APPROVED BY
BUREAU OF EXPLOSIVES

DATE 1-24-07

APPENDIX 10A

LOADING AND BRACING • PROCEDURES FOR STRATEGIC CONFIGURED LOAD (SCL) ON CONTAINER ROLL IN/OUT PLATFORM (CROP)

SCL #10A - MLRS AND GMLRS

INDEX

NOTICE: THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC CROP OUTLOADING PROCEDURES DRAWING 19-48-4905-CA17Q6.

• **LOADING AND BRACING SPECIFICATIONS SET FORTH WITHIN THIS DRAWING ARE APPLICABLE TO LOADS THAT ARE TO BE SHIPPED BY TRAILER/CONTAINER-ON-FLATCAR (T/COFC) RAIL CARRIER SERVICE. THESE SPECIFICATIONS MAY ALSO BE USED FOR LOADS THAT ARE TO BE MOVED BY MOTOR OR WATER CARRIERS.**

U.S. ARMY MATERIEL COMMAND DRAWING

APPROVED, U.S. ARMY
AVIATION AND MISSILE COMMAND

APPROVED BY ORDER OF COMMANDING GENERAL,
U.S. ARMY MATERIEL COMMAND

U.S. ARMY DEFENSE AMMUNITION CENTER

CAUTION: VERIFY PRIOR TO USE AT WWW.DAC.ARMY.MIL THAT THIS IS THE MOST CURRENT VERSION OF THIS DOCUMENT. THIS IS PAGE 1 OF 8.

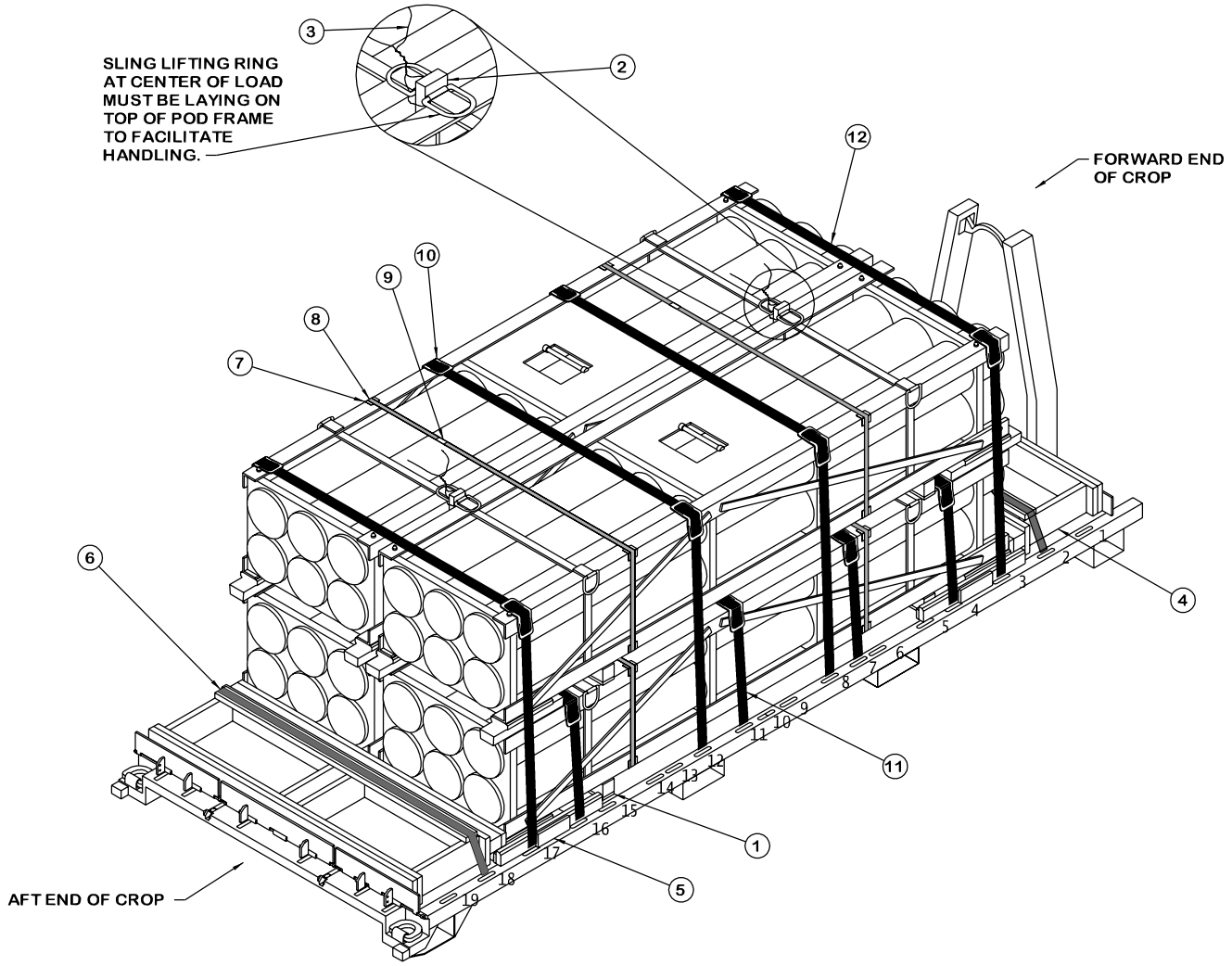
DO NOT SCALE

JANUARY 2007

ENGINEER OR TECHNICIAN	BASIC	MELVIN SIX
	REV.	
TRANSPORTATION ENGINEERING DIVISION		
VALIDATION ENGINEERING DIVISION	TESTED	
ENGINEERING DIRECTORATE		

CLASS	DIVISION	DRAWING	FILE
19	48	4905/ 10A	CA17Q6

PROJECT CAP-TV 6/10A-00



ISOMETRIC VIEW

KEY NUMBERS

(1) SUPPORT ASSEMBLY A (4 REQD). SEE THE DETAIL ON PAGE 7. CENTER A SUPPORT ASSEMBLY CROSSWISE ON THE DECK OF CROP APPROXIMATELY 50" FROM EACH ENDGATE OF CROP. POSITION TWO MORE SUPPORT ASSEMBLIES BETWEEN LAYERS OF PODS AS SHOWN.

(2) CENTER FILL PIECE, 2" X 4" X 66" (2 REQD). POSITION EACH CENTER FILL PIECE BETWEEN POD SLING LIFTING RINGS AS SHOWN.

(3) TIE WIRE, 0.0800" DIA, 24" LONG (4 REQD). FASTEN EACH CENTER FILL PIECE TO ONE STACK OF PODS AT TWO LOCATIONS, LOOPING WIRE AROUND SLING LIFTING RING, BRINGING ENDS TOGETHER, AND TWISTING TAUT.

(4) END BLOCKING ASSEMBLY A (2 REQD). SEE THE DETAILS ON PAGE 5. CENTER EACH END BLOCKING ASSEMBLY AGAINST EACH ENDGATE OF CROP. ENSURE TIGHT END-TO-END FIT BETWEEN ENDGATES AND PODS.

(5) SIDE BLOCKING ASSEMBLY A (4 REQD). SEE THE DETAIL ON PAGE 6. AFTER THE HOLD-DOWN STRAPS ARE INSTALLED, NAIL THROUGH THE HOOK ATTACHMENT SLOT OF EACH ADJACENT HOLD-DOWN STRAP INTO SIDE BLOCKING W/1-10d PARTIALLY DRIVEN NAIL AND BEND OVER SIDE OF HOOK.

(6) RETAINER STRAP, 2-INCH WIDE WEB STRAP TIEDOWN ASSEMBLY (2 REQD). INSTALL EACH RETAINER STRAP TO EXTEND FROM A TIEDOWN RING ON SIDE OF CROP, OVER TOP OF STRAPPING BOARD OF END BLOCKING ASSEMBLY, TO CORRESPONDING TIEDOWN RING ON OPPOSITE SIDE OF CROP. POSITION STRAP SCUFF SLEEVES AT SHARP EDGES. TAKE UP EXCESS SLACK IN STRAP AND THEN RATCHET TIGHT.

(CONTINUED AT LEFT)

(KEY NUMBERS CONTINUED)

(7) EDGE PROTECTOR, 2-3/4" X .030" X 2" STEEL EDGE PROTECTOR (16 REQD). POSITION BETWEEN BUNDLING STRAP AND POD FRAME AT EACH CORNER.

(8) BUNDLING STRAP, 1-1/4" X .035" OR .031" X 19'-6" LONG STEEL STRAPPING (4 REQD). INSTALL TO ENCIRCLE LATERALLY ADJACENT PODS IN EACH LAYER AS SHOWN.

(9) SEAL, FOR 1-1/4" STEEL STRAPPING (4 REQD). NOTCH EACH SEAL WITH TWO PAIR OF NOTCHES.

(10) EDGE PROTECTOR, 11-3/4" X 3/8" X 4-1/4" REINFORCED RUBBER EDGE PROTECTOR (16 REQD). SLIDE OVER 3-INCH WEB STRAP AND POSITION BETWEEN SCUFF SLEEVE OF WEB STRAP AND POD FRAME AT EACH CORNER.

(11) LOWER HOLD-DOWN STRAP, 3-INCH WIDE WEB STRAP TIEDOWN ASSEMBLY FOR CROP (4 REQD). INSTALL EACH LOWER HOLD-DOWN STRAP TO EXTEND FROM THE DESIGNATED TIEDOWN ANCHOR ON SIDE OF CROP, OVER TOP OF LOWER LAYER OF PODS, TO CORRESPONDING TIEDOWN ANCHOR ON OPPOSITE SIDE OF CROP. FIRMLY TENSION STRAP.

(12) UPPER HOLD-DOWN STRAP, 3-INCH WIDE WEB STRAP TIEDOWN ASSEMBLY FOR CROP (4 REQD). INSTALL EACH UPPER LAYER HOLD-DOWN STRAP TO EXTEND FROM THE DESIGNATED TIEDOWN ANCHOR ON SIDE OF CROP, OVER TOP OF TOP LAYER OF PODS, TO CORRESPONDING TIEDOWN ANCHOR ON OPPOSITE SIDE OF CROP. FIRMLY TENSION STRAP.

FOUR UNIT LOAD

PROJECT CAP-TV 6/10A-00

RECOMMENDED SEQUENTIAL PROCEDURES

1. PREFABRICATE THE FORWARD END BLOCKING ASSEMBLY "A", FOUR SUPPORT ASSEMBLIES "A", TWO CENTER FILL PIECES, FOUR SIDE BLOCKING ASSEMBLIES "A", AND THE AFT END BLOCKING ASSEMBLY "A" WITHOUT FILL PIECE.
2. INSTALL THE FORWARD END BLOCKING ASSEMBLY "A" AND PLACE TWO SUPPORT ASSEMBLIES "A" CROSSWISE ON THE DECK OF CROP.
3. ORIENT POD LIFTING RINGS AND LOAD THE FIRST LAYER OF PODS WITH CENTER FILL PIECES BETWEEN THE TWO PODS. CENTER PODS CROSSWISE ON CROP AND PLACE THEM TIGHTLY AGAINST FORWARD END BLOCKING ASSEMBLY "A".
4. BUNDLE THE TWO PODS TOGETHER WITH 1-1/4" STEEL STRAPPING.
5. WIRE TIE THE CENTER FILL PIECES TO THE FRAME OF ONE POD.
6. INSTALL THE AFT END BLOCKING ASSEMBLIES "A".
7. INSTALL THE FOUR SIDE BLOCKING ASSEMBLIES "A".
8. INSTALL FOUR 3" WEB STRAP TIEDOWN ASSEMBLIES TO EXTEND FROM A TIEDOWN ANCHOR ON ONE SIDE OF THE CROP, OVER TOP OF LOWER LAYER OF PODS, TO THE CORRESPONDING TIEDOWN ANCHOR ON THE OPPOSITE SIDE OF THE CROP.
9. INSTALL THE REMAINING TWO SUPPORT ASSEMBLY "A". ORIENT POD LIFTING RINGS AND LOAD SECOND LAYER OF PODS.
10. BUNDLE THE TWO PODS IN THE TOP LAYER TOGETHER WITH 1-1/4" STEEL STRAPPING.
11. WIRE TIE CENTER FILL PIECES TO POD IN TOP LAYER ABOVE PREVIOUSLY TIED POD.
12. INSTALL FOUR 3" WEB STRAP TIEDOWN ASSEMBLIES TO EXTEND FROM A TIEDOWN ANCHOR ON ONE SIDE OF THE CROP, OVER THE TOP OF THE TOP LAYER OF PODS, TO THE CORRESPONDING TIEDOWN ANCHOR ON THE OPPOSITE SIDE OF THE CROP.
13. INSTALL TWO 2" RETAINER STRAPS, ONE OVER EACH END BLOCKING ASSEMBLY "A".
14. NAIL THROUGH THE HOOK ATTACHMENT SLOT OF A HOLD-DOWN STRAP INTO EACH END OF THE SIDE BLOCKING ASSEMBLIES W/1-10d PARTIALLY DRIVEN NAIL AND BEND OVER SIDE OF HOOK.

GENERAL NOTES

A. THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC LOADING PROCEDURES DRAWING 19-48-4905-CA17Q6. TO PRODUCE AN APPROVED LOAD, ALL PERTINENT PROCEDURES, SPECIFICATIONS AND CRITERIA SET FORTH WITHIN THE BASIC DRAWING WILL APPLY TO THE PROCEDURES DELINEATED IN THIS APPENDIX. ANY EXCEPTIONS TO THE BASIC PROCEDURES ARE SPECIFIED IN THIS APPENDIX.

B. THE OUTLOADING PROCEDURES DEPICTED IN THIS DRAWING ARE APPLICABLE TO LOADS OF SCL #10A. SEE PAGE 4 FOR DETAILS OF THE MLRS/GMLRS POD. A M3A1 (HYUNDAI) CROP IS SHOWN AS TYPICAL. OTHER MANUFACTURER'S CROPS CAN BE USED FOR THE LOAD SHOWN ON PAGE 2. THE SEQUENTIAL LOADING PROCEDURES DEPICTED AT LEFT DESCRIBE THE SEQUENCE USED TO LOAD AN M3A1 CROP. ACTUAL CROP CONFIGURATION WILL DETERMINE WHETHER THE SEQUENTIAL LOADING STARTS AT THE AFT OR THE FORWARD END OF THE CROP.

C. THE LOADING PROCEDURES DEPICTED HEREIN MAY ALSO BE USED FOR OUTLOADING SIMILAR SCL LOADS WHEN IDENTIFIED BY DIFFERENT NATIONAL STOCK NUMBERS (NSN) THAN WHAT IS SHOWN ON PAGE 4, PROVIDED THE OVERALL UNIT DIMENSIONS DO NOT VARY FROM WHAT IS DELINEATED HEREIN.

D. ALTERNATE NSN/DODIC COMBINATIONS ARE SHOWN IN THE CHART ON PAGE 4. THESE ALTERNATES MAY BE SUBSTITUTED FOR SOME OR ALL THE DEPICTED NSN/DODICS IF NECESSARY DUE TO THE ITEMS OR QUANTITIES ON HAND.

E. DIMENSIONS GIVEN FOR DUNNAGE ASSEMBLIES WILL BE FIELD CHECKED PRIOR TO THEIR ASSEMBLY. PODS MUST FIT SNUGLY AGAINST THE DUNNAGE ASSEMBLIES. THIS GUIDANCE MUST BE APPLIED PRIOR TO BEGINNING AN OUTLOADING OPERATION. ALSO, DUE TO VARIATIONS IN HEIGHT OF SKIDS, ADJUSTMENTS MAY BE REQUIRED AS TO THE LOCATION OF CERTAIN PIECES ON DUNNAGE ASSEMBLIES.

F. ALL WEB STRAP TIEDOWN ASSEMBLIES MUST HAVE THE EXCESS LENGTH OF THE STRAP SECURED. ROLL UP AND BUNDLE THE EXCESS LENGTH OF WEB STRAP, SECURING WITH CABLE TIES. SEE THE "STRAP END SECUREMENT" DETAIL AND GENERAL NOTE "K.12" IN THE BASIC PROCEDURE DRAWING 19-48-4905-CA17Q6.

G. THE SUPPORT ASSEMBLY AS SHOWN ON PAGE 7 MUST BE USED UNDER BOTH LAYERS OF CONTAINERS TO PREVENT DAMAGE TO THE SHOCK ISOLATORS.

H. CAUTION: CARE MUST BE EXERCISED TO INSURE THAT PRESSURE IS NOT APPLIED AGAINST THE TUBES (ENDS AND SIDES) OF THE CONTAINERS OR THE UPPER RAIL NEAR THE CROSSMEMBER MARKED "NO STEP" DURING HANDLING OPERATIONS OR WHEN BRACED. ALSO, PERSONNEL SHALL NOT STAND OR WALK ON THE FIBERGLASS TUBES OR THE CROSSMEMBERS SO MARKED.

J. 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 0.454 KG.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	11	3
1" X 4"	53	18
2" X 4"	49	33
2" X 8"	55	73
4" X 4"	42	55

NAILS	NO. REQD	POUNDS
6d (2")	100	3/4
10d (3")	112	1-3/4

STEEL STRAPPING, 1-1/4"	77' REQD	10.95 LBS
SEAL FOR 1-1/4" STRAPPING	4 REQD	NIL
EDGE PROTECTORS FOR 1-1/4" STEEL STRAPPING	16 REQD	1.6 LBS
WIRE, 0.0800" DIA	8' REQD	NIL
2" WEB STRAP TIEDOWN ASSEMBLY	2 REQD	11 LBS
EDGE PROTECTORS FOR 3" WEB STRAPS	16 REQD	12 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
RP/C	4	20,376 LBS
DUNNAGE		401 LBS
CROP		3,800 LBS
TOTAL WEIGHT		24,577 LBS (APPROX)

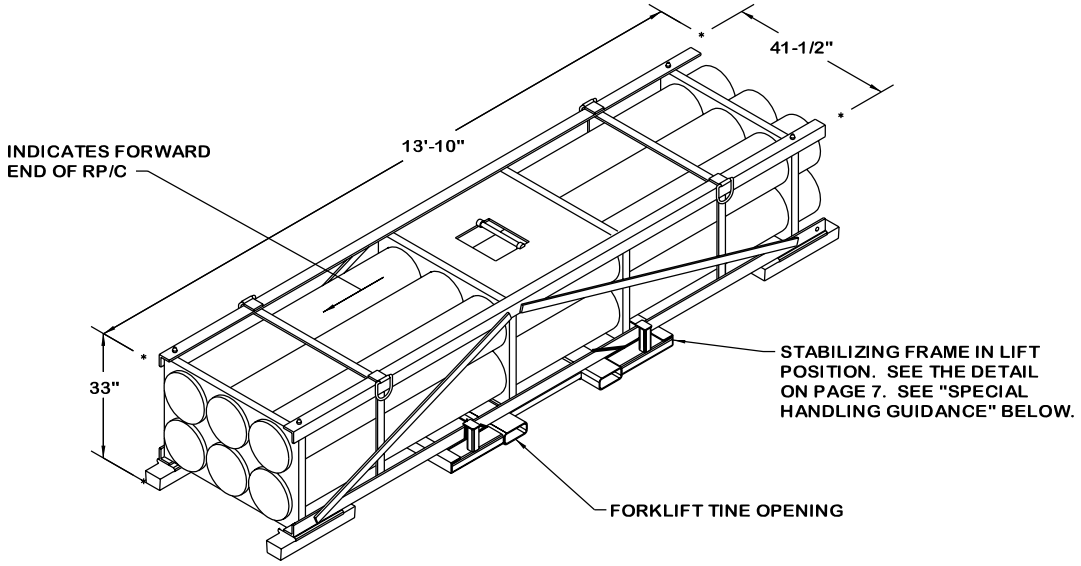
SCL #10A COMPOSITION CHART

DODIC	NSN	NOMENCLATURE	UNIT DWG	REQD	UNITS REQD	HC
H104*	1340-01-122-3506	MLRS, M26	13027900	4	N/A	1.1E

* NOTE: THE DODICS LISTED BELOW MAY BE USED AS ALTERNATES FOR THE DODICS SHOWN ABOVE IF THE QUANTITY OF THE DODICS/NSNS SHOWN ABOVE IS INSUFFICIENT.

GROSS WEIGHT OF MULTIPLE LAUNCH ROCKET SYSTEM AND GUIDED MULTIPLE LAUNCH ROCKET SYSTEM

NSN	DODIC	DESCRIPTION	WEIGHT (LBS)
1340-01-149-0918	H108*	MLRS PRACTICE M28	5,094
1340-01-370-9666	H185*	MLRS REDUCED RANGE PRACTICE ROCKET M28A1	5,090
1340-01-484-9001	H185*	MLRS REDUCED RANGE PRACTICE ROCKET M28A2	5,020
1340-01-450-5876	H186*	MLRS EXTENDED RANGE M26A2	4,990
1340-01-490-9695	HA22*	GMLRS DPICM M30	5,020
1340-01-517-4757	HA37*	GMLRS UNITARY XM31	5,093



ROCKET POD/CONTAINER

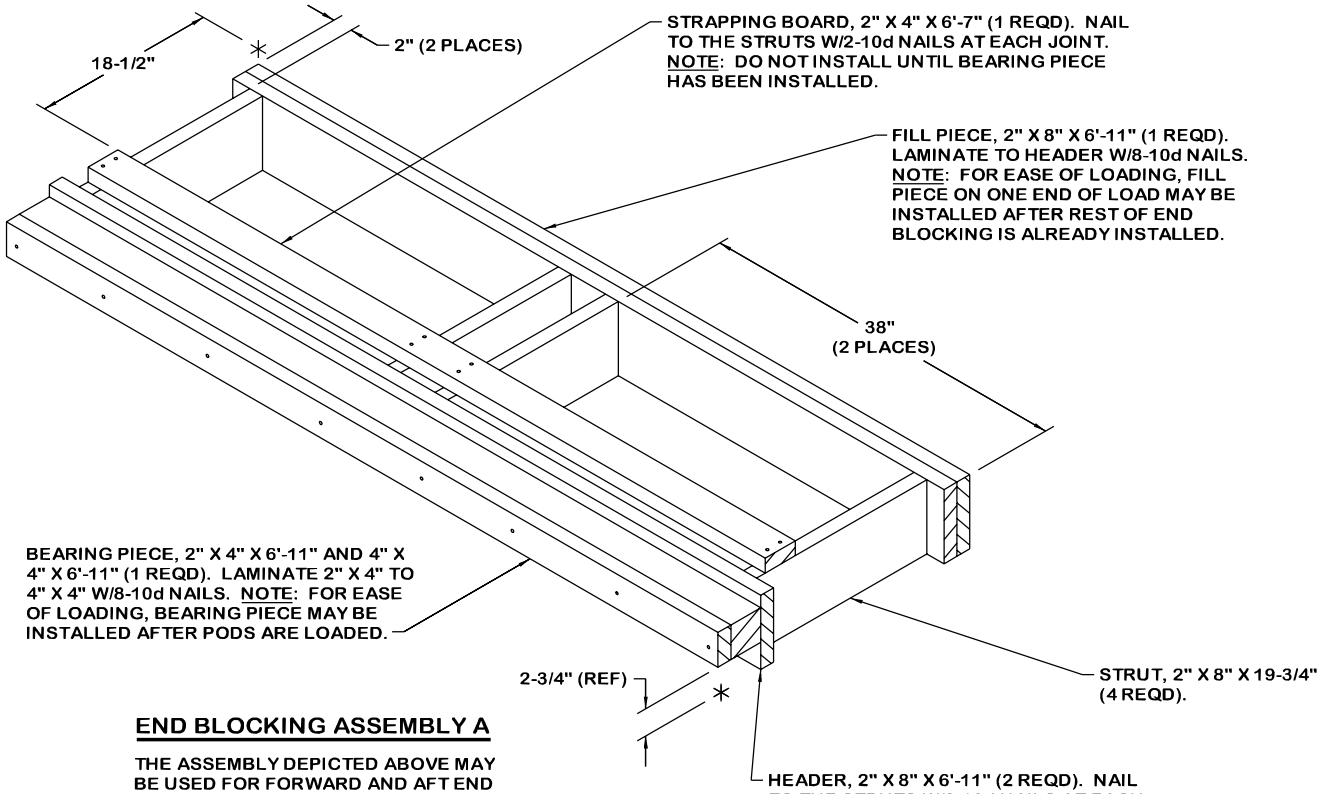
SPECIAL HANDLING GUIDANCE

CONTAINER STACKING FOR OUTLOADING PURPOSES AND CONTAINER OR CONTAINER STACK HANDLING.

NOTES: (1) MATERIALS HANDLING EQUIPMENT (MHE) IS INTENDED TO MEAN EQUIPMENT, SUCH AS FORKLIFT TRUCKS, CRANES, HAND TRUCKS, DOLLIES, ROLLER ASSEMBLIES, SLINGS, AND SPREADER BARS, THAT CAN BE USED TO HANDLE THE DEPICTED CONTAINERS.

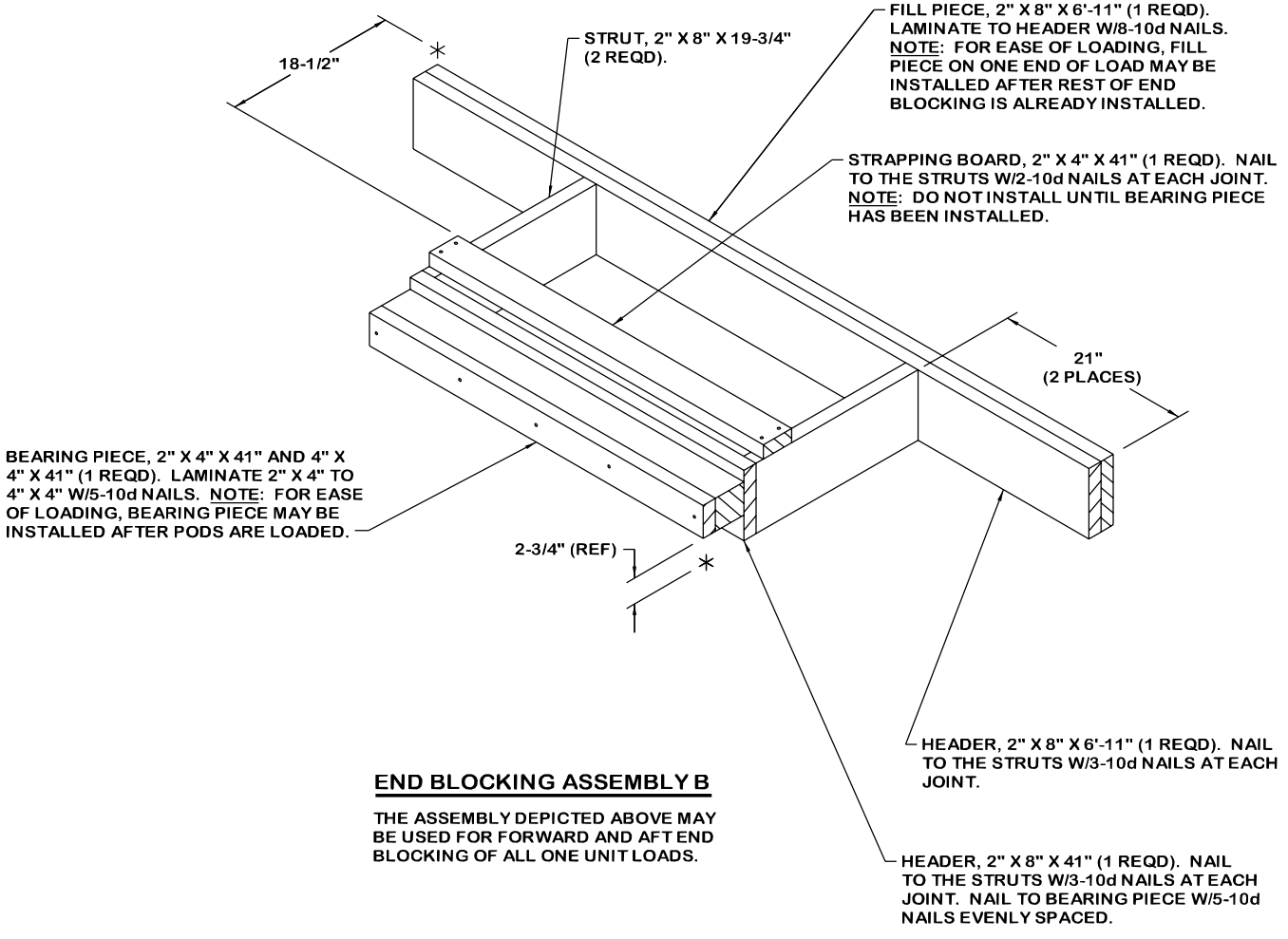
(2) PRECAUTIONARY HANDLING TECHNIQUES NORMALLY EMPLOYED OR AS SPECIFIED FOR THE TYPE OF COMMODITY INVOLVED WILL BE OBSERVED.

IF HANDLING PRIOR TO LOADING OPERATIONS IS ACCOMPLISHED WITH FORKLIFT TRUCK. THE TINES OF THE FORKLIFT ARE INSERTED INTO THE MLRS POD STABILIZING FRAME SHOWN IN THE DETAIL ON PAGE 7. THE FORKLIFT CARRIAGE IS TO BE CENTERED ON THE CENTER OF BALANCE MARK ON THE MLRS/GMLRS POD.



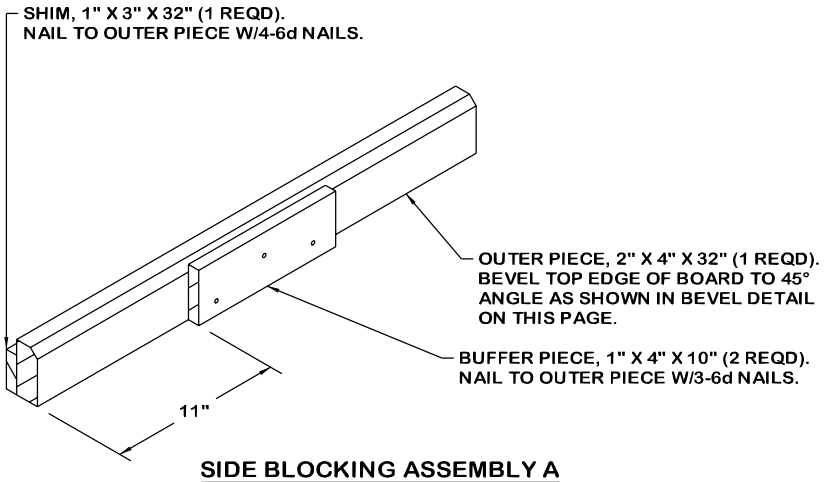
END BLOCKING ASSEMBLY A

THE ASSEMBLY DEPICTED ABOVE MAY BE USED FOR FORWARD AND AFT END BLOCKING OF ALL TWO WIDE LOADS.



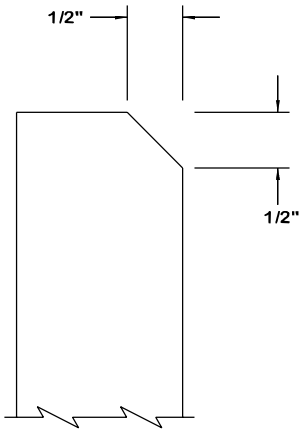
END BLOCKING ASSEMBLY B

THE ASSEMBLY DEPICTED ABOVE MAY BE USED FOR FORWARD AND AFT END BLOCKING OF ALL ONE UNIT LOADS.

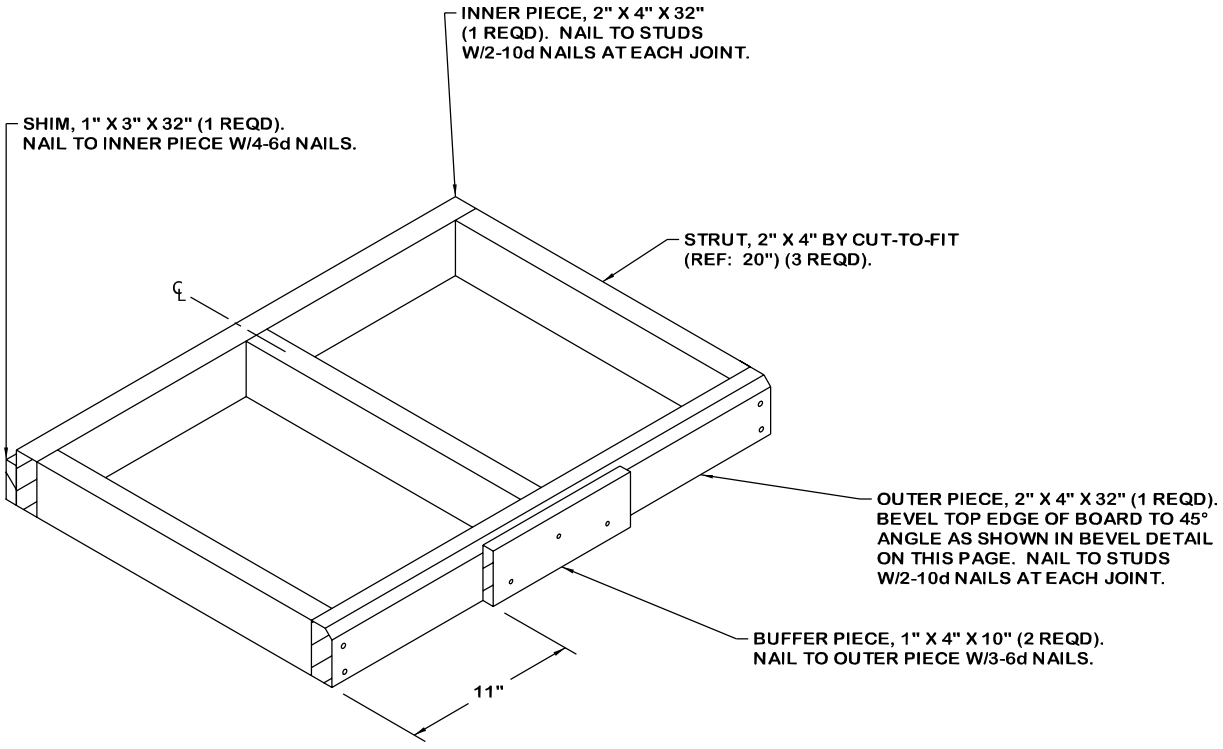


SIDE BLOCKING ASSEMBLY A

THIS ASSEMBLY IS USED ON TWO WIDE UNIT LOADS.

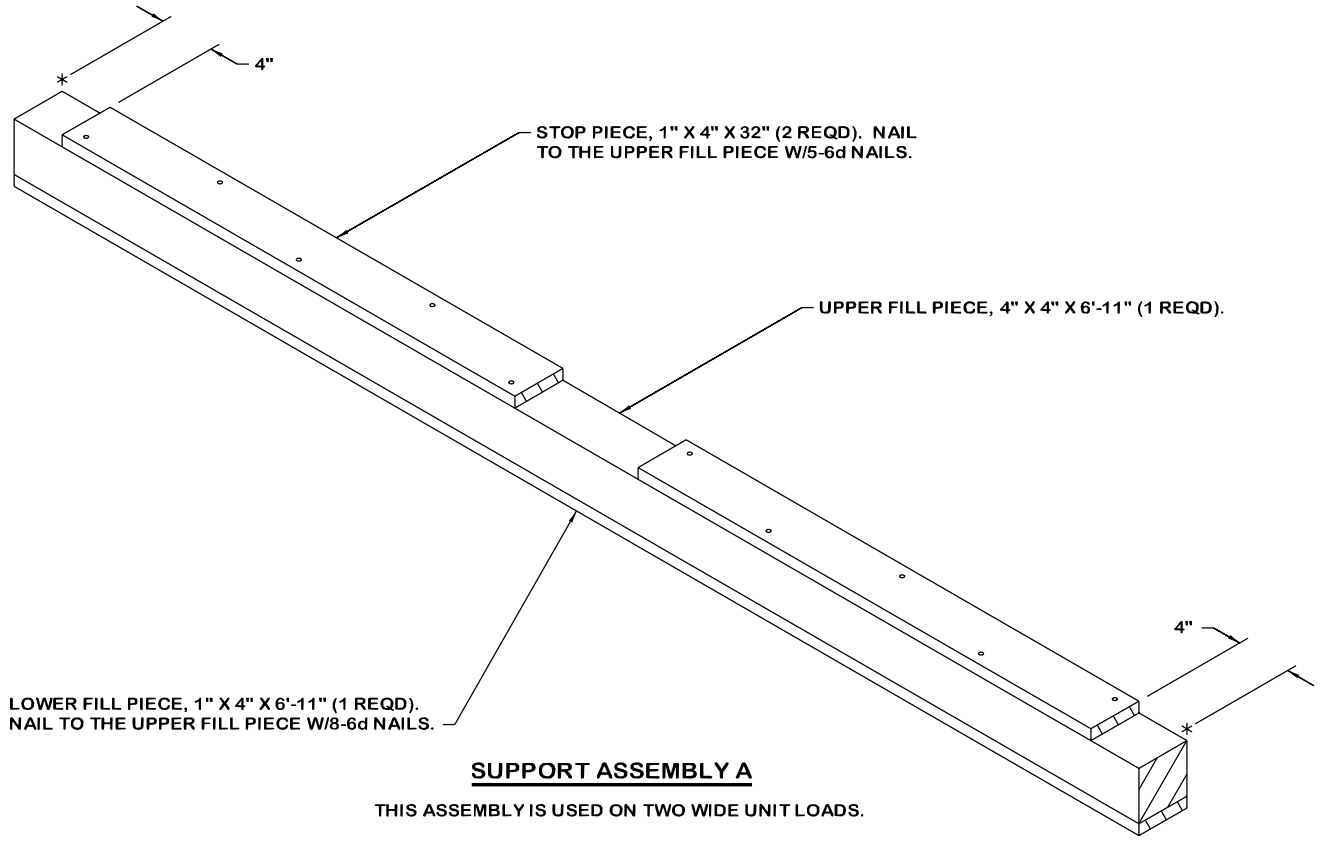


BEVEL DETAIL



SIDE BLOCKING ASSEMBLY B

THIS ASSEMBLY IS USED ON ONE UNIT LOAD.



SUPPORT ASSEMBLY A

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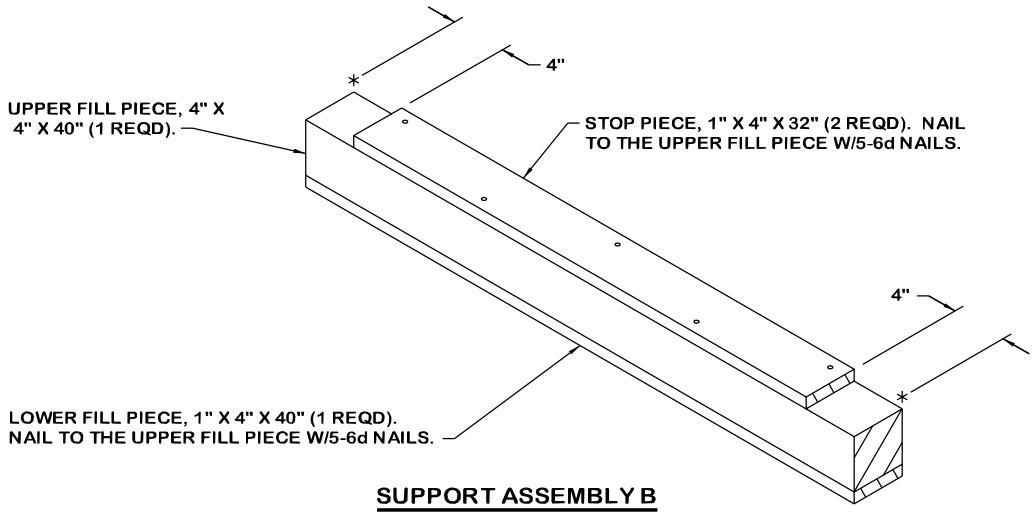

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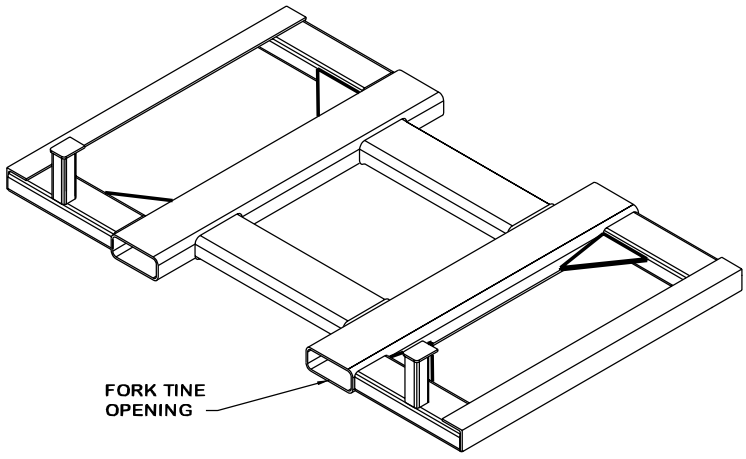
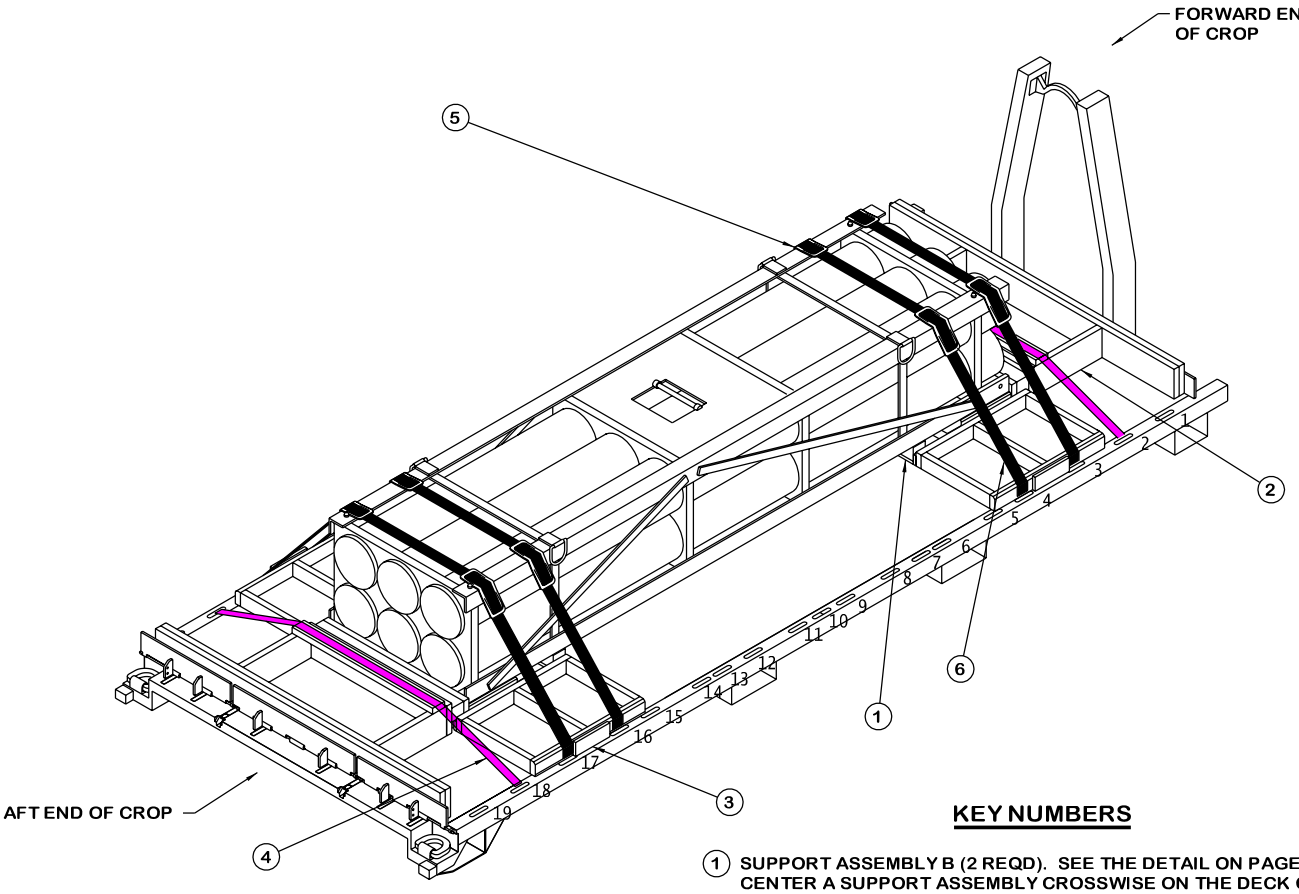


STABILIZING FRAME

REFER TO DEFENSE AMMUNITION CENTER DRAWING NUMBER AC200000809 TO MANUFACTURE. THE DRAWING CAN BE OBTAINED FROM THE FOLLOWING ADDRESS: DEFENSE AMMUNITION CENTER, 1 C TREE ROAD ATTN: SJMAC-DET, MCALESTER, OK 74501, DSN 956-8927, COMM (918) 420-8927, EMAIL SJMAC-DET@DAC.ARMY.MIL.



ISOMETRIC VIEW

KEY NUMBERS

(1) SUPPORT ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 7. CENTER A SUPPORT ASSEMBLY CROSSWISE ON THE DECK OF CROP APPROXIMATELY 50" FROM EACH ENDGATE OF CROP.

(2) END BLOCKING ASSEMBLY B (2 REQD). SEE THE DETAIL ON PAGE 5. CENTER EACH END BLOCKING ASSEMBLY AGAINST EACH END-GATE OF CROP. ENSURE TIGHT END-TO-END FIT BETWEEN END-GATES AND PODS.

(3) SIDE BLOCKING ASSEMBLY B (4 REQD). SEE THE DETAIL ON PAGE 6. AFTER THE HOLD-DOWN STRAPS ARE INSTALLED, NAIL THROUGH THE HOOK ATTACHMENT SLOT OF EACH ADJACENT HOLD-DOWN STRAP INTO SIDE BLOCKING W/1-10d PARTIALLY DRIVEN NAIL AND BEND OVER SIDE OF HOOK.

(4) RETAINER STRAP, 2-INCH WIDE WEB STRAP TIEDOWN ASSEMBLY (2 REQD). INSTALL EACH RETAINER STRAP TO EXTEND FROM A TIEDOWN RING ON SIDE OF CROP, OVER TOP OF STRAPPING BOARD OF END BLOCKING ASSEMBLY, TO CORRESPONDING TIE-DOWN RING ON OPPOSITE SIDE OF CROP. POSITION STRAP SCUFF SLEEVES AT SHARP EDGES. TAKE UP EXCESS SLACK IN STRAP AND THEN RATCHET TIGHT.

(5) EDGE PROTECTOR, 11-3/4" X 3/8" X 4-1/4" REINFORCED RUBBER EDGE PROTECTOR (8 REQD). SLIDE OVER 3-INCH WEB STRAP AND POSITION BETWEEN SCUFF SLEEVE OF WEB STRAP AND POD FRAME AT EACH CORNER.

(6) HOLD-DOWN STRAP, 3-INCH WIDE WEB STRAP TIEDOWN ASSEMBLY FOR CROP (4 REQD). INSTALL EACH LOWER HOLD-DOWN STRAP TO EXTEND FROM THE DESIGNATED TIEDOWN ANCHOR ON SIDE OF CROP, OVER TOP OF LOWER LAYER OF PODS, TO CORRESPONDING TIEDOWN ANCHOR ON OPPOSITE SIDE OF CROP. FIRMLY TENSION STRAP.

BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
1" X 3"	11	3
1" X 4"	16	6
2" X 4"	55	37
2" X 8"	42	55
4" X 4"	14	18
NAILS	**NO. REQD**	**POUNDS**
6d (2")	48	1/2
10d (3")	116	2

2" WEB STRAP TIEDOWN ASSEMBLY - - - - - - - - 2 REQD - - - - 11 LBS
EDGE PROTECTORS FOR 3" WEB STRAPS - - - - - - - - - 8 REQD - - - - 6 LBS

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
RP/C	1	5,094 LBS
DUNNAGE		255 LBS
CROP		3,800 LBS
TOTAL WEIGHT		9,149 LBS (APPROX)

ONE UNIT LOAD

PROJECT CAP-TV 6/10A-00