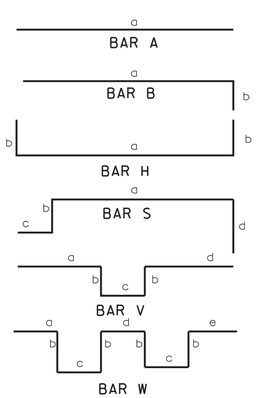
- REV. 7-17-07: ADDED GENERAL NOTE 6.
- REV. 6-1-09: ADDED GENERAL NOTE 7.
- REV. 7-19-10: DELETED GENERAL NOTE 7.
- REV. 4-15-00: MODIFIED BENDING DIMENSIONS IN BILL OF STEEL TABLE.
- REV. 5-27-01: CHANGED DESCRIPTION FOR ITEM NO. 611-07.03.
- REV. 3-20-86: CHANGED FEDERAL PAINT SPECIFICATION.
- REV. 5-27-99: CHANGED PAINT SPECIFICATION TO TT-E-489J.

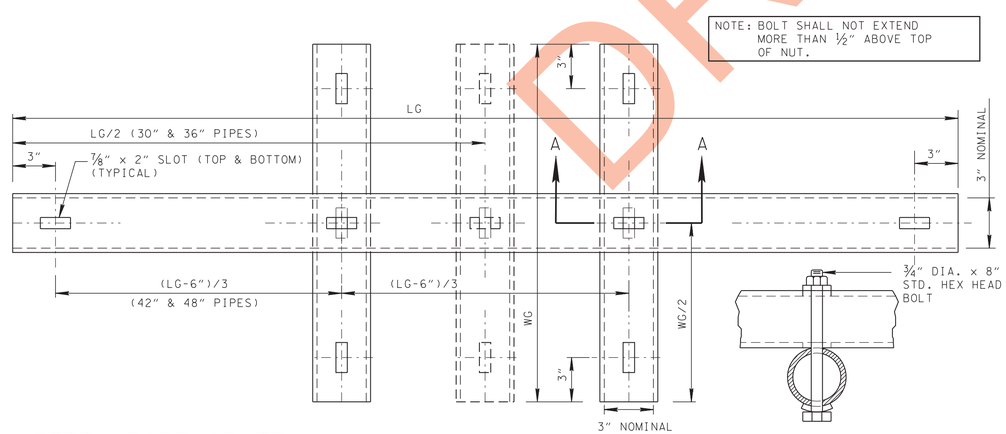
## BILL OF STEEL

| CODE NO. | LOCATION | BAR SIZE | 18" PIPE BENDING DIMENSIONS a | b | c | d | e | NO. REQ'D. | LENGTH | 24" PIPE BENDING DIMENSIONS a | b | c | d | e | NO. REQ'D. | LENGTH | 30" PIPE BENDING DIMENSIONS a | b | c | d | e | NO. REQ'D. | LENGTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A400 | TOEWALL | 4 | 2'-7" | — | — | — | — | 3 | 2'-7" | 3'-2" | — | — | — | — | 3 | 3'-2" | 3'-9" | — | — | — | — | 3 | 3'-9" |
| A401 | WINGWALLS | 4 | 11'-8" | — | — | — | — | 2 | 11'-8" | 15'-2" | — | — | — | — | 2 | 15'-2" | 19'-2" | — | — | — | — | 2 | 19'-2" |
| A402 | WINGWALLS | 4 | — | — | — | — | — | — | — | 9'-2" | — | — | — | — | 2 | 9'-2" | 13'-2" | — | — | — | — | 2 | 13'-2" |
| A403 | WINGWALLS | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 7'-2" | — | — | — | — | 2 | 7'-2" |
| A404 | WINGWALLS | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| A405 | WINGWALLS | 4 | 5'-8" | — | — | — | — | 2 | 5'-8" | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| A500 | WINGWALLS | 5 | 11'-10" | — | — | — | — | 4 | 11'-10" | 15'-5" | — | — | — | — | 4 | 15'-5" | — | — | — | — | — | — | — |
| A700 | HEADWALL | 7 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| A701 | HEADWALL | 7 | 1'-5" | — | — | — | — | 2 | 1'-5" | 1'-10" | — | — | — | — | 2 | 1'-10" | 2'-2" | — | — | — | — | 2 | 2'-2" |
| A702 | HEADWALL | 7 | 1'-4" | — | — | — | — | 2 | 1'-4" | 1'-9" | — | — | — | — | 2 | 1'-9" | 2'-2" | — | — | — | — | 2 | 2'-2" |
| A703 | HEADWALL | 7 | 2'-7" | — | — | — | — | 2 | 2'-7" | 3'-2" | — | — | — | — | 2 | 3'-2" | — | — | — | — | — | — | — |
| B400 | BOTTOM SLAB & WINGWALL | 4 | 1'-11" | 1'-2" | — | — | — | 2 | 3'-1" | 2'-6" | 1'-0" | — | — | — | 2 | 3'-6" | 3'-2" | 1'-3" | — | — | — | 2 | 4'-5" |
| B401 | BOTTOM SLAB & WINGWALL | 4 | 1'-3" | 1'-2" | — | — | — | 2 | 2'-5" | 1'-10" | 1'-0" | — | — | — | 2 | 2'-10" | 2'-6" | 1'-3" | — | — | — | 2 | 3'-9" |
| B402 | BOTTOM SLAB & WINGWALL | 4 | 0'-7" | 1'-2" | — | — | — | 2 | 1'-9" | 1'-2" | 1'-0" | — | — | — | 2 | 2'-2" | 1'-10" | 1'-3" | — | — | — | 2 | 3'-1" |
| B403 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | 0'-6" | 1'-0" | — | — | — | 2 | 1'-6" | 1'-2" | 1'-3" | — | — | — | 2 | 2'-5" |
| B404 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0'-6" | 1'-3" | — | — | — | 2 | 1'-9" |
| B405 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| B406 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| B407 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| B408 | HEADWALL & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| B409 | HEADWALL & WINGWALL | 4 | — | — | — | — | — | — | — | 3'-2" | 0'-9" | — | — | — | 2 | 3'-11" | 1'-2" | 0'-10" | — | — | — | 2 | 2'-0" |
| H400 | BOTTOM SLAB & HEADWALL | 4 | 2'-7" | 2'-10" | — | — | — | 1 | 8'-3" | 3'-2" | 3'-5" | — | — | — | 1 | 10'-0" | 3'-9" | 4'-1" | — | — | — | 1 | 11'-11" |
| H401 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 2'-9" | — | — | — | 1 | 8'-1" | 3'-2" | 3'-4" | — | — | — | 1 | 9'-10" | 3'-9" | 4'-0" | — | — | — | 1 | 11'-9" |
| H402 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 2'-3" | — | — | — | 1 | 7'-1" | 3'-2" | 2'-10" | — | — | — | 1 | 8'-10" | 3'-9" | 3'-6" | — | — | — | 1 | 10'-9" |
| H403 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 2'-1" | — | — | — | 1 | 6'-9" | 3'-2" | 2'-8" | — | — | — | 1 | 8'-6" | 3'-9" | 3'-4" | — | — | — | 1 | 10'-5" |
| H404 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 1'-11" | — | — | — | 1 | 6'-5" | 3'-2" | 2'-6" | — | — | — | 1 | 8'-2" | 3'-9" | 3'-2" | — | — | — | 1 | 10'-1" |
| H405 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 1'-9" | — | — | — | 1 | 6'-1" | 3'-2" | 2'-4" | — | — | — | 1 | 7'-10" | 3'-9" | 3'-0" | — | — | — | 1 | 9'-9" |
| H406 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 1'-7" | — | — | — | 1 | 5'-9" | 3'-2" | 2'-2" | — | — | — | 1 | 7'-6" | 3'-9" | 2'-10" | — | — | — | 1 | 9'-5" |
| H407 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 1'-5" | — | — | — | 1 | 5'-5" | 3'-2" | 2'-0" | — | — | — | 1 | 7'-2" | 3'-9" | 2'-8" | — | — | — | 1 | 9'-1" |
| H408 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 1'-3" | — | — | — | 1 | 5'-1" | 3'-2" | 1'-10" | — | — | — | 1 | 6'-10" | 3'-9" | 2'-6" | — | — | — | 1 | 8'-9" |
| H409 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 1'-1" | — | — | — | 1 | 4'-9" | 3'-2" | 1'-8" | — | — | — | 1 | 6'-6" | 3'-9" | 2'-4" | — | — | — | 1 | 8'-5" |
| H410 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 0'-11" | — | — | — | 1 | 4'-5" | 3'-2" | 1'-6" | — | — | — | 1 | 6'-2" | 3'-9" | 2'-2" | — | — | — | 1 | 8'-1" |
| H411 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 0'-9" | — | — | — | 1 | 4'-1" | 3'-2" | 1'-4" | — | — | — | 1 | 5'-10" | 3'-9" | 2'-0" | — | — | — | 1 | 7'-9" |
| H412 | BOTTOM SLAB & WINGWALL | 4 | 2'-7" | 0'-7" | — | — | — | 1 | 3'-9" | 3'-2" | 1'-2" | — | — | — | 1 | 5'-6" | 3'-9" | 1'-10" | — | — | — | 1 | 7'-5" |
| H413 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | 3'-2" | 1'-0" | — | — | — | 1 | 5'-2" | 3'-9" | 1'-8" | — | — | — | 1 | 7'-1" |
| H414 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | 3'-2" | 0'-10" | — | — | — | 1 | 4'-10" | 3'-9" | 1'-6" | — | — | — | 1 | 6'-9" |
| H415 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | 3'-2" | 0'-8" | — | — | — | 1 | 4'-6" | 3'-9" | 1'-4" | — | — | — | 1 | 6'-5" |
| H416 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | 3'-2" | 0'-6" | — | — | — | 1 | 4'-2" | 3'-9" | 1'-2" | — | — | — | 1 | 6'-1" |
| H417 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 3'-9" | 1'-0" | — | — | — | 1 | 5'-9" |
| H418 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 3'-9" | 0'-10" | — | — | — | 1 | 5'-5" |
| H419 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 3'-9" | 0'-8" | — | — | — | 1 | 5'-1" |
| H420 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 3'-9" | 0'-6" | — | — | — | 1 | 4'-9" |
| H421 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H422 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H423 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H424 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H425 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H426 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H427 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H428 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H429 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| H430 | BOTTOM SLAB & WINGWALL | 4 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| S400 | BOTTOM SLAB & TOEWALL | 4 | 11'-8" | 0'-4" | 0'-8" | 1'-4" | — | 4 | 14'-0" | 15'-2" | 0'-4" | 0'-8" | 1'-4" | — | 6 | 17'-6" | 19'-2" | 0'-4" | 0'-8" | 1'-4" | — | 6 | 21'-6" |
| V500 | WINGWALL | 5 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 9'-9" | 0'-8" | 0'-8" | 9'-1" | — | 4 | 20'-10" |
| V700 | HEADWALL | 7 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 1'-6" | 0'-4" | 0'-9" | 1'-6" | — | 2 | 4'-5" |
| W500 | WINGWALL | 5 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |

| CODE NO. | 36" PIPE BENDING DIMENSIONS a | b | c | d | e | NO. REQ'D. | LENGTH | 42" PIPE BENDING DIMENSIONS a | b | c | d | e | NO. REQ'D. | LENGTH | 48" PIPE BENDING DIMENSIONS a | b | c | d | e | NO. REQ'D. | LENGTH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A400 | 4'-4" | — | — | — | — | 3 | 4'-4" | 4'-11" | — | — | — | — | 3 | 4'-11" | 5'-6" | — | — | — | — | 3 | 5'-6" |
| A401 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| A402 | 16'-8" | — | — | — | — | 2 | 16'-8" | 19'-8" | — | — | — | — | 2 | 19'-8" | 23'-2" | — | — | — | — | 2 | 23'-2" |
| A403 | 10'-8" | — | — | — | — | 2 | 10'-8" | 13'-8" | — | — | — | — | 2 | 13'-8" | 17'-2" | — | — | — | — | 2 | 17'-2" |
| A404 | — | — | — | — | — | — | — | 7'-8" | — | — | — | — | 2 | 7'-8" | 11'-2" | — | — | — | — | 2 | 11'-2" |
| A405 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| A500 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| A700 | 2'-2" | — | — | — | — | 4 | 2'-2" | 2'-3" | — | — | — | — | 4 | 2'-3" | 2'-6" | — | — | — | — | 4 | 2'-6" |
| A701 | 2'-6" | — | — | — | — | 2 | 2'-6" | 2'-10" | — | — | — | — | 2 | 2'-10" | 3'-1" | — | — | — | — | 2 | 3'-1" |
| A702 | 2'-5" | — | — | — | — | 2 | 2'-5" | 2'-9" | — | — | — | — | 2 | 2'-9" | 3'-0" | — | — | — | — | 2 | 3'-0" |
| A703 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| B400 | 3'-9" | 1'-6" | — | — | — | 2 | 5'-3" | 4'-3" | 1'-10" | — | — | — | 2 | 6'-1" | 4'-10" | 1'-1" | — | — | — | 2 | 5'-11" |
| B401 | 3'-1" | 1'-6" | — | — | — | 2 | 4'-7" | 3'-7" | 1'-10" | — | — | — | 2 | 5'-5" | 4'-2" | 1'-1" | — | — | — | 2 | 5'-3" |
| B402 | 2'-5" | 1'-6" | — | — | — | 2 | 3'-11" | 2'-11" | 1'-10" | — | — | — | 2 | 4'-9" | 3'-6" | 1'-1" | — | — | — | 2 | 4'-7" |
| B403 | 1'-9" | 1'-6" | — | — | — | 2 | 3'-3" | 2'-3" | 1'-10" | — | — | — | 2 | 4'-1" | 2'-10" | 1'-1" | — | — | — | 2 | 3'-11" |
| B404 | 1'-1" | 1'-6" | — | — | — | 2 | 2'-7" | 1'-7" | 1'-10" | — | — | — | 2 | 3'-5" | 2'-2" | 1'-1" | — | — | — | 2 | 3'-3" |
| B405 | 0'-7" | 1'-6" | — | — | — | 2 | 2'-1" | 0'-11" | 1'-10" | — | — | — | 2 | 2'-9" | 1'-6" | 1'-1" | — | — | — | 2 | 2'-7" |
| B406 | — | — | — | — | — | — | — | 0'-7" | 1'-10" | — | — | — | 2 | 2'-5" | 0'-10" | 1'-1" | — | — | — | 2 | 1'-11" |
| B407 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 0'-6" | 1'-1" | — | — | — | 2 | 1'-7" |
| B408 | 22'-8" | 0'-10" | — | — | — | 2 | 23'-6" | 25'-8" | 0'-10" | — | — | — | 2 | 26'-6" | 29'-2" | 0'-11" | — | — | — | 2 | 30'-1" |
| B409 | 4'-8" | 1'-0" | — | — | — | 2 | 5'-8" | 1'-8" | 1'-8" | — | — | — | 2 | 3'-4" | 5'-2" | 1'-4" | — | — | — | 2 | 6'-6" |
| H400 | 4'-4" | 4'-8" | — | — | — | 1 | 13'-8" | 4'-11" | 5'-2" | — | — | — | 1 | 15'-3" | 5'-6" | 5'-9" | — | — | — | 1 | 17'-0" |
| H401 | 4'-4" | 4'-7" | — | — | — | 1 | 13'-6" | 4'-11" | 5'-1" | — | — | — | 1 | 15'-1" | 5'-6" | 5'-8" | — | — | — | 1 | 16'-10" |
| H402 | 4'-4" | 4'-1" | — | — | — | 1 | 12'-6" | 4'-11" | 4'-7" | — | — | — | 1 | 14'-1" | 5'-6" | 5'-2" | — | — | — | 1 | 15'-10" |
| H403 | 4'-4" | 3'-11" | — | — | — | 1 | 12'-2" | 4'-11" | 4'-5" | — | — | — | 1 | 13'-9" | 5'-6" | 5'-0" | — | — | — | 1 | 15'-6" |
| H404 | 4'-4" | 3'-9" | — | — | — | 1 | 11'-10" | 4'-11" | 4'-3" | — | — | — | 1 | 13'-5" | 5'-6" | 4'-10" | — | — | — | 1 | 15'-2" |
| H405 | 4'-4" | 3'-7" | — | — | — | 1 | 11'-6" | 4'-11" | 4'-1" | — | — | — | 1 | 13'-1" | 5'-6" | 4'-8" | — | — | — | 1 | 14'-10" |
| H406 | 4'-4" | 3'-5" | — | — | — | 1 | 11'-2" | 4'-11" | 3'-11" | — | — | — | 1 | 12'-9" | 5'-6" | 4'-6" | — | — | — | 1 | 14'-6" |
| H407 | 4'-4" | 3'-3" | — | — | — | 1 | 10'-10" | 4'-11" | 3'-9" | — | — | — | 1 | 12'-5" | 5'-6" | 4'-4" | — | — | — | 1 | 14'-2" |
| H408 | 4'-4" | 3'-1" | — | — | — | 1 | 10'-6" | 4'-11" | 3'-7" | — | — | — | 1 | 12'-1" | 5'-6" | 4'-2" | — | — | — | 1 | 13'-10" |
| H409 | 4'-4" | 2'-11" | — | — | — | 1 | 10'-2" | 4'-11" | 3'-5" | — | — | — | 1 | 11'-9" | 5'-6" | 4'-0" | — | — | — | 1 | 13'-6" |
| H410 | 4'-4" | 2'-9" | — | — | — | 1 | 9'-10" | 4'-11" | 3'-3" | — | — | — | 1 | 11'-5" | 5'-6" | 3'-10" | — | — | — | 1 | 13'-2" |
| H411 | 4'-4" | 2'-7" | — | — | — | 1 | 9'-6" | 4'-11" | 3'-1" | — | — | — | 1 | 11'-1" | 5'-6" | 3'-8" | — | — | — | 1 | 12'-10" |
| H412 | 4'-4" | 2'-5" | — | — | — | 1 | 9'-2" | 4'-11" | 2'-11" | — | — | — | 1 | 10'-9" | 5'-6" | 3'-6" | — | — | — | 1 | 12'-6" |
| H413 | 4'-4" | 2'-3" | — | — | — | 1 | 8'-10" | 4'-11" | 2'-9" | — | — | — | 1 | 10'-5" | 5'-6" | 3'-4" | — | — | — | 1 | 12'-2" |
| H414 | 4'-4" | 2'-1" | — | — | — | 1 | 8'-6" | 4'-11" | 2'-7" | — | — | — | 1 | 10'-1" | 5'-6" | 3'-2" | — | — | — | 1 | 11'-10" |
| H415 | 4'-4" | 1'-11" | — | — | — | 1 | 8'-2" | 4'-11" | 2'-5" | — | — | — | 1 | 9'-9" | 5'-6" | 3'-0" | — | — | — | 1 | 11'-6" |
| H416 | 4'-4" | 1'-9" | — | — | — | 1 | 7'-10" | 4'-11" | 2'-3" | — | — | — | 1 | 9'-5" | 5'-6" | 2'-10" | — | — | — | 1 | 11'-2" |
| H417 | 4'-4" | 1'-7" | — | — | — | 1 | 7'-6" | 4'-11" | 2'-1" | — | — | — | 1 | 9'-1" | 5'-6" | 2'-8" | — | — | — | 1 | 10'-10" |
| H418 | 4'-4" | 1'-5" | — | — | — | 1 | 7'-2" | 4'-11" | 1'-11" | — | — | — | 1 | 8'-9" | 5'-6" | 2'-6" | — | — | — | 1 | 10'-6" |
| H419 | 4'-4" | 1'-3" | — | — | — | 1 | 6'-10" | 4'-11" | 1'-9" | — | — | — | 1 | 8'-5" | 5'-6" | 2'-4" | — | — | — | 1 | 10'-2" |
| H420 | 4'-4" | 1'-1" | — | — | — | 1 | 6'-6" | 4'-11" | 1'-7" | — | — | — | 1 | 8'-1" | 5'-6" | 2'-2" | — | — | — | 1 | 9'-10" |
| H421 | 4'-4" | 0'-11" | — | — | — | 1 | 6'-2" | 4'-11" | 1'-5" | — | — | — | 1 | 7'-9" | 5'-6" | 2'-0" | — | — | — | 1 | 9'-6" |
| H422 | 4'-4" | 0'-9" | — | — | — | 1 | 5'-10" | 4'-11" | 1'-3" | — | — | — | 1 | 7'-5" | 5'-6" | 1'-10" | — | — | — | 1 | 9'-2" |
| H423 | 4'-4" | 0'-7" | — | — | — | 1 | 5'-6" | 4'-11" | 1'-1" | — | — | — | 1 | 7'-1" | 5'-6" | 1'-8" | — | — | — | 1 | 8'-10" |
| H424 | — | — | — | — | — | — | — | 4'-11" | 0'-11" | — | — | — | 1 | 6'-9" | 5'-6" | 1'-6" | — | — | — | 1 | 8'-6" |
| H425 | — | — | — | — | — | — | — | 4'-11" | 0'-9" | — | — | — | 1 | 6'-5" | 5'-6" | 1'-4" | — | — | — | 1 | 8'-2" |
| H426 | — | — | — | — | — | — | — | 4'-11" | 0'-7" | — | — | — | 1 | 6'-1" | 5'-6" | 1'-2" | — | — | — | 1 | 7'-10" |
| H427 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 5'-6" | 1'-0" | — | — | — | 1 | 7'-6" |
| H428 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 5'-6" | 0'-10" | — | — | — | 1 | 7'-2" |
| H429 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 5'-6" | 0'-8" | — | — | — | 1 | 6'-10" |
| H430 | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 5'-6" | 0'-6" | — | — | — | 1 | 6'-6" |
| S400 | 22'-8" | 0'-4" | 0'-8" | 1'-4" | — | 6 | 25'-0" | 25'-8" | 0'-4" | 0'-8" | 1'-4" | — | 6 | 28'-0" | 29'-2" | 0'-4" | 0'-8" | 1'-4" | — | 8 | 31'-6" |
| V500 | 11'-6" | 0'-8" | 0'-8" | 10'-10" | — | 4 | 24'-4" | — | — | — | — | — | — | — | — | — | — | — | — | — | — |
| V700 | 1'-10" | 0'-4" | 0'-8" | 1'-10" | — | 2 | 5'-0" | 2'-1" | 0'-4" | 0'-9" | 2'-1" | — | 2 | 5'-7" | 2'-5" | 0'-4" | 0'-8" | 2'-5" | — | 2 | 6'-2" |
| W500 | — | — | — | — | — | — | — | 8'-4" | 0'-8" | 0'-8" | 8'-2" | 8'-6" | 4 | 29'-0" | 9'-7" | 0'-8" | 0'-8" | 9'-4" | 9'-2" | 4 | 32'-1" |




REINFORCING STEEL LEGEND




STEEL PIPE GRATE

PLAN

SECTION A-A

## GENERAL NOTES

1. CONCRETE ENDWALL SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD SPECIFICATIONS, SECTION 611 AND/OR SPECIAL PROVISIONS.
2. THE MATERIAL AND PAINTING FOR STRUCTURAL STEEL GRATE SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:
   - (A) STEEL PIPE ASTM A53, TYPE E OR S, GRADE A OR B, SCHEDULE 40.
   - (B) THE GRATE SHALL BE PAINTED BLACK, FEDERAL SPEC. TT-E-489J, AFTER FABRICATION.
3. THE MATERIAL AND GALVANIZING FOR BOLTS, NUTS, AND WASHERS SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS:
   - (A) BOLTS, NUTS AND WASHERS ASTM A307
   - (B) GALVANIZING ASTM A153
4. THE COST OF FURNISHING BOLTS, NUTS, AND WASHERS, INCLUDING ALL MATERIALS, LABOR AND INCIDENTALS NECESSARY TO COMPLETE THE INSTALLATION, SHALL BE INCLUDED IN THE PRICE BID FOR PIPE ENDWALL.
5. PAYMENT WILL BE MADE UNDER:

   ITEM NO. 611-07.01, CLASS A CONCRETE (PIPE ENDWALLS) -----CU. YD.
   ITEM NO. 611-07.02, STEEL BAR REINFORCING (PIPE ENDWALLS) -----LB.
   ITEM NO. 611-07.03, STRUCTURAL STEEL (PIPE ENDWALLS) -----LB.
6. SEE D-PE-3B(1) FOR SKEWED CONNECTION DETAIL.

- MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE
DEPARTMENT OF TRANSPORTATION

CONCRETE ENDWALL TYPE "U" WITH STEEL PIPE GRATE

FOR 18" THRU 48" PIPES
6:1 SLOPE

D-PE-6B(2)

WORKING DRAWING