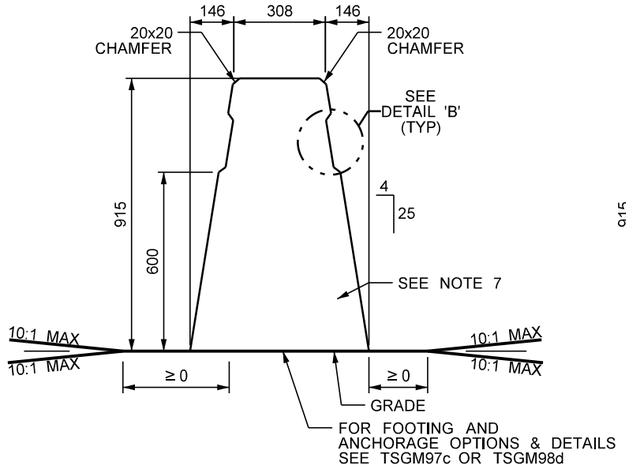
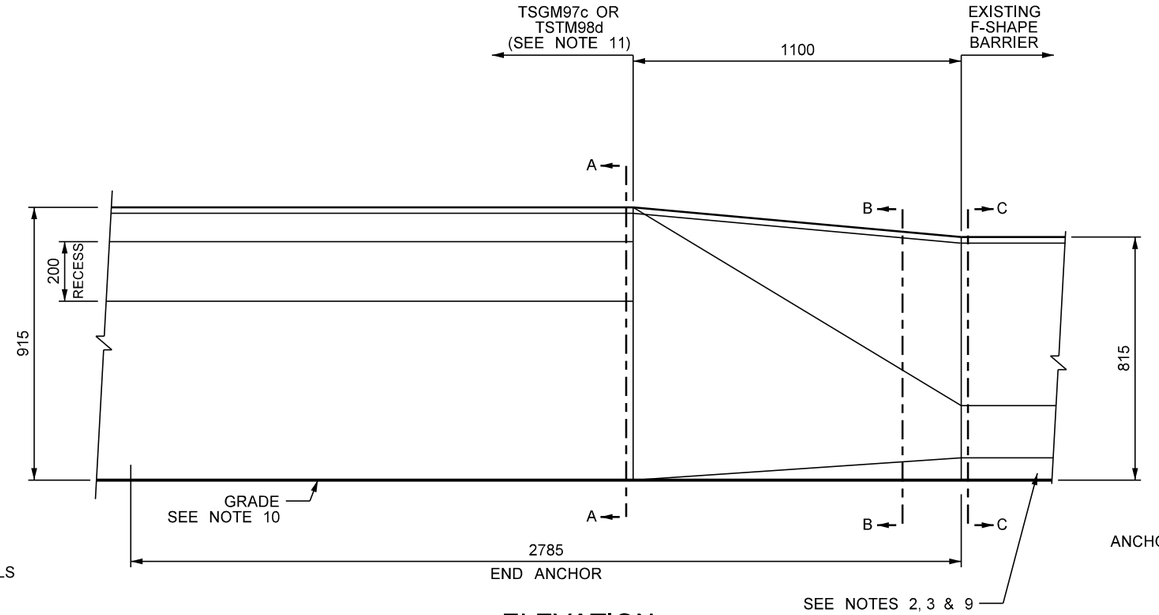


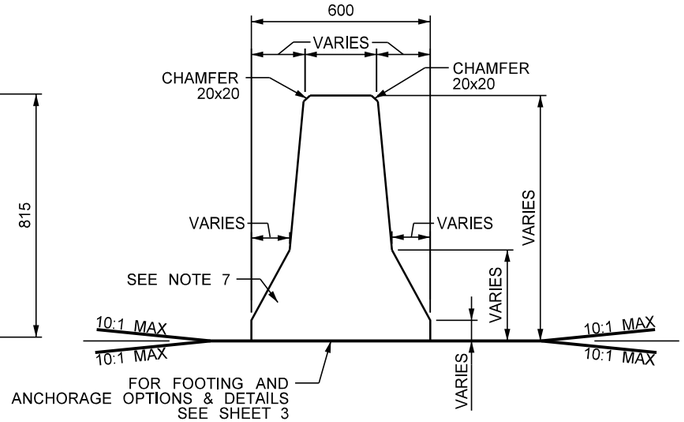

## SECTION 'A-A'

SCALE 1:20



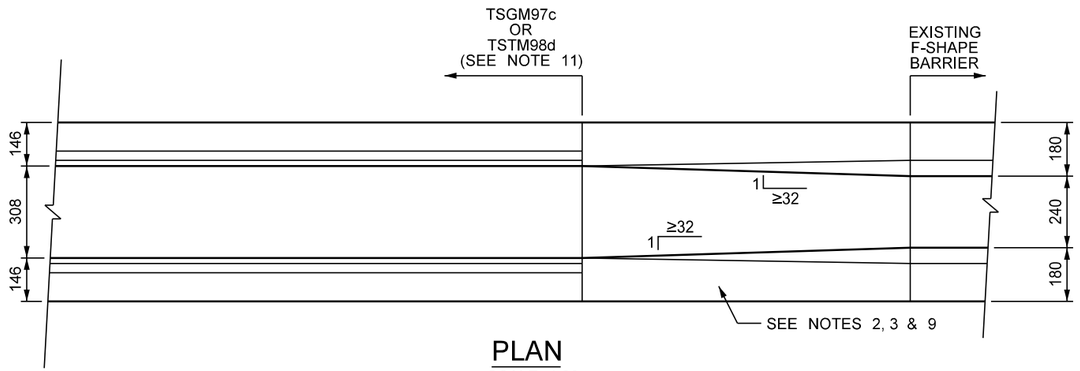

## ELEVATION

SCALE 1:20



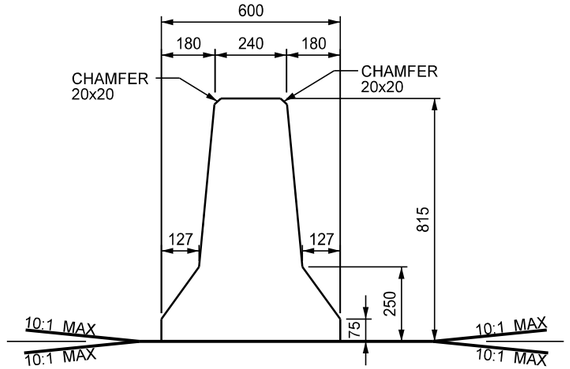

## SECTION 'B-B'

SCALE 1:20




## PLAN

SCALE 1:20




## SECTION 'C-C'

SCALE 1:20

# END SECTION DETAILS

NOTES:

1. ALL SCALES ARE APPROXIMATE.
2. LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY.
3. FORMED OR CUT CONTRACTION JOINTS SHALL BE CREATED AT EACH PLACE WHERE THE BARRIER SHAPE CHANGES, TO MATCH ADJACENT PAVEMENT JOINT SPACING, OR AT A MAXIMUM OF 6000 mm.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED.
5. THE ORIGINAL SEALED AND SIGNED DRAWING IS IN TRAFFIC ENGINEERING.
6. ALL REINFORCING SHALL HAVE MINIMUM 75 mm COVER, UNLESS OTHERWISE NOTED.
7. CONCRETE: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH: BARRIER ≥ 45 MPa AND FOOTING ≥ 35 MPa AT 28 DAYS.
8. SEE SHEET 4 FOR REINFORCING DETAILS.
9. TRANSVERSE REINFORCING NOT SHOWN FOR CLARITY.
10. SEE SHEET 3 FOR BELOW GRADE DESIGN OPTIONS.
11. TSGM97c SHOWN FOR ILLUSTRATIVE PURPOSES.

| REVISIONS | | |
|---|---|---|
| DATE | DESCRIPTION | BY |
| | | |
| | | |
| | | |
| | | |
| | | |

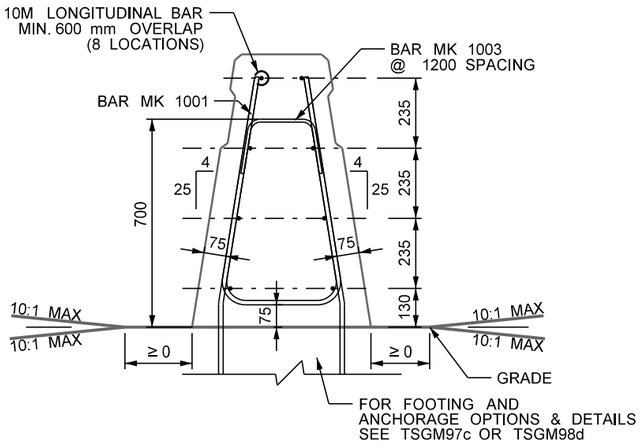
Manitoba Infrastructure
Traffic Engineering

PROVINCE OF MANITOBA
H.P. LARSEN
REGISTERED PROFESSIONAL ENGINEER

MANITOBA CONSTRAINED WIDTH CONSTANT SLOPE BARRIER - MEDIAN TL-4 TO EXISTING TL-4 F-SHAPE TRANSITION (915 TO 815)

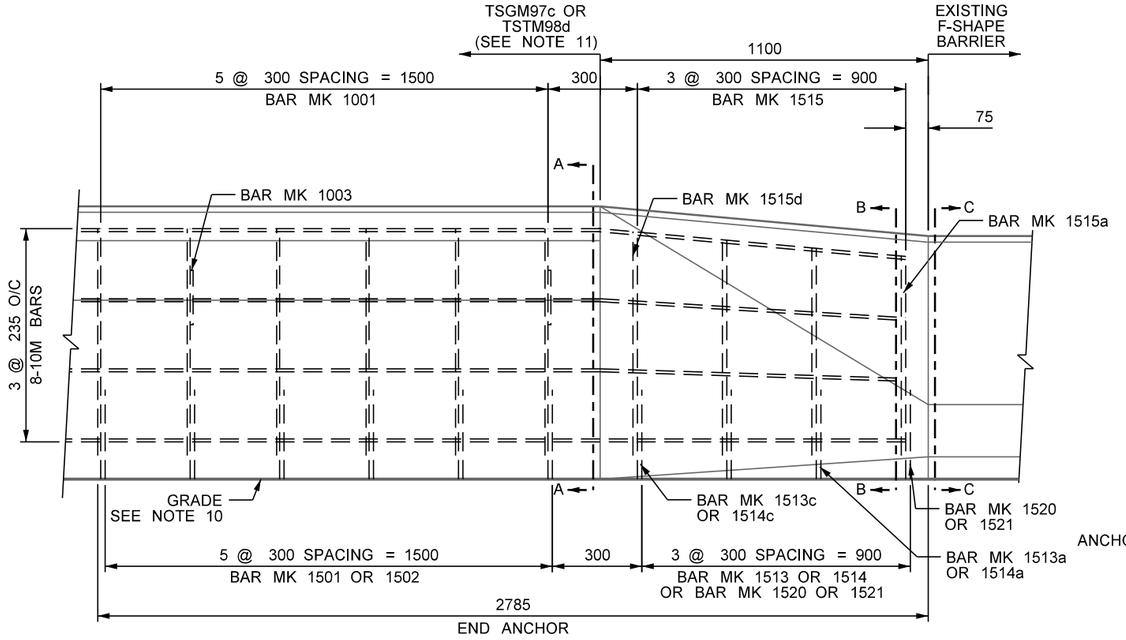
| | |
|---|---|
| SHEET NO: 1 OF 4 | DATE: 2020 - 08 |
| DESIGNED BY: | H. LARSEN |
| DRAWN BY: | L. LIEBRECHT |
| REVIEWED BY: | N. JOYAL |

TSTM95c



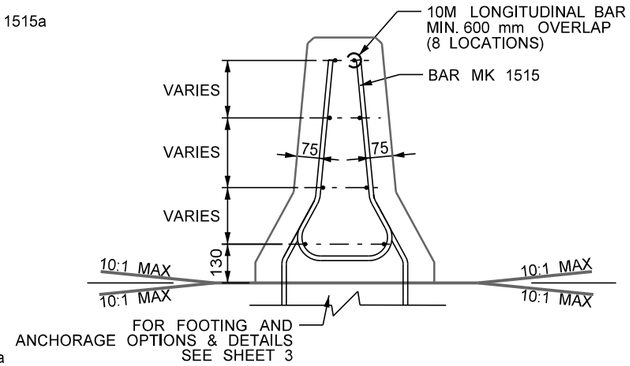

## SECTION 'A-A'

SCALE 1:20



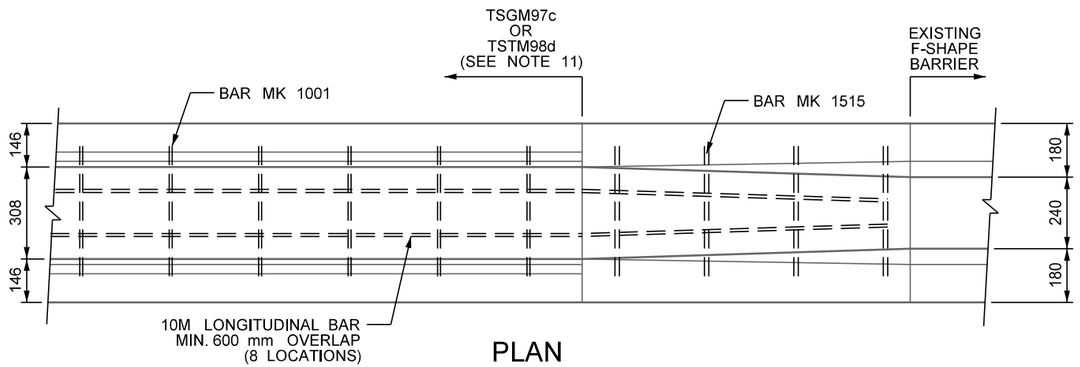

## ELEVATION

SCALE 1:20



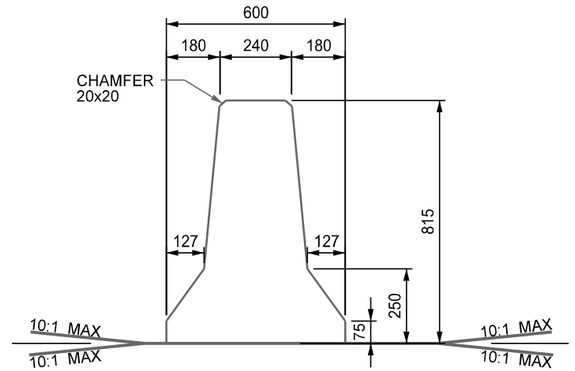

## SECTION 'B-B'

SCALE 1:20




## PLAN

SCALE 1:20




## SECTION 'C-C'

SCALE 1:20
NOTE: APPROX. DIMENSIONS
OF EXISTING BARRIER

## END SECTION DETAILS

NOTES:

1. ALL SCALES ARE APPROXIMATE.
2. LONGITUDINAL REINFORCING NOT SHOWN FOR CLARITY.
3. FORMED OR CUT CONTRACTION JOINTS SHALL BE CREATED AT EACH PLACE WHERE THE BARRIER SHAPE CHANGES, TO MATCH ADJACENT PAVEMENT JOINT SPACING, OR AT A MAXIMUM OF 6000 mm.
4. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS OTHERWISE INDICATED.
5. THE ORIGINAL SEALED AND SIGNED DRAWING IS IN TRAFFIC ENGINEERING.
6. ALL REINFORCING SHALL HAVE MINIMUM 75 mm COVER, UNLESS OTHERWISE NOTED.
7. CONCRETE: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH: BARRIER ≥ 45 MPa AND FOOTING ≥ 35 MPa AT 28 DAYS.
8. SEE SHEET 4 FOR REINFORCING DETAILS.
9. TRANSVERSE REINFORCING NOT SHOWN FOR CLARITY.
10. SEE SHEET 3 FOR BELOW GRADE DESIGN OPTIONS.
11. TSGM97c SHOWN FOR ILLUSTRATIVE PURPOSES.

| REVISIONS | | |
|---|---|---|
| DATE | DESCRIPTION | BY |
| | | |
| | | |
| | | |
| | | |
| | | |

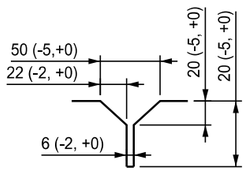
Manitoba Infrastructure
Traffic Engineering

PROVINCE OF MANITOBA
H.P. LARSEN
REGISTERED PROFESSIONAL ENGINEER

MANITOBA CONSTRAINED WIDTH CONSTANT SLOPE BARRIER - MEDIAN TL-4 TO EXISTING TL-4 F-SHAPE TRANSITION (915 TO 815)

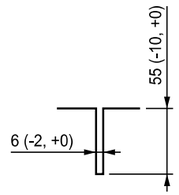
| | |
|---|---|
| SHEET NO: 2 OF 4 | DATE: 2020 - 08 |
| DESIGNED BY: | H. LARSEN |
| DRAWN BY: | L. LIEBRECHT |
| REVIEWED BY: | N. JOYAL |

TSTM95c




HAND FORMED BARRIER

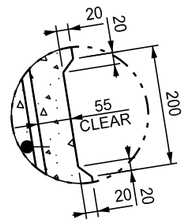
SCALE 1:5




SLIP FORMED BARRIER (SAW CUT)

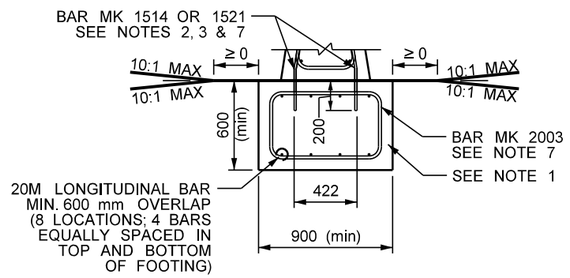
SCALE 1:5

## CONTRACTION JOINT DETAILS




DETAIL 'B'

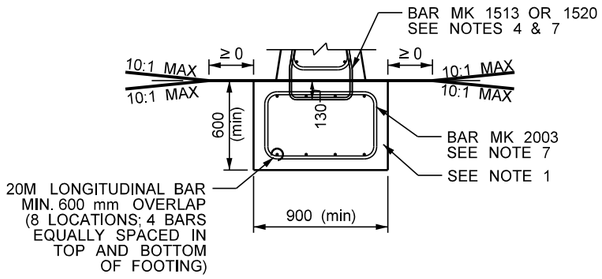
SCALE 1:10




SECTION 'B-B'

EXISTING FOOTING

SCALE 1:40




SECTION 'B-B'

NEW FOOTING

SCALE 1:40

NOTES:

1. NEW OR EXISTING REINFORCED CONCRETE: CSA A23.1, EXPOSURE CLASS C-1, AIR CONTENT CATEGORY 1, COMPRESSIVE STRENGTH FOOTING ≥ 35 MPa AT 28 DAYS.
2. HOLES IN FOOTING SHALL BE DRILLED VERTICALLY 2 mm LARGER THAN REINFORCING.
3. HOLES IN FOOTING SHALL BE PREPARED FOR EPOXY (HILTI HIT RE 500, OR APPROVED ALTERNATIVE) AS DIRECTED BY MANUFACTURER.
4. STIRRUP SHALL BE SECURELY ATTACHED TO REBAR.
5. ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE INDICATED.
6. SEE SHEET 4 FOR REINFORCEMENT DETAILS.
7. SPACING TO MATCH BAR MK 1001 OR 1515.
8. ALL REINFORCING SHALL HAVE MINIMUM 75 mm COVER, UNLESS OTHERWISE INDICATED.

| REVISIONS | | |
|---|---|---|
| DATE | DESCRIPTION | BY |
| | | |
| | | |
| | | |
| | | |
| | | |

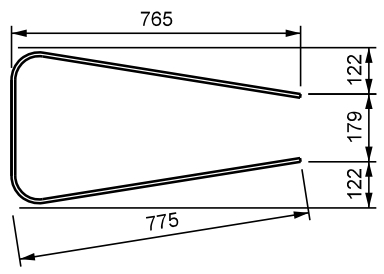
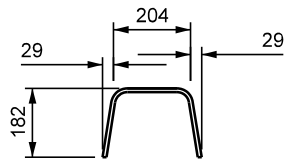
Manitoba Infrastructure
Traffic Engineering

PROVINCE OF MANITOBA
H.P. LARSEN
REGISTERED PROFESSIONAL ENGINEER

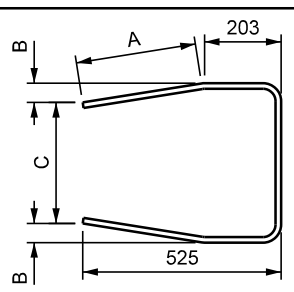
MANITOBA CONSTRAINED WIDTH CONSTANT SLOPE BARRIER - MEDIAN TL-4 TO EXISTING TL-4 F-SHAPE TRANSITION (915 TO 815)

| | |
|---|---|
| SHEET NO: 3 OF 4 | DATE: 2020 - 08 |
| DESIGNED BY: | H. LARSEN |
| DRAWN BY: | L. LIEBRECHT |
| REVIEWED BY: | N. JOYAL |

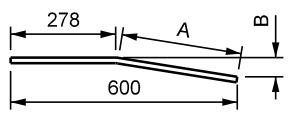
TSTM95c

| MARK | TYPE | PIN DIAMETER (mm) | TOTAL LENGTH (mm) | MASS kg | MASS kg/m INTERIOR SEC. | MASS kg/m END SEC. | BENDING DIAGRAM |
|---|---|---|---|---|---|---|---|
| 1001 | BENT | 125 | 1884 | 1.48 | --- | 3.09 |   |
| 1003 | BENT | 65 | 548 | 0.43 | --- | 0.30 |   |

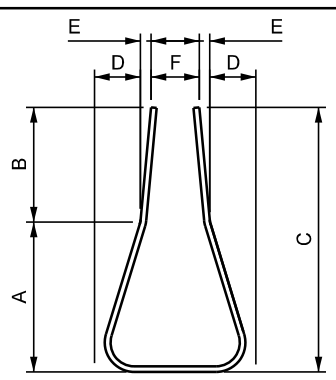
| MARK | TYPE | PIN DIAMETER (mm) | TOTAL LENGTH (mm) | MASS kg | MASS kg/m INTERIOR SEC. | MASS kg/m END SEC. | DIMENSION A | DIMENSION B | DIMENSION C |
|---|---|---|---|---|---|---|---|---|---|
| 1513a | BENT | 125 | 1505 | 2.36 | --- | 0.82 | 322 | 97 | 228 |
| 1513b | BENT | 125 | 1859 | 2.92 | --- | 1.02 | 319 | 68 | 286 |
| 1513c | BENT | 125 | 1859 | 2.92 | --- | 1.02 | 319 | 55 | 313 |

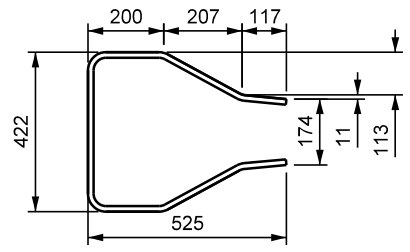
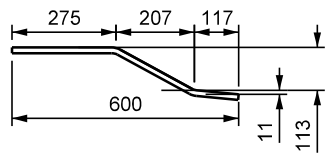
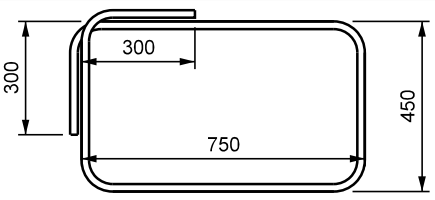



| MARK | TYPE | PIN DIAMETER (mm) | TOTAL LENGTH (mm) | MASS kg | MASS kg/m INTERIOR SEC. | MASS kg/m END SEC. | DIMENSION A | DIMENSION B |
|---|---|---|---|---|---|---|---|---|
| 1514a | BENT | 125 | 539 | 0.85 | --- | 0.59 | 322 | 97 |
| 1514b | BENT | 125 | 532 | 0.84 | --- | 0.58 | 319 | 68 |
| 1514c | BENT | 125 | 537 | 0.84 | --- | 0.58 | 319 | 55 |

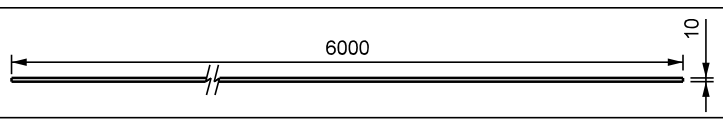
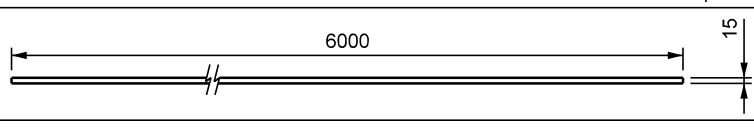
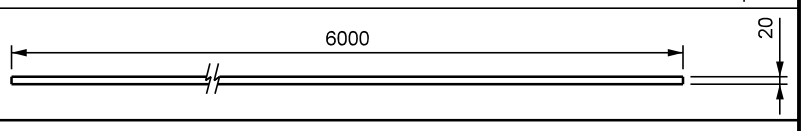



| MARK | TYPE | PIN DIAMETER (mm) | TOTAL LENGTH (mm) | MASS kg | MASS kg/m INTERIOR SEC. | MASS kg/m END SEC. | DIMENSION A | DIMENSION B | DIMENSION C | DIMENSION D | DIMENSION E | DIMENSION F |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1515a | BENT | 125 | 1654 | 2.60 | --- | 0.90 | 208 | 465 | 673 | 113 | 44 | 109 |
| 1515b | BENT | 125 | 1654 | 2.60 | --- | 0.90 | 208 | 465 | 673 | 113 | 44 | 109 |
| 1515c | BENT | 125 | 1736 | 2.73 | --- | 0.95 | 396 | 304 | 700 | 121 | 28 | 127 |
| 1515d | BENT | 125 | 1809 | 2.84 | --- | 1.00 | 578 | 153 | 731 | 125 | 15 | 147 |



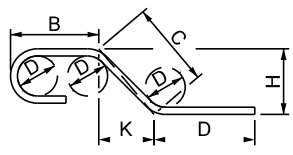

| MARK | TYPE | PIN DIAMETER (mm) | TOTAL LENGTH (mm) | MASS kg | MASS kg/m INTERIOR SEC. | MASS kg/m END SEC. | BENDING DIAGRAM |
|---|---|---|---|---|---|---|---|
| 1520 | BENT | 125 | 1488 | 2.34 | --- | 0.81 |   |
| 1521 | BENT | 125 | 629 | 0.40 | --- | 0.28 |   |
| 2003 | BENT | 125 | 2883 | 6.79 | --- | 22.63 |   |

## LONGITUDINAL REINFORCING - MASS (kg/m)

| BAR | INTERIOR SECTION | END SECTION | FOOTING OPTION 1 | FOOTING OPTION 2 | FOOTING OPTION 3 | |
|---|---|---|---|---|---|---|
| 10M | 8.24 | 8.24 | --- | --- | --- |   |
| 15M | --- | --- | 19.78 | 9.89 | --- |   |
| 20M | --- | --- | --- | --- | 19.78 |   |

NOTES:

1. ALL DIMENSIONS GIVEN IN BENDING DIAGRAM ARE OUT TO OUT, EXCEPT RADII AND EXTENSIONS ON 90°, 135° & 180° HOOKS. EXTENSIONS ON 90°, 135° & 180° HOOKS ARE THE "A" OR "G" DIMENSIONS FOR THE STANDARD 90°, 135° & 180° HOOKS REFERENCED FROM THE RSIC "MANUAL OF STANDARD PRACTICE". RADII ARE INSIDE DIMENSIONS. ALL REINFORCING STEEL BENDS AND HOOKS SHALL CONFORM TO CLAUSE 6.6.2 OF CSA A23.1 UNLESS NOTED OTHERWISE IN THE BILL OF REINFORCING STEEL.
2. ALL REINFORCING STEEL SHALL BE DEFORMED STEEL UNLESS NOTED OTHERWISE IN THE BILL OF REINFORCING STEEL.
3. ALL REINFORCING STEEL SHALL CONFORM TO CSA G30.18-M92 "BILLET STEEL BARS FOR CONCRETE REINFORCEMENT" GRADE 400W, UNLESS NOTED OTHERWISE IN THE BILL OF REINFORCING STEEL.
4. LIKE BARS SHALL BE BUNDLED, SECURELY TIED, AND IDENTIFIED AS TO MARK No. BY APPROPRIATE MEANS. ALL OTHER ITEMS TO BE IDENTIFIED IN A SIMILAR FASHION.
5. BARS MARKED WITH THE SUFFIX "P" SHALL BE PLAIN UNDEFORMED BARS IN ACCORDANCE WITH CAN/CSA G40.21-M92 GRADE 300W.
6. ALL BARS SHALL BE BENT IN ACCORDANCE WITH THE FOLLOWING DETAIL:




REVISIONS

| DATE | DESCRIPTION | BY |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |

Manitoba Infrastructure
Traffic Engineering

PROVINCE OF MANITOBA
H.P. LARSEN
REGISTERED PROFESSIONAL ENGINEER

MANITOBA CONSTRAINED WIDTH CONSTANT SLOPE BARRIER - MEDIAN TL-4 TO EXISTING TL-4 F-SHAPE TRANSITION (915 TO 815)

SHEET NO: 4 OF 4 | DATE: 2020 - 08
DESIGNED BY: H. LARSEN
DRAWN BY: L. LIEBRECHT
REVIEWED BY: N. JOYAL

TSTM95c