APPROVED BY

BUREAU OF EXPLOSIVES

A. F. Grassmuck
MILITARY ASSISTANT

DATE 9/23/69

LOADING AND BRACING (TL & LTL) ON FLAT BED TRAILER OF 15,000 POUND BLU-82 (CD-1) BOMB

DRAFTSMAN JPH	PROJ ENG MWD
CHECKER TAS	ASC AMMO CTR John Lynch

REVISIONS

SUBMITTED

COMMANDING OFFICER, SAVANNA ARMY DEPOT

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

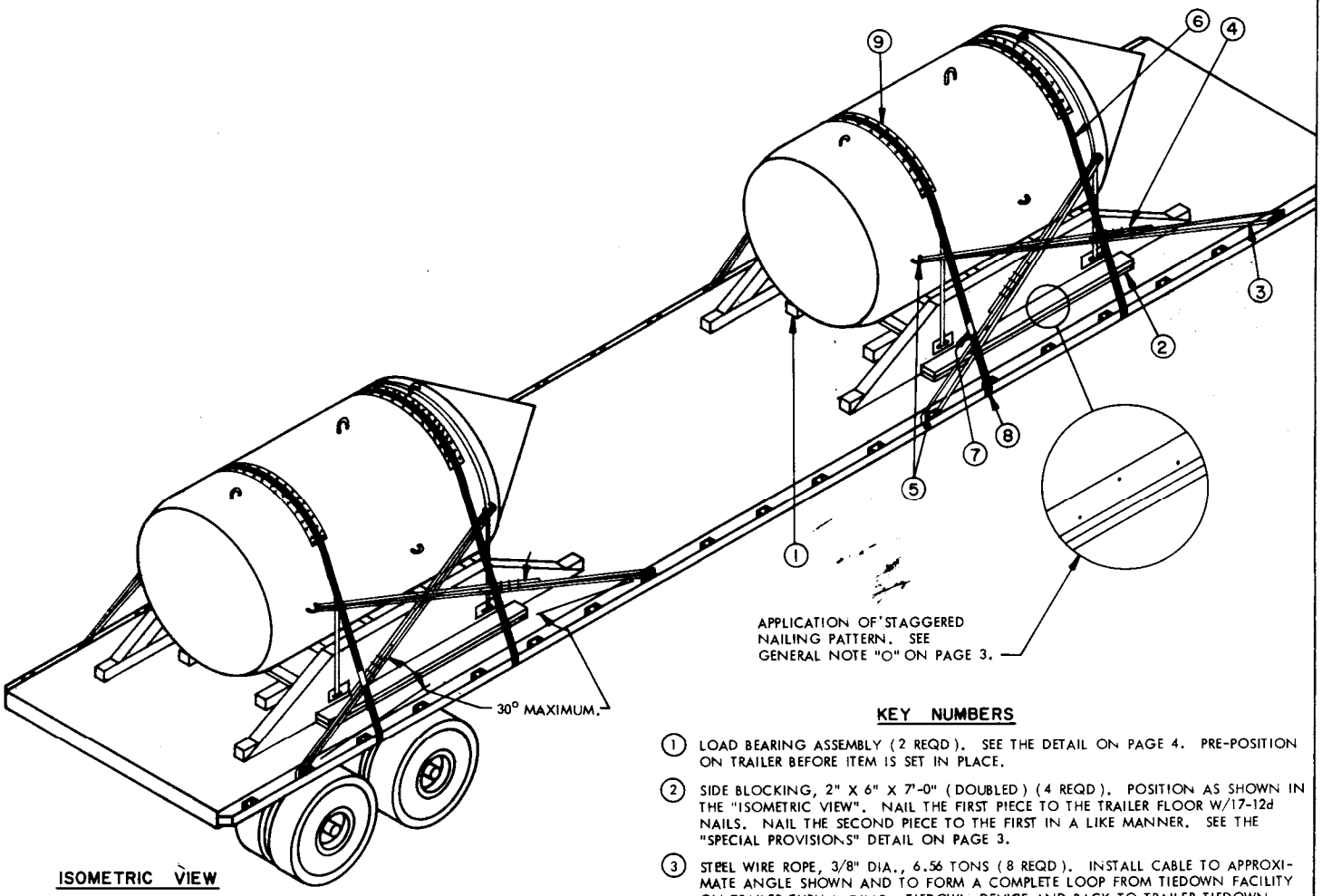
U. S. ARMY MATERIEL COMMAND

OCTOBER 1969

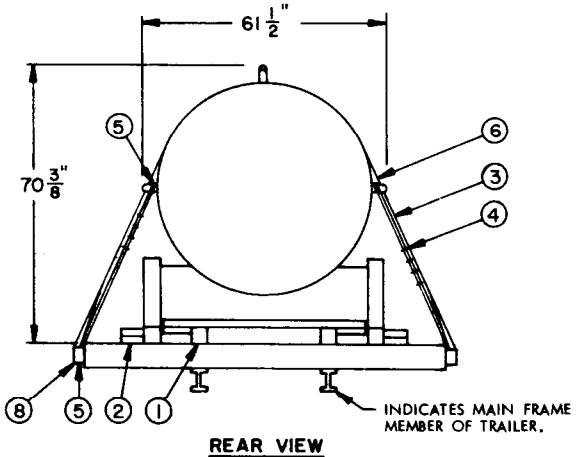
CLASS	DIVISION	DRAWING	FILE
19	48	8500	11B1

DO NOT SCALE

PROJECT AF 1-69



ISOMETRIC VIEW



REAR VIEW

KEY NUMBERS

(1) LOAD BEARING ASSEMBLY (2 REQD). SEE THE DETAIL ON PAGE 4. PRE-POSITION ON TRAILER BEFORE ITEM IS SET IN PLACE.

(2) SIDE BLOCKING, 2" X 6" X 7'-0" (DOUBLED) (4 REQD). POSITION AS SHOWN IN THE "ISOMETRIC VIEW". NAIL THE FIRST PIECE TO THE TRAILER FLOOR W/17-12d NAILS. NAIL THE SECOND PIECE TO THE FIRST IN A LIKE MANNER. SEE THE "SPECIAL PROVISIONS" DETAIL ON PAGE 3.

(3) STEEL WIRE ROPE, 3/8" DIA., 6.56 TONS (8 REQD). INSTALL CABLE TO APPROXIMATE ANGLE SHOWN AND TO FORM A COMPLETE LOOP FROM TIEDOWN FACILITY ON TRAILER THRU LADING TIEDOWN DEVICE AND BACK TO TRAILER TIEDOWN FACILITY. SEE GENERAL NOTE "P" ON PAGE 3.

(4) CLIP, WIRE ROPE, SIZE 3/8" (32 REQD). USE FOUR (4) PER CABLE. SEE "DETAIL C" AND "NOTE ⊕" ON PAGE 4 FOR INSTALLATION GUIDANCE.

(5) THIMBLE, STANDARD, SIZE 1/2" (16 REQD). USE ONE (1) PER TRAILER TIEDOWN FACILITY AND ONE (1) PER LADING TIEDOWN DEVICE. SECURE TO WIRE ROPE MARKED (3) WITH NO. 14 GAGE BLACK ANNEALED WIRE AT EACH LOCATION. USE FOUR (4) WRAPS OF WIRE AROUND CABLE AND THIMBLE AND TWIST WIRE ENDS.

(6) TIEDOWN STRAP, 2" X .050" X 23'-0" STEEL STRAPPING (4 REQD). INSTALL EACH STRAP FROM ONE PIECE OF STRAPPING; ANCHOR IT ON ONE SIDE OF THE TRAILER, RUN IT OVER THE LOAD, PASS IT THROUGH AN ANCHOR DEVICE ON THE OPPOSITE SIDE OF THE TRAILER, AND BRING IT BACK UP ABOVE THE ANCHOR DEVICE WHERE IT CAN BE TENSIONED AND SEALED. SEE GENERAL NOTE "K" ON PAGE 3 FOR SPECIAL GUIDANCE IF EACH STRAP IS INSTALLED FROM TWO (2) PIECES OF STRAPPING.

(7) SEAL FOR 2" STRAPPING (16 REQD, 4 PER STRAP). EXCEPT FOR THE SEALS USED TO SECURE PIECES MARKED (8), DOUBLE CRIMP EACH SEAL.

(8) PAD, 2" X .050" X 18" LONG STEEL STRAPPING (8 REQD). POSITION UNDER AND SEAL TO A PIECE MARKED (6). SEE "DETAIL A" ON PAGE 4. ALT: STAKE POCKET PROTECTOR (16 REQD). USE TWO (2) UNDER EACH ANCHOR POINT WITH PIECES MARKED (6). SEE "DETAIL B" ON PAGE 4.

(9) ANTI-CHAFING, NEUTRAL BARRIER MATERIAL (AS REQD). PLACE UNDER STRAPPING AT ALL POINTS OF CONTACT WITH LADING. ANTI-CHAFING MATERIAL WILL ALSO BE APPLIED AT ALL POINTS OF CONTACT BETWEEN PIECES MARKED (3) AND (6). ANTI-CHAFING MATERIAL WILL BE SECURED SO THAT IT WILL NOT BECOME DISPLACED DURING SHIPMENT.

GENERAL NOTES

A. THIS DOCUMENT HAS BEEN PREPARED AND ISSUED IN ACCORDANCE WITH AMCR 740-13, AND AUGMENTS TM 743-200-1 (CHAPTER 5).

B. THE LOAD AS SHOWN IS BASED ON A 40'-0" LONG BY 8'-0" WIDE FLAT BED TRAILER WHICH HAS A WOOD OR A WOOD AND METAL FLOOR. TRAILERS HAVING ALL METAL FLOORS WILL NOT BE USED; HOWEVER, OTHER SIZE TRAILERS CAN BE USED. ADDITIONALLY, THE LOAD AS SHOWN MAY BE SHIPPED ON A DROP-FRAME TRAILER, PROVIDING THE FRONT DECK OF THE TRAILER IS AT LEAST 10'-0" LONG.

C. LADING DATA (BOMB WITH BOLSTER):

DIMENSIONS -------- 12'-10" LONG BY 61-1/2" WIDE BY 70-3/8" HIGH.
GROSS WEIGHT ----- 15,650 POUNDS (APPROX).

D. GROSS WEIGHT AND AXLE DISTRIBUTION OF WEIGHT WILL BE THE RESPONSIBILITY OF THE CARRIER. THE CARRIER WILL ADVISE THE SHIPPER OF THE APPLICABLE LOADING REQUIREMENTS AND THE SHIPPER WILL LOAD ACCORDINGLY.

E. IF DESIRED AND "WEIGHT LAWS" WILL NOT BE VIOLATED, THREE (3) ITEMS (47,500 POUND GROSS LOAD) CAN BE SHIPPED ON A 40'-0" LONG FLAT BED TRAILER.

F. A SHIPMENT WILL BE POSITIONED ON THE TRAILER CONSISTENT WITH STATE WEIGHT LAWS. THE NUMBER OF ITEMS MAY BE ADJUSTED TO FIT THE SIZE OF THE TRAILER TO BE LOADED OR THE QUANTITY TO BE SHIPPED. HOWEVER, THE APPROVED METHODS SHOWN HEREIN MUST BE FOLLOWED AS CLOSELY AS POSSIBLE FOR BLOCKING, BRACING, AND STAYING OF THE DESIGNATED ITEM.

G. THE DEPICTED PROCEDURES ARE ALSO APPLICABLE TO THE SHIPMENT OF EMPTY BOMBS. FOR THE SHIPMENT OF EMPTY BOMBS, PIECES MARKED ⑥, ⑦, ⑧ AND ⑨ MAY BE OMITTED.

H. OTHER TYPES OF LADING ITEMS MAY BE LOADED ON A TRAILER WHICH IS PARTIALLY LOADED WITH THE DESIGNATED ITEM, PROVIDING THE TOTAL LOAD IS COMPATIBLE, EXISTING DIRECTIVES ARE NOT VIOLATED, AND THE OTHER LADING ITEMS ARE BLOCKED AND BRACED TO EQUAL THE BLOCKING AND BRACING CRITERIA SPECIFIED HEREIN.

J. PLACARD BOARDS, OF PROPER SIZE , MUST BE PROVIDED FOR BOTH SIDES AND BOTH ENDS OF A LOAD AS REQUIRED BY LAW AND/OR REGULATION. CAUTION: PLACARD BOARDS AND BOARD MOUNTING BRACKETS MUST NOT BE NAILED TO THE LADING. LIKEWISE, IF LOAD COVERING TARPAULINS ARE USED, THEY MUST NOT BE NAILED TO THE LADING.

K. WHEN STEEL STRAPPING IS SEALED AT AN END-OVER-END LAP JOINT, A MINIMUM OF TWO (2) SEALS, BUTTED TOGETHER, WITH TWO (2) PAIR OF CRIMPS PER SEAL MUST BE USED TO SEAL THE JOINT.

L. NOTICE: LADING IS NOT TO BE SECURED BY CHAINS AND/OR LOAD BINDERS IN LIEU OF THE SPECIFIED DUNNAGE.

M. IF THE STAKE POCKETS AND/OR ANCHOR DEVICES ON A TRAILER ARE NOT PROPERLY LOCATED TO PERMIT SECURING OF THE TWO INCH (2") STEEL STRAPPING AT OR NEAR THE LOCATIONS SHOWN, OR IF THE POCKETS AND/OR ANCHOR DEVICES ARE NOT EQUAL TO OR GREATER THAN THE STRENGTH OF THE 2" TIEDOWN STRAPS, STRAPPING MAY BE APPLIED TO FORM A COMPLETE LOOP WHICH ENCOMPASSES BOTH THE LADING AND THE TRAILER FRAME AND/OR BED. CAUTION: WHEN INSTALLING A TIEDOWN STRAP WHICH ENCOMPASSES BOTH LADING AND TRAILER FRAME AND/OR BED, AVOID TRAILER WHEELS, FIFTH WHEEL PLATE, CONTROLS, AND OTHER APPURTENANCES; AND USE EDGE PROTECTORS OR PADS ON ALL SHARP EDGES AS CUSHIONING FOR THE STRAPPING. ADDITIONALLY, PROVISIONS OF GENERAL NOTE "K" ABOVE WILL ALSO APPLY.

N. DUNNAGE LUMBER SPECIFIED THROUGHOUT THIS PROCEDURAL DRAWING IS OF NOMINAL SIZE. FOR EXAMPLE, 2" X 6" MATERIAL IS ACTUALLY 1-5/8" THICK BY 5-5/8" WIDE.

O. NOTICE: A STAGGERED NAILING PATTERN WILL BE USED WHEREVER POSSIBLE WHEN NAILS ARE DRIVEN INTO JOINTS OF DUNNAGE ASSEMBLIES. ALSO, A STAGGERED NAILING PATTERN WILL BE USED WHEN DUNNAGE IS NAILED TO THE FLOOR OF THE TRANSPORTING VEHICLE, OR WHEN LAMINATING DUNNAGE. ADDITIONALLY, THE NAILING PATTERN FOR AN UPPER PIECE OF LAMINATED DUNNAGE WILL BE ADJUSTED AS REQUIRED SO THAT A NAIL FOR THAT PIECE WILL NOT BE DRIVEN THROUGH ONTO OR RIGHT BESIDE A NAIL IN A LOWER PIECE.

P. A LARGER SIZE CABLE MAY BE USED IF IT IS AVAILABLE WHEN THE SPECIFIED 3/8" CABLE IS NOT IN STOCK. IF A LARGER SIZE CABLE IS USED, THE THIMBLES AND CLIPS USED MUST BE SIZED TO THE CABLE. WHEN INSTALLING 1/2" DIAMETER CABLE, THE NUTS ON 1/2" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 60 TO 75 FOOT POUNDS. WHEN INSTALLING 5/8" DIAMETER CABLE, THE NUTS ON 5/8" CABLE CLIPS WILL BE TIGHTENED TO A TORQUE OF 75 TO 90 FOOT POUNDS.

MATERIAL SPECIFICATIONS

LUMBER ---------- : SEE TM 743-200-1, DUNNAGE LUMBER; FED SPEC MM-L-751.

NAILS ----------: COMMON CEMENT COATED OR CHEMICALLY ETCHED, FED SPEC FF-N-105.
ALT: ANNULAR-RING TYPE NAIL OF SAME SIZE.

ROPE ----------: STEEL WIRE, PLAIN, PREFORMED, REGULAR LAY, 6.56 TONS, 6 X 19, FLEXIBLE IWRC, MACWHYTE WIRE ROPE CO (OR EQUAL); FED SPEC RR-W-410.

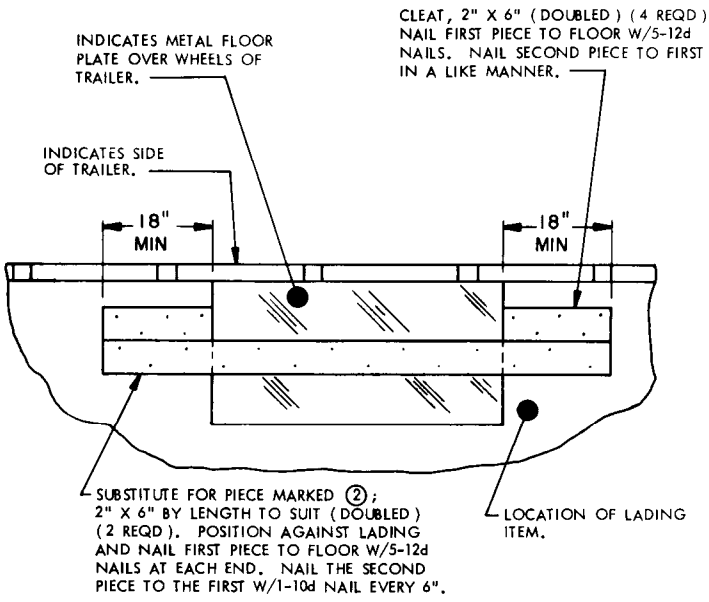
CLIPS ---------- : "U" BOLT, CROSBY, HEAVY DUTY (OR EQUAL).

STRAPPING, STEEL ------: TYPE I OR IV, CLASS A OR B OR C, FED SPEC QQ-S-781.

ANTI-CHAFING MATERIAL: NEUTRAL BARRIER MATERIAL, MIL-B-121 (OR EQUAL).

STRAP SEAL; STAKE POCKET PROTECTOR ---- : COMMERCIAL GRADE.

WIRE ----------: ANNEALED, BLACK, FED SPEC QQ-W-461.



SPECIAL PROVISIONS

THE PARTIAL PLAN VIEW ABOVE SPECIFIES SIDE BLOCKING TO BE USED FOR THE LADING AT REAR OF TRAILERS WHICH ARE EQUIPPED WITH METAL FLOOR PLATES OVER THE WHEELS.

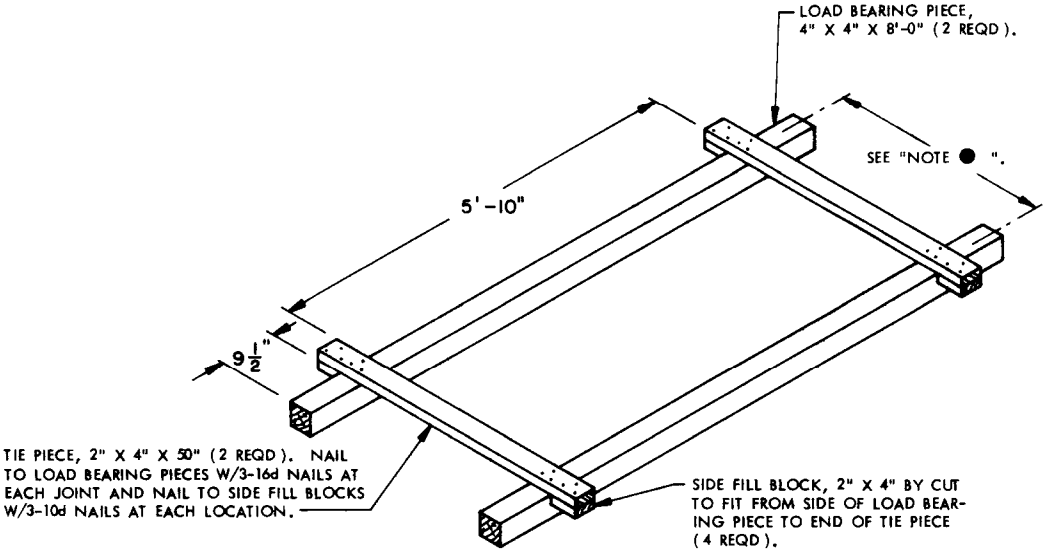
BILL OF MATERIAL

LUMBER	LINEAR FEET	BOARD FEET
2" X 4"	24	16
2" X 6"	56	56
4" X 4"	32	43
NAILS	**NO. REQD**	**POUNDS**
10d (3")	24	1/2
12d (3-1/4")	136	2-1/2
16d (3-1/2")	24	3/4

ROPE, STEEL WIRE, 3/8" DIA	184'	REQD	46 LBS
CLIP, 3/8"	32	REQD	10 LBS
THIMBLE, STANDARD, 1/2"	16	REQD	4 LBS
STEEL STRAPPING, 2" X .050"	104'	REQD	35 LBS
SEAL FOR 2" STRAPPING	16	REQD	4 LBS
WIRE, NO. 14 GAGE	24'	REQD	NIL
ANTI-CHAFING MATERIAL	AS	REQD	NIL

LOAD AS SHOWN

ITEM	QUANTITY	WEIGHT (APPROX)
BOMB W/BOLSTER	2	31,300 LBS
DUNNAGE		391 LBS
TOTAL WEIGHT		31,691 LBS

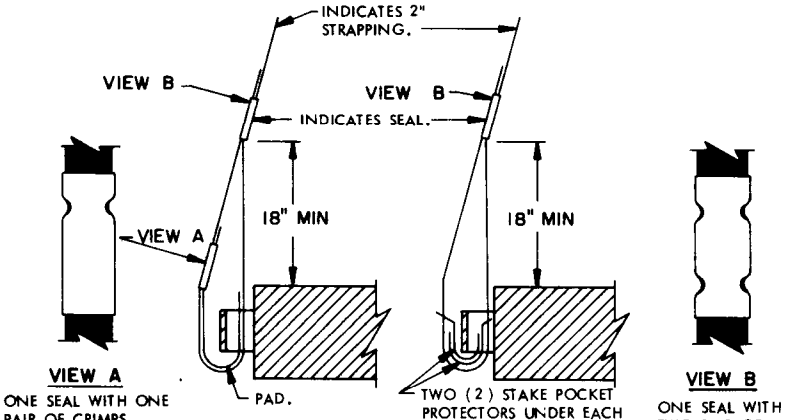


LOAD BEARING ASSEMBLY

THIS ASSEMBLY IS REQUIRED TO DISTRIBUTE THE WEIGHT OF THE ITEM OVER A GREATER SURFACE OF THE TRAILER PLATFORM.

NOTE ● :

THE LOAD BEARING PIECES OF THE ASSEMBLY WILL BE ALIGNED WITH THE MAIN FRAME MEMBERS OF THE TRAILER, AS SHOWN IN THE "REAR VIEW" ON PAGE 2. IF THE TRAILER OFFERED FOR THE SHIPMENT HAS OUTSIDE MAIN FRAME MEMBERS, THE LOAD BEARING PIECES OF THE ASSEMBLY SHALL BE SPACED 34" CENTER TO CENTER.

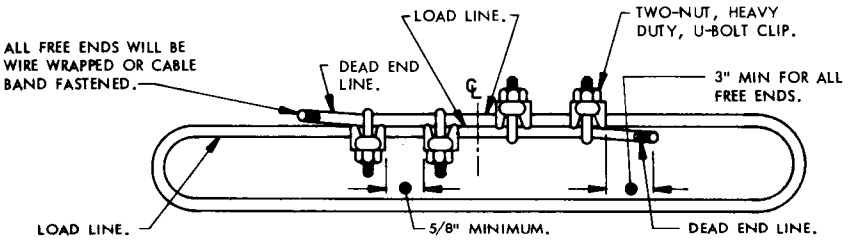


VIEW A
ONE SEAL WITH ONE PAIR OF CRIMPS.

VIEW B
ONE SEAL WITH TWO PAIR OF CRIMPS.

DETAIL A
METHOD OF INSTALLING 2" STRAPPING AND PAD AT ANCHORING FACILITY.

DETAIL B
METHOD OF INSTALLING 2" STRAPPING AND STAKE POCKET PROTECTORS (ALT PAD).



DETAIL C

THE DETAIL ABOVE SPECIFIES METHOD OF FORMING A LAP JOINT WITH FOUR CLIPS WITHIN A WIRE ROPE TIE-DOWN LOOP. SEE "NOTE ⊕ " AT RIGHT.

NOTE ⊕ :

WIRE ROPE CAN BE TENSIONED BY EMPLOYING TWO (2) CABLE "GRIPPERS" AND AN APPLICABLY SIZED "COME-A-LONG" TYPE MECHANICAL HOIST. WIRE ROPE CLIPS MUST BE TIGHTENED TO A TORQUE OF 35-40 FOOT POUNDS. THIS CAN BE ACCOMPLISHED BY UTILIZING A PROPER SIZED TORQUE WRENCH. AFTER THE NUTS HAVE BEEN INITIALLY TIGHTENED TO THE DESIRED RANGE, THE "U" SIDE OF EACH CLIP MUST BE STRUCK SEVERAL TIMES WITH A HAMMER TO INSURE PROPER SEATING INTO THE DEAD END LINE. FINAL TORQUE WILL BE ACQUIRED BY REPEATEDLY AND ALTERNATELY TIGHTENING EACH CLIP NUT. ALTERNATE METHOD OF TIGHTENING CLIP NUTS WHEN A TORQUE WRENCH IS NOT AVAILABLE: A WRENCH WITH A TEN INCH (10") MINIMUM LENGTH HANDLE MAY BE USED IN LIEU OF A TORQUE WRENCH. INITIAL TIGHTENING WILL BE ACCOMPLISHED BY REPEATEDLY AND ALTERNATELY TIGHTENING EACH NUT ON A CLIP A MINIMUM OF FOUR (4) TIMES. AFTER ALL CLIPS HAVE BEEN TIGHTENED IN THIS MANNER, THE "U" SIDE OF EACH CLIP MUST BE STRUCK SEVERAL TIMES WITH A HAMMER. FINAL TORQUE WILL BE ACQUIRED BY, AGAIN, REPEATEDLY AND ALTERNATELY TIGHTENING EACH CLIP NUT A MINIMUM OF FOUR (4) TIMES.