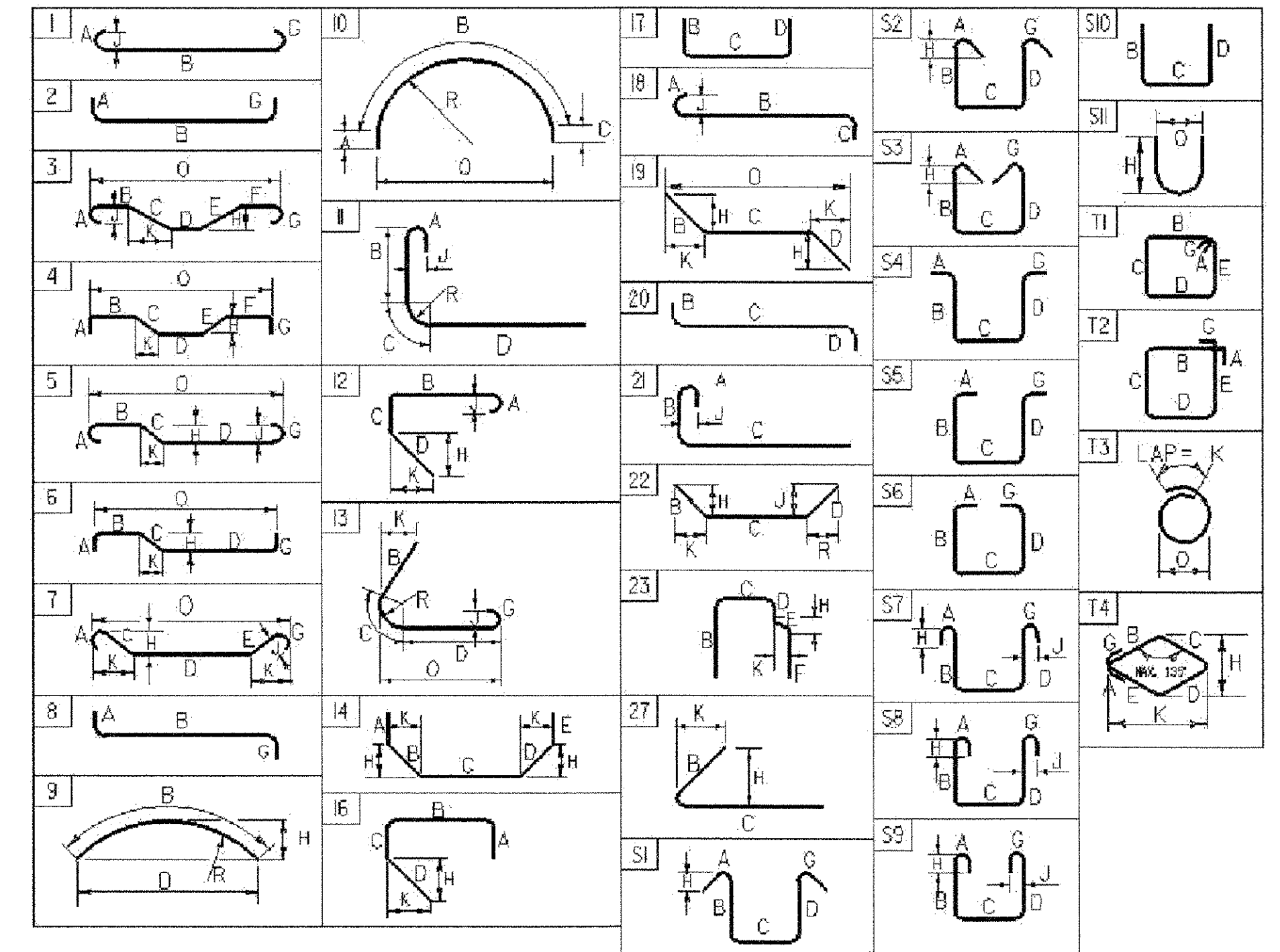


# REINFORCING STEEL SCHEDULE

| ITEM                     | EACH | SIZE | LENGTH | MARK    | TYPE | A    | B    | C    | D    | E | F | G   | H   | J   | K   | R   | O   | ITEM | EACH | SIZE | LENGTH | MARK | TYPE | A | B | C | D | E | F | G | H | J | K | R | O |  |  |
|--------------------------|------|------|--------|---------|------|------|------|------|------|---|---|-----|-----|-----|-----|-----|-----|------|------|------|--------|------|------|---|---|---|---|---|---|---|---|---|---|---|---|--|--|
| <b>APRON #1 (INLET)</b>  |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| *▲                       | 44   | 16   | 3500   | 1A1601  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 25   | 16   | 8541   | 1A1602  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 33   | 16   | 1235   | 1A1603  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 8    | 16   | 8997   | 1A1606  | STR  | 8997 |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 24   | 16   | 1935   | 1A1605  | 22   |      | 300  | 1335 | 300  |   |   |     |     | 212 | 212 | 212 | 212 |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 26   | 16   | 4020   | 1A1604  | S5   | 660  | 1350 | 300  | 1050 |   |   | 660 |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| *▲                       | 34   | 22   | 3330   | 1A2201  | 17   |      | 1510 | 1820 | ---  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| <b>INLET HEADWALL</b>    |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| *▲                       | 9    | 16   | 3433   | 1EH1601 | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 13   | 16   | 1150   | 1EH1602 | S10  |      | 450  | 250  | 450  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| <b>WINGWALL #1</b>       |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 24   | 16   | 3393   | 1W1601  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 24   | 16   | 3418   | 1W1602  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 2    | 16   | 3568   | 1W1604  | 19   |      | 459  | 3109 | ---  |   |   |     | 146 |     | 435 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 24   | 16   | 1320   | 1W1605  | 22   |      | 660  | 660  |      |   |   |     | 520 |     | 406 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 12   | 16   | 1225   | 1W1603  | S10  |      | 450  | 325  | 450  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| <b>WINGWALL #2</b>       |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 26   | 16   | 3418   | 2W1601  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 24   | 16   | 3754   | 2W1602  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 2    | 16   | 3889   | 2W1604  | 19   |      | 430  | 3459 | ---  |   |   |     | 127 |     | 411 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 24   | 16   | 1320   | 2W1605  | 22   |      | 660  | 660  |      |   |   |     | 475 |     | 459 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 13   | 16   | 1225   | 2W1603  | S10  |      | 450  | 325  | 450  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| <b>APRON #2 (OUTLET)</b> |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 39   | 16   | 3681   | 2A1601  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 26   | 16   | 6962   | 2A1602  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 30   | 16   | 1235   | 2A1603  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| *▲                       | 31   | 22   | 3245   | 2A2201  | 17   |      | 1425 | 1820 | ---  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| <b>OUTLET HEADWALL</b>   |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| *▲                       | 9    | 16   | 3433   | 2EH1601 | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 13   | 16   | 1150   | 2EH1602 | 17   |      | 450  | 250  | 450  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| <b>WINGWALL #3</b>       |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 22   | 16   | 3505   | 3W1601  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| *▲                       | 25   | 16   | 3225   | 3W1602  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 2    | 16   | 3687   | 3W1604  | 19   |      | 305  | 3382 | ---  |   |   |     | 167 |     | 255 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 26   | 16   | 1320   | 3W1605  | 22   |      | 660  | 660  |      |   |   |     | 477 |     | 456 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 11   | 16   | 1225   | 3W1603  | S10  |      | 450  | 325  | 450  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| <b>WINGWALL #4</b>       |      |      |        |         |      |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 22   | 16   | 3387   | 4W1601  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 22   | 16   | 3414   | 4W1602  | STR  |      |      |      |      |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 2    | 16   | 3403   | 4W1604  | 19   |      | 332  | 3071 | ---  |   |   |     | 124 |     | 308 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
| ▲                        | 24   | 16   | 1320   | 4W1605  | 22   |      | 660  | 660  |      |   |   |     | 522 |     | 404 |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |
|                          | 11   | 16   | 1225   | 4W1603  | S10  |      | 450  | 325  | 450  |   |   |     |     |     |     |     |     |      |      |      |        |      |      |   |   |   |   |   |   |   |   |   |   |   |   |  |  |

~ NOTES ~

- UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING 55M SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31M (ASTM A 615M-S). ALL BARS SHALL BE GRADE 420, UNLESS OTHERWISE DESIGNATED.
- FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- \* DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
- △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
- "E" IN PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



**ASTM STANDARD REINFORCING BARS**

| BAR SIZE | NOMINAL MASS (kg/m) | NOMINAL DIAMETER (mm) | CROSS SECTIONAL AREA (mm²) | PERIMETER (mm) |
|----------|---------------------|-----------------------|----------------------------|----------------|
| #10      | 0.560               | 9.5                   | 71                         | 29.84          |
| #13      | 0.994               | 12.7                  | 129                        | 39.90          |
| #16      | 1.552               | 15.9                  | 199                        | 49.95          |
| #19      | 2.235               | 19.1                  | 284                        | 60.00          |
| #22      | 3.042               | 22.2                  | 387                        | 69.74          |
| #25      | 3.973               | 25.4                  | 510                        | 79.80          |
| #29      | 5.060               | 28.7                  | 645                        | 90.16          |
| #32      | 6.404               | 32.3                  | 819                        | 101.47         |
| #36      | 7.907               | 35.8                  | 1006                       | 112.47         |
| #43      | 11.380              | 43.0                  | 1452                       | 135.09         |
| #57      | 20.240              | 57.3                  | 2581                       | 180.01         |

PROJECT NAME: **POWNA**  
 PROJECT NUMBER: **STP RS 0170(8)**  
 FILE NAME: #84c028/str/sc028rss.xls  
 PROJECT LEADER: **w. SYMONDS**  
 DESIGNED BY: **R. PELLETT**  
 REINFORCING STEEL SCHEDULE  
 PLOT DATE: 4/26/2007  
 DRAWN BY: **R. PELLETT**  
 CHECKED BY: **T. SUMNER**  
 SHEET 46 OF 65