

CASE II-LEVEL FILL WITH 2' SURCHARGE (TRAFFIC)

QUANTITIES

LIMIT STATE NOTES:

| Dimensions | | | | | | | Steel List | | | | | | | | | | | | Service Limit State | | | Strength Limit State | | | | | | | | | |
|------------|--------|--------|--------|--------|--------|--------|------------|---------|--------|----------|---------|--------|----------|---------|--------|--------|--------|--------|---------------------|----------|---------|----------------------|--------|--------|---------------------------|---------------------------|---------------|--------------------------|--------------------------|--------------|----------|
| H | W | B | C | F | E | X | S1 | | | S2 | | | S3 | | | H | V | Y | | | F1 | | | F2 | Qtveu-SERV Lbs./Sq.Ft. | Qnveu-SERV Lbs./Sq.Ft. | B'SERV Ft. | Qtveu-STR Lbs./Sq.Ft. | Qnveu-STR Lbs./Sq.Ft. | B'STR Ft. | |
| | | | | | | | Bar Size | Spacing | Length | Bar Size | Spacing | Length | Bar Size | Spacing | Length | | | Number | Length | Bar Size | Spacing | Length | Number | | | | | | | | Bar Size |
| 4' | 3'-6" | 1'-0" | 1'-0" | 10" | 1'-8" | 1'-0" | 5 | 12" | 5'-6" | | | | | | 4 | 3'-9" | 5 | 12" | 2'-6" | 2 | 5 | 12" | 3'-0" | 3 | 980 | 620 | 2.79 | 1420 | 930 | 2.64 | |
| 5' | 4'-0" | 1'-0" | 1'-2" | 10" | 2'-0" | 1'-0" | 5 | 12" | 6'-6" | | | | | | 6 | 4'-9" | 5 | 12" | 3'-0" | 2 | 5 | 12" | 3'-3" | 3 | 1090 | 730 | 3.18 | 1580 | 1100 | 2.98 | |
| 6' | 4'-6" | 1'-0" | 1'-4" | 10" | 2'-4" | 1'-2" | 5 | 12" | 7'-6" | | | | | | 6 | 5'-9" | 5 | 12" | 3'-6" | 3 | 5 | 12" | 3'-9" | 3 | 1210 | 850 | 3.53 | 1770 | 1280 | 3.29 | |
| 7' | 5'-1" | 1'-2" | 1'-6" | 10" | 2'-9" | 1'-4" | 6 | 12" | 8'-9" | | | | | | 8 | 6'-9" | 5 | 12" | 3'-9" | 3 | 5 | 12" | 4'-0" | 3 | 1370 | 990 | 3.93 | 2010 | 1490 | 3.65 | |
| 8' | 5'-8" | 1'-2" | 1'-8" | 10" | 3'-2" | 1'-6" | 6 | 9" | 9'-9" | | | | | | 10 | 7'-9" | 5 | 12" | 4'-3" | 3 | 5 | 12" | 4'-6" | 3 | 1470 | 1090 | 4.41 | 2150 | 1640 | 4.10 | |
| 9' | 6'-3" | 1'-2" | 1'-10" | 1'-0" | 3'-5" | 1'-8" | 6 | 9" | 10'-9" | | | | | | 10 | 8'-9" | 5 | 12" | 4'-9" | 3 | 5 | 12" | 4'-9" | 4 | 1560 | 1180 | 4.89 | 2280 | 1770 | 4.55 | |
| 10' | 6'-10" | 1'-3" | 2'-0" | 1'-0" | 3'-10" | 1'-9" | 7 | 12" | 12'-0" | | | | | | 12 | 9'-9" | 5 | 12" | 5'-3" | 4 | 6 | 12" | 5'-3" | 4 | 1690 | 1300 | 5.35 | 2470 | 1940 | 4.97 | |
| 11' | 7'-6" | 1'-3" | 2'-3" | 1'-0" | 4'-3" | 1'-10" | 6 | 12" | 4'-9" | 6 | 12" | 12'-9" | | | 14 | 10'-9" | 5 | 12" | 5'-9" | 4 | 7 | 12" | 6'-3" | 5 | 1750 | 1360 | 5.99 | 2550 | 2020 | 5.59 | |
| 12' | 8'-0" | 1'-3" | 2'-3" | 1'-2" | 4'-7" | 2'-0" | 6 | 12" | 5'-0" | 6 | 12" | 13'-9" | | | 14 | 11'-9" | 5 | 12" | 6'-0" | 4 | 7 | 12" | 6'-9" | 5 | 1840 | 1450 | 6.36 | 2680 | 2150 | 5.92 | |
| 13' | 8'-6" | 1'-3" | 2'-6" | 1'-3" | 4'-9" | 2'-2" | 7 | 12" | 7'-6" | 5 | 12" | 14'-9" | | | 16 | 12'-9" | 6 | 12" | 6'-6" | 4 | 8 | 12" | 7'-9" | 5 | 2000 | 1610 | 6.70 | 2910 | 2390 | 6.23 | |
| 14' | 9'-0" | 1'-3" | 2'-6" | 1'-4" | 5'-2" | 2'-4" | 7 | 12" | 7'-3" | 6 | 12" | 15'-9" | | | 18 | 13'-9" | 6 | 12" | 6'-9" | 5 | 8 | 12" | 8'-3" | 6 | 2160 | 1770 | 7.02 | 3150 | 2620 | 6.53 | |
| 15' | 9'-6" | 1'-4" | 2'-9" | 1'-5" | 5'-4" | 2'-6" | 8 | 12" | 8'-9" | 6 | 12" | 17'-0" | | | 18 | 14'-9" | 6 | 9" | 7'-0" | 5 | 8 | 12" | 8'-6" | 6 | 2280 | 1880 | 7.36 | 3320 | 2780 | 6.83 | |
| 16' | 10'-0" | 1'-5" | 2'-9" | 1'-6" | 5'-9" | 2'-8" | 7 | 12" | 7'-0" | 7 | 12" | 9'-0" | 6 | 12" | 10'-9" | 20 | 15'-9" | 6 | 8" | 7'-3" | 5 | 7 | 8" | 8'-0" | 6 | 2470 | 2060 | 7.65 | 3610 | 3060 | 7.08 |
| 17' | 10'-6" | 1'-6" | 3'-0" | 1'-7" | 5'-11" | 2'-10" | 8 | 12" | 8'-0" | 7 | 12" | 9'-0" | 6 | 12" | 10'-9" | 22 | 16'-9" | 6 | 8" | 7'-9" | 5 | 7 | 8" | 8'-3" | 6 | 2590 | 2170 | 7.99 | 3790 | 3220 | 7.38 |
| 18' | 11'-0" | 1'-7" | 3'-0" | 1'-8" | 6'-4" | 3'-0" | 7 | 10" | 7'-6" | 7 | 10" | 10'-0" | 6 | 10" | 11'-9" | 22 | 17'-9" | 7 | 12" | 8'-0" | 6 | 9 | 10" | 10'-0" | 7 | 2790 | 2360 | 8.28 | 4080 | 3500 | 7.64 |
| 19' | 11'-6" | 1'-8" | 3'-3" | 1'-9" | 6'-6" | 3'-2" | 8 | 12" | 8'-0" | 8 | 12" | 12'-6" | 6 | 12" | 10'-9" | 24 | 18'-9" | 7 | 12" | 8'-6" | 6 | 8 | 8" | 9'-6" | 7 | 2900 | 2460 | 8.62 | 4250 | 3660 | 7.93 |
| 20' | 12'-0" | 1'-9" | 3'-3" | 1'-10" | 6'-11" | 3'-4" | 9 | 12" | 9'-6" | 8 | 12" | 13'-3" | 6 | 12" | 11'-0" | 26 | 19'-9" | 7 | 12" | 8'-9" | 6 | 9 | 9" | 10'-9" | 7 | 3110 | 2660 | 8.91 | 4550 | 3940 | 8.20 |
| 21' | 12'-6" | 1'-10" | 3'-6" | 1'-11" | 7'-1" | 3'-6" | 8 | 10" | 9'-0" | 8 | 10" | 14'-3" | 6 | 10" | 11'-3" | 26 | 20'-9" | 7 | 10" | 9'-0" | 6 | 10 | 10" | 11'-9" | 7 | 3220 | 2760 | 9.25 | 4720 | 4100 | 8.49 |
| 22' | 13'-0" | 1'-11" | 3'-6" | 2'-0" | 7'-6" | 3'-8" | 9 | 12" | 10'-0" | 9 | 12" | 15'-9" | 6 | 12" | 11'-0" | 28 | 21'-9" | 8 | 12" | 9'-6" | 6 | 8 | 6" | 10'-6" | 7 | 3420 | 2950 | 9.54 | 5020 | 4390 | 8.76 |
| 23' | 13'-6" | 2'-0" | 3'-9" | 2'-2" | 7'-7" | 3'-10" | 10 | 12" | 12'-9" | 8 | 12" | 16'-3" | 6 | 12" | 11'-3" | 30 | 22'-9" | 8 | 12" | 9'-9" | 7 | 8 | 6" | 10'-9" | 7 | 3540 | 3060 | 9.89 | 5190 | 4550 | 9.05 |
| 24' | 14'-0" | 2'-2" | 3'-9" | 2'-4" | 7'-11" | 4'-0" | 10 | 12" | 11'-6" | 9 | 12" | 17'-9" | 6 | 12" | 11'-3" | 30 | 23'-9" | 8 | 12" | 10'-3" | 7 | 8 | 6" | 11'-0" | 8 | 3780 | 3280 | 10.13 | 5550 | 4870 | 9.27 |
| 25' | 14'-6" | 2'-4" | 4'-0" | 2'-6" | 8'-0" | 4'-2" | 10 | 12" | 12'-6" | 9 | 12" | 19'-0" | 6 | 12" | 11'-3" | 32 | 24'-9" | 8 | 12" | 10'-6" | 7 | 8 | 6" | 11'-3" | 8 | 3930 | 3410 | 10.43 | 5770 | 5070 | 9.51 |
| 26' | 15'-0" | 2'-6" | 4'-0" | 2'-8" | 8'-4" | 4'-4" | 9 | 10" | 11'-6" | 9 | 10" | 18'-6" | 6 | 10" | 13'-0" | 34 | 25'-9" | 8 | 12" | 11'-0" | 7 | 10 | 9" | 13'-0" | 9 | 4170 | 3630 | 10.68 | 6130 | 5400 | 9.73 |
| 27' | 15'-6" | 2'-9" | 4'-3" | 2'-10" | 8'-5" | 4'-6" | 10 | 12" | 12'-3" | 10 | 12" | 21'-3" | 6 | 12" | 11'-9" | 34 | 26'-9" | 8 | 12" | 11'-6" | 8 | 10 | 9" | 13'-3" | 9 | 4360 | 3790 | 10.94 | 6420 | 5650 | 9.93 |
| 28' | 16'-0" | 3'-0" | 4'-3" | 3'-0" | 8'-9" | 4'-8" | 10 | 12" | 13'-3" | 10 | 12" | 22'-0" | 6 | 12" | 12'-3" | 36 | 27'-9" | 8 | 12" | 11'-6" | 8 | 10 | 9" | 13'-6" | 9 | 4640 | 4040 | 11.14 | 6840 | 6030 | 10.10 |
| 29' | 16'-6" | 3'-3" | 4'-6" | 3'-3" | 8'-9" | 4'-10" | 11 | 12" | 16'-3" | 9 | 12" | 23'-0" | 6 | 12" | 12'-3" | 38 | 28'-9" | 8 | 12" | 12'-0" | 8 | 10 | 9" | 13'-9" | 9 | 4830 | 4200 | 11.40 | 7130 | 6280 | 10.29 |
| 30' | 17'-0" | 3'-6" | 4'-6" | 3'-6" | 9'-0" | 5'-0" | 11 | 12" | 15'-9" | 10 | 12" | 24'-0" | 6 | 12" | 12'-9" | 38 | 29'-9" | 8 | 12" | 12'-6" | 8 | 10 | 9" | 14'-0" | 10 | 5120 | 4460 | 11.61 | 7560 | 6670 | 10.46 |

| CASE II | | | |
|---------|-------------------------|----------------------|--------------------------------------|
| H | Concrete C.Y./Ln.Ft. | Steel Lbs./Ln.Ft. | Steel (Horiz. Lap) Lbs./Splice |
| 4' | .32 | 28 | 10 |
| 5' | .37 | 32 | 12 |
| 6' | .42 | 35 | 12 |
| 7' | .51 | 43 | 14 |
| 8' | .56 | 52 | 15 |
| 9' | .65 | 56 | 16 |
| 10' | .73 | 65 | 18 |
| 11' | .79 | 74 | 20 |
| 12' | .88 | 78 | 20 |
| 13' | .96 | 93 | 21 |
| 14' | 1.05 | 105 | 24 |
| 15' | 1.16 | 121 | 24 |
| 16' | 1.29 | 127 | 25 |
| 17' | 1.41 | 138 | 26 |
| 18' | 1.55 | 162 | 28 |
| 19' | 1.69 | 169 | 29 |
| 20' | 1.83 | 195 | 30 |
| 21' | 1.99 | 223 | 30 |
| 22' | 2.15 | 233 | 32 |
| 23' | 2.35 | 248 | 34 |
| 24' | 2.60 | 264 | 34 |
| 25' | 2.87 | 276 | 36 |
| 26' | 3.14 | 305 | 38 |
| 27' | 3.48 | 326 | 38 |
| 28' | 3.83 | 337 | 40 |
| 29' | 4.25 | 355 | 41 |
| 30' | 4.68 | 383 | 42 |

Qtveu-SERV = Total equivalent uniform vertical bearing stress to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.

Qnveu-SERV = Net equivalent uniform vertical bearing stress to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.

B' SERV = Effective footing width to be used only for the evaluation of settlement based on the Service I Limit State as per ADOT SF-1.

Qtveu-STR = Total equivalent uniform vertical bearing stress to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.

Qnveu-STR = Net equivalent uniform vertical bearing stress to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.

B' STR = Effective footing width to be used only for the evaluation of bearing resistance based on the Strength I Limit State as per ADOT SF-1.

For other applicable limit states, perform project specific-analysis using the procedures in ADOT SF-1. ADOT SF-1 (Materials Group memorandum) is found at Materials Group website.

QUANTITIES NOTE:

Quantities are shown for information purposes only. The pay item is measured per square foot of wall.

Quantities are for one L.F. of wall except for horizontal steel lap splices and footing steps.

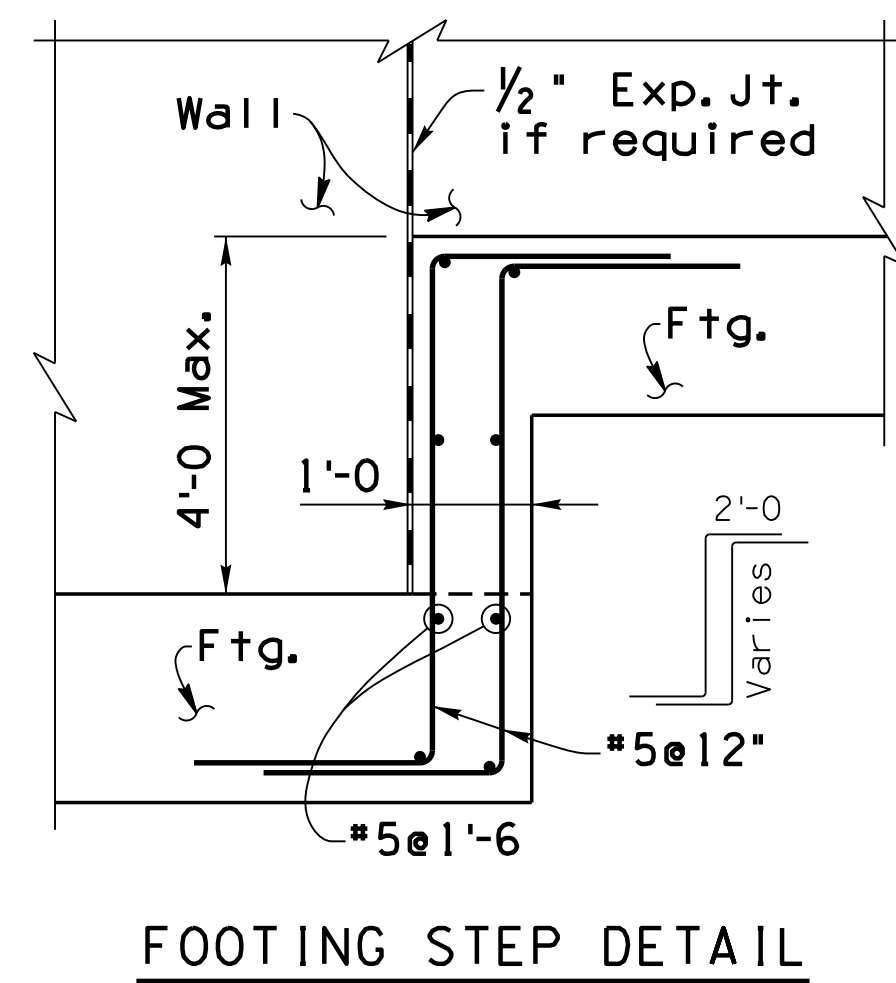
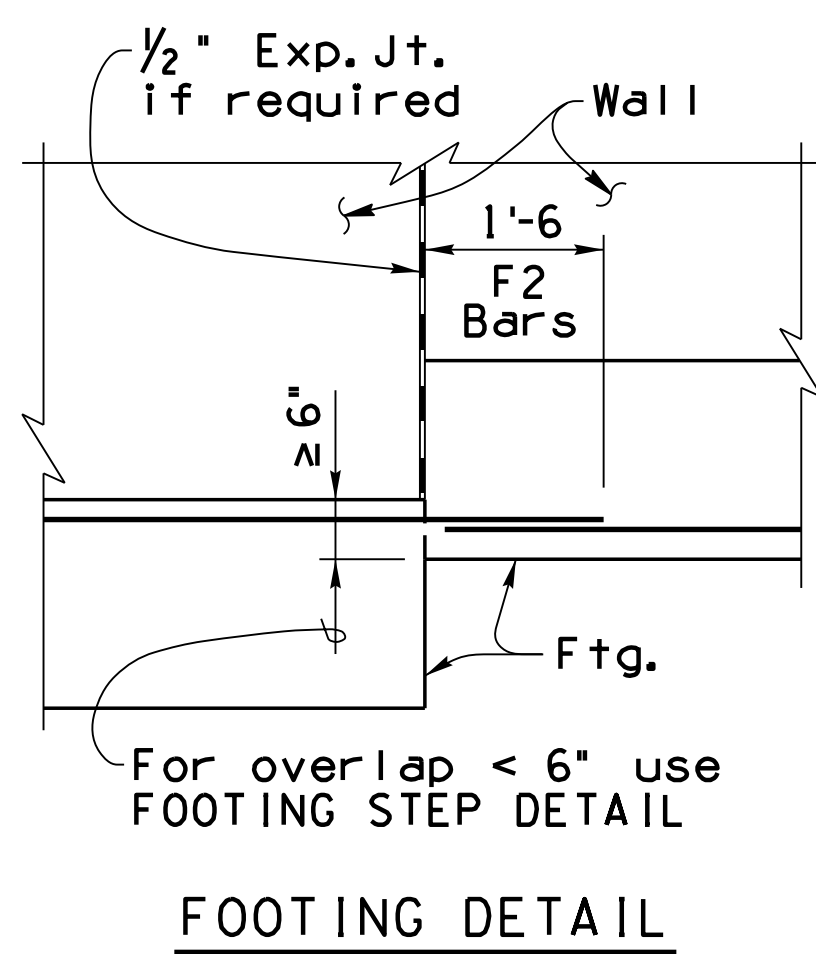
Steel quantities for horizontal lap splices shall be added for wall segments greater than 30 feet, and add a splice for each additional wall segment greater than 30 feet. Horizontal 1'-0" lap splices occur at construction or contraction joints.

Steel and concrete quantities for footing steps shall be added to those shown in the table.

Φ Total number of bars in cross section.

Note to Designer: The information presented in this Standard Detail has been prepared in accordance with recognized engineering principles and is for general use. It should not be used for specific application without competent professional examination and verification of its suitability and applicability by a licensed professional engineer. Contents within the inner border line shall not be altered.

| NO | DESCRIPTION OF REVISIONS | MADE BY | DATE |
|----|--|---------|------|
| 1 | Original Issue | S.J.H. | 9-10 |
| 2 | General updates, added limit state values and notes. | D.B.B. | 1-15 |
| 3 | | | |
| 4 | | | |



NOTE:

For General Notes, Typical Elevations, Sections and Details see SD 7.01 (1, 2, and 4).

| | | | |
|---|-------------|--|---------------------------------|
| DESIGN APPROVED <i>Celina Aman</i> | | ARIZONA DEPARTMENT OF TRANSPORTATION INFRASTRUCTURE DELIVERY AND OPERATIONS DIVISION BRIDGE GROUP STRUCTURE DETAIL | |
| APPROVED FOR DISTRIBUTION <i>[Signature]</i> | | RETAINING WALL (REINFORCED CONCRETE CANTILEVER) | |
| ROUTE | PROJECT NO. | FA NO. | DRAWING NO. SD 7.01 (3 of 5) |
| LOCATION | | | SHEET NO. OF |