17.0 Landscaping

Landscape details and specifications are provided in the Aesthetic Plans and Details in Book 4, and shall take precedence over other contract requirements as well as standard CDOT specifications.

17.1 Design Requirements

17.1.1 Landscape Plan

The Contractor shall prepare a Landscape Plan for all existing plant material in all disturbed areas on the Project. The Landscape Plan shall address both temporary and permanent work. The Landscape Plan shall include the areas to be final seeded and the locations, mitigations, removals, and replacements of Project-impacted trees, shrubs, landscapes and irrigation.

The Landscape plan shall comply with the requirements set forth in the Aesthetic Plans and Details included in Book 4.

The Landscaping Plan shall be required for any area of the Work where construction disturbance occurs including permanent Right-of-Way (ROW), temporary easements, staging, haul road, locations of borrow, or other areas that are disturbed as part of the Project or Work.

The Landscape Plan shall identify the locations of protected areas. The Contractor shall save, protect, and maintain all existing vegetation in the Project except for the vegetation that must be removed to accommodate construction of the Project. All construction operations shall be performed in such a manner that will avoid these protected areas.

The Landscape Plan shall be developed in conjunction with erosion control requirements, as defined in, Section 12 Drainage, of the Contract. The Landscape Plan shall be phased to promote the protection of existing vegetation and working-an-area-to-completion for final stabilization.

The Landscape Plan shall document the vegetation location and identification. This shall include species, location, condition, size, health, and a recommendation for remaining undisturbed, pruning, removal, transplanting, or replacement.

The Landscape Plan shall include photo documentation of the vegetation, including grass coverage for the extent of the Project limits.

The Landscape Plan shall include the proposed locations of replacement or proposed locations of transplanted vegetation within Project boundaries.

The Landscape Plan shall make recommendations for tree species based on the species and conditions as outlined by the State of Colorado portion of *The Roadside Use of Native Plants*, August 2000 USDOT, FHWA publication as edited by Bonnie Harper-Lore and Maggie Wilson. All plant material shall adhere to the City of Colorado Springs approved plant list.

In all areas outside of the plantings in the Landscape plans shown in the Aesthetic Plans and details, Book 4, (non SB-40 areas), the Contractor shall comply with CDOT's tree replacement policy by replacing all native trees equal to or greater than 3 inches Diameter at Breast Height with native trees at a 1:1 ratio. The Contractor shall comply with City of Colorado Springs Landscape Manual for planting requirements for both size and species for trees impacted or planted on the City of Colorado Springs property.

No plantings shall include any noxious weed species.

Replaced materials shall comply with Section 214 of the *Standard Specifications* and be equal or better to the existing materials in type and function.

Project impacted trees/shrubs within a riparian area (i.e., SB 40 trees and shrubs) shall be mitigated in accordance with Section 5, Environmental Requirements, of the Contract.

The Landscape Plan shall identify the landscape and irrigation systems impacted by the Project.

The Landscape Plan shall include a schedule of when Work shall take place.

The Landscape Plan shall include an irrigation plan that details layout, design, and specifications of irrigation system components. The irrigation plan shall adhere to the specifications and requirements shown in the Aesthetic Plans and Details.

A watering schedule listing the Calendar Days chosen to complete the required watering shall be included as part of the Landscape Plan to facilitate reviews by CDOT and the City of Colorado Springs. A field review shall be necessary as part of the Acceptance of the Landscape Plan.

The Contractor shall prepare and submit drawings and narrative as part of the Landscape Plan.

The Integrated Noxious Weed Management Plan, described in this Section 17, shall be included in the Landscape Plan.

All work shall be completed and stamped by a registered landscape architect in the State of Colorado.

17.1.2 Seeding

All disturbed areas within the Right-of-Way that are not surfaced shall be revegetated to replicate or enhance native vegetative communities, as shown in the Landscape Plans provided in the Aesthetic Plans and Details.

All areas to be seeded shall be accessible to maintenance activities by CDOT.

Native grass seed mix shall contain low growing or slow growing, cool and warm season grass seed mix appropriate for the Colorado, Denver metropolitan area and as per CDOT's Policy Directive 503 for landscaping with native grass material. Riparian seed mix shall contain the native grass seed mix **and** Colorado Springs appropriate riparian species as specified on the Landscape Plans provided in the Aesthetic Plans and Details. Noxious weeds and revegetation species that attract wildlife to the Project shall not be used. The proposed native seed mix and riparian seed mix shall be included in the Landscape Plan. The proposed seed mixes shall adhere as closely as possible to the seed mixes specified in the Landscape Plans provided in the Aesthetic Plans and Details.

Slopes in detention facilities shall be planted with a grass mix that has been successfully implemented on other CDOT projects.

17.1.3 Integrated Noxious Weed Management

The Contractor shall use industry standard protocol for weed management, including the development of an Integrated Noxious Weed Management Plan (INWMP) to mitigate the potential adverse effects of earth disturbance. Noxious Weeds lists from CDOT, the State of Colorado, and the Local County and City shall be used.

The INWMP shall incorporate appropriate methods, such as herbicides, mechanical removal, and (potentially) biological controls. Appropriate control methods shall be selected carefully, especially in sensitive areas, such as wetlands, riparian and habitat corridors.

Noxious weeds shall be spot sprayed. In locations where spot application is not practicable, a wildlife biologist will inspect the area prior to spraying to ensure crucial habitat will not be impacted. The INWMP is further described in Book 2, Section 5 - Environmental.

17.2 Construction Requirements

17.2.1 Landscape Plan

Once the Landscape Plan is Accepted, the Contractor shall clearly tag all existing plant material that will remain undisturbed, pruned, removed or transplanted per the Accepted Landscape Plan and prior to the start of all construction activities. The Contractor shall also conduct a landscape walkthrough with the CDOT prior to the start of construction. After Acceptance of the walkthrough, plant material shall be transplanted to areas, protection installed and pruning finished, as Accepted in the Landscape Plan and walkthrough. Removals may take place over the life of the Project.

17.2.2 Clearing and Work Area Limits Identification and Protection

The Contractor shall delineate the clearing and work limits in areas adjacent to existing wetlands, trees, and significant vegetation for Acceptance by CDOT. These areas shall adhere as closely as possible to the demolition/clearing and grubbing/selective thinning areas shown on the Landscape Plans provided in the Aesthetic Plans and Details. Upon Acceptance, the Contractor shall install temporary orange fencing in these areas to identify the clearing boundary. The Contractor shall flag those trees adjacent to the boundary that are to remain in place. The Contractor shall use all appropriate care to avoid damage or removal of the flagged trees. Flagged trees that are damaged shall be replaced in-kind at the Contractor's expense. Trees that are damaged and assessed as salvageable shall be promptly repaired, pruned, wrapped, and protected from further damage at the Contractor's expense. All replacement trees and shrubs shall be native species per the City of Colorado Springs Landscape Manual Appendix A, Section 4 Lower Elevation Riparian

The Contractor shall repair or replace in-kind all landscape material and vegetation that is disturbed by the Work. Replaced materials shall be equal or better than the existing materials in size, type and, condition. Revegetation plans for these areas shall be coordinated with the City of Colorado Springs and CDOT.

The Contractor shall repair, replace, relocate, or adjust all irrigation system components that are disturbed by the Work. Replaced materials shall be equal or better than the existing materials in type and function. Irrigation system modifications for these areas shall be coordinated with the maintaining entity.

17.2.3 Protection Areas

The Contractor shall install temporary fencing for the protection of all existing vegetation that is designated to remain undisturbed, for Acceptance by CDOT. Fencing shall be placed at twice the drip line for trees. The Contractor shall use all appropriate care to avoid damage or removal of the tagged trees. Tagged trees that are damaged shall be replaced in-kind at the Contractor's

expense. Trees that are damaged and assessed as salvageable shall be promptly repaired, pruned, wrapped, and protected from further damage at the Contractor's expense.

Construction activities, such as earth disturbance, storage, staging, or parking inside the drip line shall be prohibited. No chemicals shall be applied or used around or near these areas that would be detrimental to vegetation health.

The Contractor shall immediately report damage to any tree within the Work area designated to remain undisturbed, to CDOT, for assessment of the damage and survivability. Trees that are damaged which, at the sole discretion of CDOT, are determined will not survive, shall be replaced at the Contractor's expense. Trees that are damaged and are assessed as salvageable shall be promptly repaired, pruned, wrapped, and protected from further damage at the Contractor's expense.

Irrigated areas to remain shall be designated in the Landscape Plan and secured to prevent access for parking, staging, or other related Work elements, to ensure there is no damage to the system.

17.2.4 Trees and Shrubs

17.2.4.1 Removal of Trees and Shrubs

Tree stumps within the roadway prism or within 10 feet of the edges of roadway pavements shall be completely removed and disposed off the Project Site. All other tree stumps within the Project shall be ground 3 feet below finished grade. The Aesthetic Plans and Details provide limits of clearing/grubbing and selective thinning activities.

All trees or shrubs removed from the Project shall become the property of the Contractor and shall be completely disposed of off-Site by the Contractor.

17.2.4.2 Tree and Shrub Transplanting

Section not used.

17.2.4.3 Pruning

The Contractor shall have all root and branch pruning that interfere with the Work completed by a licensed and certified tree surgeon. This includes all root and branch pruning within the 'selective thinning' areas as shown on the Landscape Plans provided in the Aesthetic Plans and Details. All Work shall be in accordance with American National Standard Institute – ANSI A300-1995, Section 5.3.3.2.

Root Pruning: Tree roots 2 inches or greater in diameter shall not be removed. The Contractor shall not prune roots at a depth greater than the excavation.

Branch Pruning: The Contractor may prune branches that will interfere with the Work per the Approved Landscape Plan.

The Contractor shall remove weak or dead branches on trees that are to remain within the ROW.

17.2.5 Removal

All trees and shrubs removed from the Project shall be completely disposed of off Site by the Contractor.

Tree stumps within the roadway prism and 10 feet of the edges of roadway pavements shall be completely removed and disposed off the Project Site. All other tree stumps within the Project shall be ground to a depth of 3 feet below the finished surface.

17.2.6 Transplanting

Section not used.

17.2.7 Replacement Plant Material

The Contractor shall provide the following minimum tree sizes for trees to be planted or provided as part of the Work:

1. Deciduous trees: 2-inch caliper
2. Evergreen trees: 8 feet in height
3. Deciduous shrubs: 5 gallon
4. Evergreen shrubs: 5 gallon
5. Ornamental grasses: 1 gallon

Replacement trees and shrubs shall be regionally occurring native species as outlined in the City of Colorado Springs Landscape Manual Appendix A, Section 4 Lower Elevation Riparian.

All trees shall be balled and burlapped in accordance with M-Standard M-214-1 and Section 214 of the Standard Specifications. The Contractor shall be responsible for delivery and storage of trees per Section 214 of the Standard Specifications. Trees shall be protected from damage and deterioration during delivery and storage.

Trees will not be Accepted if the ball of earth surrounding the roots is cracked or broken during delivery and planting. Plants that have been cut back from a larger size to meet specifications (not the specified size), were improperly pruned, or have disease or insect infestation, shall not be Accepted.

All replacement tree/shrubs shall receive wood chip mulch per M-Standard M-214-1 and Section 213 Mulch of the Standard Specifications.

17.2.8 Staking and Watering

New replacement and transplanted trees shall be guyed in accordance with M-Standard Plans M-214-1 and Section 214 of the Standard Specifications. Trees shall be staked for two growing seasons. Guying material shall be removed at completion of the establishment period by the Contractor. Plants should be fully established at the end of three years.

The Contractor shall water new, transplanted, and protected trees on the Project until the Project has completed the establishment period. The Contractor shall water the plant material once a week at the rate of 50 gallons per tree per watering for the months May through October, and shall be watered twice per month at the rate of 70 gallons per tree for the months November through April, or as needed.

17.2.9 Topsoil

All topsoil, either imported or salvaged on Site, shall be treated with an herbicide for noxious weeds prior to final seeding. Additional topsoil specifications and requirements are listed in the Aesthetic Plans and Details.

17.2.10 Seeding

Placement of soil conditioner, topsoil, seeding, mulching (weed free), and mulch tackifier (or soil retention blanket) shall not be done in a single operation, but shall be completed immediately following each area that is to final grade per Standard Specifications 101, 107, and 208.

Fertilizer shall not be used adjacent to wetlands and waterways.

Seeding shall be drilled .25-inch to .5-inch into the soil. In small areas not accessible to drill, the Contractor shall hand-broadcast the seed at double the rate and rake into the soil .25-inch to .5-inch per Section 212 of the Standard Specifications.

Hydromulching is an acceptable method of stabilization. Hydroseeding shall only be allowed as Accepted by the CDOT landscape architect. Hydroseeding and hydromulching shall not be done in the same operation

All native and riparian seeding areas shall be mulched and mechanically crimped with weed free hay per Section 213 of the Standard Specifications.

Soil retention blanket shall be used for slopes steeper than 3:1. If soil retention blanket is used, mulching (weed free) and mulch tackifier are not required. Turf reinforcement mats shall be used in swales steeper than 2%. Soil retention blankets shall be per Section 216 of the Standard Specifications.

The Contractor shall place native seed, mulch (weed free), and mulch tackifier after each construction phase and prior to any winter shutdown Work.

Native seed areas shall contain a minimum of 90 percent grass species and no noxious weeds. Native seed areas shall have 80 percent coverage prior to Project Final Acceptance. Any native seed areas having poor germination (less than 70 percent coverage) shall be reseeded until establishment is reached.

Additional seeding specifications and requirements, including seed mixes, are listed in the Aesthetic Plans and Details.

17.2.11 Landscaping Inspection, Establishment, Acceptance, and Warranty Period

17.2.11.1 Interim Landscape Inspections

The following inspection points shall be completed and the Work shall meet the requirements of the Contract Documents prior to proceeding:

1. Completion of the subgrade preparation
2. Completion of finished grade preparation
3. Layout of planting beds
4. Layout of all plant materials

5. Completion of irrigation systems
6. Completion of planting operations

Nonconforming Work shall be replaced or repaired promptly by the Contractor at its own expense. When damage endangers public safety, or traffic, remedial action shall be taken immediately to ensure safety and prevent further disruption of traffic.

17.2.11.2 Substantial Landscape Completion

Substantial Landscape Completion is defined as when all plant materials have been planted and all irrigation items are completed in compliance with the requirements of the Contract Documents. Plants shall be healthy and in flourishing condition and be free of dying branches

and branch tips, and shall bear foliage of normal density, size, and color. All mulch beds shall be completely mulched.

Prior to Substantial Landscape Completion, a landscape inspection shall be held with CDOT to determine Acceptance of plant material, seeding areas, and irrigation systems. Upon Acceptance CDOT will issue a “Notice of Substantial Landscape Completion.”

17.2.11.3 Landscape Establishment

The Landscape Establishment Period will commence at Project Final Acceptance which will be contingent upon receipt of a written “Notice of Substantial Landscape Completion” from CDOT in accordance with the requirements of Section 214 of the Standard Specifications and herein. The Landscape Establishment Period will last for 12 months, and will begin the following spring if Project Final Acceptance is issued in the fall.

All landscape installations shall be completely maintained by the Contractor during the Landscape Establishment Period. This shall include all tap fees and water fees for the maintenance period. Upon Landscape Acceptance, the City of Colorado Springs shall be responsible for water fees. The Contractor shall submit a detailed Landscape Maintenance Plan in accordance with the requirements of Section 214 of the Standard Specifications and prior to requesting Project Final Acceptance. CDOT will inspect the landscape installations on at least a monthly basis to determine the acceptability of the maintenance Work. Noncomforming maintenance will be brought up to acceptable levels within 5 Days of receipt of notice of maintenance deficiencies.

17.2.11.4 Landscape Acceptance

Upon completion of the Landscape Establishment Period, at the Contractor’s request, CDOT will inspect the landscaping to determine compliance to the requirements of the Contract Documents. All landscape installations shall be fully established, weed-free, clean, smooth, properly graded, and without plant mortality to be Accepted. The Landscape Establishment Period and Contractor maintenance will terminate after Landscape Acceptance is reached. Should CDOT identify any areas of Nonconforming Work, the Contractor shall correct the deficiencies and extend the Landscape Establishment Period for a minimum of one additional growing season at no additional cost to the Project. If Landscape Acceptance occurs in the fall, the Contractor shall continue to maintain the landscaped area (including irrigation system) until the following spring. Any dead plant material or any damaged irrigation components shall be replaced or repaired at no additional cost to the Project. The Contractor shall perform a spring

startup on the irrigation system, at no additional cost to the Project, ensuring all irrigation components are in working order.

17.2.11.5 Landscape Warranty Period

All trees, shrubs, and ground covers shall be completely warranted by the Contractor for one calendar year from the date of Landscape Acceptance. Any plant material deemed deficient following this one-year warranty period shall be replaced in-kind by the Contractor at no additional cost to the Project, and shall be warranted for one additional year by the Contractor. Any additional one-year warranty period beyond the initial one-year warranty period will be considered an extended warranty period. Another inspection will be conducted at the request of the Contractor at the end of the extended warranty period to determine Acceptance or rejection.

If access to a completed landscaped area is required by the Contractor after Landscape Acceptance, landscape materials will be considered existing and shall be protected in accordance with the requirements of the Contract Documents.

Trees or shrubs transplanted at CDOT's direction are not required to be warranted.

17.3 Project Special Provisions

The following specifications modify and take precedence over the CDOT *Standard Specifications*.

REVISION OF SECTION 107 - PROTECTION OF EXISTING VEGETATION

Section 107 of the *Standard Specifications* is hereby revised for this Project as follows:

Subsection 107.12 shall include the following:

The Contractor shall save all existing cottonwood trees in this area, except for that vegetation, which must be removed to accommodate construction of the Project, per the plans. Specific areas of vegetation to be protected shall be as directed by the Engineer and shall be protected by using orange construction fencing, wire fencing with metal posts or silt fence. Fencing for trees shall be installed at the drip line of the tree or as approved by the Engineer. Equipment shall not be installed or stockpile material placed within 15 feet of existing trees to remain.

The Contractor shall perform all the work in such a manner that the least environmental damage will result. All questionable areas or items shall be brought to the attention of the Engineer for approval prior to removal or any damaging activity.

The Contractor shall promptly report any vegetation damaged or scarred during construction to the Engineer for assessment of damages. Damaged or destroyed fenced vegetation, shall be replaced at the expense of the Contractor. Vegetation of replaceable size shall be replaced at the Contractor's expense. When treesbeyond replaceable size or wetlands (other than the stretch of Fountain Creek that is to be reconstructed) have been damaged or destroyed, the Contractor shall be liable for the appraised value based upon the official current publications. For trees and shrubs use the International Society of Arboriculture, Guide for Plant Appraisals. The Contractor shall pay any fines or jail time should a wetland be damaged, at no cost to the Project. The value of disturbed vegetation shall be calculated according to the following formula:

(Vegetation size) x (Species) x (Location) x (Condition) x (Arborist or Wetland Specialist) = Vegetation value

CDOT will determine the value of the trees and shrubs. CDOT shall determine the value of the wetland or wetland species. This value will be deducted from any money due to the Contractor.

The determination as to whether a plant is of replacement size or beyond will be made by the CDOT.

If the fence is knocked down or destroyed by the Contractor, the Engineer will suspend the work, wholly or in part, until the fence is repaired to the Engineer's satisfaction at the Contractor's expense. Time lost due to such suspension will not be considered a basis for adjustment of time charges, but will be charged as contract time.

REVISION OF SECTION 202 - REMOVAL AND TRIMMING OF TREES

Section 202 of the Standard Specifications is hereby revised for this Project as follows:

Subsection 202.02 shall include the following:

This work includes the removal and the trimming of trees as directed by the Engineer. This work includes the preservation from injury or defacement of all vegetation and objects designated to remain.

The Engineer will establish environmental limits. All trees, shrubs, plants, grasses, and other vegetative materials shall remain, except as designated by the Engineer.

Prior to beginning any Bridge construction, removal, trimming, and pruning of encroaching vegetation (as determined by the Engineer) shall be completed.

Once all directed clearing, trimming, and pruning is completed and accepted, no additional clearing, trimming, cutting, or pruning will be allowed unless approved, in writing, by the Engineer.

This work shall be done by a Contractor or subcontractor who is a certified arborist and a member of the National Arborist Association. The firm's or individual's name and qualifications shall be submitted at the preconstruction conference for the Engineer's approval. A list of references and other clients shall be included with the qualifications statement. A written description of work methods and time schedules shall be submitted and approved in writing by the Engineer prior to work commencing.

Trees shall be felled at the risk of the Contractor. Strict limits of disturbance will be defined and shall be adhered to.

Branches on trees or shrubs shall be removed as directed by the Engineer. All trimming shall be done by skilled workmen. All work shall be done according to the following requirements:

1. Pruning shall be done with proper, sharp, clean tools in such a manner as to preserve the natural character of the tree.
2. All final cuts shall leave no projections on or off the branch and shall not be cut so close as to eliminate the branch collar.
3. To avoid bark stripping, all branches 50 mm (2 inches) in diameter and larger shall be cut using the 3-cut method. These branches shall be lowered to the ground by proper ropes.

4. Tools used on trees known or found to be diseased, shall be disinfected with alcohol before they are used on other trees.
5. Structural weaknesses, decayed trunk or branches, or split crotches shall be reported to the Engineer.
6. When cutting back or topping trees, the Contractor shall use the drop-crotch method and avoid cutting back to small suckers. Smaller limbs and twigs shall be removed in such a manner so as to leave the foliage pattern evenly distributed.
7. When reducing size (cut back or topping) not more than one-third of the total area shall be reduced at a single operation.
8. Climbing spikes shall not be used on trees not scheduled for removal.

All brush, branches, limbs, and foliage smaller than 75 mm (3 inches) in diameter shall be chipped into mulch and stockpiled at a designated site. The trunks and limbs 75 mm (3 inches) and larger shall be cut into less than 2 m (6 foot) lengths and hauled to a designated site..

Subsection 202.12 shall include the following:

Chipping, stockpiling mulch, and hauling and stockpiling trunks and limbs will not be paid for separately but shall be included in the work. Removal of trees will not be paid for separately but shall be included in the work.

REVISION OF SECTIONS 207 AND 212 - TOPSOIL

Sections 207 and 212 of the Standard Specification are hereby revised for this Project as follows:

Subsection 207.01 shall include the following:

This Work includes importing or salvaging on site topsoil that is to be placed on disturbed areas within the Project.

Subsection 207.02 shall include the following:

The source of topsoil for this Project is undesignated. This imported topsoil is subject to Acceptance by CDOT before use. The Contractor shall submit a 1 pound sample of the product four (4) weeks before its use on the Project Site for the Acceptance. The Contractor may salvage existing on site topsoil and/or import topsoil and/or prepare soil using soil preparation. If imported topsoil is used the Contractor shall submit a written notice to CDOT at least 30 days before hauling soil to the site. The Contractor shall supply a sample of the topsoil to Colorado State University Testing Laboratory for analysis. A Certificate of Compliance shall be submitted to the Engineer and to CDOT to verify the necessary requirements. Topsoil specifications and requirements are listed in the Aesthetic Plans and Details.

The area where imported topsoil is excavated and/or stored shall be free of noxious weeds. Topsoil shall contain the following minimum ammonium DPTA (chelate) extractable nutrients (the extracting solution used by CSU Soil Testing Laboratory).

Nitrogen	5 ppm air dried basis
Phosphorus	5 ppm
Potassium	30 ppm
Iron (Fe)	5 ppm

At the Contractor's option soil preparation as described below may be used instead of topsoil.

REVISION OF SECTION 212 - ORGANIC AMENDMENT

Organic amendment specifications and requirements, including soil preparation, are listed in the Aesthetic Plans and Details.

17.4 Deliverables

The Contractor shall submit the following to the CDOT for review, Approval, and/or Acceptance:

Deliverable	Review, Acceptance, or Approval	Schedule
Landscape Plan, including Noxious Weed Management Plan and irrigation plan	Acceptance	Prior to construction
Landscape walkthrough and installation of temporary fencing for the protection of all existing vegetation that is designated to remain undisturbed,	Acceptance	After tagging all existing plant material according to the Landscape Plan and prior to construction
A 1-pound sample and Certificate of Compliance for imported topsoil and 2-pound sample of organic soil amendments and Certificate of Compliance	Acceptance	Four (4) weeks before its use on the Project Site
Substantial Landscape Completion	Acceptance	Prior to Substantial Landscape Completion, a landscape inspection shall be held with CDOT to determine Acceptance of plant material, seeding areas, and irrigation systems. Upon Acceptance CDOT will issue a “Notice of Substantial Landscape Completion.”
Landscape Maintenance Plan	Acceptance	In accordance with the requirements of Section 214 of the Standard Specifications and prior to requesting Project Final Acceptance
Landscape Acceptance	Acceptance	According to requirements of Section 17.2.11.4