

32 10 00 BASES, BALLASTS, AND PAVING

32 13 00 RIGID PAVING

Hard Surfacing – Paving and Surfacing Materials

1. Typical paving materials for pedestrian and traffic surfaces (walkways, plazas, stairs, ramps, etc.):
 - i. Concrete:
 - a. Exposed aggregate (10mm nominal size).
 - b. Broom finish (preferable for wheelchair access areas).
 - c. Smooth troweled finish not acceptable.
 - ii. Concrete Pavers:
 - a. Nominal sizes, permeable installation.
 - iii. Asphalt:
 - a. Roadways.
 - b. Parking areas.
 - c. Pathways.
 - iv. Gravel:
 - a. Service roads.
 - b. Paths / trails.
 - c. Garden areas (crushed rock or limestone, consult FMGR).
2. Minimize the surface area of paved and impermeable surfaces:
 - i. Use permeable paving wherever possible.
 - ii. EcoGrid and other similar systems shall only be used where directed by FMGT.

Exterior Walkways and Concrete Work

1. All walkways shall be minimum 1200mm wide, and sized to suit the intensity of traffic, prominence of location, etc.
2. Exposed Aggregate Concrete Sidewalks:
 - i. Aggregate Type:
 - a. 10-12mm pea gravel
 - ii. Aggregate Colour:
 - a. Grey to dark grey consistent with in situ exposed aggregate Reference Standard.
 - iii. Aggregate Ratio:
 - a. Surface aggregate to cement ratio to match in situ exposed aggregate Reference Standard.
 - iv. Concrete Strength:
 - a. 32MPa / 4500psi.
 - v. Reinforcing:
 - a. 10M bars 400mm O.C. each way at mid-depth of slab with continuous reinforcing between new panels. Avoid placing upper layer reinforcing below control joints.
 - vi. Retarder:
 - a. Surface retarder must be used.
 - vii. Concrete thickness:
 - a. Minimum thickness 150mm.
 - viii. Panel/Modulus Size:
 - a. Maximum 9 metres before introducing an isolation joint.
 - ix. Control Joints:
 - a. Tooled control joints to be 40-50mm deep with 3 meter maximum spacing or to match adjacent panel spacing.

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- x. Isolation Joints:
 - a. Reinforcing to be continuous through 12mm asphalt impregnated fibreboard isolation joints using schedule 40 15mm PVC pipe sleeves for reinforcing bar weather protection. Contractor to confirm specified reinforcing fits in specified pipe.
 - xi. Reference Standard:
 - a. In situ exposed aggregate finish sample. Location to be provided by FMGT.
 - xii. Testing & Inspections:
 - a. The owner will designate an existing module on site to which the mock-up is to be matched.
 - b. Power wash existing modules near mock-up to allow for comparison with mock-up.
 - c. The Contractor shall construct a mock-up replacement panel, minimum 1200mm by 1200mm by 100mm thick. The methods used to provide the sample finish shall be the same as those determined with the Consultant and subsequently used in the remainder of the work.
 - d. It is recommended the mock-up is utilized to determine the appropriate application time for the surface retarder. This can be completed by separating the mock-up area into sections and washing off the retarder at varying intervals in order to achieve the desired depth of etch.
 - Note: the surface retarder application time is dependent on many factors including temperature, wind, exposure to sun, etc. The contractor shall satisfy oneself with the variability of these factors and make provisions to account for environmental changes throughout the progress of the project.
 - e. Mock-up to cure 10 days minimum. Subsequently, the owner and the consultant will review the mock-up. If the mock-up is not deemed to be an acceptable match, the contractor shall provide additional mock-ups approved by the owner and the consultant.
 - f. The cost of the mock-up process is to be included in the base price.
 - g. Once approved, the mock-up is to be cut into 12"x12" squares and four such squares are to be kept on site to serve as portable samples. The mock-up may not remain as part of the finished work.
 - h. The mock-up, once accepted, shall be the standard to be achieved with regards to appearance. A very close match between the mock-ups and subsequent work is required. New modules deemed not to comply with this standard will be rejected and are to be replaced at the contractor's expense.
3. Concrete Base for Light Standards:
- i. Provide base up-stand, either as a trapezoid extension of the sidewalk (preferred) or independent to prevent light pole damage from landscape equipment.

Drainage of Pedestrian Paved Areas

1. Walkways, 1200mm wide and level lengthwise shall have a continuous cross fall slope of 2%. Walkways in excess of 1200mm wide should be crowned.
2. Large paved areas shall be sloped to drains, minimum 1% to maximum 2% fall. Where falls are 2%, provide sufficient number of drains to prevent "dishing".
3. Provide positive slopes away from entrances and exits, not less than 4%, to adequate storm drains, gratings or landscape. Do not extend the 4% slope for more than 2m horizontally.

32 30 00 SITE IMPROVEMENTS

32 33 13 SITE BICYCLE RACKS

The University uses 3 types of manufactured bike racks. Refer to drawings immediately following this section.

- i. Type A – typical unrestricted placement.
- ii. Type B, with wheel stop – placement at 500mm against a wall or structure.
- iii. Type C, with wheel stop – placement at 275mm against a wall or structure.

32 33 43 SITE SEATING AND TABLES

Exterior landscape benches:

- i. Refer to Figure 32 30 00-1 following this section for exterior Landscape bench design.
- ii. Arm rests should not be used
- iii. Wood: Clear Select Cedar. Wood members 3 ½" (89 mm) x 3 ½" (89 mm) with ¼" (6 mm) radius on edges and ends. Top and front members to be 1" (25 mm) radius bullnose. Cedar to be smooth sanded and CCA pressure treated.
- iv. Metal: Mild steel, wheel-abraded to bare metal, then precisely fabricated to final shape. The metal is to be a powder coated "mar-resistant" finish. HSS tube legs and bent plate bench brackets, size and connections to be engineered by manufacturer.
- v. Hardware: Provide bolt-through construction to create a single, solid unit. A special wrench for vandal-resistant hardware is to be provided with each bench. All hardware is to be powder coating to match bench finish.
- vi. Install bolted to concrete.
- vii. Where existing standard is encountered match product to that standard.

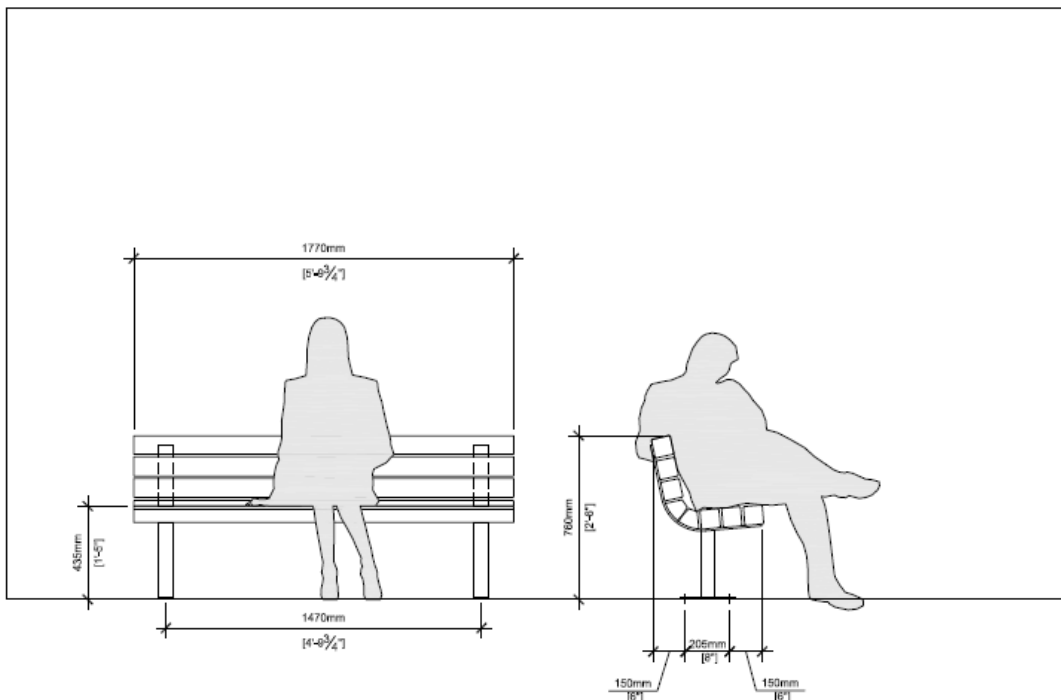


Figure 32 30 00-1

32 33 23 SITE TRASH AND LITTER RECEPTACLES

4. Typical waste receptacles:
 - i. Waste receptacles: 610 x 610 x 710mm high, exposed aggregate concrete containers, from Mackays Precast.
 - ii. Waste receptacles for buildings: Schaefer GMT Cart, from Rollins Machinery – 2 sizes:
 - i. Gray 360L – 610 x 890 x 1010mm high.
 - ii. Blue or Brown 240L – 585 x 740 x 1070mm high.
5. Waste Receptacle Enclosures:
 - i. Provide screening such that waste bins are visible only from the direction of service vehicle approach.

32 80 00 IRRIGATION

32 84 23 UNDERGROUND SPRINKLERS

Irrigation

1. Irrigation is required in all contained planting areas.
2. All Irrigation work to be completed in accordance with IIABC and BCLNA standards.
3. Drip irrigation shall not be used except in special circumstances as determined by FMGR. Polyvinyl pipe sizes: Class 200 pipe is preferred as a minimum in all applications; Class 160 may be used in special circumstances, with FMGR approval.
4. Reinstatement following construction:
 - ii. All irrigation systems impacted by construction to be reinstated by Contractor.
 - iii. Systems to be tested and verified by FMGT Grounds.
 - iv. Equipment Standards:
 - a. Lawn sprinkler heads (Rotor type) Hunter I-40-04-SS, Hunter 1-20-04-SS or Hunter PGJ-04.
 - b. Lawn sprinkler heads (Pop up type): Irritrol I-Pro series with check valve and rainbird VAN nozzles
 - c. Shrub bed Rotors: Hunter PGJ-00 or Hunter I-20-00 on 3'-0" sched 80 grey risers supported by metal posts.
 - d. Shrub bed Spray Heads: Irritrol I-Pro Series 12" pop ups with check valve or sched 80 grey risers with shrub adaptors supported by metal posts
 - e. All sprinkler heads to have a minimum of 2' of flexible PVC. No swing joints

32 90 00 PLANTING

32 91 00 PLANTING PREPARATION

General Landscaping

1. All work shall conform to the latest edition of the B.C. Landscape Standard, issued by the British Columbia Society of Landscape Architects (BCLSA), unless approved by the Owner otherwise.
2. Preserve and enhance the overall character of the campus through the elements of landscape. Use continuity and consistency as design principles to create a coherent relationship between buildings and structures that may be quite different in their architectural expression.
 - i. Consider trees as the most important elements to define the functional and visual character of spaces. Douglas fir is the primary planting material, followed by other evergreens such as Cedar, Sequoia and Arbutus (broadleaf), as well as the deciduous Oak, Maple, and Dogwood.
 - ii. Shrubs shall be of a wider variety.
3. The established policy of the University stipulates that existing trees shall be retained wherever possible. Where tree removals over 100mm diameter are necessary, the University strives to provide 3 new trees on campus to replace every 1 tree removed.
4. In areas of brush and small trees under 100mm in diameter, the area to be cleared will be marked out by the University. Where existing trees over 100mm in diameter interfere with construction, the University will clearly mark the individual trees which are to be removed if required as part of the work.

32 91 13 SOIL PREPARATION

Landscape Materials

1. Soil Additives:
 - i. Manure: Well-rotted mushroom manure, to requirements of B.C. Landscape Standard.
 - ii. Sand: Hard, granular sharp sand to CSA A82 SO-M1976, well-washed and free of impurities.
 - iii. Peat Moss: Horticultural grade, to the B.C. Landscape Standard.
 - iv. Wood Residuals: Content of sawdust (such as fir or hemlock) shall not cause a C to N ratio higher than 40:1. Cedar or Redwood sawdust shall not be present in the soil mix.
 - v. Dolomite Lime: Horticultural commercial grade, finely and uniformly ground, containing not less than 20% by weight.
 - vi. Compost: Well-rotted vegetable matter, free of impurities and chemicals.
2. Fertilizers:
 - i. Standard commercial brands, meeting requirements of Canada Fertilizer Act, packed in waterproof containers with weight, analysis and manufacturer's name clearly marked. Granular, pelleted, or pill form, dry and free-flowing. Applied fertilizers must not contain a Phosphorus % in excess of 1% of total weight of overall applied fertilizer.
3. Planting Soil:
 - i. Shall be substantially free from roots, sticks, building materials, wood chips, pollutants, crab grass, noxious weeds or seeds/parts thereof.

- a. Maximum requirements of dolomite lime to require pH: 220kg/100sq.m (100 lbs/1000sf).
- b. Salinity: Maximum saturation extract conductivity 3.0 millihos/cm at 25°C.
- c. Total Nitrogen: 0.2-0.4% by weight.
- d. Available Phosphorus: 50-70 ppm.
- e. Available Potassium: 50-100ppm.
- f. Cation Exchange Capacity: 30-50meq.
- g. Carbon to Nitrogen Ratio: maximum 40:1.
- h. Allowable pH: lawns 6.0-6.5; planting areas 5.0-6.0.
- i. Texture:
 1. Dry weight organic content (compost) 30-50%.
 2. Particle size glasses: rock and gravel (2mm) 0-3%.
 3. Sand: (0.05 & 2mm) 30-35%.
 4. Silt & Clay: (0.05mm) 15-20%.
 5. Clay: (0.002mm) 0-10%.

4. Bark Mulch

- i. Dark brown in colour, 25mm and smaller, Douglas fir or Hemlock, free of chunks and all foreign and harmful material.

Landscape Reinstatement

1. Soil Preparation and Placement:

- i. Supply, prepare and place planting medium where indicated on drawings and as affected by the work.
- ii. Prior to placement, do not move or work soil or additives when they are excessively wet, frozen, extremely dry or in any manner, which will adversely affect soil structure.
- iii. Protect soil, additives and fertilizers against extreme wetting and against contamination by weeds and insects.
- iv. Deliver and store fertilizers and chemical ingredients in the original manufacturer's containers.
- v. Place a minimum 50mm layer of bark mulch in all planting beds.
- vi. Thoroughly mix soil with additives to produce planting medium.
- vii. Scarify compacted sub-grades to a minimum depth of 100mm (4") prior to placing planting soil.
- viii. Place planting soil to depth of 225mm for groundcover areas, 450mm for shrubs and gardens.
- ix. Individual plants shall have shrub pit 300mm wider and 150mm deeper than root-ball.
- x. Crown or slope for positive surface drainage.
- xi. Do not compact, but finish the surface smooth, uniform and firm against deep footprints.
- xii. Protect planted areas with 1220mm high temporary fencing.

2. Grass:

- i. Reinstatement topsoil as per FMGT Standard mix see "typical soil preparation and placement notes above).
- ii. Roll out topsoil to compact prior to sodding.
- iii. Replant using sod.
- iv. Apply Quickstart fertilizer.

32 93 00 PLANTS

Plantings

1. The University quadrangle is strongly defined by formal planting, walkways and the surround architecture. Trees in this space are primarily Pin Oak, Garry Oak, and Douglas fir. All future formal planting within the quadrangle shall be consistent with the existing.
2. Maintain the informal planting and natural plant material growth outside the quadrangle.
3. Plant materials shall be selected with the acknowledgement that UVic practices Integrated Pest Management. Discuss plant combination to be applied in specific locations with FMGR.
4. Areas of site to be “reforested” – i.e. areas where planting will recover the quality of native growth – will primarily be Douglas fir, Western Red Cedar, Big Leaf Maple, and Dogwood.
5. Transition areas between forest and developed areas shall be provided with plant materials compatible to both areas.
6. Areas closer to buildings (domesticated areas) shall use trees such as Pacific Crabapples, Red Oaks, Pin Oak, Garry Oak and Maple.
7. In special circumstances, other specimen materials may be required by the botanical studies program for educational purposes, as directed by FMGT in co-ordination with FMGR and the Biology Department.
8. Shrubs shall be chosen to define space, complement buildings, control circulation and provide wind screening. In developed areas, ground cover shall be primarily lawn, supplemented by other materials with proven performance suitability on campus. Shrubs and ground cover are elements of space continuity; however, the extent of their use shall be evaluated in relation to the cost of maintenance required for the first two years of plant establishing.
9. Annuals provide desirable bright colour, but should be used only in contained areas where irrigation is available, and maintenance and replacement are not problematic (i.e. courtyards).
10. Mulching (fertile mulch) of planting beds is required. Hog fuel type of Bark mulch is prohibited. Consult FMGR.
11. UVic prefers the short-term use of irrigation to establish plants (maximum 2 growing seasons). Low water, drought tolerant planting is encouraged.

Planting Warranty

1. One full year labour and planting.

Materials warranty to be provided for all landscape work