# CONCRETE COLUMN / TIE COLUMN SCHEDULE

| LEVEL \ COLUMN MARK | | C-1 | | | | C-2 | | | | C-3 | | | | C-4 (IRREG. SHAPE) | | | | C-5 (LOW SITE COL.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONCRETE STRENGTH f' c =PSI | FLOOR NUMBER | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE |
| $f_c$ = 4,000 PSI | | | | | | | | | | | | | | | | | | | | | |
| | ROOF LEVEL | | | | | | | | | | | | | | | | | | | | |
| | SECOND FLOOR LOW ROOF | | | | | | | | | | | | | | | | | | | | |
| | FOUNDATION GROUND FLOOR | 8"x12" | 4-#5 | | B | 8"x24" | 8-#5 | | B | 10"x24" | 8-#5 | | B | 24"x28" + 8"x16" | 12-#7 + 6-#5 | | B | 8"x16" | 6-#5 | | B |
| | DOWELS | 4-#5 | | | | 8-#5 | | | | 8-#5 | | | | 12-#7 + 6-#5 | | | | 6-#5 | | | |

| LEVEL \ COLUMN MARK | | TC-1 | | | | TC-2 | | | | TC-3 (L-SHAPE) | | | | TC-4 | | | | TC-5 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONCRETE STRENGTH f' c =PSI | FLOOR NUMBER | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE |
| $f_c$ = 4,000 PSI | | | | | | | | | | | | | | | | | | | | | |
| | ROOF LEVEL | | | | | | | | | | | | | | | | | | | | |
| | SECOND FLOOR LOW ROOF | 8"x12" | 4-#5 | | B | 8"x24" | 8-#6 | | B | 8"x15"x17" | 8-#5 | | B | 8"x25" | 8-#5 | | B | 8"x32" | 10-#5 | | B |
| | FOUNDATION GROUND FLOOR | 8"x12" | 4-#5 | | B | 8"x24" | 8-#6 | | B | 8"x15"x17" | 8-#5 | | B | 8"x25" | 8-#5 | | B | 8"x32" | 10-#5 | | B |
| | DOWELS | 4-#5 | | | | 8-#6 | | | | 8-#5 | | | | 8-#5 | | | | 10-#5 | | | |

| LEVEL \ COLUMN MARK | | TC-6 | | | | TC-7 | | | | TC-8 (L-SHAPE) | | | | TC-9 | | | | TC-10 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONCRETE STRENGTH f' c =PSI | FLOOR NUMBER | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE |
| $f_c$ = 4,000 PSI | | | | | | | | | | | | | | | | | | | | | |
| | ROOF LEVEL | | | | | | | | | | | | | | | | | | | | |
| | SECOND FLOOR LOW ROOF | 12"x16" | 6-#6 | | B | | | | | | | | | | | | | | | | |
| | FOUNDATION GROUND FLOOR | 12"x16" | 6-#6 | | B | 8"x12" | 4-#5 | | B | 8"x10"x12" | 6-#5 | | B | 8"x28" | 8-#5 | | B | 8"x30" | 8-#5 | | B |
| | DOWELS | 6-#6 | | | | 4-#5 | | | | 6-#5 | | | | 8-#5 | | | | 8-#5 | | | |

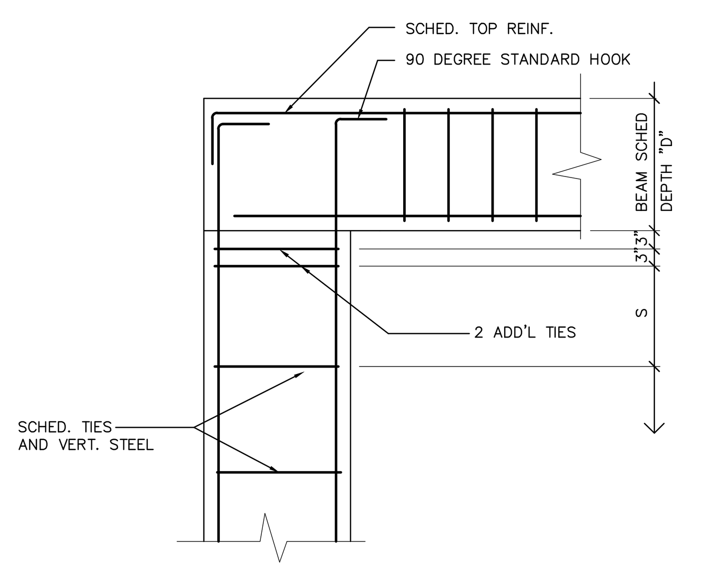
| LEVEL \ COLUMN MARK | | TC-11 | | | | TC-12 | | | | TC-13 | | | | TC-14 | | | | TC-15 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CONCRETE STRENGTH f' c =PSI | FLOOR NUMBER | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE | COLUMN SIZE | VERTICAL BARS | BAR PLACEMENT | SPLICE TYPE |
| $f_c$ = 4,000 PSI | | | | | | | | | | | | | | | | | | | | | |
| | ROOF LEVEL | | | | | | | | | | | | | | | | | | | | |
| | SECOND FLOOR LOW ROOF | | | | | | | | | 8"x12" | 4-#5 | | B | 8"x16" | 6-#5 | | B | 8"x24" | 8-#5 | | B |
| | FOUNDATION GROUND FLOOR | 8"x31" | 8-#5 | | B | 8"x40" | 12-#5 | | B | | | | | | | | | | | | |
| | DOWELS | 8-#5 | | | | 12-#5 | | | | 4-#5 | | | | 6-#5 | | | | 8-#5 | | | |

CONCRETE COLUMN / TIE COLUMN SCHEDULE

COLUMN SCHEDULE NOTES:

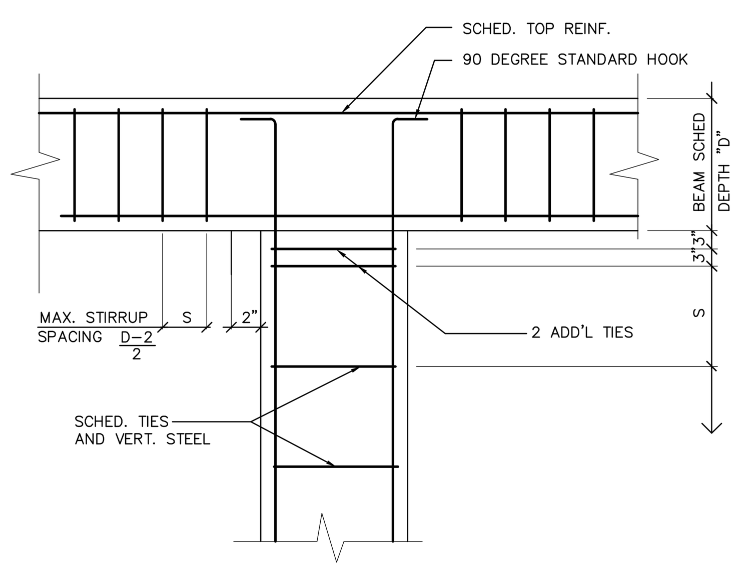
1. DETAIL COLUMN VERTICAL REINFORCEMENT, TIES AND SPLICES TO CONFORM TO ACI 318-14 AND ACI STANDARD "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT" AS REPORTED BY ACI COMMITTEE 315.
2. SEE COLUMN SPLICE DETAILS FOR ADDTIONAL INFORMATION ABOUT COLUMN VERTICAL REINFORCEMENT AND TIES.
3. FOR COLUMN TIE REQUIREMENTS, SEE COLUMN TIE SCHEDULE AND COLUMN TIE REQUIREMENT DETAIL.
4. SQUARE AND RECTANGULAR COLUMNS SHALL HAVE EQUAL NUMBER OF VERTICAL BARS ON EACH COLUMN FACE, UNLESS OTHERWISE NOTED.
5. SQUARE AND RECTANGULAR COLUMN LAP SPLICES SHALL BE NORMAL LAP SPLICES WITH BARS OFFSET BENT IN THE SHOP TOWARD THE INTERIOR OF THE COLUMN (SEE DETAIL).
6. THE SLOPE OF THE INCLINED PORTION OF AN OFFSET BAR WITH THE AXIS OF THE COLUMN SHALL NOT EXCEED 1 IN 6. PORTIONS OF THE BAR ABOVE AND BELOW AN OFFSET SHALL BE PARALLEL TO THE AXIS OF THE COLUMN. OFFSET BAR SHALL BE BENT BEFORE PLACEMENT.
7. COLUMN SCHEDULE SPLICE TYPE AND EMBEDMENT LENGTH NOTATION.
   - CD – COMP. DEVELOPMENT LENGTH – 22 BAR DIAM.
   - TD – TENSION DEVELOPEMENT LENGTH
   - CS – COMPRESSION SPLICE – 30 BAR DIAM.
   - A – CLASS A TENSION SPLICE
   - B – CLASS B TENSION SPLICE
   - M – MECHANICAL SPLICE

   SEE TABLE FOR TENSION DEVELOPEMENT LENGTH AND TENSION LAP SPLICE VALUES.
8. SEE ARCH. DWGS. FOR HORIZONTAL REVEALS IN COLUMNS.




NOTE
"S" DENOTES SCHEDULED TIE SPACING

TYPICAL DETAIL
DISCONTINUED EXTERIOR COLUMN
TO CAST-IN-PLACE BEAM




NOTE
"S" DENOTES SCHEDULED TIE SPACING

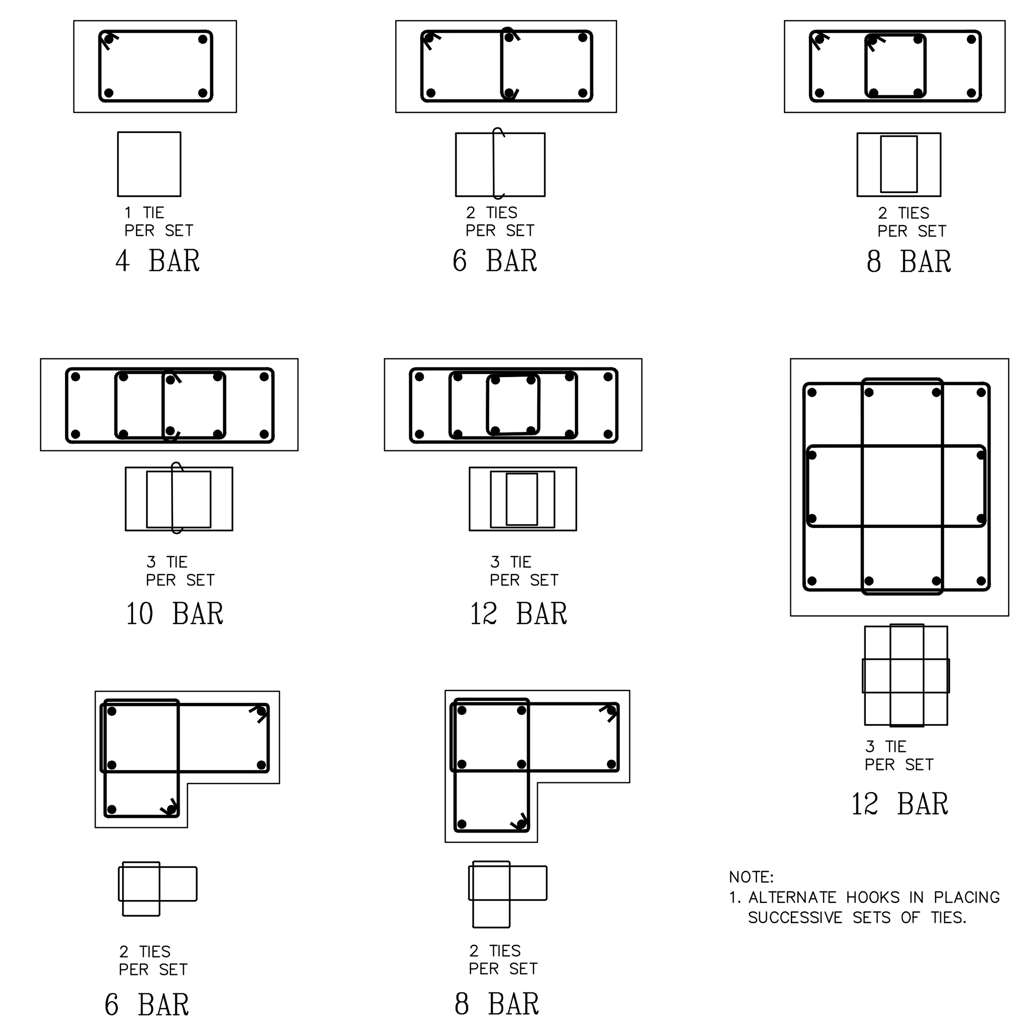
TYPICAL DETAIL
DISCONTINUED INTERIOR COLUMN
TO CAST-IN-PLACE BEAM

CONCRETE COLUMN TIE SCHEDULE

| COL. SIZE \ BAR # | #6 | #7 | #8 | #9 | #10 | #11 | #14 | #18 |
|---|---|---|---|---|---|---|---|---|
| 10" | #3@10" | | | | | #4@10" | | |
| 12" | #3@12" | | | | | #4@12" | | |
| 14" | | #3@14" | | | | #4@14" | | |
| 16" | | | #3@16" | | | #4@16" | | |
| 18" | | | | #3@18" | #3@18" | #4@18" | | |
| 20" | | | | | | #4@20" | | |
| 24" | | | | | | #4@22" | | |
| 28" | | | | | | | | |
| 32" | | | | | | | | |
| 36" | | | | | | | | |

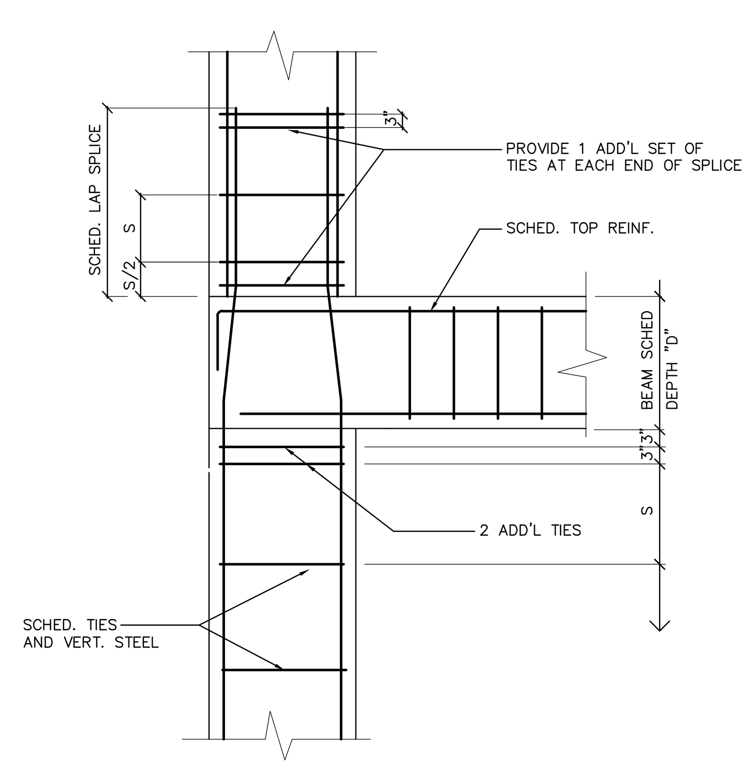
NOTES:
1. COLUMN SIZE IS MIN. DIMENSION OF COLUMN.
2. BAR SIZE IS MAX. SIZE ENCLOSED BY TIES.
3. ROUND OFF SIZES TO CLOSEST SIZE IN TABLE.
4. PLACE 1 SET OF TIES FROM TOP & BOTT. OF COLUMN.

COLUMN TIE SCHEDULE



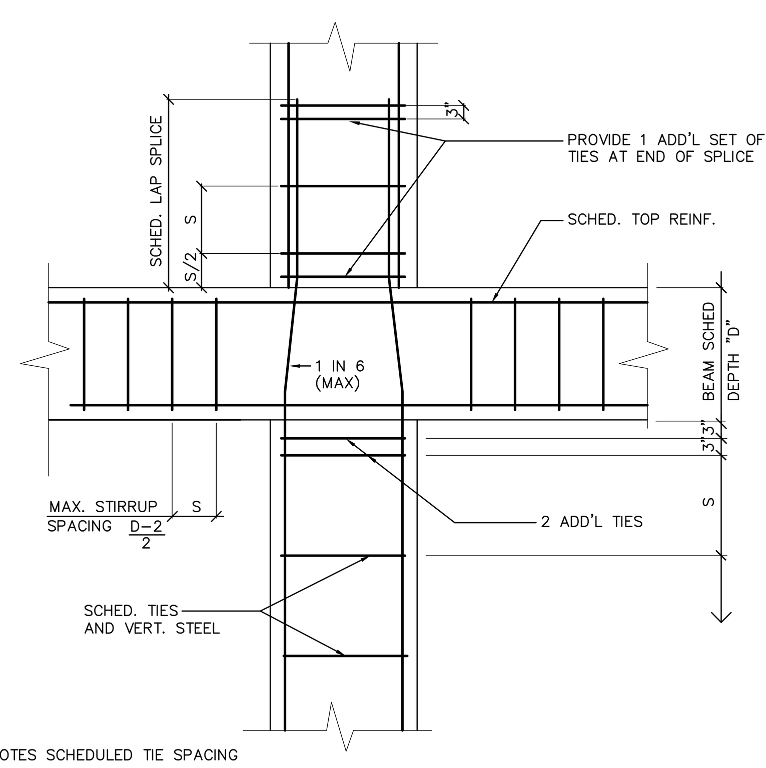

NOTE:
1. ALTERNATE HOOKS IN PLACING SUCCESSIVE SETS OF TIES.

TYPICAL DETAIL
COLUMN REINFORCING LAYOUT




NOTE
"S" DENOTES SCHEDULED TIE SPACING

TYPICAL DETAIL
COLUMN SPLICE AT FLOOR LINE
EXTERIOR COLUMN TO C.I.P. BEAM




NOTE
"S" DENOTES SCHEDULED TIE SPACING

TYPICAL DETAIL
COLUMN SPLICE AT FLOOR LINE
INTERIOR COLUMN TO C.I.P. BEAM

TENSION LAP SPLICE (INCHES)

| BAR SIZE | LAP CLASSES | TOP BARS CASE 1 | TOP BARS CASE 2 | OTHER BARS CASE 1 | OTHER BARS CASE 2 |
|---|---|---|---|---|---|
| #3 | A | 18 | 28 | 14 | 21 |
| | B | 24 | 36 | 18 | 28 |
| #4 | A | 25 | 37 | 19 | 28 |
| | B | 32 | 48 | 25 | 36 |
| #5 | A | 31 | 46 | 24 | 36 |
| | B | 40 | 60 | 31 | 46 |
| #6 | A | 37 | 55 | 28 | 43 |
| | B | 48 | 72 | 37 | 55 |
| #7 | A | 54 | 81 | 42 | 62 |
| | B | 70 | 105 | 54 | 81 |
| #8 | A | 62 | 92 | 47 | 71 |
| | B | 80 | 120 | 62 | 92 |
| #9 | A | 70 | 104 | 54 | 80 |
| | B | 90 | 136 | 70 | 104 |
| #10 | A | 78 | 117 | 60 | 90 |
| | B | 102 | 153 | 78 | 117 |
| #11 | A | 87 | 130 | 67 | 100 |
| | B | 113 | 170 | 87 | 130 |

NOTES:

1. TABULATED VALUES ARE BASED ON GRADE 60 REINFORCING BARS AND 4,000 PSI NORMAL WEIGHT CONCRETE. LENGTHS ARE IN INCHES.
2. TENSION LAP SPLICE LENGTHS ARE CALCULATED PER ACI 318-14.
3. CASES 1 AND 2, WHICH DEPEND ON THE BARS CONCRETE COVER, THE CLEAR SPACING OF THE BARS, AND THE PRESENCE OF STIRRUPS OR TIES THROUGHOUT THE SPLICE DEVELOPMENT LENGTH, ARE DEFINED AS:

   CASE 1: CLEAR SPACING NOT LESS THAN db, CLEAR COVER NOT LESS THAN db, AND STIRRUPS OR TIES NOT LESS THAN CODE MIN.
   OR
   CLEAR SPACING NOT LESS THAN 2db, AND CLEAR COVER NOT LESS THAN db

   CASE 2: ALL OTHER CONDITIONS
4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 IN. OF CONCRETE CAST BELOW THE BARS.
5. LAP SPLICE LENGTHS ARE MULTIPLES OF TENSION DEVELOPMENT LENGTHS:
   CLASS A = 1.0 ld
   CLASS B = 1.3 ld
6. FOR LIGHTWEIGHT AGGREGATE CONCRETE, MULTIPLY THE TABULATED VALUES BY 1.3.

TENSION LAP SPLICES AND
DEVELOPMENT LENGTHS

FOOTING SCHEDULE

| MARK | SIZE | THICKNESS | REINFORCING |
|---|---|---|---|
| SPREAD FOOTINGS | | | |
| F3.0 | 3'-0" X 3'-0" | 14" | 4-#5 BOTT. E/W |
| F3.5 | 3'-6" X 3'-6" | 14" | 4-#5 BOTT. E/W |
| F4.0 | 4'-0" X 4'-0" | 14" | 5-#5 BOTT. E/W |
| F4.5 | 4'-6" X 4'-6" | 15" | 5-#5 BOTT. E/W |
| F6.0 | 6'-0" X 6'-0" | 16" | 7-#5 BOTT. E/W |
| F6.5 | 6'-6" X 6'-6" | 17" | 7-#5 BOTT. E/W |
| F7.5 | 7'-6" X 7'-6" | 20" | 9-#5 BOTT. E/W |
| F3.0x4.0 | 3'-0" X 4'-0" | 14" | 4-#5 BOTT. L/W<br>5-#5 BOTT. S/W |
| F4.0x5.0 | 4'-0" X 5'-0" | 15" | 5-#5 BOTT. L/W<br>6-#5 BOTT. S/W |
| F4.0x7.0 | 4'-0" X 7'-0" | 15" | 5-#5 BOTT. L/W<br>8-#5 BOTT. S/W |
| | | | |
| | | | |
| WALL FOOTINGS | | | |
| WF1.5 | 1'-6" WIDE | 12" | 3-#4 BOTT. CONT.<br>#4 @ 12" O.C. BOTT. S/W |
| WF2.0 | 2'-0" WIDE | 12" | 3-#5 BOTT. CONT.<br>#5 @ 12" O.C. BOTT. S/W |
| WF3.0 | 3'-0" WIDE | 12" | 4-#5 TOP & BOTT. CONT.<br>#5 @ 12" O.C. TOP & BOTT. S/W |
| WF4.5 | 4'-6" WIDE | 15" | 5-#5 TOP & BOTT. CONT.<br>#5 @ 12" O.C. TOP & BOTT. S/W |
| WF5.5 | 5'-6" WIDE | 16" | 7-#5 TOP & BOTT. CONT.<br>#5 @ 12" O.C. TOP & BOTT. S/W |
| | | | |
| | | | |

FOOTING SCHEDULE

This item has been digitally signed and sealed by Carlos F. Sanz, PE, on December 12, 2023. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.


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ISSUE DATE : DECEMBER 12, 2023

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SHEET: S-501