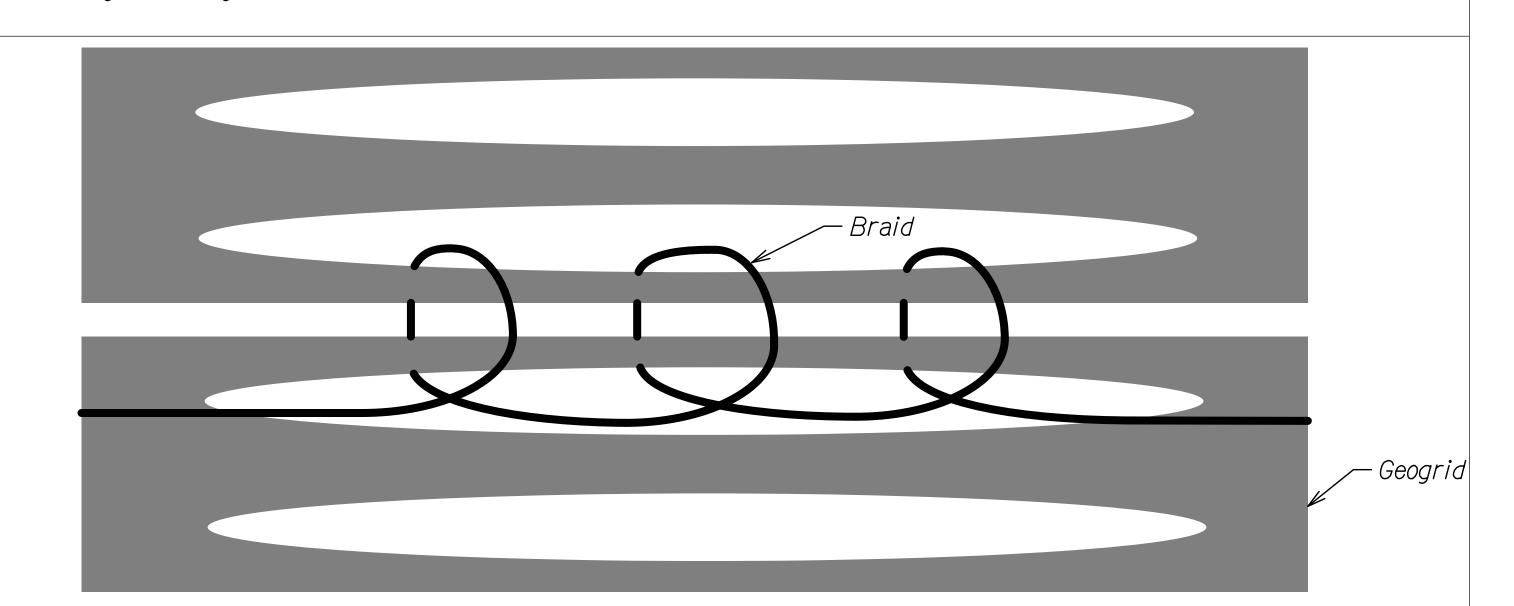


- (A) Indicates Bodkin Connection Using 3/8" Diameter HDPE Bodkin Rod
- (B) Indicates Braided Seam Using 3/16" Diameter High UV HDPE Braid

TYPICAL CONFIGURATION OF FILLED MATTRESS UNITS

Notes

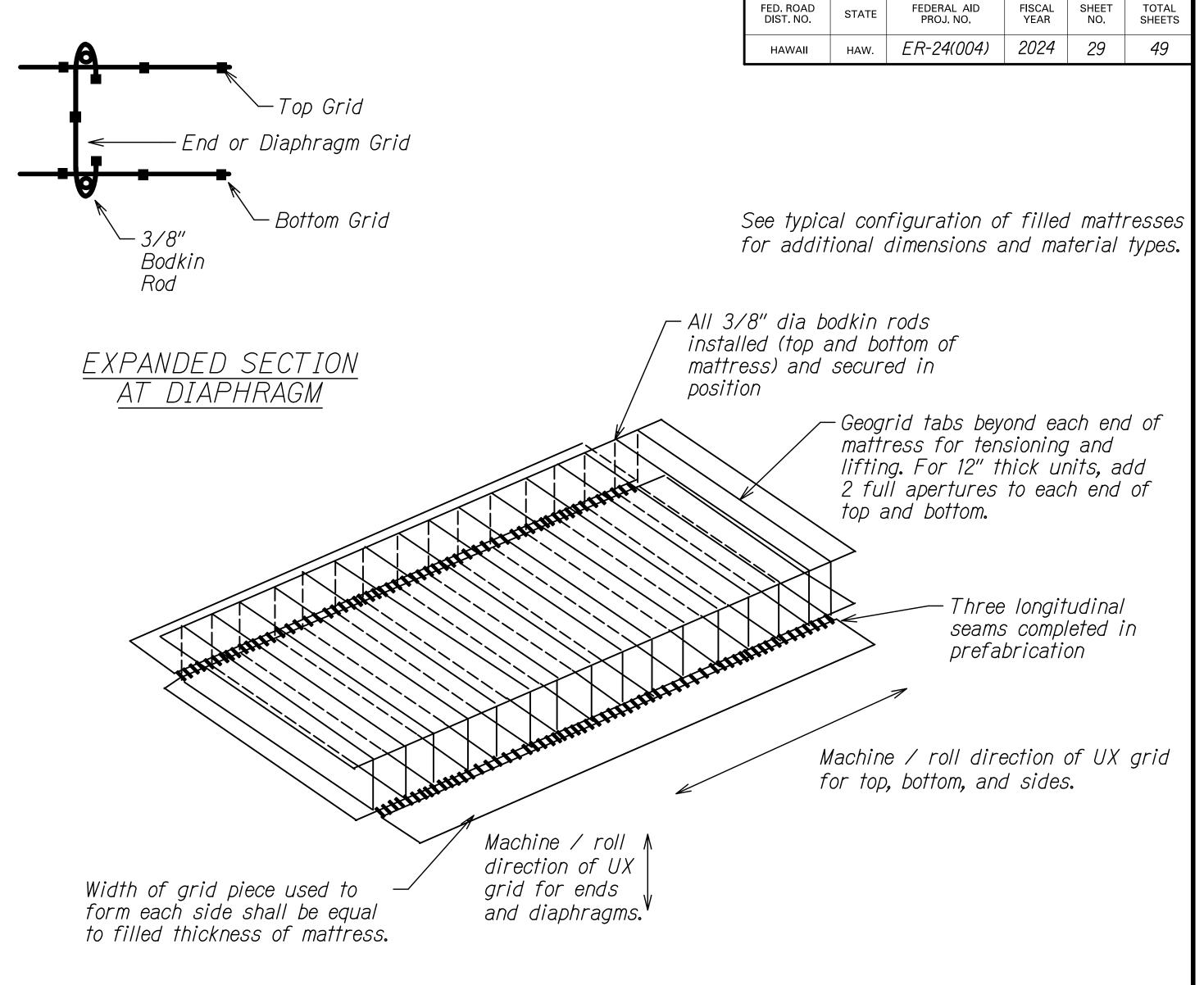
- -Ends, top, bottom, sides, and any extra length used for lifting or anchoring purposes shall be composed of Tensar UXTriton200 Geogrid.
- -Internal diaphragms shall be composed of Tensar UXTriton100 Geogrid.
- -Nominal width of units: 5' (filled), 4.4' (unfilled).
- -Nominal thickness (filled): 12".
- -Plastic cable ties may be used to secure bodkin connectors in position prior to tensioning or filling of mattress units.



TYPICAL LOCK-STITCH BRAIDING CONFIGURATION FOR MATTRESS FABRICATION

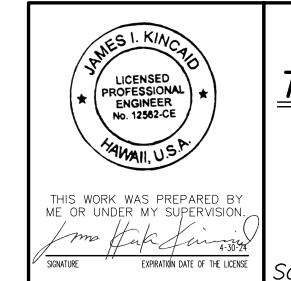
Notes:

- -All cut ends of braid material shall be knotted within 1/2" to 2" of the end to prevent raveling of braid.
- -At all ends of all braided seams the braid shall be securely knotted to the geogrid.
- -At all ends of all pieces of braid material used, the braid shall be knotted to splice it to the next piece of braid, or to secure it to the geogrid. Each braided seam shall be continuous, with securely knotted splices allowed. The braid shall be securely knotted to the geogrid at a spacing not to exceed 3' along any seam.
- -The braid shall be stitched through each pair of apertures along the seam at least once, and the minimum number of stitches per foot along the seam shall be six (6). The spacing of stitches along each seam shall be reasonably uniform.
 -All knots shall be tied in a manner to prevent slipping and cinching.
- -The wraps along the seam shall be sufficiently tight to close the gap between the adjacent pieces of geogrid,



TYPICAL CONFIGURATION OF PREFABRICATED MATTRESSES

Note: Typical spacing of diaphragms is every three aperture lengths (± 19"). A shorter spacing may be used in order to match the required mattress length. Length of end pieces and internal diaphragm pieces shall be 2 grid apertures long for 12" (filled) mattress thickness:



STATE OF HAWAI'I EPARTMENT OF TRANSPORTATION

TRITON MARINE MATTRESS TYPICAL DETAILS

KUHIO HIGHWAY

Emergency Shoreline Mitigation Fed. Aid Project No. ER-24(004)

Scale: Not to Scale

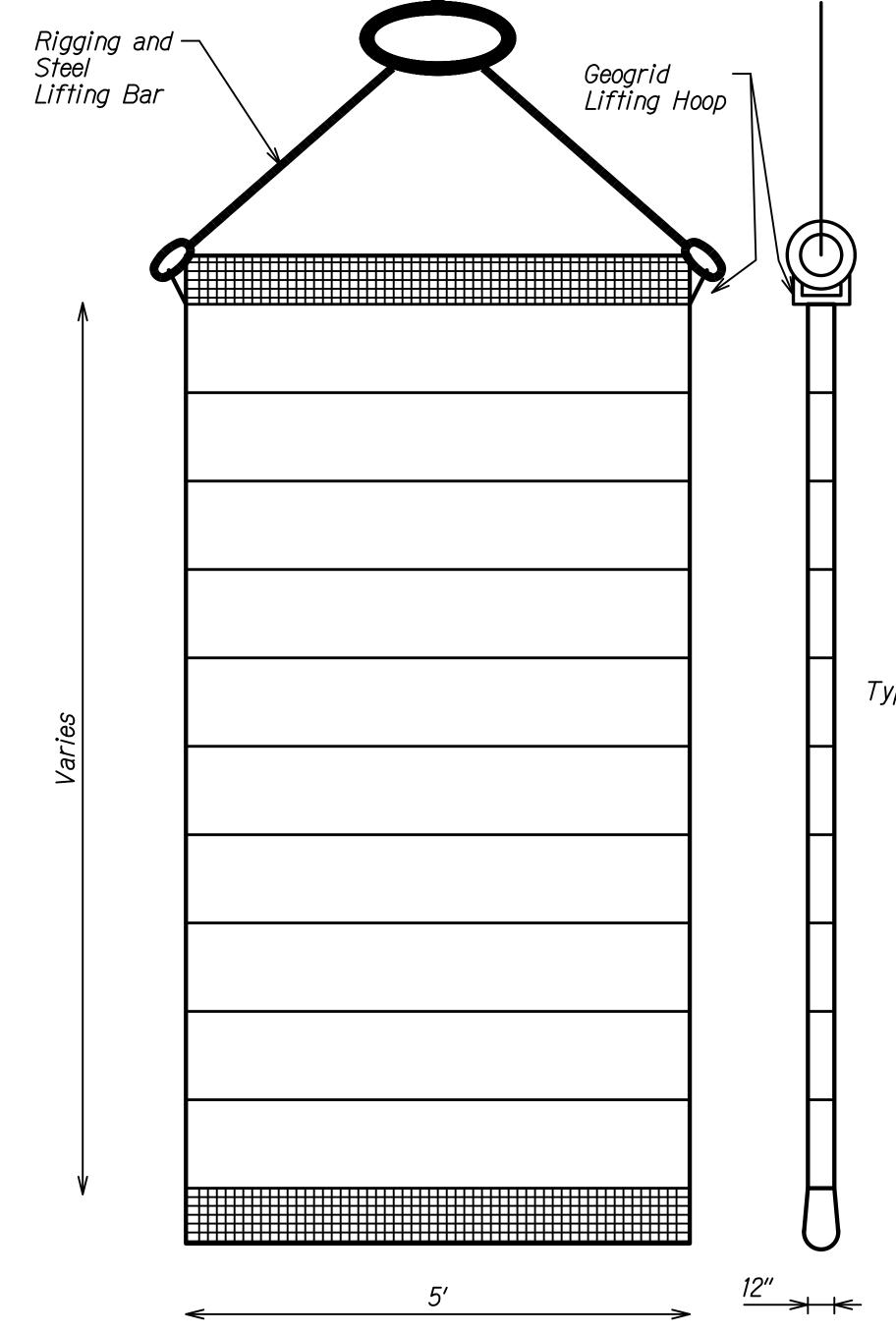
Date: Dec. 2023

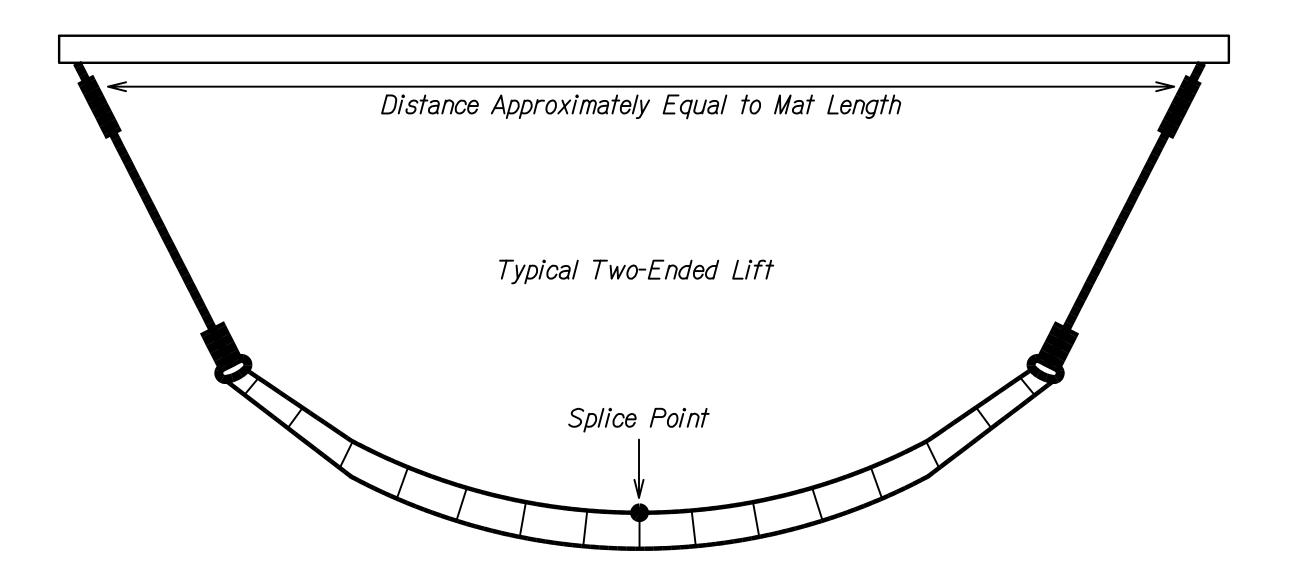
SHEET No. S-11 OF 20 SHEETS

311 01 20 3



FED. ROAD	STATE	FEDERAL AID	FISCAL	SHEET	TOTAL
DIST. NO.		PROJ. NO.	YEAR	NO.	SHEETS
HAWAII	HAW.	ER-24(004)	2024	30	49

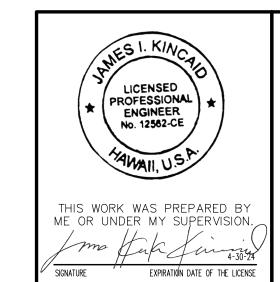




Typical One-Ended Lift

General Notes:

- -Lifting bar, rigging and handling must be suitable to distribute the lifting loads uniformly to the geogrid. Lifting apparatus to be proposed by contractor. Handling and lifting of grid materials and mattresses shall be avoided when the ambient temperature is lower than 5 degrees below zero, C. -Use a bodkin connection to form the lifting hoops.
- -Use cable ties (or similar) to prevent the connector piece from sliding out when tension is not applied.
- -The hoop may be configured in 2 ways:
 - -On each end of the unit, connect the pair of lifting tabs directly to each other; or -On each end of the unit, use a separate piece of the same type of grid to form a longer hoop. Connect each end of the separate piece of grid to one of the lifting tabs. (This type of hoop may be more advantageous for some conditions.)
- -See the project specifications regarding stonefill materials.
- -Filling shall be accomplished such that the average thickness of each mattress does not exceed 12".
- -Marine Mattresses shall be lifted in accordance with the manufacturer's recommendations.



STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

TRITON MARINE MATTRESS

TYPICAL LIFT DETAILS

<u>KUHIO HIGHWAY</u>

Emergency Shoreline Mitigation

Fed. Aid Project No. ER-24(004)

Scale: Not to Scale

Date: Dec. 2023

SHEET No. S-12 OF 20 SHEETS