# Concrete & Miscellaneous Details

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**DRAWING INDEX**

**CONCRETE & MISCELLANEOUS DETAILS**

**ISSUE DATE:** SEPTEMBER 2018

**APPROVED BY:** J. LEE
## Concrete & Miscellaneous Details

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OUTSIDE EDGE DETAIL

1. SIDEWALK TYP. 1.8m CLEAR WIDTH OR AS SPECIFIED BY CITY ENGINEER.
2. DIMENSION "a" SHALL BE EQUAL SPACING FOR THE ENTIRE SIDEWALK BLOCK AT A DESIRED LENGTH OF 1.5m/1.8m. STONES TO BE AS CLOSE TO SQUARE AS POSSIBLE.
3. PRIOR NOTICE AND APPROVAL OF THE CITY ENGINEER, OR REPRESENTATIVE INSPECTOR, IS REQUIRED BEFORE SIDEWALK RESTORATIONS CAN COMMENCE.
4. WHERE SPECIAL TREATMENT ZONES EXIST, THOSE STANDARDS MUST BE FOLLOWED. SEE VANCOUVER.CA/STREETSCAPE FOR LOCATIONS AND DETAILS.
5. USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.
6. SIDEWALK WIDTHS REFER TO THE CLEAR WIDTHS.
7. CUT JOINTS SHALL BE SAWED INTO THE SIDEWALK WITHIN 24 HOURS AFTER THE POUR TO MINIMIZE ANY CRACKING.
8. ARTIFICIAL TURF IS NOT A SUPPORTED TREATMENT ON PUBLIC PROPERTY.
9. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
SECTION A-A
CURB WALK 1

SECTION B-B
STANDARD CONTROL JOINT

NOTES:
1. SIDEWALK TYP. 2.0m OR AS DIRECTED BY CITY ENGINEER (MIN 1.8m).
2. DIMENSION "a" & "b" SHALL BE EQUAL SPACING AT A DESIRED LENGTH OF 1.5m - 2.1m. STONES TO BE AS CLOSE TO SQUARE AS POSSIBLE.
3. WHEN DIMENSION 'c' OR 'd' IS GREATER THAN 8.0m:
   i) EVEN NUMBER OF SIDEWALK STONES:
      PLACE A CONTROL JOINT AT THE MIDPOINT AND INLINE WITH EXISTING SIDEWALK CONTROL JOINT.
   ii) ODD NUMBER OF SIDEWALK STONES:
      PLACE TWO CONTROL JOINTS AT EQUAL DISTANCE FROM MIDPOINT AND INLINE WITH EXISTING SIDEWALK CONTROL JOINT.
4. PRIOR NOTICE AND APPROVAL OF THE CITY ENGINEER, OR REPRESENTATIVE INSPECTOR, IS REQUIRED BEFORE SIDEWALK RESTORATIONS CAN COMMENCE.
5. WHERE SPECIAL TREATMENT ZONES EXIST, THOSE STANDARDS MUST BE FOLLOWED. SEE VANCOUVER.CA/STREETSCAPE FOR LOCATIONS AND DETAILS.
6. USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.
7. SIDEWALK WIDTHS REFER TO THE CLEAR WIDTHS.
8. CUT JOINTS SHALL BE SAWED INTO THE SIDEWALK WITHIN 24 HOURS AFTER THE POUR TO MINIMIZE ANY CRACKING.
9. ARTIFICIAL TURF IS NOT A SUPPORTED TREATMENT ON PUBLIC PROPERTY.
10. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.
SECTION A-A
CURB WALK 2

SECTION B-B
STANDARD CONTROL JOINT

NOTES:
1. WHEN SIDEWALK IS >2.4m CLEAR WIDTH, CENTER SCORING AT EQUAL WIDTH.
2. DIMENSION "a" & "b" SHALL BE EQUAL SPACING AT A DESIRED LENGTH OF 1.8m ±0.25m. STONES TO BE AS CLOSE TO SQUARE AS POSSIBLE.
3. WHEN DIMENSION 'c' OR 'd' IS GREATER THAN 8.0m:
   i) EVEN NUMBER OF SIDEWALK STONES:
      PLACE A CONTROL JOINT AT THE MIDPOINT AND INLINE WITH EXISTING SIDEWALK CONTROL JOINT.
   ii) ODD NUMBER OF SIDEWALK STONES:
      PLACE TWO CONTROL JOINTS AT EQUAL DISTANCE FROM MIDPOINT AND INLINE WITH EXISTING SIDEWALK CONTROL JOINT.
4. PRIOR NOTICE AND APPROVAL OF THE CITY ENGINEER, OR REPRESENTATIVE INSPECTOR, IS REQUIRED BEFORE SIDEWALK RESTORATIONS CAN COMMENCE.
5. WHERE SPECIAL TREATMENT ZONES EXIST, THOSE STANDARDS MUST BE FOLLOWED. SEE VANCOUVER.CA/STREETSCAPE FOR LOCATIONS AND DETAILS.
6. USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.
7. SIDEWALK WIDTHS REFER TO THE CLEAR WIDTHS.
8. CUT JOINTS SHALL BE SAWED INTO THE SIDEWALK WITHIN 24 HOURS AFTER THE POUR TO MINIMIZE ANY CRACKING.
9. ARTIFICIAL TURF IS NOT A SUPPORTED TREATMENT ON PUBLIC PROPERTY.
10. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

SIDEWALKS
COMMERCIAL SIDEWALK > 2.4m

ISSUE DATE: SEPTEMBER 2018
APPROVED BY: J. LEE
NOTE "A" FOR DETAILS, SEE DWG C6.1.
NOTE "B" WHERE P.C. CONCRETE PAVEMENT BASE IS USED, CURB CONSTRUCTION SHALL BE AS SHOWN ON DWG C6.2.
NOTE "C" CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50 mm DEPTH).
NOTE "D" PLACE A MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR). EXCAVATE 1.2m WIDE FOR CURB & GUTTER.

USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.

NOTE:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
SECTION AT PEDESTRIAN CURB RAMP CROSSING AND DRIVEWAY (RESIDENTIAL & COMMERCIAL) CROSSING

7mm RAD. 135 410 15 SLOPE 1 TO 25
25mm RAD. 25mm RAD. 150mm FACE
6-13mm RAD. SPOT ELEVATION LOCATION
NOTE "C"

NOTE "A" 150 Note "B"

NOTE "D"

SECTION AT PEDESTRIAN CURB RAMP CROSSING AND DRIVEWAY (RESIDENTIAL & COMMERCIAL) CROSSING

6-13mm RAD. 135 410 15 SLOPE 1 TO 25
25mm RAD. 25mm RAD. 150mm FACE
6-13mm RAD. SPOT ELEVATION LOCATION
NOTE "C"

NOTE "A" 150 Note "B"

NOTE "D"

NOTE "A" FOR DETAILS, SEE DWG C6.1.
NOTE "B" WHERE P.C. CONCRETE PAVEMENT BASE IS USED, CURB CONSTRUCTION SHALL BE AS SHOWN ON DWG C6.2.
NOTE "C" CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH).
NOTE "D" PLACE A MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR). EXCAVATE 1.2m WIDE FOR CURB & GUTTER.

USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.

NOTE:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
NOTE "A" FOR DETAILS, SEE DWG C6.1.
NOTE "B" CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH).
NOTE "C" PLACE A MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95 MPD (19mm MINUS CRUSHED GRANULAR). EXCAVATE 1.2m WIDE FOR CURB & GUTTER.

USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.

NOTE:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.
NOTE "A" FOR DETAILS, SEE DWG C6.1.
NOTE "B" CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH).
NOTE "C" PLACE A MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR).
EXCAVATE 1.2m WIDE FOR CURB & GUTTER.

NOTE:  
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.
NOTE "A"  CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH).
NOTE "B"  PLACE A MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR).

USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.

NOTE:
1.  ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
INCREASE THICKNESS BY 50mm FOR ARTERIAL ROUTES AND AREAS WITH BUS Stops

NOTE "A"
FOR DETAILS, SEE DWG C6.1.
NOTE "B" WHERE P.C. CONCRETE PAVEMENT BASE IS USED, CURB CONSTRUCTION SHALL BE AS SHOWN ON DWG C6.2.
NOTE "C" CONTROL JOINTS CUT AT 4.5m INTERVALS (MIN. 50mm DEPTH).
NOTE "D" PLACE A MINIMUM OF 150mm APPROVED GRANULAR BASE AT 95% MPD (19mm MINUS CRUSHED GRANULAR). EXCAVATE 1.2m WIDE FOR CURB & GUTTER.

USE ONLY CITY APPROVED MIN. 32 MPa CONCRETE MIX.

NOTE:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
NOTE:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
NOTE 'A' DRAINAGE MATERIAL SHALL BE AS PER 31 05 17 19mm CLEAR DRAIN ROCK.

NOTE:
1. CURB DRAINS TO CONNECT TO STORM SEWER.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
ASPHALTIC CONCRETE 3mm TO 6mm ABOVE GUTTER.

EDGES TRIMMED AS PER STANDARD SPECIFICATION FOR ASPHALTIC CONCRETE PAVING.

FOR CONSTRUCTION JOINT IN P.C. CONCRETE PAVEMENT AND P.C. CONCRETE BASE

STEP TREATMENT FOR EDGES OF ASPHALTIC CONCRETE PAVED STRIPS

ROUGH TIMBER FORM FOR PAVED STRIPS WITH SURFACE-APPLIED CURB

NOTE:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
PARTS LIST

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<tr>
<td>1</td>
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<td>STEEL CURB INLET</td>
<td>STEEL CURB INLET</td>
<td>1150.9mm</td>
<td>238.1mm</td>
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<td>2</td>
<td>1</td>
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<td>SUPPORT STRIP</td>
<td>SUPPORT STRIP</td>
<td>650.9mm</td>
<td>30.2mm</td>
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NOTES:
1. ENSURE NO SHARP EDGES.
2. SUPPORT STRIP MAY NOT BE NEEDED FOR ALL APPLICATIONS **CHECK WITH FOREMAN BEFORE FABRICATION**.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

CURBS
STANDARD STEEL CURB INLET

ISSUE DATE: SEPTEMBER 2018
APPROVED BY: J. LEE
NOTES:
1. CONTRACTOR SHALL ENSURE THAT CROSSING LAYOUT IS APPROVED BY CITY INSPECTORS PRIOR TO POURING OF CONCRETE.
2. CONCRETE MIXES AS PER DWG C7.2.
3. ARTIFICIAL TURF IS NOT A SUPPORTED TREATMENT ON PUBLIC PROPERTY.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
LEADING TO/FROM AN ARTERIAL STREET CARRYING LESS THAN 10 VEHICLE PARKING SPACES.

LEADING TO/FROM AN ARTERIAL STREET CARRYING 10 OR MORE VEHICLE PARKING SPACES.

NOTES:
1. FOR WIDER CROSSINGS, RAMP AND FLARE WIDTHS SHALL REMAIN AS ABOVE.
2. CONTRACTOR SHALL ENSURE THAT CROSSING LAYOUT IS APPROVED BY CITY INSPECTORS PRIOR TO POURING OF CONCRETE.
3. CURB AND GUTTER AS PER DWG C4.1 (TYPE "A") UNLESS OTHERWISE SPECIFIED.
4. CONCRETE MIX:
   A) CITY MIX NO. 1503 OR EQUIVALENT MIX APPROVED BY THE CITY CAN BE USED AS LONG AS NO TRAFFIC OR WEIGHT LOAD PUT ON THE CROSSING FOR 3 DAYS AFTER POUR.
   B) STRENGTH OF 20MPa IN 24 HRS. OR EQUIVALENT MIX APPROVED BY THE CITY CAN BE USED AS LONG AS NO TRAFFIC OR WEIGHT LOAD IS PUT ON THE CROSSING FOR 24 HOURS AFTER POUR.
5. ARTIFICIAL TURF IS NOT A SUPPORTED TREATMENT ON PUBLIC PROPERTY.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
NOTES:
1. CROSSING THICKNESSES (INCLUDING BASE & SUBBASE DETAILS) TO MEET MINIMUM REQUIREMENTS IN DWG C7.1 & C7.2
2. ARTIFICIAL TURF IS NOT A SUPPORTED TREATMENT ON PUBLIC PROPERTY.

CROSSING

TRANSITION FROM CURB TO CROSSING SHALL BE FLUSH

GRADE CHANGE TO TAKE PLACE IN BOULEVARD AS MUCH AS POSSIBLE, UP TO MAX. 10% GRADE.

TYPE "A" CURB & GUTTER UNLESS OTHERWISE SPECIFIED

BIKE LANE

SECTION A-A

SCALE: N.T.S.
CONCRETE TO PEDESTRIAN CONTROL BUTTON, IF A CONTROLLED CROSSING

MINIMUM RAMP LENGTH BASED ON FLAT CONDITIONS

RAMP THICKNESS SHALL TAPER FROM 200mm BACK OF CURB TO 100mm BACK OF RAMP

TRANSITION FROM CURB TO RAMP SHALL BE FLUSH

CURB & GUTTER DWG C4.1 OR OTHERWISE SPECIFIED

SCORE LINES MUST LINE UP IN DIRECTION OF TRAVEL AND BE PARALLEL WITH THE CROSSING OR MARKED CROSSWALK. MINIMUM 6 SCORE LINES 150mm APART TO FILL RAMP. USE 9.5mm TROWEL.

SECTION A-A CURB RAMP

NOTES:
1. STANDARD RAMP LENGTH: 2.0m TYP. (+) AT CENTRE OF RAMP.
2. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%.
3. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS.
4. ADJUST LENGTH OF RAMP AS REQUIRED.
5. WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT, CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

CURB RAMPS
DOUBLE CURB RAMP (PREFERRED)

ISSUE DATE: SEPTEMBER 2018
APPROVED BY: J. LEE
CROSSWALK

CONCRETE TO PEDESTRIAN CONTROL BUTTON, IF A CONTROLLED CROSSING

TOP OF DROP

BOTTOM OF DROP

CROSSWALK

RAMP THICKNESS SHALL TAPER FROM 200mm BACK OF CURB TO 100mm BACK OF RAMP

TRANSITION FROM CURB TO RAMP SHALL BE FLUSH

CURB & GUTTER DWG C4.1

SECTION A-A CURB RAMP

NOTE: MAX. RISE 10mm FROM GUTTER LINE TO BACK OF CURB

SCORE LINES MUST LINE UP IN DIRECTION OF TRAVEL AND BE PARALLEL WITH THE CROSSING OR MARKED CROSSWALK. MINIMUM 6 SCORE LINES 150mm APART TO FILL RAMP. USE 9.5mm TROWEL.

1. STANDARD RAMP LENGTH: 2.0m TYP. (±) AT CENTRE OF RAMP.
2. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%.
3. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS.
4. ADJUST LENGTH OF RAMP AS REQUIRED.
5. WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT, CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.
SCORE LINES MUST LINE UP IN DIRECTION OF TRAVEL AND BE PARALLEL WITH THE CROSSING OR MARKED CROSSWALK. MINIMUM 6 SCORE LINES 150mm APART TO FILL RAMP. USE 9.5mm TROWEL.

RAMP THICKNESS SHALL TAPER FROM 200mm BACK OF CURB TO 100mm BACK OF RAMP

TRANSITION FROM CURB TO RAMP SHALL BE FLUSH

NOTE: MAX. RISE 10mm FROM GUTTER LINE TO BACK OF CURB

1. STANDARD RAMP LENGTH: 2.0m TYP. (±) AT CENTRE OF RAMP.
2. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%.
3. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS.
4. ADJUST LENGTH OF RAMP AS REQUIRED.
5. WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT, CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.
ADJUST WIDTH TO MATCH ISOLATED SIDEWALKS

RAMP TO BE LOCATED IN LINE WITH OPPOSITE RAMP ACROSS STREET

SCORE LINES MUST LINE UP IN DIRECTION OF TRAVEL AND BE PARALLEL WITH THE CROSSING.
MIN. 6 SCORE LINES 150mm APART TO FILL RAMP. USE 9.5mm TROWEL.

RAMP OUTLINE IN CONCRETE OR GRASS

SECTION A-A
CURB RAMP

NOTE: MAX. RISE 10mm FROM GUTTER LINE TO BACK OF CURB

NOTES:
1. STANDARD RAMP LENGTH : 2.0m TYP. (±) AT CENTRE OF RAMP.
2. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%.
3. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS.
4. ADJUST LENGTH OF RAMP AS REQUIRED.
5. WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT, CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.
FLARE NOT REQUIRED IF ADJACENT AREA IS SOFTSCAPE

1. STANDARD RAMP LENGTH: 2.0m TYP. (±) AT CENTRE OF RAMP.
2. RECOMMENDED RAMP SLOPE: 7.1% ± 1.2%.
3. MAX. SLOPE 8.3% (1:12) WHERE TOPOGRAPHY PERMITS.
4. ADJUST LENGTH OF RAMP AS REQUIRED.
5. WHEN SITE CONDITIONS DO NOT PERMIT TYPICAL LAYOUT, CONTACT CITY ENGINEER FOR APPROVAL OF DESIGN.
6. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

NOTES:

SCALE: N.T.S.

ISSUE DATE: SEPTEMBER 2018
APPROVED BY: J. LEE

LANEWAYS
LANE CURB RAMP
**SECTION A-A**

- **Concrete to Flow Out Below Wood Form at Natural Angle Repose**
- **89mm Formed Section** (Height of 2x4 Wood Form)
- **Concrete Crossing**
- **Asphalt Pavement**
- **Granular Base Approved by the City**
  - Minimum 95% MPD

**NOTES:**
1. To be installed where directed by City Engineer.
2. Use only City approved curb and gutter and sidewalk mixes.
3. All dimensions in millimeters unless stated otherwise.

**SCALE:** N.T.S.

**LANEWAYS CONCRETE CROSSING**

**ISSUE DATE:** September 2018

**APPROVED BY:** J. Lee
NOTE:
1. CROSSING THICKNESSES (INCLUDING BASE & SUBBASE DETAILS) TO MEET MINIMUM REQUIREMENTS IN DWG C9.1 & C9.2.
2. SCORE LINES TO REFERENCE DIMENSIONING IN DWG C9.2.

GRADE CHANGE TO TAKE PLACE IN BOULEVARD AS MUCH AS POSSIBLE. UP TO MAX. 10% GRADE.

TRANSITION FROM CURB TO CROSSING SHALL BE FLUSH

TYPE "A" CURB & GUTTER UNLESS OTHERWISE SPECIFIED

BIKE LANE LANEWAY CROSSING

SCALE: N.T.S.
# STANDARD DETAIL DRAWINGS
## ENGINEERING SERVICES - VANCOUVER, B.C.

### DRAWING No.
C12.1

## PARTS LIST

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>PART #</th>
<th>DESCRIPTION</th>
<th>MATERIAL</th>
<th>LENGTH</th>
<th>WIDTH</th>
<th>MASS (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>CROSBY 1014075</td>
<td>9.5mm WELDLESS END LINK</td>
<td>STEEL, GALVANIZED</td>
<td></td>
<td></td>
<td>0.10</td>
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<tr>
<td>2</td>
<td>1</td>
<td>CONCRETE ROD</td>
<td></td>
<td>STEEL, MILD</td>
<td>165.1</td>
<td>12.7</td>
<td>0.16</td>
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<tr>
<td>3</td>
<td>1</td>
<td>COVER PLATE</td>
<td></td>
<td>STEEL, MILD, 9.5mm</td>
<td>120.7</td>
<td>120.7</td>
<td>0.88</td>
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<tr>
<td>4</td>
<td>3</td>
<td>IFI 12B-3/8-16</td>
<td>HEX COUPLING NUT - UNC</td>
<td>VINYL (DECAL)</td>
<td>277.8</td>
<td>101.6</td>
<td>0.03</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>75mm SCHED 40 PIPE</td>
<td>PIPE INSERT</td>
<td>STEEL, MILD</td>
<td></td>
<td></td>
<td>0.03</td>
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<tr>
<td>6</td>
<td>1</td>
<td>100mm SCHED 40 PIPE</td>
<td>PIPE RECEIVER</td>
<td>STEEL, MILD</td>
<td>1124.0</td>
<td></td>
<td>11.01</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>PIPE STIFFENER</td>
<td></td>
<td>STEEL, MILD, 6.4mm</td>
<td>355.6</td>
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<td>5.71</td>
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<tr>
<td>8</td>
<td>1</td>
<td>ROD</td>
<td></td>
<td>STEEL, MILD, 6.4mm</td>
<td>111.1</td>
<td>117.5</td>
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<tr>
<td>9</td>
<td>1</td>
<td>SHARPEPRODUCTS 9112</td>
<td>STEEL DOMED WELD-ON CAP</td>
<td>STEEL, MILD</td>
<td>50.8</td>
<td>9.5</td>
<td>0.03</td>
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<tr>
<td>10</td>
<td>1</td>
<td>CONCRETE ROD</td>
<td></td>
<td>STEEL, MILD</td>
<td></td>
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<td>0.27</td>
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<tr>
<td>11</td>
<td>1</td>
<td>SQUARE RECESSED FLAT</td>
<td>COUNTERSUNK HEAD MACHINE</td>
<td>STEEL, MILD</td>
<td></td>
<td></td>
<td>0.02</td>
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<tr>
<td>12</td>
<td>1</td>
<td>SCREW - TYPE III - UNC</td>
<td>#12 PADLOCK</td>
<td>BRASS, SOFT YELLOW</td>
<td></td>
<td></td>
<td>0.38</td>
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</tbody>
</table>

### NOTES:
1. BURN TABLE PROGRAMS MADE FOR COVER PLATE, STIFFENER, AND LOCK TAB.
2. ENTIRE ASSEMBLY INCLUDING BASE TO HDG (HOT DIPPED GALVANIZED) CONFIRM WITH RELATED WORK ORDER.
3. PAINTING AS PER WORK ORDER.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

**SCALE:** N.T.S.

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**BOLLARDS**  
PARTS LIST & ASSEMBLED PARTS  
ISSUE DATE: SEPTEMBER 2018  
APPROVED BY: R. KENNY
NOTE:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
NOTES:
1. BURN TABLE PROGRAMS MADE FOR COVER PLATE, STIFFENER, AND LOCK TAB.
2. ENTIRE ASSEMBLY INCLUDING BASE TO HDG (HOT DIPPED GALVANIZED) CONFIRM WITH RELATED WORK ORDER.
3. PAINTING AS PER WORK ORDER.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

ISSUE DATE: SEPTEMBER 2018
APPROVED BY: R. KENNY
NOTES:
1. BURN TABLE PROGRAMS MADE FOR COVER PLATE, STIFFENER, AND LOCK TAB.
2. ENTIRE ASSEMBLY INCLUDING BASE TO HDG (HOT DIPPED GALVANIZED) CONFIRM WITH RELATED WORK ORDER.
3. PAINTING AS PER WORK ORDER.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
MACHINE SCREW IS PARTIALLY COVERED BY PIPE STIFFENER AS TAMPER PROOF MEASURE

6mm THICK ANTI-SWAY STRIPS WELDED HERE (NOT SHOWN) (FITTED BY FABRICATOR)

SECTION A-A

SECTION B-B

DIAMOND GRADE REFLECTIVE TAPE

FRONT ELEVATION

SIDE ELEVATION

REAR ELEVATION

NOTES:
1. BURN TABLE PROGRAMS MADE FOR COVER PLATE, STIFFENER, AND LOCK TAB.
2. ENTIRE ASSEMBLY INCLUDING BASE TO HDG (HOT DIPPED GALVANIZED) CONFIRM WITH RELATED WORK ORDER.
3. PAINTING AS PER WORK ORDER.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

DRAWING No. C12.5

ISSUE DATE: SEPTEMBER 2018

APPROVED BY: R. KENNY
MANUFACTURING NOTES:
1. BOLLARDS MAY BE LEFT BARE, POWDER COATED, OR HDG (HOT DIPPED GALVANIZED).
2. OTHER OPTIONS AND CUSTOMIZATIONS ARE AVAILABLE.

BASIC INSTALLATION NOTES:
1. TEMPORARY SLEEVE MAY BE REQUIRED TO ENSURE THAT COVER PLATE DOES NOT ADHERE TO CONCRETE/ASPHALT SO THAT IT MAY BE REMOVED IN FUTURE IF HOLE NEEDS CLEANING OUT (ESPECIALLY IMPORTANT FOR ROAD INSTALLS).
2. CONCRETE DIAMETER AS PER PROJECT ENGINEER,
3. CONCRETE DEPTH TO BE APPROXIMATELY THAT OF RECEIVER.
4. KEEP CONCRETE OUT OF RECEIVER DURING INSTALL.
5. RECEIVER MUST BE INSTALLED IN DRAINAGE ROCK.
6. DRAINAGE ROCK DEPTH AS PER PROJECT ENGINEER (VARIES AS PER SOLID CONDITIONS USU. 100mm - 600mm)

(IMPROPER INSTALLATION COULD ALLOW THE BOLLARD TO FREEZE IN PLACE AND POSSIBLY BOW OUT THE BASE. THIS COULD ALSO CAUSE THE PAINT TO COME OFF.)
**MANUFACTURING NOTES:**
1. BOLLARDS MAY BE LEFT BARE, POWDER COATED, OR HDG (HOT DIPPED GALVANIZED).
2. OTHER OPTIONS AND CUSTOMIZATIONS ARE AVAILABLE.

**BASIC INSTALLATION NOTES:**
1. TO BE USED ONLY WHEN 2 DIFFERENT LOCKS ARE REQUIRED FOR SITE ACCESS.
2. TEMPORARY SLEEVE MAY BE REQUIRED TO ENSURE THAT COVER PLATE DOES NOT ADHERE TO CONCRETE/ASPHALT SO THAT IT MAY BE REMOVED IN FUTURE IF HOLE NEEDS CLEANING OUT (ESPECIALLY IMPORTANT FOR ROAD INSTALLS).
3. CONCRETE DIAMETER AS PER PROJECT ENGINEER.
4. CONCRETE DEPTH TO BE APPROXIMATELY THAT OF RECEIVER.
5. KEEP CONCRETE OUT OF RECEIVER DURING INSTALL.
6. RECEIVER MUST BE INSTALLED IN DRAINAGE ROCK.
7. DRAINAGE ROCK DEPTH AS PER PROJECT ENGINEER (VARIES AS PER SOLID CONDITIONS USU. 100mm - 600mm)

(Improper installation could allow the bollard to freeze in place and possibly bow out the base. This could also cause the paint to come off.)

**SCALE:** N.T.S.

**BOLLARDS**

**DOUBLE LOCK ASSEMBLY & INSTALLATION**

**ISSUE DATE:** SEPTEMBER 2018

**APPROVED BY:** R. KENNY
711mm STANDARD "BIKE FRIENDLY" BOLLARDS
114.3mm O.D. STEEL 40 PIPE/CAPPED

FABRICATION NOTES:
1. IF UTILIZED ON A BIKE PATH/ROUTE, THE BOLLARD SHOULD BE PAINTED “SAFETY YELLOW” AND HAVE THREE 101.6mm WHITE DIAMOND GRADE REFLECTIVE BANDS APPLIED AS ILLUSTRATED.
   - TWO BANDS NEAR THE TOP OF THE BOLLARD
   - ONE BAND 50.8mm FROM THE BASE
2. THE BOTTOM STRIPE IS CRITICAL AS MOST CYCLE HEADLAMPS ILLUMINATE THE PATH AHEAD AND THE LOWER BAND IS MOST LIKELY TO BE THE FIRST VISUAL CLUE OF THE OBSTRUCTION (BOLLARD) SEEN BY CYCLIST IN LOW LIGHT SITUATIONS.

INSTALLATION NOTES:
1. HANDLES TO BE ORIENTED PARALLEL TO DIRECTION OF BIKES SO AS TO NOT OBSTRUCT FLOW OF TRAFFIC.
2. MINIMUM FOUNDATION SIZE DEPENDS ON LOCAL SOIL CONDITIONS BUT GENERALLY CITY FORCES INSTALL BOLLARD BASE IN A CONCRETE FOOTING THAT IS APPROXIMATELY 609.6 X 609.6

NOTES:
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.
**NOTES:**

1. **CONCRETE FINISH IS TO BE MEDIUM BROOM FINISH**
2. **BARRIER CURB AND GUTTERS TO BE PROVIDED SURROUNDING MEDIAN IF GRADE OF ROAD IS LESS THAN 1.0% LENGTHWISE ALONG MEDIAN. (SEE DWG C15.2)**
3. **CONCRETE TO HAVE A 28 DAY COMPRESSIVE STRENGTH OF 32 MPa. ONLY NON-CHLORIDE BASED ADMIXTURES CAN BE USED FOR CONCRETE IN THIS APPLICATION.**
4. **ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.**

**SCALE:** N.T.S.

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**MEDIANS**

**MEDIAN CURB**

**ISSUE DATE:** SEPTEMBER 2018

**APPROVED BY:** J. Lee
PLAN

VARIES

TYPE A CURB UNLESS OTHERWISE SPECIFIED. SEE DWG C4.1

VARIES

100mm CONCRETE

100 MIN. APPROVED 19mm MINUS CRUSHED GRANULAR BASED MIN. 95% MPD (150mm UNDER CURB)

ASPHALT

SECTION A - A

NOTES:
1. CONCRETE FINISH IS TO BE MEDIUM BROOM FINISH
2. MEDIAN CURB TO BE PROVIDED SURROUNDING MEDIAN IF GRADE OF ROAD IS LESS THAN 1.0% LENGTHWISE ALONG MEDIAN. (SEE DWG C15.1)
3. CONCRETE TO HAVE A 28 DAY COMPRESSIVE STRENGTH OF 32 MPa. ONLY NON-CHLORIDE BASED ADMIXTURES CAN BE USED FOR CONCRETE IN THIS APPLICATION.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

MEDIANs
BARRIER CURB

ISSUE DATE: AUGUST 2019
APPROVED BY: J. LEE

REv. 1 2019-08-14 J. LEE
REv. APPROVED

ENGINEERING SERVICES - VANCOUVER, B.C.

CITY OF VANCOUVER
CONC. SAWED CONTROL JOINTS TO A DEPTH OF 1/3 OF THE TOTAL SLAB THICKNESS AND SEALED WITH CITY APPROVED CAULKING COMPOUND. JOINTS SHALL BE EQUALLY SPACED ALONG LENGTH OF SLAB.

MEDIUM BROOM FINISH. DO NOT RE-EDGE.

CURB TO BE POURED WITH BUS SLAB AS ONE INTEGRAL CURB

STEEL TROWEL FINISH ALONG GUTTER LINE

CONCRETE MIX:
A) CITY MIX NO. 1503 OR EQUIVALENT MIX APPROVED BY THE CITY CAN BE USED AS LONG AS NO TRAFFIC OR WEIGHT LOAD IS PUT ON THE BUS SLAB FOR 3 DAYS AFTER POUR.
B) STRENGTH OF 20MPa IN 24 HRS OR EQUIVALENT MIX APPROVED BY THE CITY CAN BE USED AS LONG AS NO TRAFFIC OR WEIGHT LOAD IS PUT ON THE BUS SLAB FOR 24 HOURS AFTER POUR.
C) NO CHLORIDE BASED ADDITIVES SHALL BE USED IN CONCRETE SLAB WITH EMBEDDED STEEL.

8. USE 15mm REBAR WITH MINIMUM 75mm COVER.
9. PLACE REBAR MAT AT 150mm BELOW TOP OF CONCRETE.
10. PLACE REBAR IN A 600mm X 600mm GRID.
11. MILL AND RE-CONTOUR AC TO MATCH CONCRETE BUS SLAB CROSS FALL.

NOTES:
1. THE BUS SLAB SHOULD BE INSTALLED AS A CONTINUOUS POUR. IF THE BUS SLAB IS INSTALLED IN NO MORE THAN TWO SEPARATE POURS, THEN THE EDGE OF THE POUR MUST BE KEYED OR REBAR INSERTS USED TO TIE BOTH PADS TOGETHER.
2. ALL CUT JOINTS ARE TO RUN PERPENDICULAR TO THE CURB. THE CUT JOINTS MUST RUN FROM OUTSIDE EDGE OF BUS SLAB TO BACK OF INTEGRAL CURB.
3. CUT JOINTS SHOULD BE SAWED INTO THE BUS SLAB WITHIN 24 HOURS AFTER THE POUR TO MINIMIZE ANY CRACKING.
4. BUS SLABS THAT CONTAIN MAINTENANCE HOLES, CATCH BASINS, VALVE BOXES, CHAMBERS OR OTHER UTILITY COVERS MUST HAVE CONTROL CUT JOINTS ON BOTH SIDES OF THE UTILITY COVER.
5. CUT JOINTS MUST MAINTAIN EQUAL DISTANCE OF 3.0m-4.5m FROM ANY CONSTANTS (I.E., MAINTENANCE HOLE, CATCH BASIN, VALVE BOX, CHAMBERS) WITHIN THE BUS SLAB.
6. INTERNAL VIBRATOR OR POWER SCREED SHALL BE USED WHEREVER PRACTICABLE TO CONSOLIDATE THE CONCRETE. ANY OTHER CONSOLIDATION METHODS MUST BE APPROVED BY THE CITY ENGINEER PRIOR TO THE CONCRETE POUR.
7. CONCRETE MIX:

SCALE: N.T.S.
NOTES:
1. INSTALL ZEBRA PAVEMENT MARKINGS ON RAISED CROSSWALK INVOLVING SCHOOL CHILDREN, ELDERLY, DISABLED, MID-BLOCK CROSSWALKS, CROSSING OF RIGHT TURN CHANNELS, AND/OR SPECIAL CROSSWALKS.
2. SEE DRAWING C17.2 FOR SECTION.
3. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
NOTES:
1. SEE DRAWING C17.1 FOR PLAN & PROFILE.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.
STANDARD DETAIL DRAWINGS
ENGINEERING SERVICES - VANCOUVER, B.C.

DRAWING No.
C17.3

PLAN VIEW

DISTANCE (m) | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.2 | 1.3 | 1.4 | 1.5
---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---
FINISHED HEIGHT (mm) | 1 | 5 | 12 | 21 | 31 | 43 | 56 | 69 | 82 | 94 | 104 | 113 | 120 | 124 | 125

NOTES:
1. SEE DRAWING C17.4 FOR SECTION.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

TRAFFIC CALMING
RAISED CROSSWALK (125mm) - PLAN

ISSUE DATE: SEPTEMBER 2018
APPROVED BY: J. LEE
MILL EXISTING ASPHALT UNDER RAISED CROSSWALK
CROSSFALL PER EXISTING STREETS DESIGN (1-2% TYP.)
TOP OF ASPHALT RAISED CROSSWALK

RECONSTRUCT CURB & GUTTER TO SAME LEVEL WITH RAISED CROSSWALK

SECTION A-A

BEGIN OF 25mm CURB DROP
IF Grass BOULEVARD, fill CONCRETE TO SAME LEVEL WITH SIDEWALK
5.3% TRANSITION SLOPE

SECTION B-B

SCORE LINES 150mm APART
BEGINNING OF 25mm CURB DROP
END OF 25mm CURB DROP
0.12m x 0.60m

NOTES:
1. SEE DRAWING C17.3 FOR PLAN & PROFILE.
2. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
STANDARD DETAIL DRAWINGS
ENGINEERING SERVICES - VANCOUVER, B.C.

DRAWING No. C18.2

TO BE PAINTED WHITE (TYP.)

PLAN

SECTION B-B

SECTION A-A

DISTANCE (m) | 0  | 0.125 | 0.250 | 0.375 | 0.500 | 0.625 | 0.750 | 0.875 | 1.000 | 1.125 | 1.250 | 1.375 | 1.500 | 1.625 | 1.750 | 1.875 | 2.000
---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
FINISHED HEIGHT (mm) | 0  | 1  | 3  | 7  | 12 | 18 | 25 | 32 | 40 | 48 | 55 | 62 | 68 | 79 | 79 | 77 | 80

SINUSOIDAL SPEED HUMP DEVELOPMENT

NOTE: 1. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.

SCALE: N.T.S.

TRAFFIC CALMING
SPEED HUMP (40km/hr)

ISSUE DATE: SEPTEMBER 2018
APPROVED BY: J. LEE
SINUSOIDAL SPEED HUMP DEVELOPMENT

NOTES:
1. FOR USE WITH VALLEY DRAINAGE WITH LONGITUDINAL GRADES LESS THAN 1% & NO SEWERS AVAILABLE.
2. SITE ACCESS TO BE CONSIDERED IN LOCATING SPEED HUMP.
3. LONGITUDINAL PROFILE VARIES WITH TYPE OF SPEED HUMP.
4. ALL DIMENSIONS IN MILLIMETERS UNLESS STATED OTHERWISE.
NOTES:
1. CAUTION MUST BE TAKEN TO ENSURE THAT NO CONCRETE OR DEBRIS GET INSIDE THE SLEEVE.
2. THE SLEEVE IS TO BE ABSOLUTELY PLUMB.
NOTES:
1. CAUTION MUST BE TAKEN TO ENSURE THAT NO CONCRETE OR DEBRIS GET INSIDE THE SLEEVE.
2. THE SLEEVE IS TO BE ABSOLUTELY PLUMB.
3. ALTERNATIVE SIGN LOCATIONS MAY BE NECESSARY IN INSTANCES OF CONFLICT WITH UNDERGROUND UTILITIES.
4. POST AND SLEEVE: 12.7mm DIAMETER x 12.7mm LENGTH CUP POINT STAINLESS STEEL ALLEN KEY SET SCREW.
5. POST AND BASE: 12.7mm DIAMETER x 19.1mm LENGTH CUP POINT STAINLESS STEEL ALLEN KEY SET SCREW.

SCALE: N.T.S.
NOTES:
1. CAUTION MUST BE TAKEN TO ENSURE THAT NO CONCRETE OR DEBRIS GET INSIDE THE SLEEVE.
2. THE SLEEVE IS TO BE ABSOLUTELY PLUMB.
3. BUS STOP ID SIGN SLEEVES FROM COAST MOUNTAIN BUS COMPANY.
NOTE:
1. PLACEMENT OF PAY STATION MAY BE AT BACK OF SIDEWALK (SEE DRAWINGS).
2. ENSURE EDGES OF PAD DO NOT CREATE LOW POINTS WITH SURROUNDING GRADE.

PAY STATION CONCRETE
BASE LOCATION DETAIL

PAY STATION CONCRETE
BASE DETAIL

NOTE:
1. PLACEMENT OF PAY STATION MAY BE AT BACK OF SIDEWALK (SEE DRAWINGS).
2. ENSURE EDGES OF PAD DO NOT CREATE LOW POINTS WITH SURROUNDING GRADE.