

GROUNDS MAINTENANCE DESIGN STANDARDS

SITE CLEARING, DEMOLITION AND EROSION CONTROL

A site plan will be developed to provide details on land clearing and demolition which will indicate all landscape elements which are to be removed, relocated or modified. The site plan should include, but not be limited, to the following:

- The plan submitted must note the location of staging areas, dumpsters, site entrances, and exit and construction limit lines and fences. Contractor must adhere to these limit lines and not stage, store, or park construction vehicles or equipment outside of the limit line.
- All trees that are to be removed from the site should be reviewed one year in advance to discuss the viability of moving these trees to other locations.
- Once site work begins Yale Grounds Maintenance representatives should be notified and invited to site meetings. At minimum at the beginning of the project and prior to the beginning of final site work and landscaping.
- Any changes to the site or landscape plans after projects has begun are to be brought to the attention of the Yale Grounds Maintenance representative
- Landscape plans must denote planting list in scientific nomenclature denoting plant species, varieties and cultivars to insure named plants are consistent with what is planted. Substitutes shall be approved by Yale Grounds Maintenance representatives.
- Landscape plants trees and lawns which are designated to remain must be protected, relocated, or removed. Plant material to remain will be protected by non-movable construction fence installed at the trees drip line, in no case shall the tree protection be less than five times the diameter breast height of the tree (extending out from all sides of the tree) No construction equipment, materials or debris shall be located within tree protection zones at any time.
- All tree protection should be approved by a GM representative. The GM representative must inspect the site before any construction begins to approve tree protection in place.
- Location of stockpiled site materials which are to be reused such as; topsoil, subsoil, gravel must be clearly denoted. All top soil removed from the site should go to an agreed upon storage site with the GM representative being notified in advance of movement off site and all excess top soil to be retained by Yale University.

- All tree root zones within the protected area should receive min. of 2” mulch and kept moist as needed.
- Protect existing drains from sediment resulting from construction operations. Provide Erosion Control Plan including silt fence locations.
- Erosion control or seed establishment matting must not contain plastic mesh if it does it must be removed after establishment, any remaining matting must biodegrade within three months of installation or will be removed at the cost of the General Contractor.

SITE GRADING

- Grading and excavations will not occur within the drip line of existing plant materials which have been identified to remain.

FINISH GRADING

- Finish grading requirements will be included on the grading plan and in the project specifications.
- Landscape contractor will be pre-qualified for grading and lawn installation for similar size projects.
- Existing on site topsoil may be reused for lawns and plant beds, provided it meets the following topsoil requirements. Friable loam with minimal amounts of clay and free of subsoil, roots, grass, weeds, stones, debris, and foreign matter. A pH range of 5.9 to 7.0 and containing a minimum of 6% and a maximum of 25% organic matter.
- Topsoil mix for plant beds: 3/4 topsoil and 1/4 peat moss or composted organic material. For each 100 square feet of plant bed incorporate the following: 5 lbs. of slow release all-organic fertilizer.
- Topsoil tests will be made by an independent agency before topsoil delivery and placement. Tests will also determine requirements for topsoil additives. Topsoil samples will be preapproved by Grounds Maintenance prior to delivery.

SEEDING AND SODDING

- Identify on landscape or grading plan, areas to be seeded or sodded. Seeding will include areas to receive shade seed mix and/or general seed mix.

- Samples of sod to be used on site for turf areas to be submitted to GM representative. This sod should contain no plastic mesh or other non organic material used to hold sod together.
- A certified seed tag from the proposed lawn seed mixture should be submitted to the GM representative prior to installation.
- Sod will be either a blue grass blend or a turf-type tall fescue blend depending on site conditions such as lawn use, maintenance level, irrigation, and orientation, the specific blend must be approved by GM representative.
- Seed mix should contain 70-80% Turf Type Tall Fescue, this must include at least three different varieties of these Fescues, 10% Perennial Rye, 10% Kentucky Bluegrass. **Shade areas** 30% Creeping Red Fescue, 30% Chewing Fescue, 30% Hard Fescue 5% Perennial Rye, 5% Kentucky Bluegrass. Certified seed tag must be submitted to Grounds Representative for approval prior to use. A list of acceptable varieties may be provided upon request.

TRASH AND RECYCLING AREAS AND EQUIPMENT

- All trash disposal equipment including site fixtures, compactors and dumpsters must be designed into project and funded by the project. Upon request Grounds will provide cut sheets for specified equipment.
- All trash containment areas should be screened from public view.
- Compactors should be the first option for trash and cardboard collection.
- All gates for trash containment areas should be a minimum of 5' wide.
- Curb cuts should be provided within twenty feet of enclosures.
- All trash containment areas should have proper drainage
- All trash containment areas should have a spigot for hot and cold water.

PLANT MATERIALS AND INSTALLATION

- Landscape contractor will be pre-qualified in installation of similar size projects, and have a successful track record on both projects outside and within Yale University.
- All plant material will conform to the current issue of the American Standard for Nursery stock published by the American Association of Nurserymen.

- Plant material must be selected from nurseries which are located in hardiness zones similar to the Yale Campus . Nurseries must be recognized and approved by state and federal agencies
- Plant materials must be approved by the landscape architect prior to digging and delivery.
- Plant material inspections and approvals can be done at the nursery or by photographs. A minimum of two photographs per plant type with a front and side view is required.
- Photographs must indicate size, shape, color, and nursery growing conditions.
- All groundcover must be in grown in min. 3” pot size, spacing shall not exceed eight inches on center.
- Perennials should be grown in 1 gal containers or larger
- All new and existing trees must have an exposed root flare whether upon finish grading.

SIDEWALKS, RAMPS, STEPS

- Sidewalks, ramps and steps should be constructed of a material that capable of withstanding the application of ice melt materials.

FENCES AND BARRIERS

- Old Campus sitting fence – per approval by GM
- Bollards- per approval by GM

SITE FURNITURE

- Manufacturers and suppliers who have provided campus site furniture include the following:
- Benches- British American model type “Medway” 4’,5’,6’,8’
- Trash/litter receptacles Victor Stanley Model number ES-142 Economy Series 36 gal., VS black, PL-36 Black plastic liners, S-1 Dome lids.
- Bike racks must be Yale standard type.
- Cigarette containment - TBD

IRRIGATION

- All irrigation systems will be in proper running order after a project is completed ,this will be inspected and determined by a GM representative.
- All installed irrigation systems will be turned over to Yale GM dept. with an as built lay-out plan of that system. Design and construction of irrigation system must meet all applicable codes. In addition, provide color-coded drawing(s) showing all zones and assigned valves.
- Irrigation drawings/plan shall include but not limited to zone size, operating pressure and scheduled flow rates.
- Hunter clocks and irrigation heads will be the preferred standard.
- All irrigation time clocks should be mounted outside of the building. Each zone shall have its own station on the controller
- Controllers/ clocks shall be capable of temporarily shutting down system by utilizing internal/external options (such as rain, freeze devices) Outdoor controllers shall be lockable and weather resistant
- All irrigation systems should have a shut off for the main water source located outside of the building.
- Irrigation heads shall be installed to provide head to head coverage to reduce water waste from over-watering, inefficient watering. All sprinkler heads shall be spaced at a maximum of 50% of *design performance* diameter of the sprinkler. Spacing shall be reduced below 50% of *design performance* diameter *when* conditions demand. Sprinklers adjacent to walls, buildings, fences *or other structures* shall be spaced a min. 6” *away from structures*.
- Systems shall be able to complete watering in 10 hours or less per night and match appropriate zones for plant material to irrigation to provide separate zones for turf, shrubs, and drip. (Provide separate zones for different exposures)
- Irrigation systems with a minimum 1” point of connection or 2500 *square feet* and larger of landscaped area shall have a master valve installed.
- All wire *connections* shall be made with watertight connectors and contained in valve box. Remote control valve wiring shall be a minimum of 14 gauge, UF UL or PE UL rated.

- Provide minimum of one spare wire for every five remote control valves in system. Spare wire shall be available at all valve manifolds or clusters and controllers.
- All installed irrigation systems shall have a back flow preventer that must meet all applicable codes including blowout a connection.
- Minimum recommended standards for PVC pipe: Schedule 40 for sizes 3/4" through 3", Class 200 for sizes 4" and up. 1/2" PVC pipe not allowed. All piping under hardscapes shall be contained in sleeving *separate from wire sleeving*. (When irrigating slopes, take runoff at slope bottom into consideration. (*Run lateral lines parallel to slope*).
- Booster pumps *shall* be installed on systems where supply pressure does not meet minimum recommended pressures of sprinkler manufacturers.

FINAL APPROVALS AND JOB ACCEPTANCE

- The GM representative must be kept informed of all punch lists related to grounds matters and when they are completed. Once a job site is handed off to Yale University and sub-contractor no longer is responsible for maintenance of that site GM must be notified.
- Work that is deemed unacceptable by the GM representative after the project is handed off will be repaired at the cost of the project.
- All additional work performed on site by GM as part of the project or requested by the project must be accompanied by a PATEO before work begins.
- All tree preservation must be performed immediately prior to the project completion date to mitigate compromised root zones, compaction or damage to the landscape from site work. This work may be managed by GM.
- Any landscape areas disturbed from compaction or damage outside the project work zone such as but not limited to materials, equipment, parked vehicles or transport of materials or equipment to work location will be repaired immediately to the standards set forth by the GM representative and be paid for by the project or GC.
- All plantings and landscape material will be guaranteed to the satisfaction of Yale GM for a period of one calendar year from date of job acceptance. Within the one calendar year, GM will notify contractor of dead or declining plantings, materials, and lawns and contractor will replace as directed by GM. The replacements will be guaranteed for one year from installation date.

