

SECTION 07 55 65

HARD LANDSCAPE SYSTEM ON ROOFTOP

(ZinCo "Driveways" with Elastodrain EL202 – hard landscape)

PART 1 GENERAL

1.1 SUMMARY

- A. This sample specification serves as a guideline to the specifier. It shall be adapted to each project by either choosing from several suggestions or by adjusting the text to project specific and site conditions, such as type of roof construction, roof slope, insulation, water proofing, local climate, design goals, and other.
- B. This specification is prepared in accordance with the CSI format and shall be included as separate section under DIVISION 7 – Thermal and moisture protection.

1.2 SECTION INCLUDES

- A. Hard landscape system including the following:
 - 1. Paving.
 - 2. Joint infill.
 - 3. Bedding layer.
 - 4. Base layer.
 - 5. Edging - separation between vegetated area and hard landscape.
 - 6. Filter layer.
 - 7. Inspection chamber.
 - 8. Combined protection and drainage layer.
 - 9. Separation layer.
 - 10. Root barrier.

1.3 RELATED SECTIONS

- A. Division 07 Section "Waterproofing" for waterproofing systems under vegetated roof system.
- B. Division 07 Section "Roofing" for roofing systems under vegetated roof system.
- C. Section 07 Section "Sheet Metal Flashing and Trim" for coordination with flashing.

1.4 DEFINITIONS

- A. Hard Landscape: Walkways and driveways on top of roof decks that allow heavy live loads. Heavy live loads demand high quality protection and drainage mats.
- B. System build-up "Driveways" with Elastodrain EL202 – hard landscape: Extremely stable system build-up suitable for vehicle traffic, also suitable for lawn, perennials, shrubs and small trees.

1.5 SUBMITTALS

- A. Submit in accordance with Division 01 Section "Submittal Procedures".
- B. Product data: Submit manufacturer's current published data including component materials, dimensions, standard details, and installation instructions.
- C. Shop drawings: Include the following:
 - 1. Details of green roofing system, plantings, and paving.
 - 2. Relationship to substrate, perimeter, and penetrating items.
 - 3. Location of roof drains and slopes.
 - 4. Average weight of green roof system.
- D. Range samples: Full size sample of each planting selection in trays minimum 1 x 1 feet by full thickness.
- E. Closeout submittals: Maintenance instructions and warranties.

1.6 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Manufacturer qualifications: Minimum ten years experience producing green roof systems of the size with the production facilities capable of meeting the project schedule.
 - 2. Installer qualifications: Minimum 2 years experience with green roof systems and acceptable to the manufacturer, with adequate equipment and skilled workers.
- B. Pre-installation meeting: Convene on project site min. one week before beginning work to:
 - 1. Verify project requirements and site logistics.
 - 2. Coordinate between trades.
 - 3. Assess integrity of the roofing system and building structure.
 - 4. Review manufacturer's installation instructions and warranty requirements.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Coordinate delivery schedule to minimize on-site storage. Verify roofing installation system is tested and accepted prior to delivery. Do not overload roof.
- B. Store materials in a dry area, out of direct sunlight, protected from freezing, staining, contamination, or damage.
- C. Water plants and expose plant materials to daylight. Unpack trays for even daylight distribution.

1.8 WARRANTY

- A. Manufacturer's warranty: Provide manufacturer's 5-year limited warranty against deficiencies in materials or fabrication.
- B. Installer's warranty: Provide installer's 2-year growing warranty which provides periodic inspections and maintenance service to ensure vegetation is properly installed, is becoming established, and is of sufficient density over the roof area.

PART 2 PRODUCTS

2.1 MANUFACTURER

- A. Basis-of-Design: "Driveways" with Elastodrain EL202 – hard landscape
Hard Landscape System by
ZinCo USA, Inc.
401 VFW Drive
Rockland, MA 02370
Telephone: 866-766-3155
Website: www.zinco-usa.com

2.2 COMPONENTS

(Note to specifier: select applying components.)

- A. Paving:
Thickness depending on the live load and substructure. A thickness of 3 1/8 in. (80 mm) is recommended to allow for good load distribution and stability. The material dimensions and installation shall comply with the local standards and regulations and project specific requirements. Delivery and installation on the bedding layer.
- B. Joint infill:
Grading adapted to bedding layer. The material shall comply with the local standards and regulations and project specific requirements. Delivery and installation in the paving.
- C. Bedding layer:
The paving shall be laid in a suitable structure stable bedding layer. Thickness: approx. 1.2-2.0 in. (approx. 30–50 mm) above the drainage element. The material shall be structure stable, suitable for the use on roofs and shall comply with the local standards and regulations and project specific requirements. For example: well graded coarse sand, lime free, sieve size 3/8 in. to # 100. Delivery and installation on top of the compacted base layer (if applicable) or on the filter layer.
- D. Compacted base layer:
(Note to specifier: please select, if required.)
For load distribution reasons in heavy duty applications (trucks class 2-8) and for creating grade in the finished surface a compacted base layer shall be installed. Thickness depends on expected load, min. 6.0 in. (approx. 150 mm). The material and its grading shall be suitable for the use on roofs and comply with the local regulations and standards. For example: compacted crusher run, lime free, sieve size e.g. 1 1/2 in. to # 200. The material shall be frost resistant, stable and permeable after compaction. Delivery and installation on top of the filter layer.
- E. Edging - separation between vegetation and hard landscape:
Steel profile or concrete curb as edging for driveways. Dimensions according to the application as well as customers' and architects' requirements. Delivery and installation in a concrete foundation according to the local standards and regulations and project specific requirements.
- F. Filter layer:
ZinCo Filter Sheet PV. Thermally strengthened filter sheet made of polypropylene, UV-stabilized, highly resistant to mechanical stress. Chemically and biologically neutral. Resistant to all naturally occurring acids and alkali. Color: grey. Thickness approx. 0.06 in. (approx. 1.6 mm). Weight approx. 0.06 lbs./sq. ft. (approx. 300 g/m²). Geotextile strength class 5. Maximum tensile strength (lengthwise / crosswise): approx. 131 lbs./in. (approx. 23 kN/m). Effective opening width, O_{90%}: approx. 2.75 mil (approx. 0.07 mm). Delivery and installation on top of the combined protection and drainage layer.

- G. Inspection chamber:
1. ZinCo Heavy Duty Inspection and Drainage Chamber BES 300, for the application within hard landscaping. Made of galvanized steel with removable, secured grill, mesh width approx. 0.4 x 1.6 in. (approx. 11 x 41 mm), sand trap made of aluminum, and pressure distributing support flange. Vertically adjustable to the respective layer depth by extension pieces. High compression resistance; fit for heavy traffic up to truck class 8. Height: approx. 11.8 in (approx. 300 mm). Weight: approx. 70.5 lbs (approx. 32.0 kg). External dimensions: approx. 11.8 x 11.8 in. (approx. 300 x 300 mm); aperture dimension: approx. 7.9 x 7.9 in. (approx. 200 x 200 mm); flange dimensions: approx. 15.8 x 15.8 in (approx. 400 x 400 mm). Delivery and installation on top of Elastodrain.
 2. ZinCo Extension Piece BES. (*Optional item for height adjustment*). Height: approx. 1.0 in (approx. 25 mm). Weight: approx. 17.6 lbs (approx 8.0 kg). Delivery and installation on top of the ZinCo Heavy Duty Inspection and Drainage Chamber BES 300.
- H. Combined protection and drainage layer:
ZinCo Elastodrain EL 202. Compression molded building protection and drainage sheet of solid, recycled vulcanized rubber, with a rebated edge and one-sided stud structure. Resistant to high loads and spade damage. Color: black. Height: approx. 0.7 in. (approx. 19 mm). Weight: approx. 3.9 lbs/sq. ft. (approx. 19 kg/m²). Compressive strength at 10% compression approx. 4.1 ton/sq. ft. (approx. 40 t/m²); Delivery and installation on top of 2 layers of the Slip Sheet TGF 20.
- I. Separation layer:
ZinCo Slip Sheet TGF 20. Non-rotting separation and slip sheet made of high-pressure polyethylene for application in driveways build-up to avoid tensile forces in the waterproofing membrane. UV-stabilized, compatible with bitumen and polystyrene, vapor proof, free of chemical softeners, resistant to all natural chemicals. Color: black. Thickness: approx. 0.008 in. (approx. 0.2 mm). Weight: approx. 0.04 lbs/sq. ft. (approx. 190 g/m²). Delivery and installation two layered on top of the root barrier or root resistant waterproofing.
- J. Root barrier:
(Note to specifier: select if waterproofing is not root resistant, and if driveways are combined with vegetated areas.)
ZinCo Root Barrier WSB 100-PO. ZinCo Root Barrier WSB 100-PO. Root proof, hot air weldable sheet made of flexible polyolefin (FPO), with polyester weft inserted reinforcement. Resistant to bitumen and for short periods of time to oil. Superb weather proofness (UV- and IR-Radiation). Thickness: approx. 0.04 in. (approx. 1.1 mm). Weight: approx. 0.23 lbs./sq. ft. (approx. 1.1 kg/m²). Hot air weldable, excellent cold flexibility. Root resistance tested according to FLL-Test method of 2002. Delivery and installation on top of the waterproofing.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verification of conditions:
1. Confirm work by others is installed per the project requirements. Do not cover work by others prior to inspection or acceptance.
 2. Inspect seams, penetrations and details. Identify defects in writing to the Architect.
 3. Do not proceed until unacceptable conditions are corrected.

3.2 INSTALLATION

(Note to specifier: select applying components.)

A. General:

Install green roof system in strict accordance with manufacturer's instructions and in proper relationship with adjacent materials and the following.

1. Root barrier:

(Note to specifier: please select, if required.)

Install the Root Barrier WSB 100-PO above the non root resistant waterproofing, the seams are to be hot air welded, root proof and waterproof with an overlap of min. 2.0 in. The root barrier shall be taken above the growing media along edges and at roof penetrations. Cut the root barrier in situ at roof penetrations. Consider an allowance for overlap and wastage of approx. 3–5 %.

2. Separation layer:

Install the Slip Sheet TGF 20 above root barrier or above the root resistant waterproofing with an overlap of approx. 4.0 in., (2-layered for driveways). Cut the slip sheet in situ at roof penetrations. Consider an allowance for overlap and wastage of approx. 10–15 %.

3. Combined drainage and protection layer:

Install the Heavy Duty Drainage and Protection Mat Elastodrain EL 202 on the slip sheet or waterproofing with the studs facing up. Cut the drainage element in situ at roof penetrations. Consider an allowance for wastage of approx. 3 %.

4. Edging - separation between vegetated area and hard landscape:

Install a concrete curb or stable steel profile as edging of the paving. Place the edging in a concrete foundation. Reinforcement, concrete specification and curb dimension according to the architects requirements.

5. Inspection chamber:

Cut holes into all layers of the build-up in the size of the drain. Then install the Heavy Duty Inspection Chamber BES 300 on top of the Elastodrain drainage element above the drain. Install the Filter Sheet PV on top of the flange of the Inspection Chamber BES 300.

6. Filter layer:

Install the Filter Sheet PV with an overlap of approx. 8 in. (approx. 200 mm) above the Protection and Drainage Element Elastodrain EL 202. The filter sheet shall be taken above the growing media along edges and at roof penetrations. Cut the filter sheet in situ at roof penetrations. Consider an allowance for overlap and wastage of approx. 15–25 %.

7. Compacted base layer (if applicable):

Install the compacted base layer for the hard landscape application on the Filter Sheet PV. The grading of the surface of the later installed paving shall be incorporated into the gravel base layer. The compacted base layer shall be compacted with a suitable compactor (compaction rollers are not recommended) without deforming/damaging the drainage element. For deeper depths of the material it is recommended to install and compact the base layer by layer.

8. Bedding layer:

Apply the bedding material in a continuous layer of 1.2–2.0 in. (30–50 mm) as basis for the paving.

9. Paving:

Install the paving in the bedding layer. Ensure sufficient infill of joints.

3.3 CLEANING

- A. Remove all debris from the project site in accordance with the owner's construction waste management requirements.

3.4 PROTECTION

- A. Protect green roof components from dirt and damage caused by subsequent construction activities.

3.5 MAINTENANCE

- A. General maintenance of hard landscapes: includes, but is not limited to, the removal of unwanted plants from borders, edges or joints, filling of joint material washed out during the time, and visual inspection and cleaning of the outlets.

END OF SECTION