TOP PLATE
SEE "NOTE*" BELOW.

BOTTOM PLATE
(3 REQD PER ASSEMBLY)



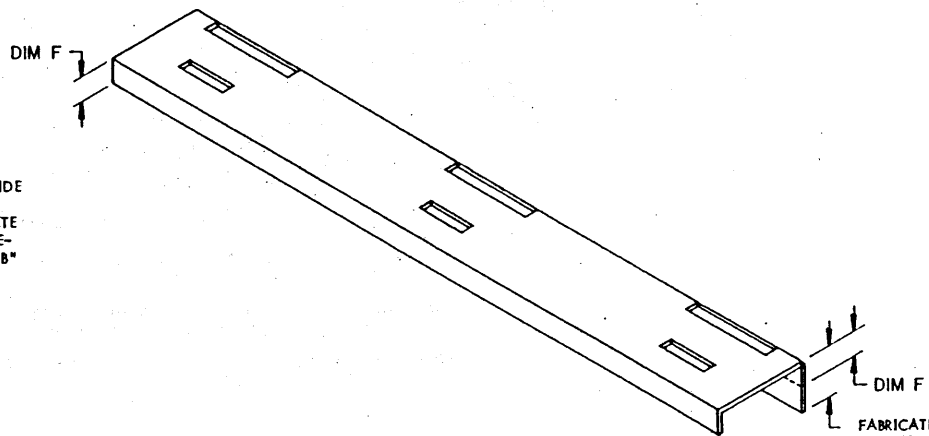
LONG REINFORCEMENT PIECE
(6 REQD PER ASSEMBLY)

SHORT REINFORCEMENT PIECE
(6 REQD PER ASSEMBLY)

SIDE PLATE
(2 REQD PER ASSEMBLY)

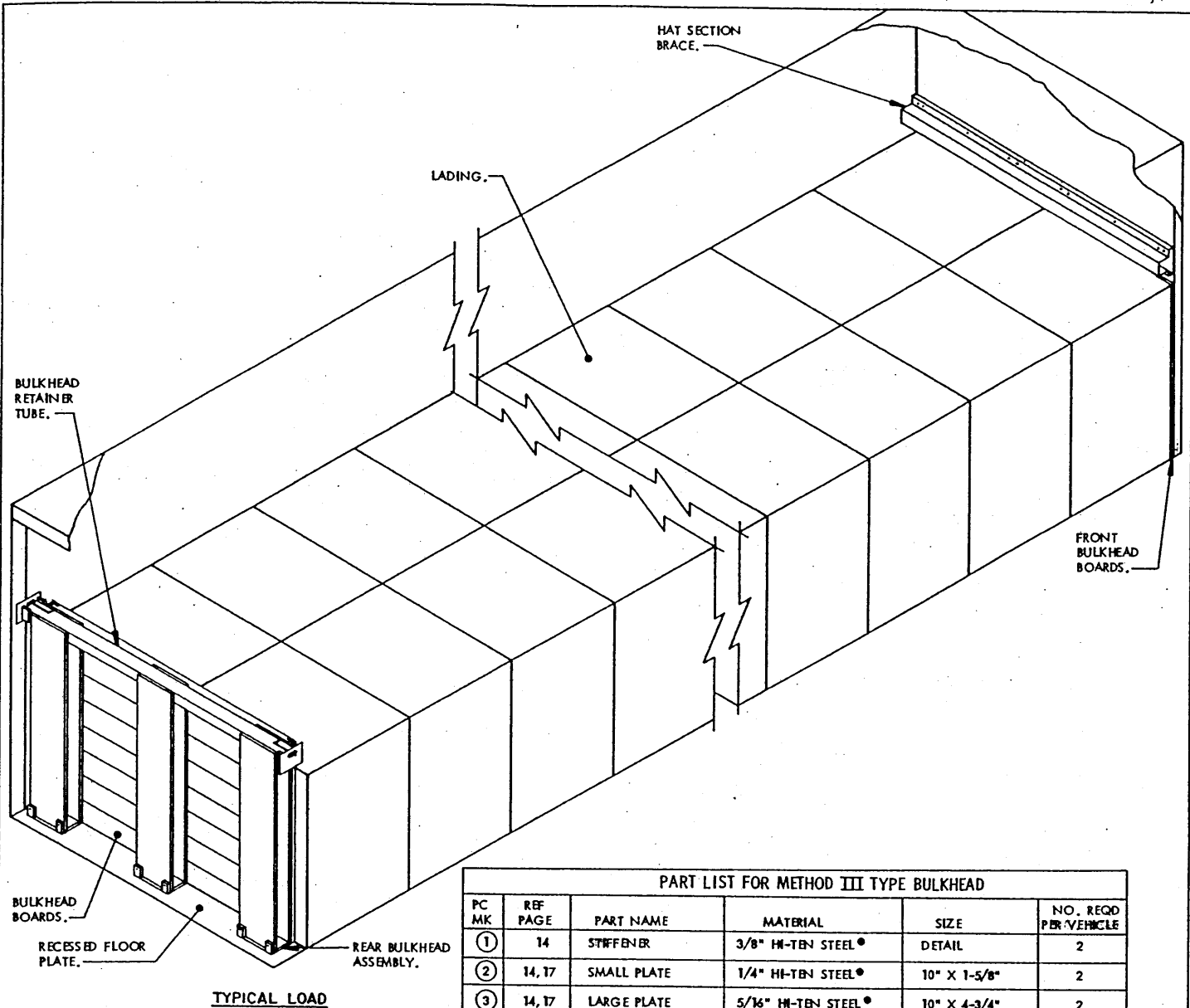
NOTE *

IF DESIRED, THE TOP PLATE AND SIDE PLATES CAN BE FORMED FROM A SINGLE PIECE OF MATERIAL. DELETE PC. MK. (2). THIS METHOD IS DEPICTED IN "ALTERNATIVE METHOD B" DETAIL DEPICTED ON PAGE 10.



ALTERNATIVE TOP PLATE

FABRICATE TO SUIT. SEE "ALTERNATIVE METHOD B" DETAIL ON PAGE 10.



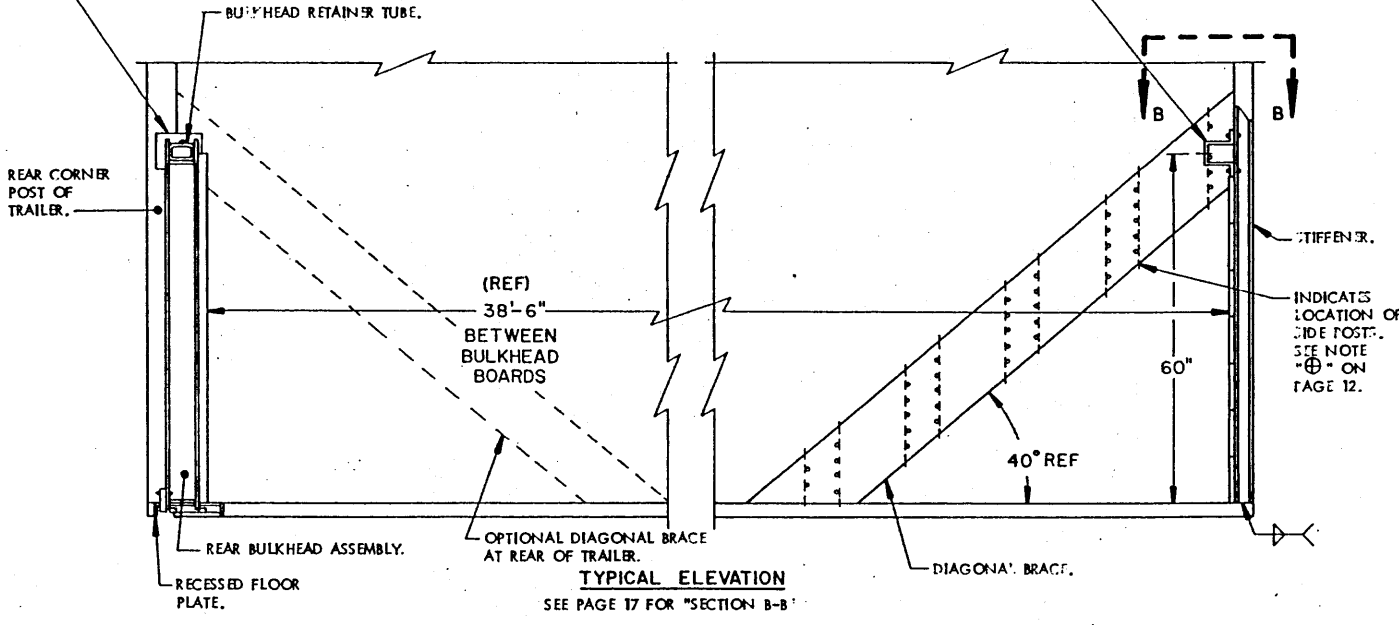
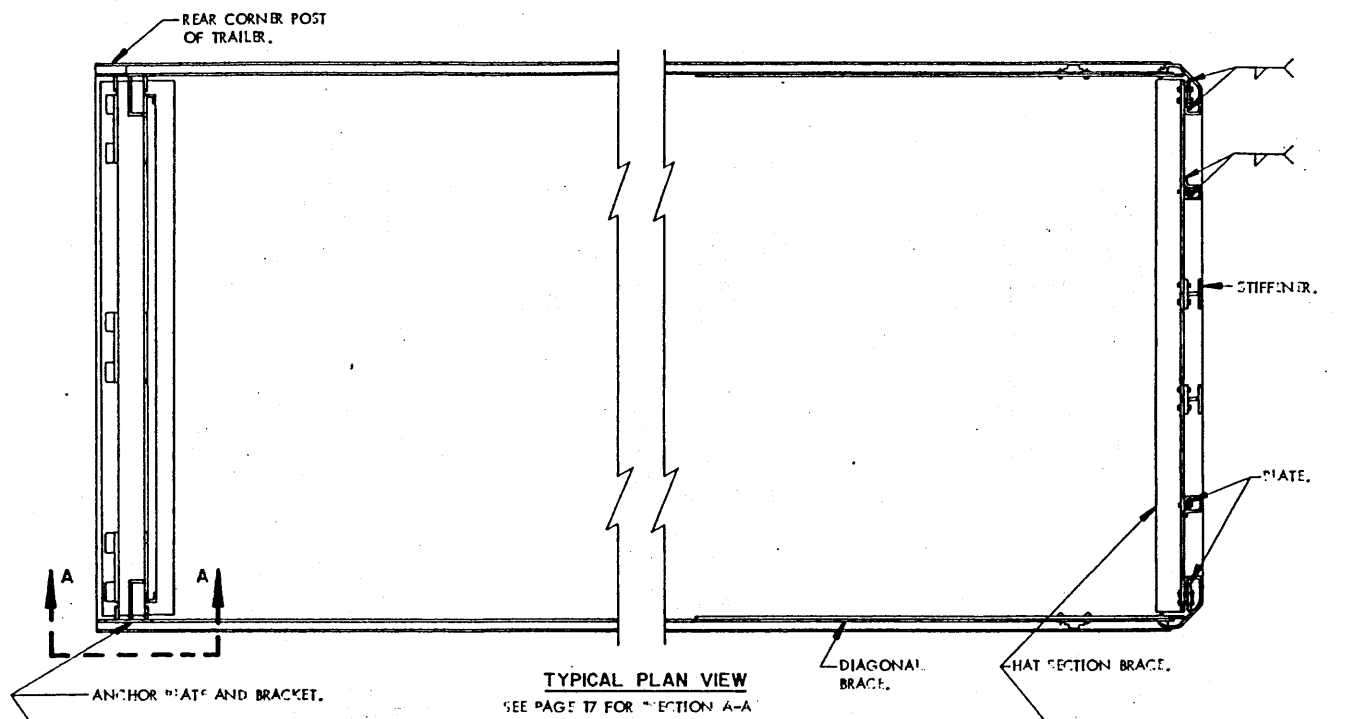
PART LIST FOR METHOD III TYPE BULKHEAD

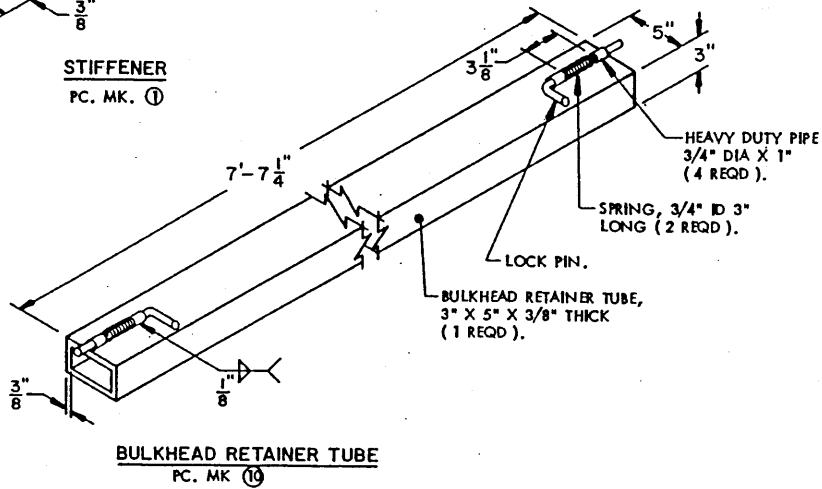
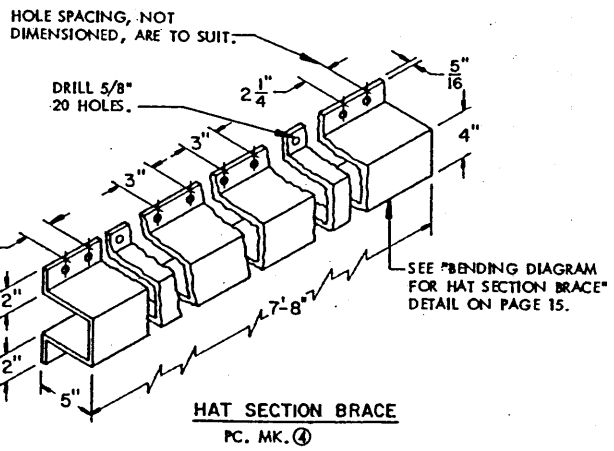
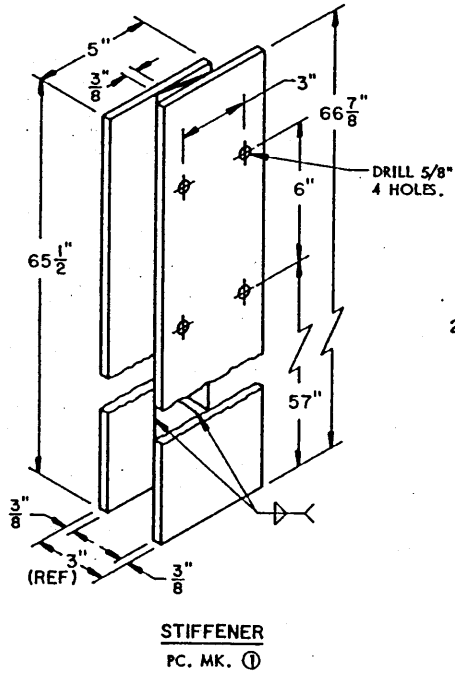
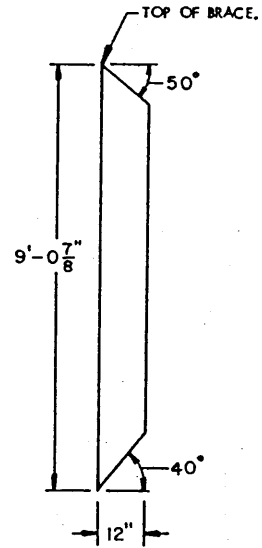
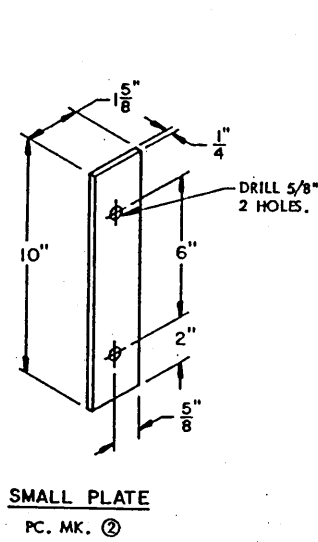
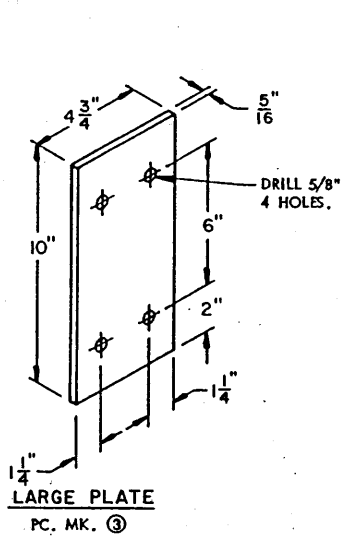
PC MK	REF PAGE	PART NAME	MATERIAL	SIZE	NO. REQD PER VEHICLE
①	14	STIFFENER	3/8" HI-TEN STEEL*	DETAIL	2
②	14, 17	SMALL PLATE	1/4" HI-TEN STEEL*	10" X 1-5/8"	2
③	14, 17	LARGE PLATE	5/16" HI-TEN STEEL*	10" X 4-3/4"	2
④	14	HAT SECTION BRACE	5/16" HI-TEN STEEL*	DETAIL	1
⑤	13	CAP SCREW, NUT, LOCK WASHER	GRADE 5	1/2"-20UNF	20
* ⑥	13	FRONT BULKHEAD BOARD	3/4" X 8" OAK BOARD	INSIDE VEHICLE WIDTH	7
⊕ ⑦	13-14	DIAGONAL BRACE	3/16" HI-TEN STEEL*	12" X 9"-8 1/8"	2 OR 4
⑧	10-15	RECESSED FLOOR PLATE	3/8" STEEL PLATE	SEE DETAIL	1
⑨	13-15	ANCHOR PLATE AND BRACKET	STEEL PLATE	SEE DETAIL	2
⑩	13-14	BULKHEAD RETAINER TUBE	3/8" HI-TEN STEEL TUBE*	3" X 5" X 7'-7-1/4"	1
⑪	12-13, 16-17	REAR BULKHEAD ASSEMBLY	HI-TEN STEEL*	SEE DETAIL	3
⑫	16	BULKHEAD BOARD RETAINER	HI-TEN STEEL*	1-1/2" X 1-3/8" X 61-1/2"	2
⑬	12, 13, 17	BULKHEAD BOARD	1-1/2" X 8" OAK BOARD	AS REQUIRED	7

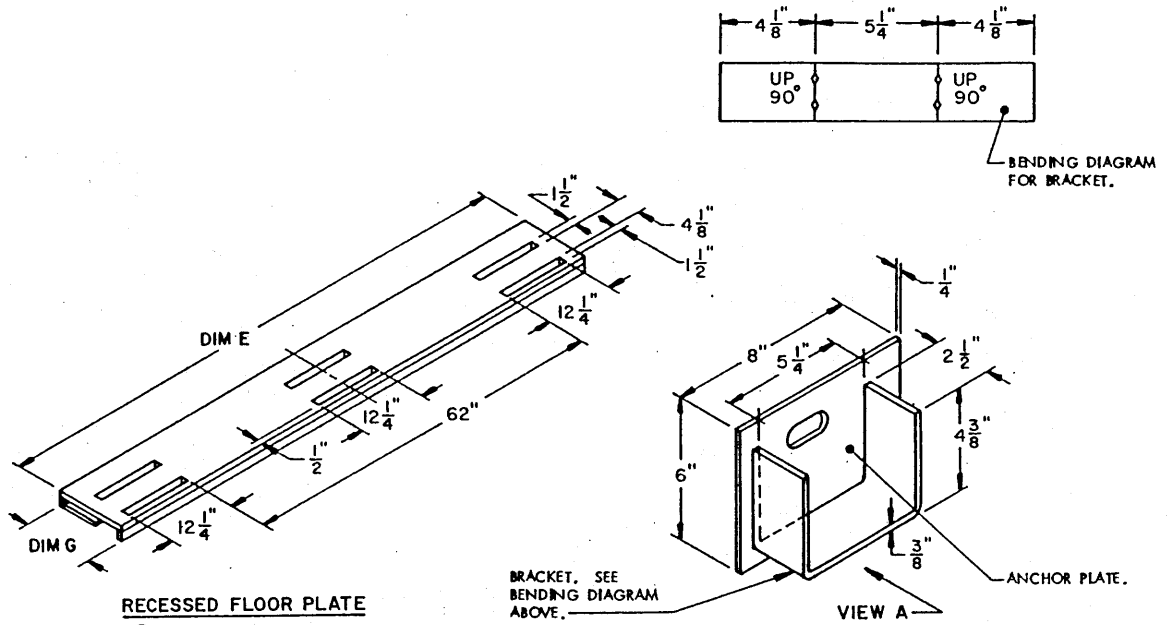
* ATTACH THE FRONT BULKHEAD BOARDS TO EACH POST W/2-1/4" X 1-1/4" COUNTER-SUNK HEAD THREAD CUTTING SCREWS.

⊕ ATTACH THE DIAGONAL BRACE TO THE FRONT CORNER POST AND THE NEXT FOUR SIDE POSTS W/5-1/4" X 3/4" RIVETS AT EACH LOCATION.

• HI-TEN STEEL SPECIFIED ABOVE IS LISTED WITHIN THE MATERIAL SPECIFICATIONS ON PAGE 2 AS HIGH STRENGTH STEEL (COR-TEN A).





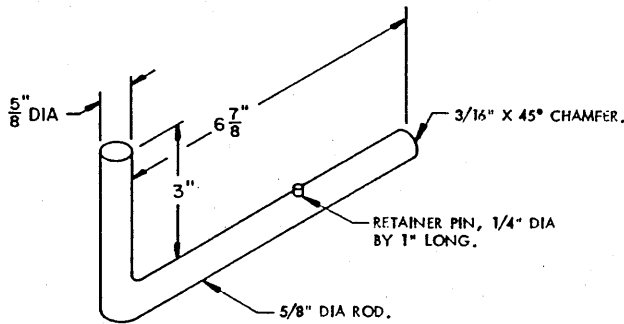


RECESSED FLOOR PLATE

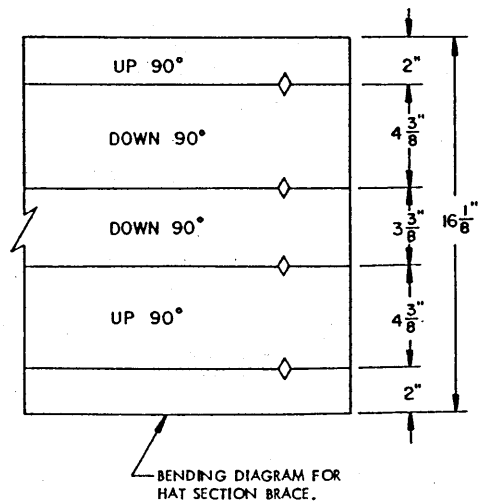
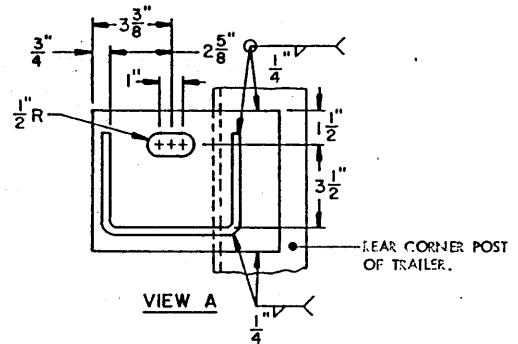
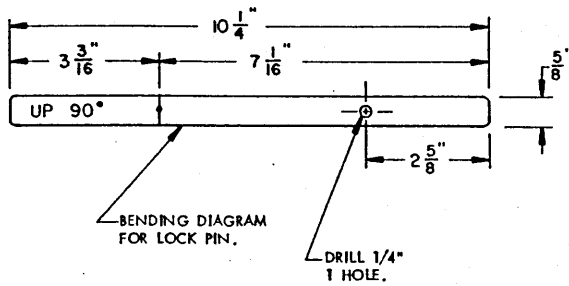
(PC MK ⑧). SEE "RECESSED HOLD-DOWN ASSEMBLY" DETAIL ON PAGE 10 FOR ADDITIONAL PIECES, (SIDE PIECE, BOTTOM PLATE, LONG AND SHORT REINFORCEMENT PIECES). SEE "NOTE ⑥" ON PAGE 17.

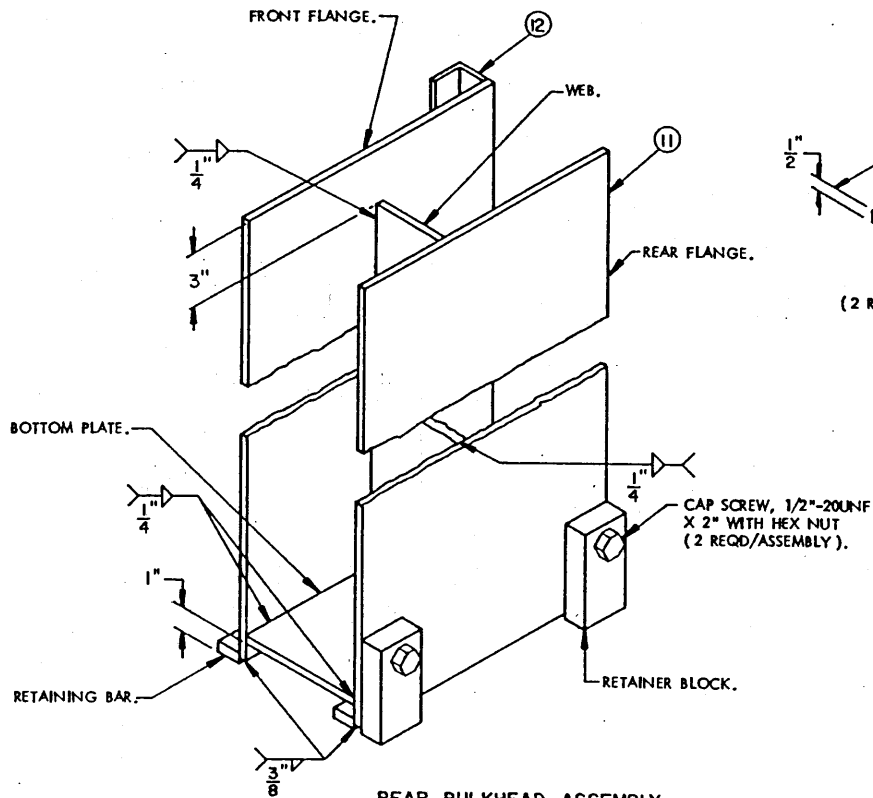
ANCHOR PLATE AND BRACKET

(PC MK ⑨) (2 REQD/VEHICLE, 1 RIGHT HAND AND 1 LEFT HAND).



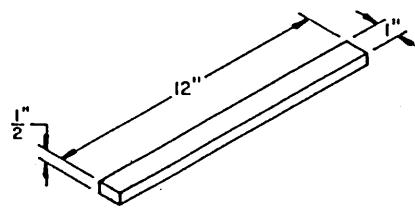
LOCK PIN
HOT ROLLED STEEL.



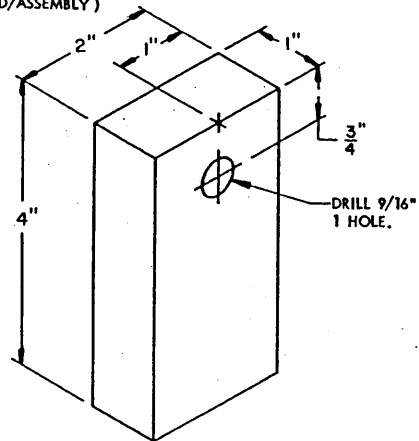


REAR BULKHEAD ASSEMBLY

PC MK (11) (3 REQD, ONE RIGHT HAND AS SHOWN, ONE LEFT HAND, AND ONE WITHOUT BULKHEAD BOARD RETAINER).

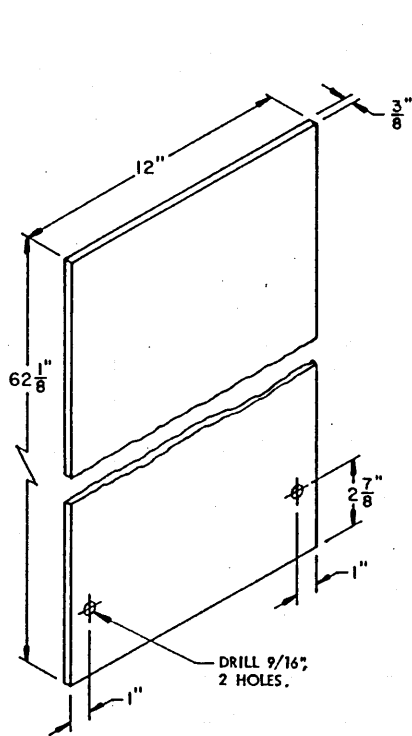


RETAINING BAR
(2 REQD/ASSEMBLY)



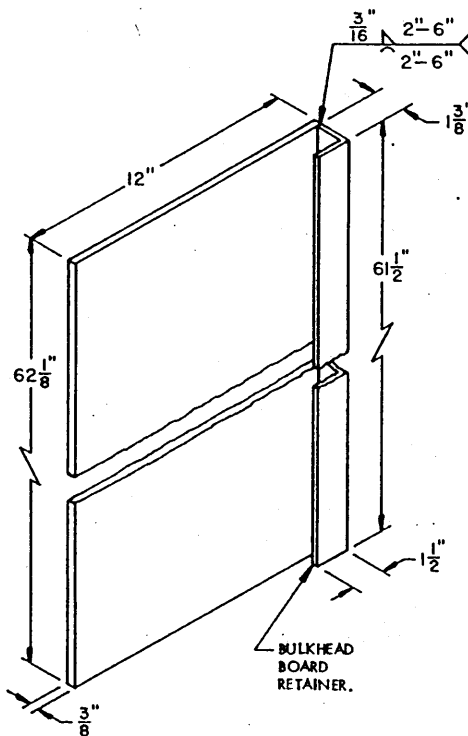
RETAINER BLOCK

(MILD STEEL; 2 REQD/ASSEMBLY)



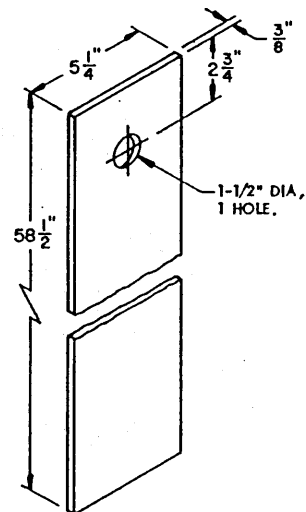
REAR FLANGE

(ONE REQD/ASSEMBLY)



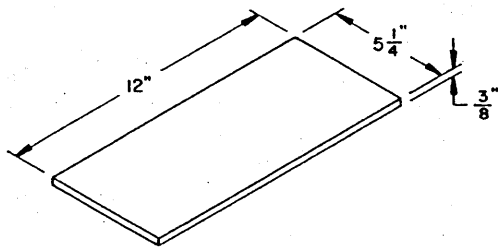
FRONT FLANGE

(ONE REQD/ASSEMBLY)



WEB

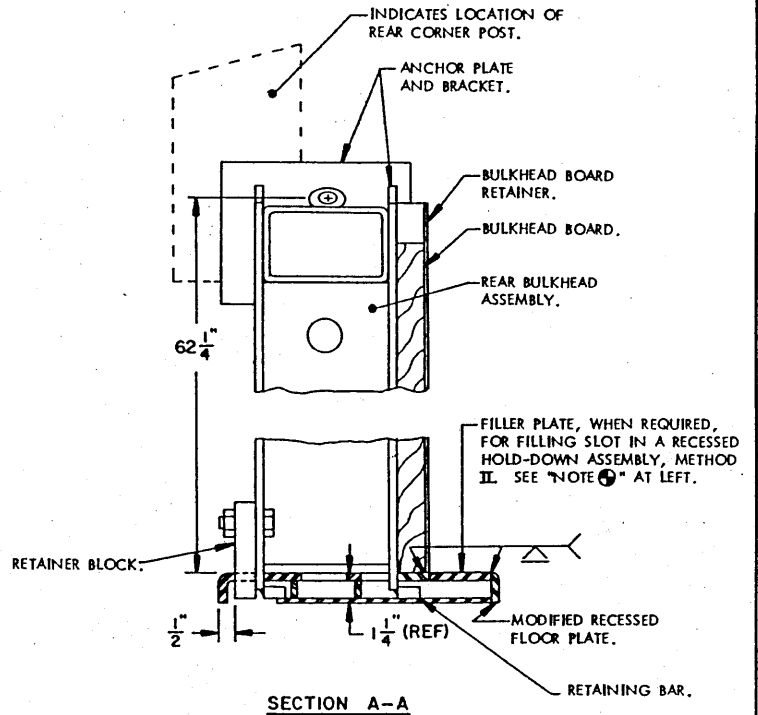
(ONE REQD/ASSEMBLY)



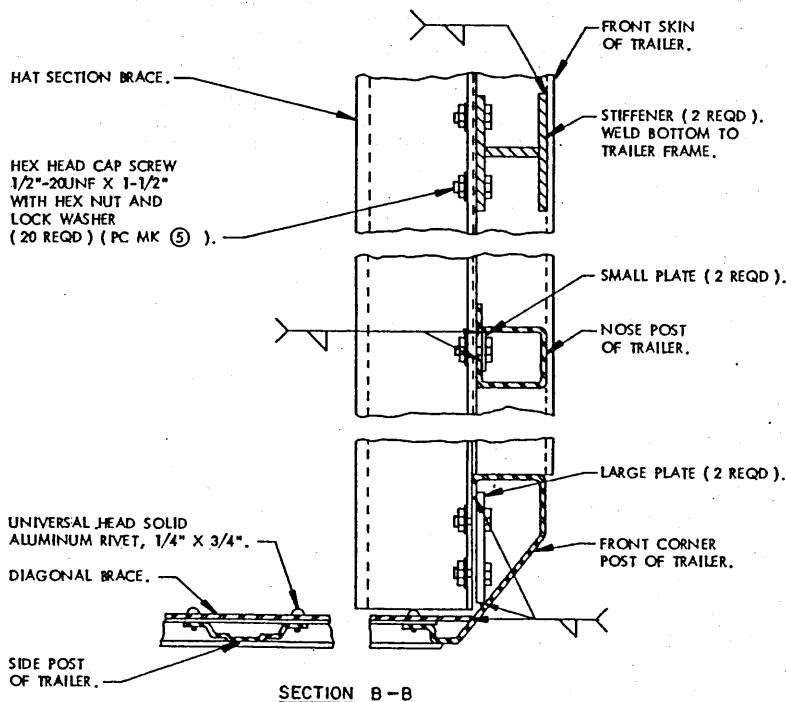
BOTTOM PLATE
(ONE REQD/ASSEMBLY)

NOTE ④ :

A METHOD II TYPE BULKHEAD RECESSED HOLD-DOWN ASSEMBLY CAN BE CONVERTED TO A METHOD III RECESSED FLOOR PLATE BY CUTTING SIX NEW SLOTS AND ADDING FILLER PLATES IN THREE OF THE EXISTING SLOTS. "SECTION A-A" DEMICTS A CONVERTED RECESSED FLOOR PLATE SHOWING WELDING DIRECTIONS. THE RECESSED FLOOR PLATE DETAILED ON PAGE 15 DEMICTS THE LOCATION AND SIZE OF THE SLOTS REQUIRED FOR THE RECESSED FLOOR PLATE.

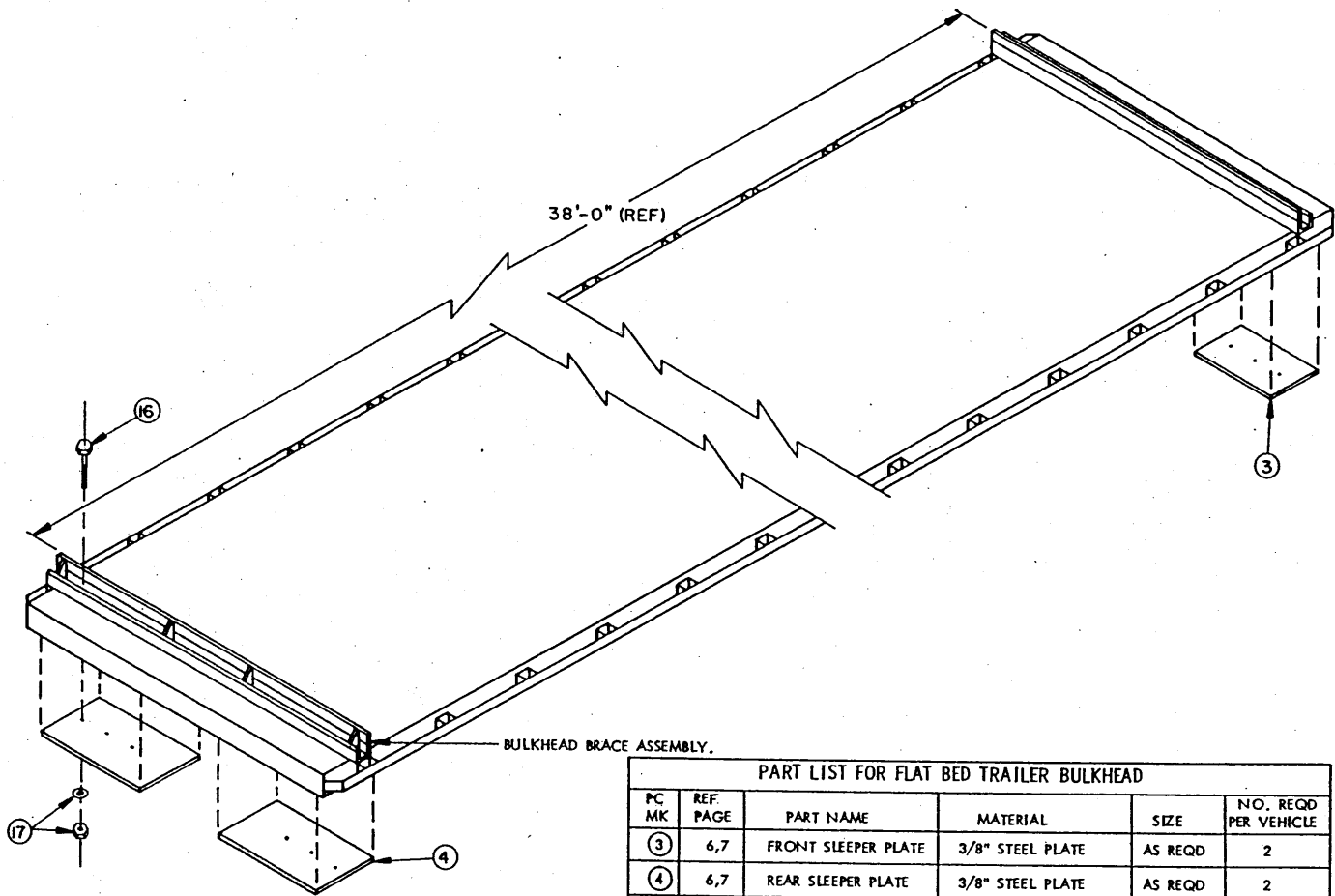


SECTION A-A



SECTION B-B

METHOD III BULKHEAD

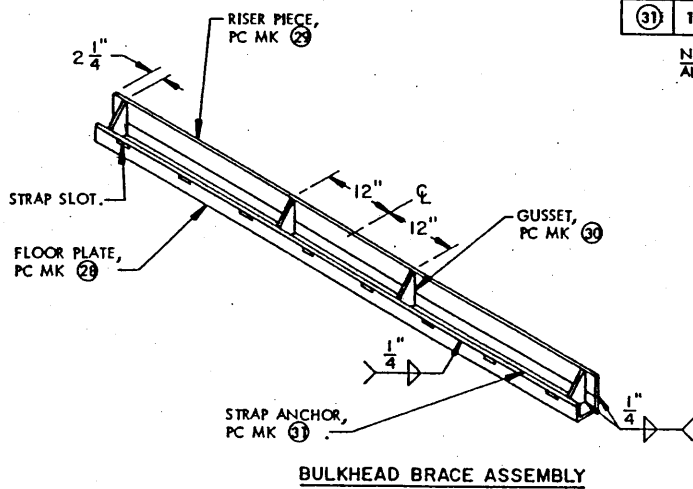


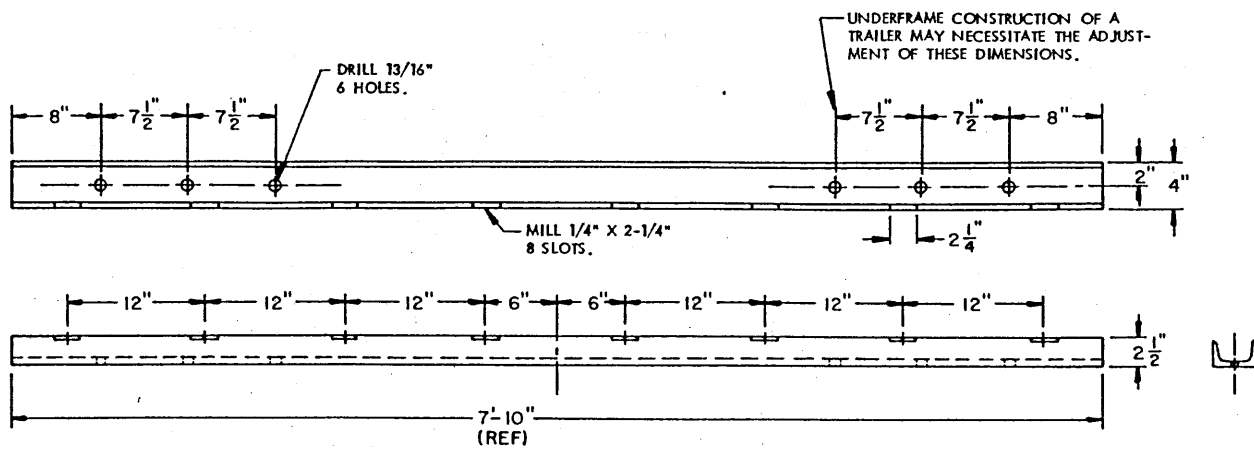
TYPICAL FLAT BED TRAILER WITH BULKHEADS INSTALLED

PART LIST FOR FLAT BED TRAILER BULKHEAD

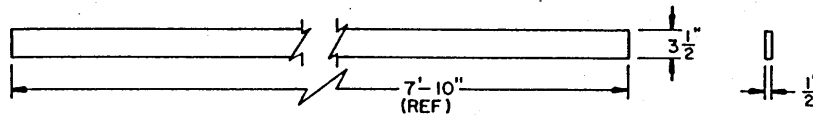
PC MK	REF. PAGE	PART NAME	MATERIAL	SIZE	NO. REQD PER VEHICLE
3	6,7	FRONT SLEEPER PLATE	3/8" STEEL PLATE	AS REQD	2
4	6,7	REAR SLEEPER PLATE	3/8" STEEL PLATE	AS REQD	2
16	6,7	HOLD DOWN BOLT	SQUARE HEAD BOLT	3/4" DIA	12
17	6,7	HOLD DOWN NUT	NUT & LOCK WASHER	3/4"	12
28	18, 19	FLOOR PLATE	13.8#/FT CHANNEL	7'-10"	2
29	18, 19	RISER PIECE	1/2" STEEL PLATE	7'-10"	2
30	18, 19	GUSSET	1/2" STEEL PLATE	SEE DETAIL	8
31	18, 19	STRAP ANCHOR	3/4" DIA STEEL ROD	7'-10"	2

NOTE: SEE PAGES 6 AND 7 FOR INSTALLATION OF SLEEPER PLATES AND ALTERNATIVES.

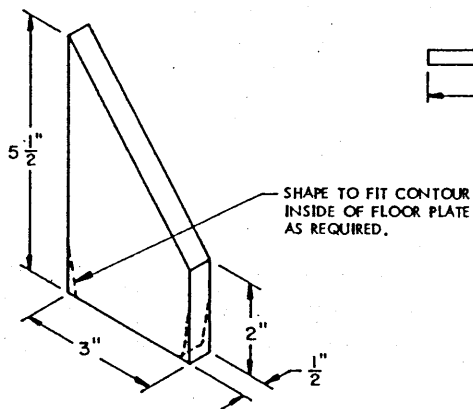




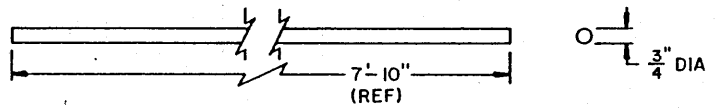
FLOOR PLATE
PC MK 28



RISER PIECE
PC MK 29

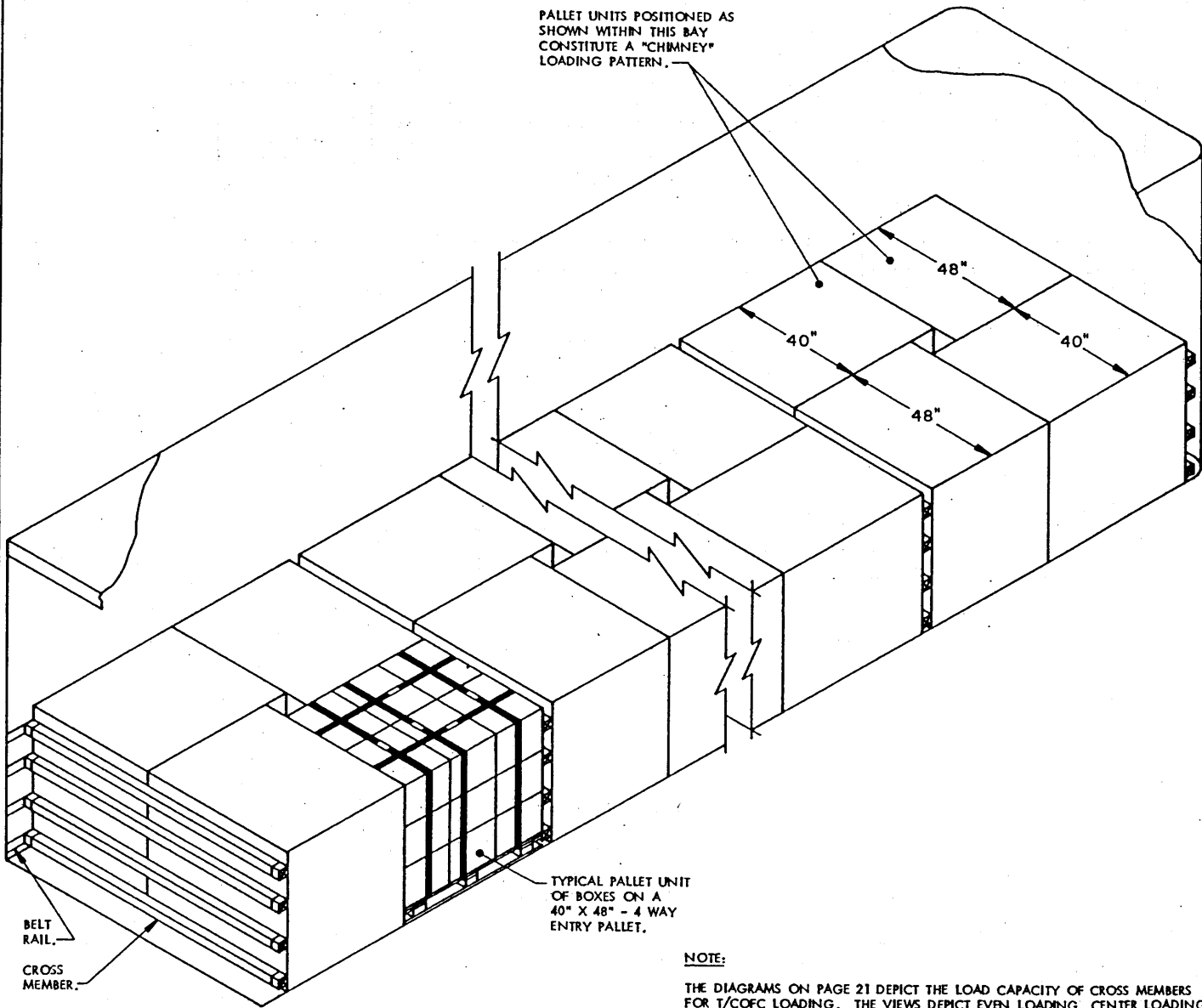


GUSSET
PC MK 30



STRAP ANCHOR
PC MK 31

PALLET UNITS POSITIONED AS SHOWN WITHIN THIS BAY CONSTITUTE A "CHIMNEY" LOADING PATTERN.

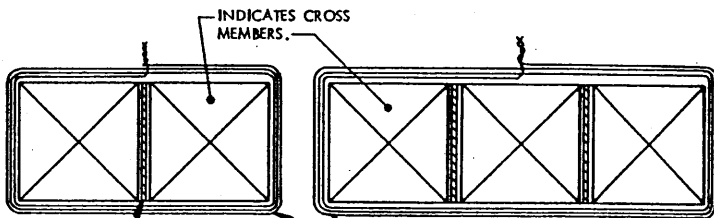


NOTE:

THE DIAGRAMS ON PAGE 21 DEPICT THE LOAD CAPACITY OF CROSS MEMBERS FOR T/COFC LOADING. THE VIEWS DEPICT EVEN LOADING, CENTER LOADING AND END LOADING. WHENEVER CROSS MEMBERS ARE DOUBLED OR TRIPLED, FILL MATERIAL IS REQUIRED BETWEEN LONGITUDINALLY ADJACENT CROSS MEMBERS, SUCH AS 1/4" PLYWOOD. SEE "FILL DETAIL" AT LEFT.

TYPICAL LOAD

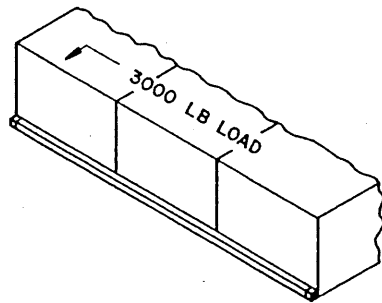
TYPICAL LOAD OF PALLET UNITS IN A TRAILER EQUIPPED WITH MECHANICAL BRACING (CROSS MEMBERS ATTACHED TO BELT RAILS ON THE SIDE WALLS).



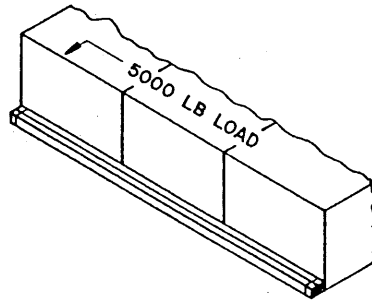
FILL DETAIL

THESE DETAILS DEPICT THE INSTALLATION OF FILLER MATERIAL BETWEEN CROSS MEMBERS WHEN THEY ARE USED BACK-TO-BACK.

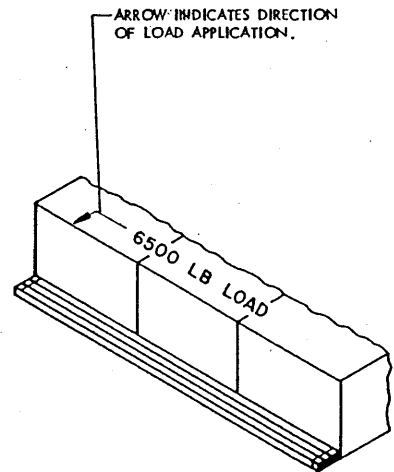
TIE WIRE, NO. 14 GAGE WIRE (3 REQD/SET). INSTALL TO FORM THREE COMPLETE LOOPS AROUND CROSS MEMBERS, BRING THE ENDS TOGETHER AND TWIST TAUT.



SINGLE CROSS MEMBER INSTALLATION

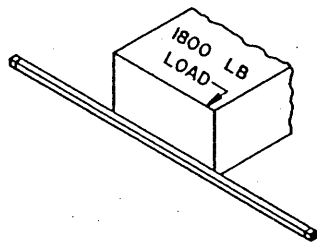


DOUBLED CROSS MEMBER INSTALLATION

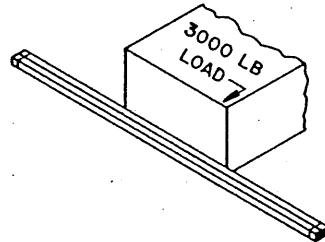


TRIPLED CROSS MEMBER INSTALLATION

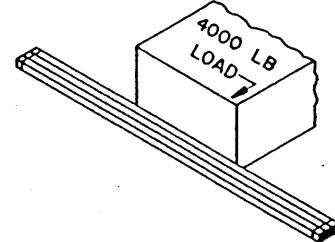
LOAD EVENLY DISTRIBUTED (FULL TRAILER WIDTH) ACROSS CROSS MEMBER



SINGLE CROSS MEMBER INSTALLATION

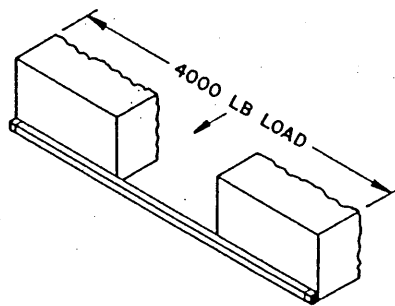


DOUBLED CROSS MEMBER INSTALLATION

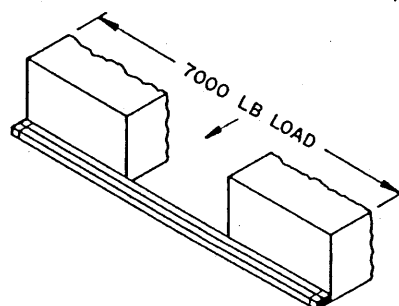


TRIPLED CROSS MEMBER INSTALLATION

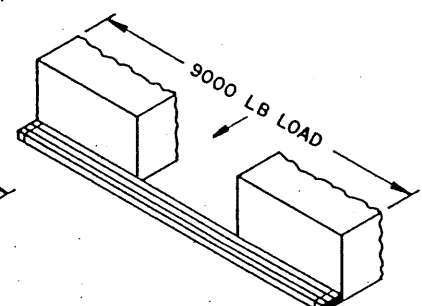
LOAD CONCENTRATED IN CENTER AREA ($\frac{1}{2}$ - TRAILER WIDTH) OF CROSS MEMBER



SINGLE CROSS MEMBER INSTALLATION



DOUBLED CROSS MEMBER INSTALLATION



TRIPLED CROSS MEMBER INSTALLATION

LOAD CONCENTRATED AT END AREA ($\frac{1}{3}$ - TRAILER WIDTH) OF CROSS MEMBER

MAXIMUM LOAD APPLICATIONS OF CROSS MEMBERS

