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DATE 5/21/05

APPENDIX 39

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

SCL #39 - 155MM COPPERHEAD



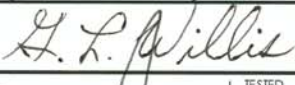

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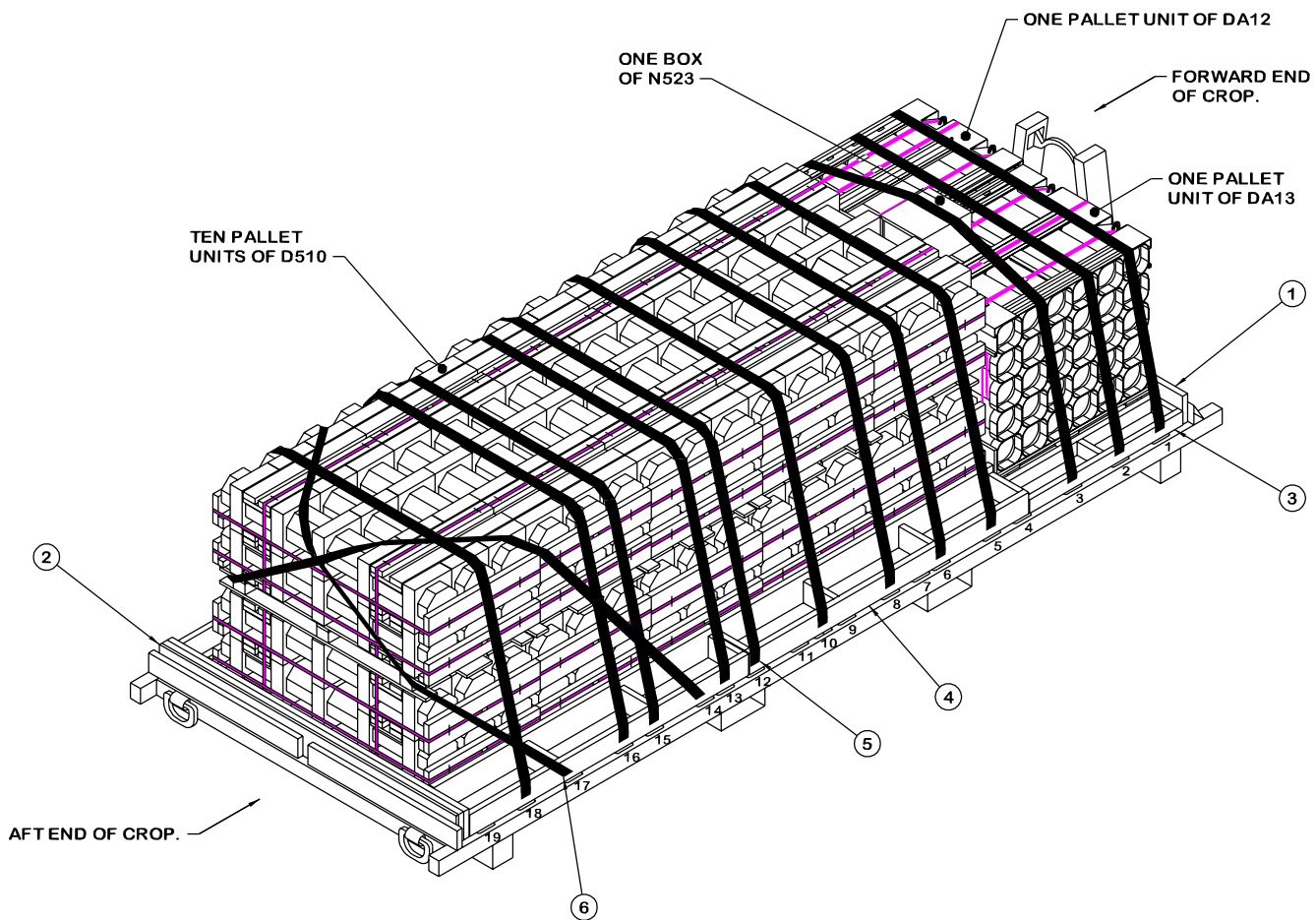
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NOTICE: THIS APPENDIX CANNOT STAND ALONE BUT MUST BE USED IN CONJUNCTION WITH THE BASIC CROP OUTLOADING PROCEDURES DRAWING 19-48-4905-CA17Q6.

- 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 FIELD SUPPORT COMMAND  | 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 | | DECEMBER 2000 | |
| APPROVED BY ORDER OF COMMANDING GENERAL, U.S. ARMY MATERIEL COMMAND  | ENGINEER OR TECHNICIAN | BASIC REV. | WALTER GORDON RICHARD GARSIDE | |
| | TRANSPORTATION ENGINEERING DIVISION |  | | REVISION NO. 1 |
| | VALIDATION ENGINEERING DIVISION | TESTED | SEE THE REVISION LISTING ON PAGE 3 | |
| U.S. ARMY DEFENSE AMMUNITION CENTER | ENGINEERING DIRECTORATE |  | CLASS 19 | DIVISION 48 |
| | | | DRAWING 4905/ 39 | FILE CA17Q6 |



ISOMETRIC VIEW

(KEY NUMBERS CONTINUED)

- ⑤ HOLD-DOWN STRAP, 3-INCH WIDE WEB STRAP TIEDOWN ASSEMBLY FOR CROP (12 REQD). INSTALL EACH HOLD-DOWN STRAP TO EXTEND FROM THE DESIGNATED TIEDOWN ANCHOR ON ONE SIDE OF CROP, OVER TOP OF PALLET UNITS, TO CORRESPONDING TIEDOWN ANCHOR ON OPPOSITE SIDE OF CROP. ALIGN SCUFF SLEEVES OVER ALL SHARP EDGES AND FIRMLY TENSION STRAP. SEE GENERAL NOTE "F" ON PAGE 3.
- ⑥ AFT END RESTRAINT STRAP, 3-INCH WIDE WEB STRAP TIEDOWN ASSEMBLY FOR CROP (2 REQD). INSTALL EACH STRAP FROM THE SEVENTEENTH TIEDOWN ANCHOR ON ONE SIDE OF THE CROP (ONE ON EACH SIDE), OVER THE TOP AND ACROSS THE AFT OF THE TOP LAYER OF D510 PALLET UNITS, AND BACK DOWN TO THE FOURTEENTH TIEDOWN ANCHOR ON THE OPPOSITE SIDE OF THE CROP. ALIGN SCUFF SLEEVES OVER ALL SHARP EDGES AND FIRMLY TENSION STRAP. SEE GENERAL NOTE "F" ON PAGE 3.

KEY NUMBERS

- ① FORWARD BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 6. CENTER ON THE DECK OF THE CROP AGAINST THE FORWARD END GATE. AFTER THE PALLET UNITS ARE LOADED, NAIL TWO 12d NAILS THRU SLOTS IN FORWARD END GATE INTO THE FORWARD BLOCKING ASSEMBLY, WITH NAIL HEADS PROTRUDING TO PROVIDE LATERAL RESTRAINT.
- ② AFT BLOCKING ASSEMBLY (1 REQD). SEE THE DETAIL ON PAGE 6. AFTER THE PALLETS ARE LOADED, CENTER ON THE DECK OF THE CROP AGAINST THE AFT END GATE. ANY REMAINING GAP BETWEEN THE END BLOCKING AND THE CROP END GATE MUST BE FILLED BY LAMINATING ADDITIONAL 1" OR 2" X 8" X 7'-4" PIECES TO THE END BLOCKING W/8 NAILS OF A SUITABLE SIZE. NAIL TWO 12d NAILS THRU UPPER CORNER OF OPENING IN AFT END GATES INTO THE AFT BLOCKING ASSEMBLY, WITH NAIL HEADS PROTRUDING AND BENT OVER VERTICAL TUBE OF END GATE TO PROVIDE LATERAL AND VERTICAL RESTRAINT.
- ③ SIDE BLOCKING ASSEMBLY A (2 REQD). SEE THE DETAIL ON PAGE 7. INSTALL ONE ASSEMBLY ON EACH SIDE OF CROP ADJACENT TO THE DA12 AND DA13 PALLET UNITS. SEE GENERAL NOTE "G" ON PAGE 3.
- ④ SIDE BLOCKING ASSEMBLY B (4 REQD). SEE THE DETAIL ON PAGE 7. INSTALL TWO ASSEMBLIES ON EACH SIDE OF CROP ADJACENT TO THE D510 PALLET UNITS. SEE GENERAL NOTE "G" ON PAGE 3.

(CONTINUED AT LEFT)

RECOMMENDED SEQUENTIAL PROCEDURES

1. PREFABRICATE THE FORWARD AND AFT BLOCKING ASSEMBLIES, TWO SIDE BLOCKING ASSEMBLIES "A", AND FOUR SIDE BLOCKING ASSEMBLIES "B".
2. INSTALL THE FORWARD BLOCKING ASSEMBLY AS INSTRUCTED IN KEY NUMBER ①.
3. LOAD ONE PALLET UNIT OF DA12 AND ONE PALLET UNIT OF DA13. CENTER THE PALLET UNITS ON THE DECK OF THE CROP, WITH OPENING END OF CONTAINERS FACING OUTWARDS, AND PLACE TIGHTLY AGAINST THE FORWARD BLOCKING ASSEMBLY.
4. LOAD TEN PALLET UNITS OF D510. CENTER THE PALLET UNITS ON THE DECK OF THE CROP AND PLACE TIGHTLY AGAINST THE DA12 AND DA13 PALLET UNITS.
5. LOAD ONE BOX OF N523 ON TOP OF THE DA13 PALLET UNIT, AS SHOWN IN THE ISOMETRIC VIEW ON PAGE 2.
6. INSTALL THE AFT BLOCKING ASSEMBLY AS INSTRUCTED IN KEY NUMBER ②.
7. INSTALL THE TWO SIDE BLOCKING ASSEMBLIES "A" AS INSTRUCTED IN KEY NUMBER ③.
8. INSTALL THE FOUR SIDE BLOCKING ASSEMBLIES "B" AS INSTRUCTED IN KEY NUMBER ④.
9. INSTALL TWELVE 3-INCH WEB STRAP TIEDOWN ASSEMBLIES TO EXTEND FROM A TIEDOWN ANCHOR ON ONE SIDE OF THE CROP, OVER THE TOP OF THE PALLET UNITS, TO THE CORRESPONDING TIEDOWN ANCHOR ON THE OPPOSITE SIDE OF THE CROP.
10. INSTALL THE TWO AFT END RESTRAINT STRAPS AS DIRECTED IN KEY NUMBER ⑥.
11. 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.

REVISION

REVISION NO. 1, DATED APRIL 2005, CONSISTS OF:

1. REMOVING TWO PALLET UNITS OF D533 FROM LOAD.
2. REMOVING ONE PALLET UNIT OF D541 FROM LOAD.
3. ADDING ONE PALLET UNIT OF DA12 TO LOAD.
4. ADDING ONE PALLET UNIT OF DA13 TO LOAD.
5. REMOVING EDGE BOARD ASSEMBLY FROM LOAD.
6. DIMENSIONAL ADJUSTMENTS TO SIDE BLOCKING ASSEMBLY "A".

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 #39. SEE PAGES 4 AND 5 FOR DETAILS OF THE PALLET UNITS. AN M3 (SUMMA) 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 M3 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. DIMENSIONS, CUBE AND WEIGHT OF THE PALLET UNITS WILL VARY SLIGHTLY DEPENDING UPON THE ACTUAL DIMENSIONS OF THE BOXES AND THE WEIGHT OF THE SPECIFIC ITEM BEING UNITIZED.
- E. DIMENSIONS GIVEN FOR DUNNAGE ASSEMBLIES WILL BE FIELD CHECKED PRIOR TO THEIR ASSEMBLY. PALLET UNITS MUST FIT SNUGLY AGAINST THE DUNNAGE ASSEMBLIES. THIS GUIDANCE MUST BE APPLIED PRIOR TO BEGINNING AN OUTLOADING OPERATION. ALSO, DUE TO VARIATION OF PALLET UNIT DIMENSIONS, 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. EACH END OF THE SIDE BLOCKING ASSEMBLIES MUST BE SECURED BY NAILING A 10d NAIL THRU A 3" WEBSTRAP HOOK SLOT. SEE "STRAP HOOK DETAIL" AND GENERAL NOTE "G.2" IN THE BASIC PROCEDURES DRAWING 19-48-4905-CA17Q6.
- H. UNUSED WEB STRAP TIEDOWN ASSEMBLIES MUST BE SECURED AS DELINEATED IN GENERAL NOTE "K.13" IN THE BASIC PROCEDURE DRAWING 19-48-4905-CA17Q6.
- 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 8" | 8 | 5 |
| 2" X 4" | 21 | 14 |
| 2" X 6" | 40 | 40 |
| 2" X 8" | 50 | 66 |
| NAILS | NO. REQD | POUNDS |
| 6d (2") | 8 | NIL |
| 10d (3") | 144 | 2-1/4 |
| 12d (3-1/4") | 4 | NIL |

LOAD AS SHOWN

| ITEM | QUANTITY | WEIGHT (APPROX) |
|------------------|----------|-----------------|
| D510 PALLET UNIT | 10 | 13,970 LBS |
| DA12 PALLET UNIT | 1 | 1,297 LBS |
| DA13 PALLET UNIT | 1 | 1,835 LBS |
| N523 BOX | 1 | 34 LBS |
| DUNNAGE | | 253 LBS |
| CROP | | 3,800 LBS |

TOTAL WEIGHT - - - - - 21,189 LBS (APPROX)

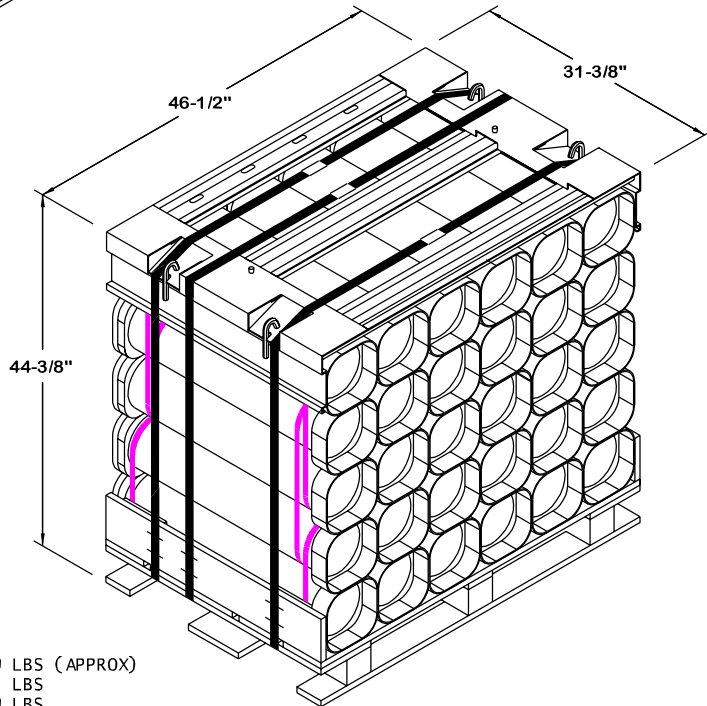
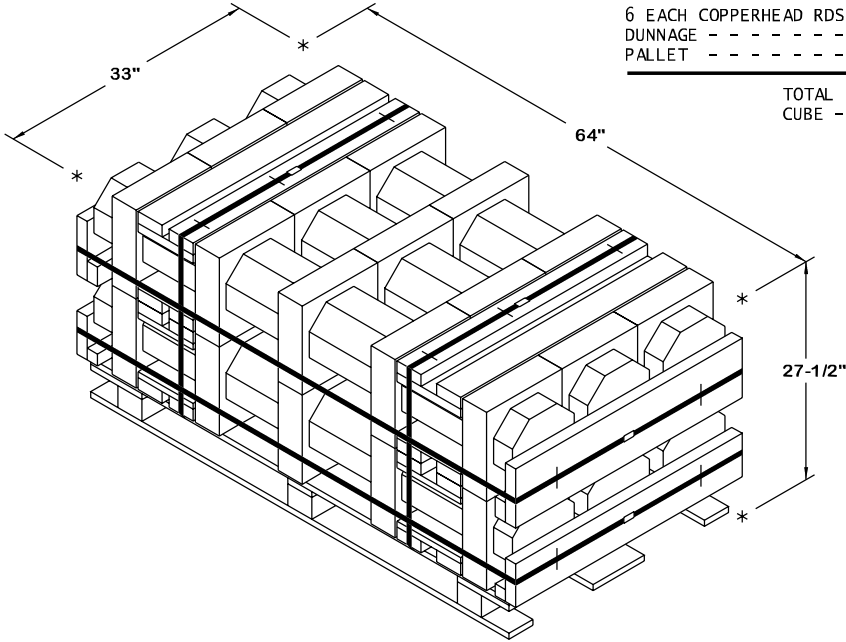
SCL #39 COMPOSITION CHART

| DODIC | NSN | NOMENCLATURE | UNIT DWG | REQD | UNITS REQD | HC |
|-------|------------------|---|-----------|------|------------|------|
| D510 | 1320-01-077-4279 | PROJECTILE, 155MM M712 | 4159 | 60 | 10 PALLETS | 1.1D |
| DA12 | 1320-01-454-4603 | MODULAR ARTILLERY CHARGE SYSTEM (MACS) M231 | 4326/50 | 120 | 1 PALLET | 1.3C |
| DA13 | 1320-01-457-4063 | MODULAR ARTILLERY CHARGE SYSTEM (MACS) M232 | 4326/50A | 150 | 1 PALLET | 1.3C |
| N523 | 1390-01-481-2024 | PRIMER, PERCUSSION M82 | 4116/158G | 200 | 1 BOX | 1.4S |

D510 PALLET UNIT DETAIL

6 EACH COPPERHEAD RDS IN CONTAINERS @ 206 LBS - - - 1,236 LBS (APPROX)
 DUNNAGE - - - - - 107 LBS
 PALLET - - - - - 54 LBS

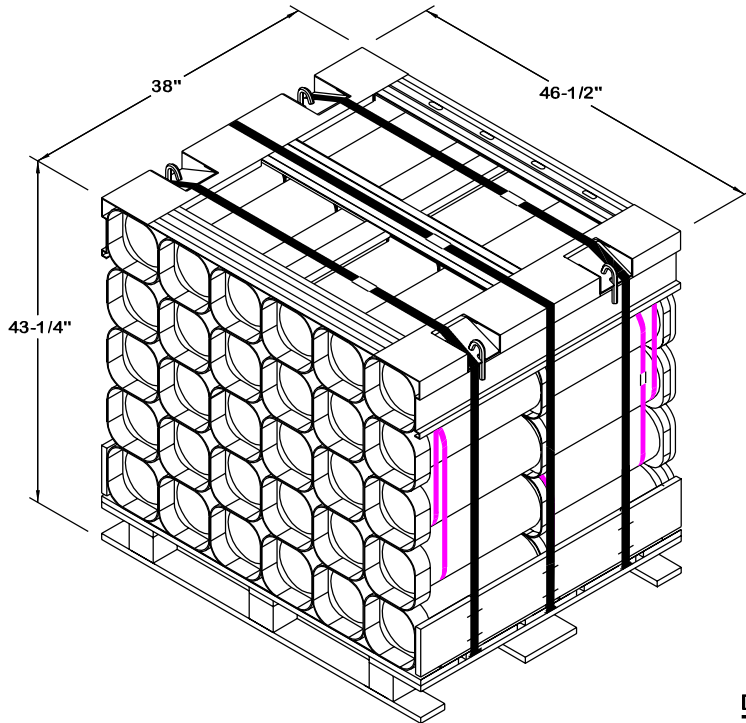
TOTAL WEIGHT - - - - - 1,397 LBS (APPROX)
 CUBE - - - - - 33.6 CU FT (APPROX)



DA12 PALLET UNIT DETAIL

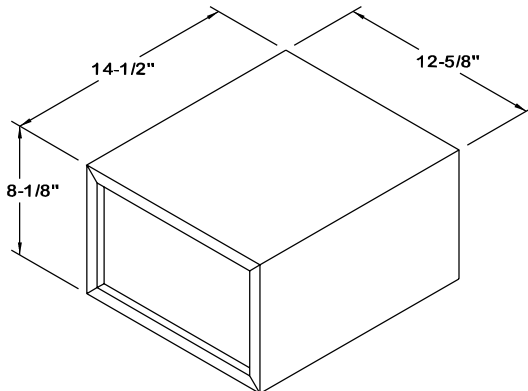
30 CONTAINERS OF MACS (4 PER CNTR) @ 38 LBS - - - 1,140 LBS (APPROX)
 DUNNAGE - - - - - 97 LBS
 PALLET - - - - - 60 LBS

TOTAL WEIGHT - - - - - 1,297 LBS (APPROX)
 CUBE - - - - - 37.5 CU FT (APPROX)



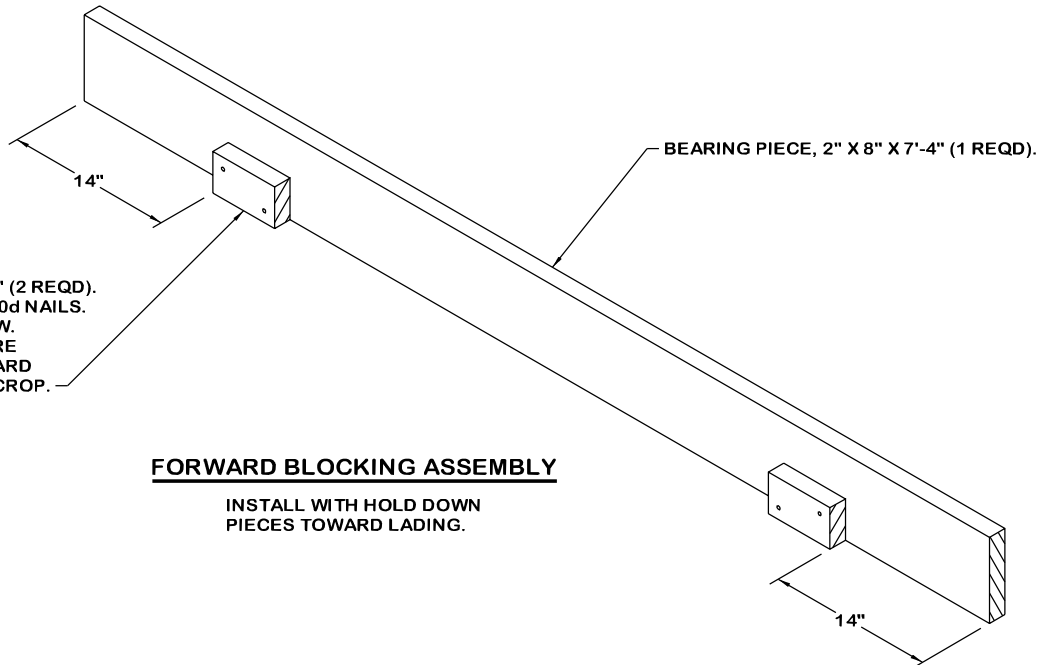
DA13 PALLET UNIT DETAIL

| | |
|---|---------------------|
| 30 CONTAINERS OF MACS (5 PER CNTR) @ 55 LBS - - - - | 1,650 LBS (APPROX) |
| DUNNAGE - - - - - | 110 LBS |
| PALLET - - - - - | 75 LBS |
| <hr/> | |
| TOTAL WEIGHT - - - - - | 1,835 LBS (APPROX) |
| CUBE - - - - - | 44.3 CU FT (APPROX) |



N523 BOX DETAIL

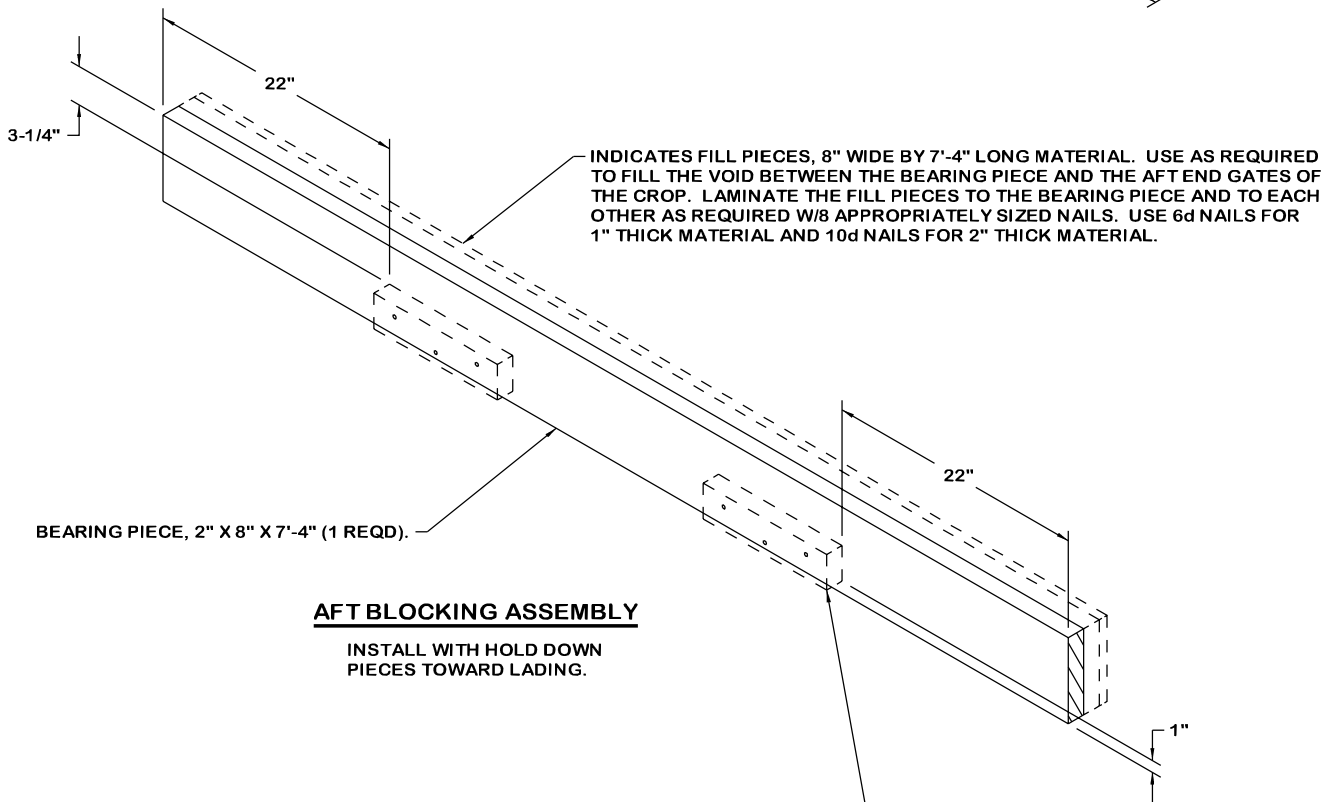
| | |
|------------------------|---------------------|
| GROSS WEIGHT - - - - - | 34 LBS (APPROX) |
| CUBE - - - - - | 0.86 CU FT (APPROX) |



HOLD DOWN PIECE, 2" X 4" X 6" (2 REQD).
 NAIL TO BEARING PIECE W/2-10d NAILS.
 SEE THE SPECIAL NOTE BELOW.
 NOTE: HOLD DOWN PIECES ARE NOT REQUIRED AT THE FORWARD END OF THE M3A1 (HYUNDAI) CROP.

FORWARD BLOCKING ASSEMBLY

INSTALL WITH HOLD DOWN PIECES TOWARD LADING.



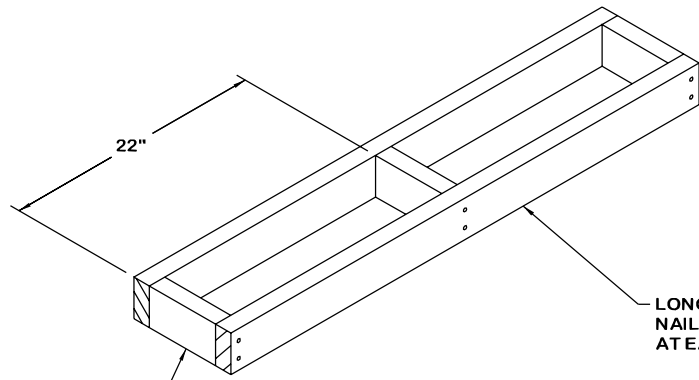
INDICATES FILL PIECES, 8" WIDE BY 7'-4" LONG MATERIAL. USE AS REQUIRED TO FILL THE VOID BETWEEN THE BEARING PIECE AND THE AFT END GATES OF THE CROP. LAMINATE THE FILL PIECES TO THE BEARING PIECE AND TO EACH OTHER AS REQUIRED W/8 APPROPRIATELY SIZED NAILS. USE 6d NAILS FOR 1" THICK MATERIAL AND 10d NAILS FOR 2" THICK MATERIAL.

AFT BLOCKING ASSEMBLY

INSTALL WITH HOLD DOWN PIECES TOWARD LADING.

SPECIAL NOTE: HOLD DOWN PIECES (IF REQD) MUST BE RECESSED UNDERNEATH THE PALLET UNITS AND FIT BETWEEN THE SKIDS. FIELD CHECK DIMENSIONS BEFORE ASSEMBLY TO ENSURE A PROPER FIT. SEE GENERAL NOTE "E" ON PAGE 3.

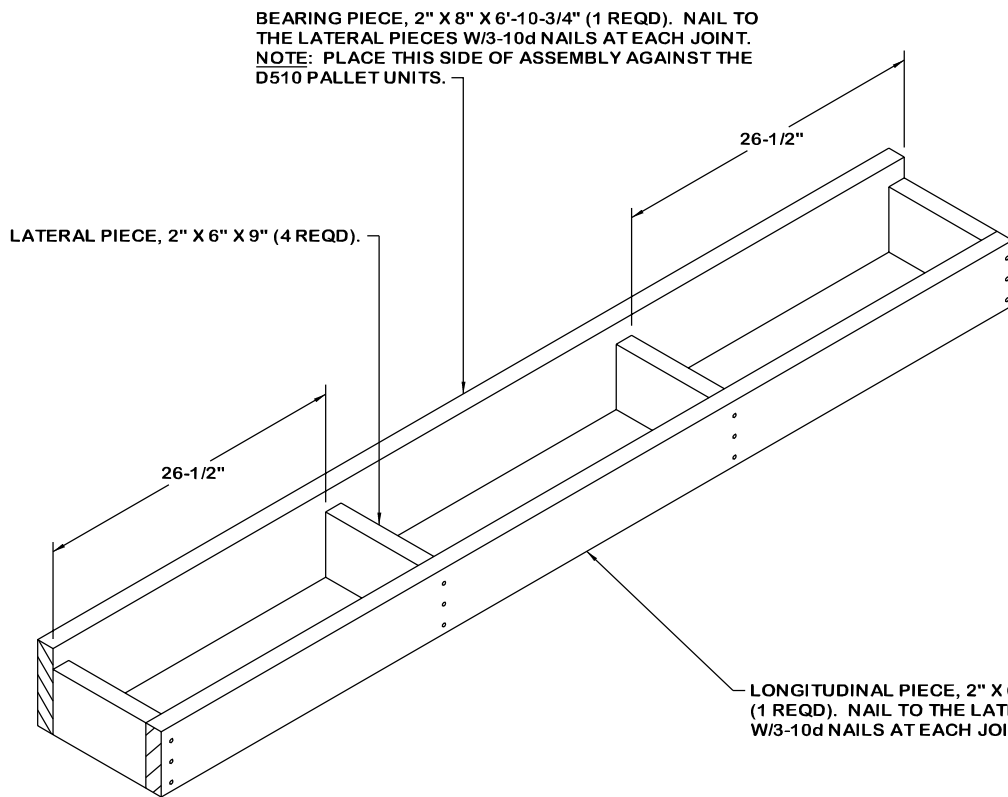
INDICATES HOLD DOWN PIECE, 2" X 3" (ACTUAL) X 12" (2 REQD). NAIL TO BEARING PIECE W/3-10d NAILS. SEE THE SPECIAL NOTE BELOW. NOTE: HOLD DOWN PIECES ARE NOT REQUIRED AT AFT END OF M3 (SUMMA) CROP.



LATERAL PIECE, 2" X 4" X 6-3/8" (3 REQD).

LONGITUDINAL PIECE, 2" X 4" X 45-1/2" (2 REQD).
NAIL TO THE LATERAL PIECES W/2-10d NAILS
AT EACH JOINT.

SIDE BLOCKING ASSEMBLY A



BEARING PIECE, 2" X 8" X 6'-10-3/4" (1 REQD). NAIL TO
THE LATERAL PIECES W/3-10d NAILS AT EACH JOINT.
NOTE: PLACE THIS SIDE OF ASSEMBLY AGAINST THE
D510 PALLET UNITS.

LATERAL PIECE, 2" X 6" X 9" (4 REQD).

26-1/2"

26-1/2"

LONGITUDINAL PIECE, 2" X 6" X 6'-10-3/4"
(1 REQD). NAIL TO THE LATERAL PIECES
W/3-10d NAILS AT EACH JOINT.

SIDE BLOCKING ASSEMBLY B

