Part 1- General

1.1 RELATED DOCUMENTS

.1 Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 RELATED SECTIONS

.1 Section 32 91 21 Growing Medium

.2 Section 32 93 00 Tree Planting

.3 Section 32 84 10 Rainwater Distribution System

.4 OPSS 1010 Material Specification for Aggregates – Base, Subbase, Select Subgrade, Backfill

.5 OPSS 1860 Material Specification for Geotextiles

.6 TS 1010 Amendments to OPSS 1010

.7 TS 1860 Amendments to OPSS 1860

1.3 SUMMARY

.1 Contractors must provide trees with the specified net soil volume within a structured rooting space provided by the soil cell system.

.2 Section Includes:

.1 Furnishing and installing soil cell system, geotextile, geogrids, sub base material, backfill, drainage system, root barrier, and mulch, and the installation of Growing Medium.

1.4 DEFINITIONS

.1 Aggregate Sub Base (below soil cells): Aggregate material between the bottom of the soil cell frame and the compacted subgrade below, designed to distribute loads from the frame to the subgrade.

.2 Aggregate Base Course (above cell deck): Aggregate material between the paving and the top of the soil cell deck below designed to distribute loads across the top of the deck.

.3 Backfill: The earth used to replace or the act of replacing earth in an excavation beside the soil cell to the excavation extents.

.4 Finish Grade: Elevation of finished surface of Growing Medium or paving.

.5 Geogrid: Net-shaped synthetic polymer-coated fibers that provide a stabilizing force within soil structure as the fill interlocks with the grid and as defined in Part 2 – Products.

.6 Geotextile: A geosynthetic fabric, applied to either the soil surface or between materials, providing filtration, separation, or stabilization properties.

.7 Growing Medium: Soil as defined in Section "Growing Medium" intended to fill the soil cell system and other planting spaces.

.8 Root Barrier: Plastic root diversion device.

.9 Root package: The earthen package containing the root system of the tree as shipped from the nursery.

.10 Soil Cells: Structural system designed to be filled with Growing Medium for tree rooting and support of vehicle loaded pavements.

.11 Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill.

.12 Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

1.5 SUBMITTALS

.1 Environmental Requirements and Procedures

.1 Comply with all requirements and procedures in Section 01 35 43 Environmental Requirements and Procedures.

.1 Submit materials water management plan that describes how materials will be managed at the site to prevent erosion and siltation from stored materials in accordance with Section 01 35 43 Environmental Requirements and Procedures paragraph Water Management, and General Construction Materials (Non Hazardous Materials)

.2 Submit testing data, waste material disposal plan for disposal of all excavated soil and fill material in accordance with Section 01 35 43 Environmental Requirements and Procedures, paragraph Waste Management.

.3 Submit letters and certificates of approval certifying that all fill material, including all aggregates and backfills meet the requirements of Sections 01 35 43 Environmental Requirements and Procedures, paragraph General Construction Materials (Non Hazardous Materials) and Fill Materials.

.4 Submit letters of compliance that all contractors and subcontractors are in compliance with the provisions of Section 01 35 43 Environmental Requirements and Procedures, paragraph Environmental Management Plan, and Environmental Awareness Training.

.2 Upon seven (7) days prior to start of installation of items in this section, the Contractor shall provide submittals required in this section to the City for review and approval.

.3 Shop Drawings: Provide drawings signed and sealed by a professional engineer licensed to practice in the Province of Ontario.

.4 Product Data: For each type of product, submit manufacturer's product literature with technical data sufficient to demonstrate that the product meets these specifications.

.5 Samples for Verification: For each product where noted in the specification, submit samples as described.

.6 Compaction testing results: Submit results of all compaction testing required by the specifications including the bulk density test of the mock up and installed soil, and the compaction testing log of penetrometer and moisture meter readings to the City for approval.

.7 Qualification Data: Submit documentation of the qualifications of the soil cell installer sufficient to demonstrate that the installer meets the requirements of paragraph "Quality Assurance".

.8 Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:

.1 Manufacturer's certified analysis for standard products.

.2 Soil cell manufacturer's letter of review and approval of the project, plans, details and specifications for compliance with product installation requirements.

1.6 SEQUENCING AND SCHEDULING

.1 General: Prior to the start of Work, prepare a detailed schedule of the work for coordination with other trades.

.2 Schedule all utility installations prior to beginning work in this section.

.3 Where possible, schedule the installation of soil cells after the area is no longer required for use by other trades and work. Protect installed soil cells from damage in the event that work must occur over or adjacent to the completed soil cells.

1.7 QUALITY ASSURANCE

.1 Installer Qualifications: Soil cells and related products shall be installed by a qualified installer whose work has resulted in successful installation of Growing Mediums and planter drainage systems, underground piping, chambers and vault structures.

.1 Submit list of completed projects of similar scope and scale to the City, demonstrating capabilities and experience.

.2 The installer and the field supervisor shall have a minimum of five years successful experience with construction of similar scope in dense urban areas.

.3 Installer's Field Supervision: Installer is required to maintain an experienced full-time supervisor on Project site when work is in progress. This person shall be identified during the Pre-installation Conference, with appropriate contact information provided, as necessary. The same supervisor shall be utilized throughout the Project, unless a substitution is submitted to and approved in writing by the City.

.4 Installer will be required to take part in a half-day training session provided by the manufacturer. Training session to be attended by all foremen and key personnel involved in installation. Manufacturer will provide additional training during mock-up installation

.2 Provide mock up of soil installation and compaction evaluation:

.1 Prior to the installation of soil cells, construct a mock up of the complete installation at the site. The installation of the mock up shall be in the presence of the City.

.2 The mock up shall be a minimum of 10 square meters and include the complete soil cell system installation with sub base compaction, drainage installation, base course aggregate and geotextile as required, geogrids, backfill, Growing Medium with compaction, and top geotextile.

.3 The mock up area may remain as part of the installed work at the end of the Project provided that it remains in good condition and meets requirements of the Contract Documents.

.3 Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:

.1 Manufacturer's certified analysis for standard products.

.2 Soil cell manufacturer's letter of review and approval of the project, plans, details and specifications for compliance with product installation requirements.

.4 Quality control required.

.1 The contractor shall, engage the soil cell manufacturer to provide shop drawings, stamped by a Ontario licensed professional engineer, and to provide periodic construction review by a Ontario licensed professional engineer, in order to ensure that the soil cells are constructed in accordance with the construction documents.

.2 The soil cell Ontario Professional Engineer responsible for the periodic review of the installation shall attend the pre-installation meeting.

.5 Conduct a pre-installation meeting.

1.8 LAYOUT AND ELEVATION CONTROL

.1 Provide layout and elevation control during installation of soil cells. Utilize grade stakes, benchmarks, surveying equipment and other means and methods to assure that layout and elevations conform to the layout and elevations indicated on the plans.

1.9 PERMITS AND CODE COMPLIANCE

.1 Comply with applicable requirements of the laws, codes, ordinances and regulations of Federal, Provincial and Municipal authorities having jurisdiction. Obtain necessary permits/approvals from all such authorities.

1.10 DELIVERY, STORAGE, AND HANDLING

.1 Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer. Protect materials from deterioration during delivery and while on the project site.

.2 Bulk Materials: Do not deliver or place backfill, soils and soil amendments in frozen, wet, or muddy conditions.

.1 Do not dump or store bulk materials near structures, utilities, sidewalks, pavements, and other facilities, or on existing trees, turf areas or plants.

.2 Provide protection including tarps, plastic and or matting between all bulk materials and any finished surfaces sufficient to protect the finish material.

.3 Provide erosion-control measures to prevent erosion or displacement of bulk materials and discharge of soil-bearing water runoff or airborne dust to adjacent properties, water conveyance systems, and walkways. Provide additional sediment control to retain excavated material, backfill, soil amendments and planting mix within the project limits as needed.

.4 Soil cells: Protect soil cells from damage during delivery, storage and handling.

.1 Store under tarp to protect from sunlight when time from delivery to installation exceeds one week. Storage should occur on smooth surfaces, free from dirt, mud and debris.

.2 Handling is to be performed with equipment appropriate to the size (height) of Cells and site conditions, and may include, hand, handcart, forklifts, extension lifts, small cranes, etc., with care given to minimize damage to soil cells. Backhoes, front-end loaders and skid steers are considered inappropriate for soil cell transport and placement.

1.11 PROJECT CONDITIONS

.1 Verification of Existing Conditions and Protection of New or Existing Improvements: Before proceeding with work in this section, the Installer shall carefully check and verify all

dimensions, quantities, and grade elevations, and inform the City immediately of any discrepancies.

.1 Carefully examine the civil, record, and survey drawings to become familiar with the existing underground conditions before digging. Verify the location of all aboveground and underground utility lines, infrastructure, other improvements, and existing trees, shrubs, and plants to remain including their root system, and take proper precautions as necessary to avoid damage to such improvements and plants.

.2 In the event of conflict between existing and new improvements notify the City in writing and obtain written confirmation of any changes to the work prior to proceeding.

.1 When new or previously existing utility lines are encountered during the course of excavation, notify the City in writing and make recommendations as to remedial action. Proceed with work in that area only upon approval of appropriate remedial action. Coordinate all work with the appropriate utility contractors, utility company or responsible public works agency.

.2 Weather Limitations: Do not proceed with work when subgrades, soils and Growing Mediums are in a wet, muddy or frozen condition.

.3 Where construction sequencing requires work during cold weather, protect sub grades and bulk materials from freezing using covers or as needed heated tenting. Sub grades that are sufficiently well drained to preclude the buildup of ice may be installed and built upon during freezing weather provided the surface is cleared of snow and any ice bound material.

.4 Protect partially completed soil cell installation against damage from other construction traffic when work is in progress, and following completion with highly visible construction tape, fencing, or other means until construction is complete. Prevent all non-installation related construction traffic over the completed soil cell installation; only allowing loads less than the design loads.

1.12 PROTECTION

.1 Protect open excavations and partially completed Soil Cell installation from access and damage when work is in progress, and following completion with highly visible construction tape, fencing, or other means until all construction is complete.

1.13 WARRANTY

.1 Soil cell manufacturer's product warranty shall apply. Submit manufacturer's product warranty.

.2 Warranty for other products and installation of soil cells in this section shall be as described in Division 1.

1.14 PROJECT WORK

.1 Coordinate installation with all other work that may impact the completion of the work.

1.15 PRECONSTRUCTION MEETING

.1 Prior to the start of the installation of soil cells, meet at the site with the City, general contractor and the soil cells installer to review installation layout, procedures, means and methods.

Part 2 - Products

2.1 SOIL CELLS

.1 Structural system designed to be filled with Growing Medium for tree rooting and support of vehicle loaded pavements meeting the following requirements:

.1 The structure shall be designed to support loads up to and including AASHTO H-20 and Relevant Ontario Building Code standards for sidewalks.

.2 The structures shall be designed to be filled with the growing medium as specified in section 32 91 21 “Growing Medium” including the type of soil specified; the required limitations of delivery, storage, and handling; the requirement to retain soil peds; and requirements to compact and in-situ test soil compaction to the ranges specified.

.3 The soil cells shall have been specifically designed and tested for the purpose of growing tree roots, and rainwater filtering, detention and retention.

.4 Critical to the soil cell design is that each soil cell or stack of soil cells shall be structurally independent of all adjacent soil cell stacks such that a single stack or group of stacks can be removed after the completion of installation to facilitate future utility installation and repair.

.5 The structural design of each Soil Cell unit shall facilitate the movement of roots and water between each cell and between the edges of the cell system and the surrounding soils. The design shall facilitate the installation, compaction and in-situ soil compaction testing; installation and maintenance of utilities within and under the soil cells; the movement and expansion of roots; and the lateral capillary movement of water.

2.2 INSPECTION RISER AND CAP

.1 Inspection riser shall consist of a rigid, schedule 40 non-perforated 100mm +/- diameter PVC pipe.

.2 Cap shall be cast iron clean out caps with screw top and inset lug designed to fit standard PVC schedule 40 pipe-fittings.

2.3 GEOGRID

.1 Geogrid shall be high strength, high tenacity, high molecular weight polyester with the following properties:

Ultimate Wide Width Tensile Strength	29.2 kN/m
Creep Reduced Strength	18.5 kN/m
Long Term Design Strength	16.0 kN/m

2.4 GEOTEXTILE

.1 Refer to Class II non-woven geotextile per OPSS 1860.

2.5 AGGREGATE SUB BASE (BELOW CELL FRAME):

.1 19mm crusher run limestone per TS 1010.

2.6 AGGREGATE BASE COURSE (ABOVE CELL DECK):

.1 19mm crusher run limestone per TS 1010.

2.7 BACKFILL MATERIAL (ADJACENT TO SOIL CELLS):

.1 Refer to OPSS 1010. Clean, compactable, coarse grained fill soil meeting the requirements of the Unified Soil Classification system for soil type GW, GP, GC with less than 30% fines, SW, and SC with less than 30% fines. Backfill material shall be free of organic material, trash and other debris, and shall be free of toxic material injurious to plant growth.

2.8 GROWING MEDIUM - (See Specification Section - Growing Medium)

2.9 ROOT BARRIER

.1 Root barrier shall prevent root penetration. The material shall be impermeable and ribbed with a thickness of 1mm to 2mm. The root barrier shall be the full depth of the soil cells.

Part 3 - Execution

3.1 LAYOUT APPROVAL

.1 Prior to the start of work, layout and stake the limits of excavation and horizontal and vertical control points sufficient to install the soil cells and required drainage features in the correct locations.

3.2 UTILITY COORDINATION

.1 Confirm that the layout of the soil cells is not in conflict with any existing or proposed utility lines or structures. In event that there is a conflict notify the City and take remedial actions to resolve the conflict as instructed by the City. Where needed, and approved by the City utility lines may be installed through the spaces within the soil cell frames.

.1 Secure and brace all utility lines placed within the frames.

.2 Where lines require that the space between cells is larger than 75mm, use the manufacturer's recommended spanning techniques to bridge paving over the gaps between frames.

3.3 EXCAVATION

.1 Excavate to the depths and shapes indicated on the drawings. Base of excavation shall be smooth soil, level and free of lumps or debris.

.2 Excavate per manufacturer's instructions.

3.4 SUB GRADE COMPACTION

.1 Check compaction of the subgrade below the soil cells and confirm that the subgrade soil is compacted to a minimum of 95% of maximum dry density at optimum moisture content in accordance with ASTM D 698 Standard Proctor Method.

.1 Proof compact the subgrade with a minimum of three passes of a suitable vibrating compacting machine or apply other compaction forces as needed to achieve the required subgrade compaction rate.

.2 Apply additional compaction forces at optimum water levels.

3.5 INSTALLATION OF GEOTEXTILE OVER SUBGRADE

.1 Where indicated on the drawings by the project engineer, install geotextile over the compacted subgrade material.

.2 Install the geotextile with a minimum joint overlap of 450 mm between sections of material.

3.6 INSTALLATION OF SOLID AND PERFORATED DRAIN LINES

.1 Lay out the location of all drain lines. Adjust the alignments to conform to the final locations of sleeves and risers. Do not locate drain lines within 150mm of the edge of any soil cell edge.

3.7 INSTALLATION OF AGGREGATE SUB BASE BELOW SOIL CELL FRAME

.1 Install aggregate sub base to the depths indicated on the drawings, under the first layer of soil cell frames.

.2 Compact aggregate sub base layer to a minimum of 95% of maximum dry density at optimum moisture content in accordance with ASTM D 698 Standard Proctor Method.

.1 Compact the subgrade with a minimum of three passes of a suitable vibrating compacting machine or apply other compaction forces as needed to achieve the required subgrade compaction rate.

.3 Grade surface in a plane parallel to the grades of the paving above.

.1 The tolerance for dips and bumps in the aggregate under soil cells shall be a 9 mm deviation from the plane in 3000mm and 3 mm in 1200 mm.

.2 The grade and elevations of the base under the soil cells shall be approved by the City prior to proceeding with the installation of the soil cells.

3.8 INSTALLATION OF SOIL CELLS, GROWING MEDIUM, GEOGRID, AND BACKFILL

.1 Refer to manufacturer's instructions.

.2 Identify the outline layout of the structure and the edges of paving around tree planting areas on the floor of the excavation, using spray paint or chalk line. The layout shall be calculated to include shift in layout locations due to depth and the slope of the cells.

.3 Lay out the first layer of soil cell frames on the sub base. Verify that the layout is consistent with the required locations and dimensions of paving edges to be constructed over the soil cells.

.1 Check each soil cell frame unit for damage prior to placing in the excavation. Any cracked or chipped unit shall be rejected.

.4 Place frames no less than 25 mm and no more than 75 mm apart.

.5 Assure that each soil cell sits solidly on the surface of the sub base. Soil cells shall not rock or bend over any stone or other obstruction protruding above the surface of the sub base material. Soil cells shall not bend into dips in the sub base material. The maximum tolerance for deviations in the plane of the sub base material under the bottom of the soil cells shall be 6 mm in 1200 mm. Adjust sub base material including larger pieces of aggregate under each soil cell to provide a solid base of support.

.6 For additional layers, comply with manufacturer's requirements to correctly register and connect the soil cells together.

.7 Install Growing Medium, geogrid and geotextile curtain, rain water harvesting system and backfill as indicated on the drawings and per specification. The process of installation requires that these materials be installed and compacted together in several alternating operations to achieve correct compaction relationships within the system.

.8 Where required install utility lines within the soil cells during the installation of the system.

.9 Where required, place the geogrid and geotextile curtain along the outside of the limit of the soil cell frames.

.1 Geogrid and geotextile curtains are required between the edge of the Soil Cells and any soils to be compacted to support paving beyond the area of Soil Cells. Do not place geogrid and geotextile curtains between the edge of the Cells and any planting area adjacent to the Cells.

.2 Pre-cut the geogrid and geotextile to allow for 150 mm minimum under lapping below backfill, and 300 mm minimum overlapping top of soil cells.

.3 Where cell layout causes a change direction in the plane of the geogrid or geotextile, slice the top and bottom flaps of the material so that it lies flat on the top of the soil cells and aggregate base course along both planes.

.4 Provide a minimum of 300mm overlaps between different sheets of geogrid or geotextile.

.5 Place the geogrid and geotextile in the space between the soil cells and the sides of the excavation. Attach the geogrid to the soil cells at every soil cell then place the geotextile over the geogrid.

.10 Install no more than two layers of soil cell frames before beginning to install Growing Medium and backfill. Compact the Growing Medium within the soil cells and the backfill material outside the frames in alternating lifts until the desired elevations and density is achieved in both soils.

.11 Install and compact backfill material in the space between the soil cells and the sides of the excavation in lifts that do not exceed 250 mm in depth.

.1 Compact backfill to minimum 95% of maximum dry density using a powered mechanical compactor. Use a pneumatic compacting tool or narrow foot jumping jack compactor for spaces less than 300 mm wide and a 300 mm wide jumping jack compactor or larger equipment in wider spaces.

.2 Maintain the geogrid and geotextile curtain between the soil cells and the backfill material.

.3 Install backfill in alternating lifts with the Growing Medium inside the soil cells.

.12 Fill the first layer or layers of frames with Growing Medium, specified in Section "Growing Medium". Install in lifts that do not exceed 250 mm. Lightly compact the soil inside the frames at each lift to remove air pockets and settle the soil within the frames. Refer to manufacturer's instructions.

.1 Lightly compact each lift to achieve the following test results. Growing Medium compaction shall be tested at each lift using a cone penetrometer to between 70,000 and 140,000 kg/m^2 (100 and 200 psi) when the soil is between 12% and 20% moisture.

.2 If the Growing Medium becomes overly compacted, remove the soil and reinstall. Use hand tools or other equipment that does not damage the soil cells.

.3 Eliminate air pockets and voids. Fill each frame such that there is a minimum of 200 mm of soil over the top of the soil cells before beginning compaction.

.13 After the first two layers of soil cells have been installed, filled with Growing Medium and backfilled, proceed to install the third layer of soil cells, if required. Comply with manufacturer's requirements to correctly register and connect the soil cells together.

.14 Continue to install and compact the Growing Medium within the soil cells and the backfill material outside the frames in alternating lifts until the desired elevations and density is achieved in both soils.

.1 When using mulch, add a final layer of Growing Medium as required to bring the Growing Medium level to not more than 25 mm below the bottom of the soil cell when installed.

.2 Obtain final approval by the City for the soil installation.

.15 Leave 25 mm air space, below top layer of soil cells.

.16 Install and compact remaining backfill material such that the soil outside the limits of the soil cells is flush with the top of the installed deck.

3.9 INSTALLATION OF RAIN WATER DISTRIBUTION SYSTEM WITHIN THE SOIL CELLS

.1 Install perforated rainwater distribution lines as specified in Section Rain Water Distribution System.

.2 Assure that lines are laid level within the growing medium at the depths indicated on the drawings.

3.10 INSTALLATION OF GEOTEXTILE, GEOGRID, INSPECTION RISER AND AGGREGATE OVER SOIL CELLS

.1 Refer to manufacturer's instructions.

.2 Overlap geogrid over the top of the soil cells, with minimum of 300mm overlap.

.3 Place geotextile over the top of the soil cells and where indicated on the drawings, extending beyond the outside edge of the excavation by at least 450 mm. Any joints must be overlapped by a minimum of 450 mm.

.4 Cut geotextile larger than the size of the soil cell area to be covered to accommodate for required conforming of the geotextile and aggregate to the soil cell contours and all required overlaps.

.5 Install 100mm solid P.V.C. inspection risers above the soil cells where indicated on the plan or directed in the field. Install a minimum of one inspection riser for each four trees.

.1 Place inspection risers on top of the soil cells, assemble riser and fittings to dimensions required such that the rim of the riser cap is flush with the paving. Set the rim top with a slope consistent with the slope of the pavement.

.1 Adjust the location of the riser such that the center of the riser falls along the centerline of one of the soil cell slots. Cut the soil cell geotextile with an 'X' cut.

.2 Make a geotextile collar secured to the riser with zip ties that over lap the surrounding geotextile a minimum of 300mm. Secure in place with tape.

.2 Brace all risers while backfill and paving is being installed to secure its location and elevation.

.6 Install the aggregate base course over the geotextile immediately after completing the installation of the fabrics and inspection risers. Work the aggregate from one side of the soil cell to the other to ensure that the fabric and aggregate conforms to the soil cell contours. Do not apply aggregate in several positions at the same time.

.1 Load the aggregate from equipment that is outside the limits of the excavated area. Use small, low impact material mover such as a concrete buggy or Georgia Buggy to move aggregate over the cells. Work over material already in place. Never allow any motorized equipment of any size to operate directly on top of the soil cells.

.2 For large or confined areas, where aggregate cannot easily be placed from the edges of the excavated area, obtain approval for the installation procedure and types of equipment to be used in the installation from the soil cell manufacturer.

.3 Compact aggregate base course(s) in lifts not to exceed 150mm in depth, to minimum 95% of maximum dry density. Utilize a roller or plate compactor with a maximum weight of 450 kg. Make sufficient passes with the compacting equipment to attain the required compaction.

3.11 INSTALLATION OF PAVING ABOVE THE SOIL CELL SYSTEM

.1 Place planter curb and paving material over the soil cell system as specified in Sections Concrete and Unit Pavers. Take care when placing paving or other backfill on top of the soil cell system not to damage the system components.

3.12 INSTALLATION OF ROOT BARRIERS

.1 Install root barrier in accord with manufacturer's reviewed installation instructions.

.2 Install with vertical root directing ribs facing inwards towards trees or plants.

3.13 INSTALLATION OF GROWING MEDIUM WITHIN THE TREE PLANTING AREA

.1 Prior to planting trees, install additional Growing Medium, to the depths indicated, within the tree opening adjacent to paving supported by soil cells.

.2 Remove all rubble, debris, dust and silt from the top of the Growing Medium that may have accumulated after the initial installation of the Growing Medium within the soil cells.

.3 Assure that the Growing Medium under the tree root ball is compacted to approximately 85-90% to prevent settlement of the root ball.

.4 The Growing Medium within the tree opening shall be the same soil as in the adjacent soil cells.

3.14 REPAIR OF CUT GEOTEXTILE

.1 In the event that any geotextile over subgrades or the soil cells must be cut during or after installation, repair the seam with a second piece of geotextile that overlaps the edges of the cut by a minimum of 300mm in all directions prior to adding aggregate material.

3.15 PROTECTION

.1 Ensure that all construction traffic is kept away from the limits of the soil cells until the final surface materials are in place. No vehicles shall drive directly on the soil cells or aggregate base course.

.2 Provide fencing and other barriers to keep vehicles from entering into the area with soil cell supported pavement.

.3 Maintain a minimum of 100 mm of aggregate base course over the geotextile material during construction.

.4 When vehicles must cross soil cells that do not have final paving surfaces installed, use construction mats and thicker aggregate layers designed to distribute vehicle loads to levels that would be expected at the soil cell surface once final paving has been installed. Use only low impact track vehicles with a maximum surface pressure under the vehicle of 20 kg/m^2, on top of the mats over soil cells prior to the installation of final paving.

3.16 CLEAN UP

.1 Perform cleanup during the installation of work and upon completion of the work. Maintain the site free of soil and sediment, free of trash and debris. Remove from site all excess soil materials, debris, and equipment. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

END OF SECTION 32 88 88