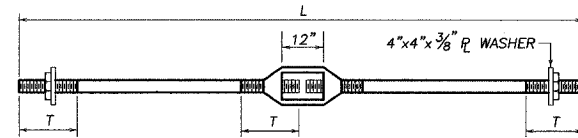


**BILL OF HARDWARE**

ITEM	NO.	SIZE
ROD R <sub>1</sub>	2	1 1/2" $\phi$ x 46'-9"
ROD R <sub>2</sub>	2	1 1/4" $\phi$ x 54'-2"
ROD R <sub>3</sub>	2	1" $\phi$ x 61'-9"
BEVELLED WASHERS	12	4" x 4" x *
WASHERS FOR RODS	12	4" x 4" x 3/8"
NUTS FOR RODS	4, 4, 4	1 1/2", 1 1/4", 1" $\phi$
TURNBUCKLES	2, 2, 2	1 1/2", 1 1/4", 1" $\phi$



**ROD DETAILS & DIMENSIONS**

RODS	SIZE	NO.	L	T	TURN-BUCKLE	EACH ROD		NUT
						PLATE WASHERS	NO.	
R <sub>1</sub>	1 1/2" $\phi$	2	46'-9"	12"	1 1/2" $\phi$	4" x 4" x *	2	2
R <sub>2</sub>	1 1/4" $\phi$	2	54'-2"	12"	1 1/4" $\phi$	4" x 4" x *	2	2
R <sub>3</sub>	1" $\phi$	2	61'-9"	12"	1" $\phi$	4" x 4" x *	2	2

\* SEE BEVELLED WASHER DETAIL

**SUBSTRUCTURE NOTES**

AFTER THE ABUTMENT PILES ARE IN PLACE, THE CONTRACTOR SHALL START STEEL SHEET PILE DRIVING OPERATIONS WITH A BENT CORNER SHEET AT THE LOCATION SHOWN, OR BY MAKING AN ACCURATE LAYOUT OF THE WALL BEFORE STARTING, SO THAT ALL SHEETS, WALERS AND RODS WILL FIT AS PLANNED.

AFTER THE DECK BEAMS HAVE BEEN SET, THE CONTRACTOR SHALL WELD A PIECE OF STEEL SHEETING TO THE CORNER SHEET, ABOVE THE ABUTMENT, TO PROVIDE A SOIL STOP BETWEEN THE CORNER SHEET AND THE EDGE OF THE OUTSIDE DECK BEAM. COST SHALL BE INCIDENTAL TO STEEL SHEET PILING.

HARDWARE ITEMS SHALL BE HOT-DIPPED GALVANIZED AND ARE INCLUDED FOR PAYMENT PER POUND OF HARDWARE. ALL OTHER MATERIAL AND LABOR REQUIRED FOR THE INSTALLATION OF HARDWARE SHALL BE INCIDENTAL TO THE CONTRACT.

AFTER THE WING SHEET PILING IS IN PLACE, HOLES SHALL BE DRILLED (NOT BURNED) IN THE WING SHEETING AND WALERS FOR PASSAGE OF TIERODS.

WALERS & CHANNEL SECTIONS ARE ALL INCLUDED FOR PAYMENT PER POUND OF FURNISHING AND ERECTING STRUCTURAL STEEL.

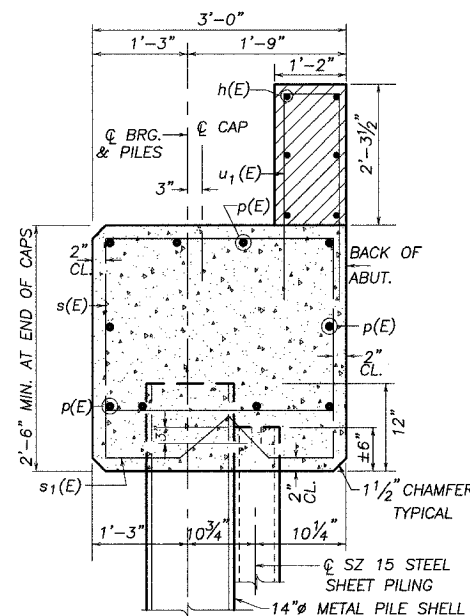
ALL RODS, NUTS, WASHERS, AND WALERS SHALL BE IN PLACE AND PROPERLY SECURED BEFORE BACKFILLING SHALL BEGIN.

HATCHED AREAS TO BE POURED AFTER DECK BEAMS ARE SET AND ANCHORED.

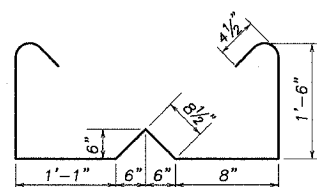
STEEL SHEET PILING SHALL BE NEW SZ15 OR APPROVED EQUAL WITH AN EFFECTIVE SECTION MODULUS EQUAL OR GREATER THAN 10.4 IN<sup>3</sup>/FT. SEE SPECIAL PROVISION FOR PERMANENT STEEL SHEET PILING.

ALL EXPOSED WALERS, CHANNELS, STEEL PILING, AND HARDWARE SHALL BE PAINTED ACCORDING TO SECTION 506 OF THE STANDARD SPECIFICATIONS FOR CLEANING AND PAINTING NEW METAL STRUCTURES. THE INTERMEDIATE COAT MAY BE APPLIED IN THE SHOP. THE COLOR OF THE FINAL FINISH COAT SHALL BE REDDISH BROWN OR AS APPROVED BY THE ENGINEER.

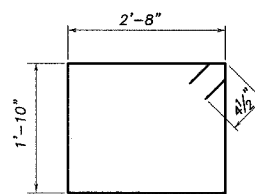
THE BACK FACE OF ALL SHEET PILING SHALL BE LINED WITH AN APPROVED ABOVE GRADE FILTER FABRIC PRIOR TO BACKFILLING. COST OF THIS WORK INCLUDING ALL LABOR, MATERIALS, AND EQUIPMENT SHALL BE CONSIDERED INCIDENTAL TO STEEL SHEET PILING.



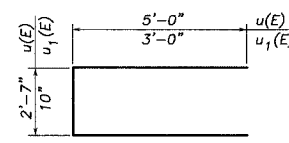
**SEC. THRU ABUT.**  
(AT RIGHT ANGLES)



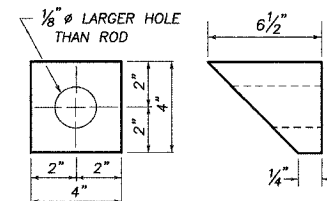
**BAR s<sub>1</sub>(E)**



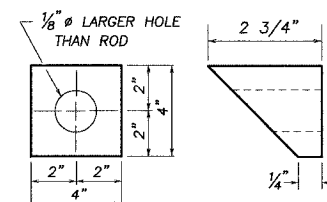
**BAR s(E)**



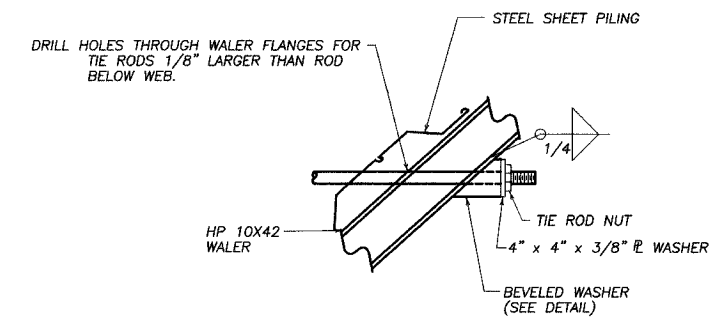
**BAR u(E) & u<sub>1</sub>(E)**



**BEVELLED WASHER DETAIL**  
(LONG WING)  
(6 REQ'D)



**BEVELLED WASHER DETAIL**  
(SHORT WING)  
(6 REQ'D)



**TYPICAL TIE ROD CONNECTION DETAIL**

**SUBSTRUCTURE - DETAILS**  
SECTION 01-00278-00-BR  
COUNTY HIGHWAY 16 (F.A.S. 186)  
LEE COUNTY  
S.N. 052-3332