

## **PART 1 – GENERAL**

### **1.1 SECTION INCLUDES**

- .1 Gutters and downspouts.
- .2 Accessories.

### **1.2 RELATED SECTIONS**

- .1 Section 01 11 00 – Summary of Work.
- .2 Section 07 31 13 –Fiberglass Reinforced Asphalt Shingles.
- .3 Section 07 62 00 – Prefinished Sheet Metal Flashing and Trim.
- .4 Section 07 92 00 – Joint Sealants.

### **1.3 REFERENCES**

- .1 Latest edition of all listed references; most stringent requirements to govern in conflicts:
  - .1 American National Standards Institute/Single Ply Roofing Industry (ANSI/SPRI):
    - .1 ES-1: Wind Design Standard for Edge Systems (Low Slope Roofing).
  - .2 American Society for Testing and Materials (ASTM):
    - .1 A606: Steel Sheet, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
    - .2 A653/A653M: Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process.
    - .3 A792/A792M: Steel Sheet, 55% Alum.-Zinc Alloy-Coated by Hot-Dip.
  - .3 Canadian Standards Association (CAN/CSA):
    - .1 B111: Wire Nails, Spikes and Staples.
  - .4 Canadian General Standards Board (CAN/CGSB):
    - .1 51.32M: Sheathing, Membrane, Breather Type.
    - .2 93.1-M: Sheet, Aluminum Alloy, Prefinished.
  - .5 Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
    - .1 Architectural Sheet Metal Manual
  - .6 Roofing Contractors Association of BC (RCABC): Roof Practices Manual, Latest Revision, and includes Technical Updates issued at the time of tender.
  - .7 Canadian Roofing Contractors Association (CRCA): Roofing and Waterproofing Manual

### **1.4 SUBMITTALS**

- .1 Shop Drawings: Submit shop drawings with profile(s) for review by **Owner** prior to fabrication.  
**Provide samples for Owner review prior to production and installation.**
- .2 Samples: Provide nominal 305mm (12") sample of gutter profile and 305mm (12") length of rainwater leader for review by Owner and Consultant.

**1.5 QUALITY ASSURANCE**

- .1 Manufacturer Qualifications: Manufacturer shall have a minimum of five (5) years' experience in the production of sheet metal gutters and downspouts.
- .2 Fabricator Qualifications: Shall be approved by manufacturer for fabrication of gutters and downspouts.

**1.6 STORAGE AND HANDLING**

- .1 Do not store metals in direct contact with the earth, road surface, or roof deck. Place suitable supports under the metal upon delivery to protect it from scratching or puncturing membrane, membrane flashing or absorbing moisture from the surrounding terrain or deck.
- .2 Store all materials in waterproof covered trailers.
- .3 Store caulking at +5°C minimum.
- .4 Handle and store products in a manner to prevent damage and deterioration.
- .5 Remove and replace damaged products at own expense and to the satisfaction of the Quality Observer and Consultant.
- .6 Maintain fire watch for two hours after each day where soldering operations were in use and examine all flashings with an infrared thermal fire scanner as manufactured by Rayteck and supplied by Lexcor or an approved equal prior to departing from the site.
- .7 Apply materials in accordance with the manufacturer's recommendations.
- .8 Prepare and submit for approval shop drawings showing layout of new gutters, including but not limited to:
  - .1 material thicknesses,
  - .2 forming,
  - .3 slopes,
  - .4 seam, joint and connection layout,
  - .5 securement details.

**1.7 WARRANTY**

- .1 The Contractor shall supply the Owner with a 2-year material and workmanship warranty on Contractor letterhead.

**1.8 QUALITY ASSURANCE OBSERVATION**

- .1 IRC Building Sciences Group, hereafter known as "Observer", is an independent Quality Assurance Observation agency appointed by Owner to observe installation of gutters and downspouts Work:

**PART 2 - PRODUCTS**

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## **2.1 GUTTERS**

### **.1 Materials:**

.1 Aluminum Coil Stock: Formed and coated aluminum coil stock; 3105 H24 aluminum

### **.2 Box Gutter Fabrication:**

.1 Size: 127mm (5"), minimum 82.6mm (3.25") at base.

.2 Length: Continuous.

.3 Profile: K style or Ogee

.4 Material Thickness: .813mm (0.032").

### **.3 Gutter Corner Fabrication:**

.1 Provide mitered corners, lapped, sealed and riveted. Corners shall extend a minimum of 19mm (0.75") from the corner in each direction. Lap joint and sealant where connecting to continuous gutter.

.2 Match material, shape and finish of gutter.

## **2.2 DOWNSPOUTS**

### **.1 Rectangular downspout fabrication:**

.1 Size: 51mm x 76mm (2' by 3').

.2 Length: 3,048mm (Standard 10').

.3 Profile: Corrugated.

.4 Material Thickness: .813mm (0.032").

.5 Colour:

.1 Downspouts to match wall colour at wall mount locations.

.2 Downspouts to match shingle colour at roof locations.

## **2.3 ACCESSORIES**

### **.1 Gutters:**

.1 End Caps: Match material, shape and finish of gutter.

.2 Outlet Tubes: Match material and shape of downspout.

### **.2 Gutter Support:**

.1 Hidden Gutter Hanger: Manufacturer's standard steel hidden hanger.

### **.3 Downspouts:**

.1 Downspout Support:

.1 Exposed strap.

.2 Colour: Match Downspout.

- .4 Miscellaneous downspout components: Provide all necessary elbows, downspout offset sections, and pop rivets as required for a complete installation. All miscellaneous components shall match downspouts.
- .5 Fasteners:
  - .1 Stainless steel fasteners of sufficient length to penetrate minimum 1 inch into substrate.
- .6 Flashing: As per Section 07 62 00 Prefinished Sheet Metal Flashing and Trim.
- .7 Sealants: As per Section 07 92 00 Joint Sealants.
- .8 Downspout Strainer: Steel wire-ball downspout strainer.
- .9 Downspout Clean-out to fit and match downspouts' profile and colour.
- .10 Precast Concrete 11" x 24" Splash Blocks.

## **2.4 FINISH**

- .1 Exterior Coating:
  - .1 As per Section 07 62 00 Flashing and Trim.
  - .2 Colour: As selected from manufacturer's standard color line.
    - .1 Owner to approve colour.

## **PART 3 - EXECUTION**

### **3.1 PREPARATION**

- .1 Verify that substrates are in place and ready for installation of gutters and downspouts.

### **3.2 INSTALLATION**

- .1 General: Install Work securely in place and provide for expansion and contraction of components using lapped and sealed joints
  - .1 Do not install damaged components.
  - .2 Separate dissimilar metals to prevent galvanic action through the use of bituminous coating or other permanent separation recommended by SMACNA.
  - .3 Space expansion joints in gutters at a maximum of 21,336mm (70') centers.
  - .4 Rivet joints where required for strength, exposed rivet shall be stainless steel and match gutter or downspout color.
  - .5 Torch cutting of components is not allowed.

### **3.3 GUTTERS:**

- .1 Install gutter supports at no less than 406mm (16") on center.
  - .2 Slope gutters evenly to downspouts; provide end caps at gutter ends and seal watertight per manufacturer's instructions.
  - .3 Install aluminum outlet tubes at all downspout locations, seal watertight.
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- .4 Apply joint sealants at gutter joints per manufacturer's installation instructions and to meet the requirements of Section 07 92 00 – Joint Sealants.
- .5 Gutters shall have a net positive slope of 0.13" per foot between high point and downspouts.

### **3.4 DOWNSPOUTS:**

- .1 Install downspouts, provide elbows and offsets, and secure downspouts to wall construction using downspout supports spaced no more than 3,048mm (10') on center. Maximum distance of downspout support from top or bottom of downspout shall be 610mm (2'). Tie into existing building perimeter drainage system (BPDS). If no BPDS is in place, notify the Consultant.
  - .1 Where downspout connects to building perimeter drainage system, lap downspout and perimeter drainage pipe a minimum of 76mm (3").
- .2 Gutter clean-out shall be installed 24" from entrance to BPDS.
- .3 Fabricate and install a new, fully soldered square to round transition to attach new downpipe to existing sub surface drain as required.
- .4 Install downspouts from upper roofs across lower roofs, and exhaust into lower roof gutters.
  - .1 Install 90° elbow to direct water into lower roof gutter.
  - .2 Colour to closely match shingle colour. Review on site with Consultant.

### **3.5 CLEANING AND PROTECTION**

- .1 On All Roof Replacement Areas: Clean up and remove from job site on a daily basis, all rubbish and surplus materials resulting from this work.
- .2 Drag a magnetic bar across work area and grounds to ensure removal of all discarded fasteners and sharp metal debris.
- .3 Final cleaning:
  - .1 Remove temporary protection.
  - .2 Remove dust, dirt and foreign matter from surfaces.
  - .3 Broom clean paved exterior surfaces, rake clean other exterior surfaces.
  - .4 Ensure that all fasteners have been removed from roof and surrounding site. Clean all gutters and downspouts of debris generated as a result of this work.
  - .5 Remove full garbage bins immediately. Do not pile debris or garbage on project site.
  - .6 At end of project, landscaping to be repaired to match original conditions.

**END OF SECTION - 07 62 13**

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