18195

Michigan, Department of Natural Resources (U.P.)

SB482.M52B43 19xx

TECHNICAL SPECIFICATIONS

VETERANS MEMORIAL PARK

BAY CITY, MICHIGAN

SB
482
.M52
B43
19xx

ANDERSON/LESNIAK & ASSOCIATES INC.
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DIVISION 2

Section 2A - Bituminous Paving

The requirements of Section 1A apply to all work hereunder.

SCOPE

Furnish approved labor, materials, equipment, transportation and services required to complete all bituminous paving work indicated on the drawings and specified herein.

WORK INCLUDED

This work comprises the furnishing and installation of all bituminous paving work and incidental or related items in connection therewith necessary to complete the work as shown or as specified, including but not limited to:

Base course and bituminous surfacing for parking areas
Bituminous walkways
Striping and painting

All work done under this section shall be in accordance with MDSH Specifications.

BASE COURSE AND BITUMINOUS SURFACING FOR PARKING AREAS

Preparation of Subgrade

Upon excavation to required depth, the subgrade soil shall be compacted by approved pneumatic or steel wheel rollers with a minimum weight of ten tons. The subgrade shall be compacted to 95% of maximum unit weight and shall be shaped to the required line and grade within approved tolerances. Any areas that cannot be properly shaped or compacted shall be removed and replaced with sound material and compacted to required density. Supply and place and compact additional fill material as required to obtain subgrade elevations.

Constructing Compacted Aggregate Base

Base course materials: Current Michigan Department of State Highways Specifications 21A blast furnace slag or limestone.

The aggregate shall be crushed stone or crushed slag from an approved source meeting the current specifications of the Michigan Department of State Highways for 21A.

After the subgrade has been properly shaped and compacted, the base aggregate material shall be uniformly spread with a mechanical spreader in two layers and compacted to the required depth. The depth of any one layer shall not be more than 3 inches compacted depth. The aggregate shall be thoroughly compacted with approved pneumatic or steel wheel rollers to at least 100% of maximum unit weight. Special care shall be taken to prevent segregation during the placing and leveling operations. The shaping and leveling shall be done with approved equipment. The finished surface shall be shaped to the specified crown, cross pitch or grade within a tolerance of 3/8 inch in 10 feet.

Priming Base Course

The prepared base course shall be primed with bituminous prime coat material MC-30 or MC-70 in accordance with MDSH requirements at the rate of one-third gallon per square yard.

Constructing Bituminous Concrete Surface for Parking Area

Construction of bituminous concrete surfacing shall be in accordance with current MDSH standard specifications.

4.09 leveling course - 3 inch compacted thickness blast furnace slag or natural aggregate.

4.12 wearing course - 1 inch compacted thickness blast furnace slag or natural aggregate.

Asphalt cement penetration shall be 85 - 100.

Stripes and Lines

Stripes and lines shall be accurately located to show parking stalls, handicap and "no parking" areas as shown on the plans. Paint shall be an approved highway type for asphalt. California Products or equal.

ASPHALT PEDESTRIAN/BIKE PATH - 8' WIDE

The Contractor shall excavate to a depth as called for on the plans, compact the subgrade and install a minimum rolled thickness of 4 inch deep strength asphalt. The paving shall be 3 inches of 4.09 with a surface course of 1 inch-4.12.

GUARANTEE

As a condition to final payment this Contractor shall furnish a written guarantee warranting all bituminous paving against defective materials and workmanship, and to be free of cracking, crumbling, ravelling, holes and depressions over 1/4 inch in 2 feet for a period of 2 years after final acceptance of the paving by the Owner, and to repair any defective surfacing within that period without cost to the Owner.

DIVISION 2

Section 2B - Concrete Work

The requirements of Section 1A apply to all work hereunder.

SCOPE

Furnish approved labor, materials, equipment, transportation and services required to complete all concrete work as indicated on the drawings and specified herein.

WORK INCLUDED IN THIS SECTION

The principal items of work included in this Section are:

Picnic shelter slab & ratwall
Concrete footings
Fireplace footings

MATERIALS

Concrete

Concrete, including Portland Cement, fine and coarse aggregates, admixture, and water shall conform to the requirements of the City in which the site is located.

Concrete specified herein shall be 3000# compressive strength or as otherwise called for on the plans.

Concrete specified herein shall be air-entrained conforming to ASTM C-260.

The concrete shall have a slump of not less than 3 inches, not more than 5 inches.

Coarse aggregate shall be 100% crushed limestone MSHD GAA and shall be free from all organic materials and fire materials. No soft particles are to be included in aggregate.

Mixing water shall be fresh, clean and potable.

Water/cement ratio for all concrete, whether job-mixed or transit-mixed shall be directed by the Inspector. NO concrete shall be placed having a greater degree of slump than necessary for proper placing and workability.

Concrete shall be mixed and delivered in accordance with the requirements of ASTM C-94, Standard Specifications of Ready-Mixed Concrete, or job-mixed as specified herein.

Expansion Joint Materials

Expansion joint filler shall be preformed, non-extruding and resilient premolded parting or isolation strips when shown on drawings, shall be at least 1/2 inch thick and of width shown on drawings. They shall be formed from layers of felt, wood or other approved material uniformly impregnated with suitable binder. Joint filler shall conform to Section 7-16, 1963 MSHD Specifications.

Curing Compound

The curing compound used shall be a white membrane curing compound conforming to Section 7.24 of the 1963 MSHD Specifications.

Forms

Forms shall be of metal or wood, straight and free from distortion, and of sufficient strength to resist the pressures of the fresh concrete.

Sub-Base Material

Sub-base material shall consist of clean, well-compacted granular bank run sand.

WORK PROCEDURE

Concrete Work

Concrete work shall be constructed to the lines and grades shown on the drawings, as specified herein, and as approved by the Landscape Architect.

Subgrade

Subgrades shall be true to line and shall be compacted to 95% of maximum unit weight. All trenches and excavations shall be well filled with non-organic or unfrozen material. Contractor shall receive approval of subgrade from Inspector prior to placing sub-base material. Subgrade shall be wet down so as to be moist immediately prior to placing concrete.

Forms

All forms shall be correct for position to within 1/8 inch and shall be parallel within 1/8 inch to a wire stretched on the true line. All lines and edges shall be truly vertical, horizontal, inclined or curved as shown on drawings.

Forms shall not be removed until approved by the Inspector. After the removal of such forms, the depression along the edge of all concrete shall be backfilled with soil and tamped to proper compaction and grade as determined by Inspector.

Concrete Slab

Concrete slab shall conform to cross-section and notations as shown on plans; slab will have a minimum thickness of 4 inches and reinforcing as shown on drawings.

One-half inch expansion joints shall be placed through slab at intervals as shown on drawings or as otherwise acceptable to the Landscape Architect.

Concrete Footings

All concrete footings shall be in accordance with concrete specifications in this section and constructed according to drawings and appropriate manufacturer's installation procedures.

DIVISION 2

Section 2C - Miscellaneous Construction & Equipment

The requirements of Section 1A apply to all work hereunder.

GENERAL DESCRIPTION

The work embraced and to be done under this Contract consists of furnishing all materials (except otherwise noted), labor, tools, equipment and supervision incidental to the installation of Miscellaneous Items, all in accordance with the plans and specifications.

WORK INCLUDED IN THIS SECTION

Playcenter subsurface drainage	Benches
Timber curbing	Observation deck
Timber playstructures	Picnic tables & grills
Woodchip play area base	

MATERIALS

Playcenter Materials

Landscape Structures

Prefabricated timber play systems with accessory components, which are shipped unassembled to the site with all necessary items for assembly, as manufactured by Landscape Structures, Inc., Delano, Minnesota 55328, telephone 612/972-3391. (Local representative, Jack Golden, telephone 313/772-4117).

Landscape Structures Components Included:

Playstructure #26A
Balance Beam #812
Balance Beam #081
Spring Platform #144 (2 ea.)
Bench #078 (3 ea.)

Timberform

Prefabricated timber play systems with accessory components, which are shipped unassembled to the site with all necessary items for assembly, as manufactured by Columbia Cascade Timber Company, Portland, Oregon 97201, telephone 503/223-1157. (Local representative, Jennings Corporation, 2150 South Shore Drive, Macatawa, Michigan 49434, telephone 800/632-4153).

Timberform Component Included:

Stepping Column Climber #1549, complete with accessories, slide pole, ships wheel, chain ladder and color coated railings.

All timbers for timber edging shall be Southern Yellow Pine S4S, kiln dried to a moisture content of 16% pressure treated with Wolman CCA wood

preservative. This preservative shall conform to AWPB Standard LP-2 and LP-22.

Pins, spikes, hardware, as indicated for all construction are to be hot dipped galvanized.

Drain tile as designated on drawings shall be of size indicated, corrugated perforated plastic.

Woodchips for play area base shall be two year aged common.

Observation Deck Materials

All lumber shall be Southern Yellow Pine S4S, kiln dried to a moisture content of 16% pressure treated with Wolman CCA wood preservative. This preservative shall conform to AWPB Standard LP-2 and LP-22.

All footings are to be in accordance with those specified in the section on concrete.

10A stone to be placed beneath deck.

Steel pipe for deck footings are to be galvanized.

Fabricated steel saddle angles as indicated on drawings shall be zinc coated and painted with 2 coats of metal primer and 2 coats of flat black.

All bolts, nuts, washers, nails shall be hot dipped zinc coated.

Picnic Tables and Grills

Gametime park equipment which is shipped unassembled to the site with all necessary items for assembly as manufactured by Gametime, Inc., P. O. Box 121, Ft. Payne, Alabama 35967. (Local representative, Apex Apparatus, Inc., P. O. Box 390, Litchfield, Michigan, telephone 517/542-2264).

Gametime Equipment

Picnic Tables #557 (30 ea.)
Grill #60 Waist High Stove (15 ea.)

WORK PROCEDURE

All fabrication and installation work required under this Section of the Specifications shall be executed in accordance with the best standard of practice for each type of work. New materials only shall be used, all subject to prior approval by the Landscape Architect. Samples of materials and finishes shall be furnished for approval prior to installation.

Any surface of the treated wood, which, for any reason, is cut, sawn, dressed or similarly disturbed, shall be given at least 3 additional brush coats of the same solution that was used in treatment. The solution shall be not less than 10% strength, applied hot, and thoroughly brushed on so as to saturate and fill the disturbed surfaces completely.

All construction shall be best quality to ensure durability and all edges, surfaces, connections and exposed fittings shall be finished to avoid sharp edges and similar hazards.

All observation deck flooring members shall be 10 ft. length pieces and cut only to accommodate deck shape as designated on drawing. Odd lengths will not be permitted.

10A stone is to be placed beneath deck at depth specified in drawing and shall be up to but not exceed perimeter of deck. Ground beneath deck shall be sterilized prior to placement of stone.

All prefabricated playcenter components and accessories shall be installed and assembled following the manufacturer's installation procedures and as shown on plans. All equipment shall be set true to lines, levels and dimensions and rigidly secured in place. All footings are to be constructed by the Contractor at a depth of 42 inches.

Playcenter drain tile shall be installed according to drawings and proposed sub-base grading plan.

Woodchips for play area base shall be installed according to and as designated on drawings.

Footings for observation deck, playstructures, platform and grills shall be in accordance with specifications in the section on concrete and constructed according to drawings and manufacturer's installation procedure.

Picnic tables shall be assembled by Contractor according to manufacturer's specifications. All wood members shall be covered with 2 coatings of marine grade outdoor varnish. Location of tables will be designated by Owner's representative.

Grills shall be assembled and installed by Contractor in accordance with manufacturer's specifications, along with footings at a 42 inch depth. Location will be determined by Owner's representative.

During construction, secure and brace structures and/or framing to ensure adequate stability as a safety measure.

CLEAN UP

Upon completion of all work related to this section and before final acceptance, the Contractor shall remove all tools, surplus materials, apparatus, debris, etc. from the site and the site shall be left in a clean, neat condition acceptable to the Landscape Architect and the Inspector.

DIVISION 2

Section 2D - Picnic Shelter

The requirements of Section 1A apply to all work hereunder.

GENERAL DESCRIPTION

The work embraced and to be done under this Contract consists of furnishing all materials (except otherwise noted), labor, tools, equipment and supervision incidental to the installation of a picnic shelter, all in accordance with the plans and specifications.

WORK INCLUDED IN THIS SECTION

Provide and erect prefabricated picnic shelter

MATERIALS

Picnic Shelter

A prefabricated timber shelter with accessory components, which is shipped unassembled to the site with all necessary items for assembly, as distributed by Jennings Corporation, 2150 South Shore Drive, Macatawa, Michigan 49434, telephone 800/632-4153. (Local representative, Bob Nagle).

Shelter to be:

Laminated Beam Shelter complete with asphalt shingles as specified #87-3036L

Reinforced 4 inch concrete slab is <u>not</u> part of prefabricated shelter package. See Section 3B, Concrete Work

CONSTRUCTION PROCEDURES

Picnic Shelter - shall be erected following the manufacturer's installation procedure and as shown on the plans. All work shall be properly framed, closely fitted, set true to lines, levels and dimensions, adequately braced and rigidly secured in place. Nailing and bolting shall be as shown and in accordance with recognized practice.

The top of all concrete footings shall be flush with top grade of adjacent concrete floor slab.

The Contractor shall notify the Landscape Architect of any discrepancy or conflicting details before proceeding with further construction.

Workmanship

All fabrication and installation work required under this section of the specifications shall be executed in accordance with the best standard of practice for each type of work. New materials only shall be used, unless specified, all subject to prior approval by the Landscape Architect. Samples of materials and finishes shall be furnished, when required by the Landscape Architect for approval prior to installation.

Any surface of the treated wood which for any reason is cut, sawn, dressed or similarly disturbed shall be given at least 3 additional brush coats of the same solution that was used in treatment. The solution shall not be less than 10% strength, applied hot, and thoroughly brushed on so as to saturate and fill the disturbed surfaces completely.

All timber posts shall be base-treated with coat tar creosote for the full depth portion below grade.

All construction shall be best quality to ensure durability, and all edges, surfaces, connections and exposed fittings shall be finished to avoid sharp edges and similar hazards. The Landscape Architect will inspect such construction and will require the Contractor to rectify any hazardous situation during construction. The Contractor shall bring to the Landscape Architect's attention any discrepancies in the drawings which may lead to a hazardous situation before proceeding with further construction.

DIVISION 2

Section 2E - Fireplace Masonry Work

The requirements of Section 1A apply to all work hereunder.

NOTES ON THE DRAWINGS

All notes on the Drawings pertaining to the work of this Section shall be considered a part of this Specification and Contract.

WORK INCLUDED IN THIS SECTION

Shelter masonry fireplace

CHECKING AND BUILDING-IN

This Contractor shall take all measurements at the building and check same with the dimensions given on the Drawings. If any discrepancies are found in the figured dimensions, this Contractor shall submit same to the Landscape Architect for correction.

This Contractor shall carefully check the sizes of all openings and frames and all similar items of work which are to be built into masonry, to see that all sizes and measurements are in agreement.

The Contractor shall be responsible for the proper working out of all such details and shall regulate the jointing and courses of the brick and block work to produce the desired effect.

The Contractor shall build-in, as required, all items of work which occur in the masonry and provide pipe chases and recesses where shown or required.

The Contractor shall examine the Drawings and consult with the various contractors whose work is involved, to see that all items of material are in their proper location before the walls are carried beyond.

FACE BRICK (FIREPLACE)

Face brick for all work on the fireplace shall be selected based on an allowance of $180.00 per M. Samples of brick to be provided to the Owner for selection and approval of brick and color.

MORTAR, MATERIALS AND MIXING

Prepared masonry cement shall be Portland cement base or natural cement base conforming to the requirements of the Federal Spec. SS-C-18 lb., Type KK, "Cement Masonry", and ASTM Designation C-91-66.

Portland cement shall be an approved brand of Portland cement conforming to current ASTM Specifications.

Hydrated lime shall conform to the requirements of the ASTM Specifications for "Hydrated Lime", Type S for Masonry Purposes; C-207-49.

Sand for mortar shall be re-screened, clean, washed sand consisting of hard, strong durable particles, free from adherent coatings, loam, clay and other mortar. At the time of use, sand shall be free of frozen materials. Sand shall be uniformly graded from coarse to fine with 100% passing #4 sieve and not more than 5% passing #100 sieve.

Mortar shall be mixed in the following proportions, all measurements being by volume. Mortar shall be highly plastic with high water retentivity. The proportions of sand may be varied not to exceed the amount stated by more than 10% to improve the spreading quality of the mortar. Paddle mixed; no hand mixing.

Prepared Masonry Cement Mortar ASTM, Type N

1 part prepared masonry cement
3 parts mortar sand

Prepared masonry cement mortar shall be used for all masonry walls of block or brick and block.

WEATHER PROTECTION

The Contractor shall assume full responsibility for the protection of the Contractor's work against damage from frost or freezing. The Contractor shall provide and maintain suitable housing, covering, temporary heat and other required protections at all time.

Tops of walls exposed to the weather shall be securely covered at completion of each day's work.

LAYING MASONRY UNITS

Block shall be laid with the cells vertical in such a manner that the main bearing webs come in proper relation for bearing with the units below. Regular bond.

All contacts of units at beds shall have a full bed of mortar and all side contacts at joints shall be filled with mortar.

Courses shall be kept level and exposed vertical joints shall be in line and joints neatly tooled and finished smooth. Concealed joints shall be cut off flush.

Horizontal joints shall be tooled to a straight edge or with a jointer at least two (2) feet long.

All joints in brick, glazed block and painted block to be tooled with a round jointer.

All joints on the exposed scored block units shall be raked back 3/8 inch from face.

Build work to lines shown on the Drawings of thickness marked. Thicknesses as marked for all walls are nominal dimensions.

All masonry shall be laid up on full beds of mortar with vertical joints flushed solid and walls plumb and level.

Rub joints smooth as work progresses, where interior faces of walls are left exposed. Where masonry is used for finished interior surface, the joints shall be tooled with a round jointer.

Lay hollow units so that no open ends will show. Closed ends shall be provided where necessary. Bond together in a thorough substantial manner, corners and angles being tooth bonded; where door openings, corners and exposed wall ends occur, use bullnose jamb blocks.

Fractional units to be used, as required, instead of cutting masonry units.

BRICK LAYING

Lay out all face work carefully in advance to make horizontal and vertical joints fit openings, reveals, and other work.

Lay brick plumb and true, on a full bed of mortar. Fill all end joints solidly before proceeding with the next course.

Lay face work so that joints will be not greater than 3/8 inch wide, unless otherwise detailed. Joints between stone and brick shall be 1/4 inch wide, unless otherwise detailed.

Lay face brick in running bond with round tooled joints.

No spalled or chipped brick or brick with broken corners shall be used in exposed work.

Where horizontal wall dimension does not equal a modular brick dimension, and cutting of brick is necessary, brick shall be maching cut.

SETTING AND BUILDING-IN

The Mason shall set and build-in materials occurring in any type of masonry construction which are furnished by other trades.

All built-in work shall be accurately placed, securely held in position and located as directed in all cases.

All other masonry exposed to view shall be brushed clean as the work progresses and at completion all spots and dirt shall be removed and pointing done where necessary.

CLEANING AND POINTING - FACE BRICK

Upon completion, all face brick shall be cleaned thoroughly of all excess mortar, job dirt and other foreign matter, using Sure Klean Masonry Products as manufactured by The Process Solvent Company, Inc. Product selection shall be in accordance with the manufacturer's recommendations for type of face brick selected, either "No. 600 Detergent" or "No. 101 Lime Solvent".

FLASHING

Flashing shall be Phoenix Flashings, Revere, or Wasco, "Dryseal" 3 ounce copper flashings.

Provide and install flashing as shown on drawings.

FIREPLACE DAMPER

Provide cast iron fireplace chain operated damper as shown on drawings.

DIVISION 2

Section 2F - Tree Planting

The requirements of Section 1A apply to all work hereunder.

SCOPE

Furnish approved labor, materials, equipment, transportation and services required to complete all planting and related work as indicated on the drawings and as specified herein.

DESCRIPTION OF WORK

The extent of work shall be as shown on drawings.

SOURCE QUALITY CONTROL

Assume responsibility for all certificates of inspection of plant materials required by Federal, State or other authorities.

All major trees required by this contract shall be tagged at the source prior to digging and shipment. Inspection and approval of trees may be required at the discretion of the Landscape Architect. In such case, the Landscape Architect shall be notified of the location of the material two weeks prior to start of digging. Contractor shall be responsible for Landscape Architect's out-of-pocket and travel expenses.

All plant material shall be subject to final approval by the Landscape Architect on the site before installation.

When specifically requested, provide material samples for approval by the Landscape Architect before the material is delivered to the site. Any materials that are supplied but do not conform to the approved sample will be rejected.

Plant material substitutions may be allowed only if notified within one week after contract award, that specified material is unavailable. Requests for substitutions, together with price adjustment quotes shall be made in writing to the Landscape Architect accompanied by proof that specified material is not available. All requests subject to approval by Landscape Architect.

SUBMITTALS

Certificate of inspection of plant material by State or Federal authorities.

Maintenance Instruction: Furnish three copies of written maintenance instructions to Landscape Architect for maintenance and care of installed plants through their full growing season prior to job completion.

PRODUCT DELIVERY, STORAGE AND HANDLING

Digging Seasons

Deciduous trees: March 1 through June 1 and August 15 through November 15.

Evergreen trees: March 1 through June 1 and September 1 through November 1.

If special conditions may warrant a variance from the digging season dates, approval by the Landscape Architect is required.

Preparation for Delivery

Balled and burlapped (B&B) plants:

Dig and prepare for shipment in manner that will not damage roots, branches, shape and future development after replanting.

Ball with firm, natural balls of soil.

Wrap ball firmly with burlap or strong cloth and tie: ANSI Z60.1.

Ball sizes and ratios: ANSI Z60.1.

Bare-root (BR) plants:

Dig with entire root system intact, but with earth carefully removed.

Cover roots with thick coating of mud by puddling after plants are dug.

Specimen plants:

Exercise care in digging, wrapping and binding of such specimens to assure safe loading, shipment and handling.

Delivery

Deliver fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance to state law.

Deliver plants with legible identification labels.

State correct plant name and size indicated on Plant List.

Use durable waterproof labels with water resistant ink which will remain legible for at least 60 days.

Protect during delivery to prevent damage to root ball or dessication of leaves. Transport in closed vehicles or in open vehicles with entire load properly covered.

Notify Landscape Architect of delivery schedule in advance so plant material may be inspected upon arrival at job site.

Remove unacceptable plant material immediately from job site.

Storage

Heel-in bare root plants immediately upon delivery if not to be planted within four hours.

Protect root ball of plant material from drying or other possible injury by covering with wood chip mulch or other approved method and keeping moist.

Store plants in shade, and maintain plant material not to be planted within four hours.

Handling

Do not drop plants or pick up contained or balled plants by stems or trunks.

JOB CONDITIONS

Perform actual planting only when weather and soil conditions are suitable in accordance with locally accepted practice.

MAINTENANCE AND GUARANTEE

Maintenance

Maintain all work until job completion and acceptance by the Owner.

Water all plantings at least twice each month from June 15 to September 15.

Weed all tree saucers as required when weeds attain not more than 6 inches of growth.

Spray with appropriate insecticides and/or fungicides to control insects, fungus and other diseases.

Refertilize with fertilizer that is completely water soluble and contains not less that 23% nitrogen, 21% phosphorous and 17% potassium. Apply each three weeks from May 15 through July 1 at the rate of 1 lb. fertilizer to 30 gallons of water per tree 3 inch caliper and larger and at the rate of 1/3 lb. of fertilizer to 10 gallons of water per tree for less than 3 inch caliper.

Prune dead or broken branches.

Tighten guys as required.

Fill areas of soil settlement and repair eroded areas.

Guarantee

Guarantee all plant material to be true to botanical name, specified size and in a vigorous condition during and at the end of the following time periods: October 15th one (1) year later for fall plantings and June 15th one (1) year later for spring plantings. Replace any plant materials that are dead or that are, in the opinion of the Landscape Architect, in an unhealthy or unsightly condition, or that have lost their natural shape due to dead branches, excessive pruning or inadequate or improper maintenance. All plant materials rejected by the Landscape Architect shall be removed from the site and legally disposed of at no additional cost to the Owner.

Replacement plants and planting operations shall be in accordance with these specifications, at no additional cost to Owner. Replacement of any one plant shall be limited to one time. Such replacement shall be completed no later than the next succeeding planting season. All areas damaged by replacement operations shall be fully restored to original and/or specified condition.

Specifically excluded from the guarantee are damages resulting from natural causes such as floods, lightning strikes, freezing rains or winds over 60 mph, damages from acts of negligence on the part of the Owner or others occupying the site, fires, vandalism and herbivorous animals.

SCHEDULING

Install trees before lawns are installed.

PRODUCTS

PLANT MATERIALS

Well-formed and shaped, typical of habit, and free from disease, insects, and defects such as knots, sun-scald, windburn, injuries, abrasion or disfigurement.

Plants shall conform to the sizes indicated in the Plant List and/or shown on the plans with the exception that larger plants than those specified may be used if approved by the Landscape Architect. Use of such plants shall not increase the Contract Price.

Plants shall have normal, well-developed branches and vigorous fibrous root system and shall conform to the specifications of the latest edition of American Standard for Nursery Stock sponsored by the American Association of Nurserymen, Inc.

Plants shall have a normal habit of growth and shall be typical of their species unless the general shape or overall character of a particular plant is specifically noted in the Plant List or on the Plans.

Plants shall be true to botanical and common name and variety: American Joint Committee on Horticultural Nomenclature, Standardized Plant Names.

Plants shall be nursery grown unless specifically authorized to be collected. Grown under climatic conditions similar to those in locality of project.

Container grown stock:
Growing in container for minimum 180 days before delivery.

Not root-bound or with root system hardened-off.

Bare root stock: Roots well-branched and fibrous.

MULCH MATERIAL

Shredded bark mulch shall be of a quality similar to "Paygro".

PLANTING MIXTURE

Planting mixture is the material which is used in tamping around the balls and roots in the process of planting. It shall be prepared on the site by mixing 4 parts topsoil to one part peat, adding 5 pounds of superphosphate to each cubic yard of the mixture. This mixing shall be done by mechanical means subject to approval of the Owner. All mixing of plant soil shall be done on the site. Superphosphate shall contain 20% of phosphoric acid. For ericaceous plants, use an acidifying fertilizer such as Greenleaf Compound, instead of superphosphate. The Contractor shall supply sufficient plant mixture to plant all material indicated on plans.

TOPSOIL

Topsoil for planting shall be fertile, friable and representative of local productive soil, capable of sustaining vigorous plant growth and free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones, roots, sticks and other extraneous material; not frozen or muddy condition at time of installation.

Acidity shall range between PH 5.0 to 7.5. Organic content between 5% and 30%. Clay content between 5% and 25%. Very fine sand, silt and clay between 40% and 60%.

FERTILIZER

Fertilizer shall be complete fertilizer, part of the elements of which are derived from organic sources. The percentages by weight shall be 10-6-4.

LIME

Lime shall be ground, dolomite limestone, 95% passing through 100 mesh screen.

SUPERPHOSPHATE

Superphosphate shall be composed of finely ground phosphate rock as commonly used for agricultural purposes containing not less than 18% available phosphoric acid.

PEAT MOSS

Michigan peat moss. FSQ-P-166E Type II consisting of 75% minimum partially decomposed stems and leaves of hypnum, polytrichum and other mosses.

Shredded, loose, substantially free of mineral and waste matters, and showing an acid reaction.

Minimum organic matter by weight on an oven-dry basis: 85%.

Its texture may vary from porous fibrous to spongy fibrous and it shall be either crumbly or compact but fairly elastic. It shall be nearly free from decomposed colloidal residue, wood, etc., and shall be essentially brown to black in color. For use with ericaceous plants, sphagnum moss peat with Ph below 4.0 shall be used.

WRAPPING MATERIAL

Two thickness of creped paper cemented together with bituminous material. Crepe Kraft paper weighing not less than 30 lbs. each ream.

Width of wrapping material: 2-1/2 inch.

Twice for tying: Lightly tarred medium or coarse sisal yarn or 2-ply jute material.

GUYING AND STAKING MATERIAL

Wood stakes for tree support.
Minimum nominal size: 2 inch x 2 inch x 8 ft. long and pointed at one end, for trees 2-1/2 inch caliper or smaller, and 3 inch x 3 inch x 8 ft. for trees 3 inch caliper and greater when guying is not feasible.

Stakes for guying: 2 inch x 4 inch x 3 ft. long, pointed at one end.

Guying wire: Annealed, galvanized iron or steel 12 gauge wire.

Hose
Type: New or used 2-ply reinforced rubber or plastic.

Minimum size: 1/2 inch.

TREE WOUND PAINT

R.I.W. Tree surgery paint by Toch Bros, or Sherwin Williams Pruning Compound.

WATER

Quality: Potable

EXECUTION

INSPECTION

Verify final grades have been established prior to beginning planting operations.

Inspect trees for injury, insect infestation, and improper pruning.

Do not begin planting or wrapping of trees until deficiencies are corrected, or plants replaced.

PREPARATION

Locate plants as shown on drawings or as approved in field by Landscape Architect after staking. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected or approved in writing by the Landscape Architect. Where location or spacing dimensions are not clear on the drawings, request clarification by Landscape Architect.

Stake out locations for plants on ground. Wood stakes or slats shall be 3 ft. high.

Do not begin excavation until stake out of plant locations are acceptable to Landscape Architect.

EXCAVATION FOR PLANTING

Pits and trenches
Shape: Vertical sides and flat bottom, circular.

Sizes for Trees:

Depth: Minimum 2 ft. (600 mm) from finish grade and increased as necessary to accommodate ball or roots and at least 6 inch (150 mm) planting mix below ball or roots.

Width or diameter: 2 ft. greater than diameter of ball or spread of roots, if bare-rooted.

Special Conditions:

Excavate tree pits in sidewalk areas by hand digging. Take due care to avoid existing utilities known to be located in close proximity.

Disposal of excess soil

Dispose of unacceptable or unused excess soil by removing from the site and legally disposing of.

PLANTING

General

Center plant in pit or tench.

Face for best effect.

Set plant plumb and hold rigidly in position until siol has been tamped firmly around ball or roots.

Use only planting soil for backfill.

Place sufficient planting soil under plant to bring top of root ball level to finish grade of surrounding ground.

Backfill pit or trench with planting soil until 2/3 full and water each layer thoroughly to settle soil.

After soil settles, fill pit with planting soil, water, and leave pit surface even with finish grade of surrounding ground.

Watering basin.

Construct a topsoil berm 3 inches (75mm) above finish grade, forming a watering basin with a level bottom around each plant.

Size: 2 ft. (600mm) greater than diameter of ball or spread of roots if bare-rooted.

Balled plants (B & B)

Place in pit on planting soil material that has been hand-tamped prior to placing plant.

Place with burlap intact so location of ground line at top of ball is same as at nursery.

Cut burlap or cloth, ropes, wires, and other wrapping materials and remove from top one-half of ball.

Do not pull wrapping from under ball.

Do not plant if ball is cracked or broken before or during planting process.

Bare-root plants (BR)

Cut off clean, broken or frayed root.

Spread roots out in pit and carefully work planting soil among roots,

Container-grown plants

Can removal:

Cut cans on two sides with an acceptable can cutter.

Do not injure root ball or cut cans with spade or ax.

Carefully remove plants without injury or damage to root ball.

After removing plant, superficially cut edge-roots with knife on three sides.

Dig planting holes to accommodate root balls.

Hand place plants which are in containers less than one gallon in size.

Hand backfill and hand tamp leaving slight depression around bases of plants.

Cover root ball with maximum 3/4 inches (6 mm) of planting soil.

MULCHING

Mulch planting pits within 2 - 3 days after planting.

Cover watering basin evenly with mulch material to depth specified on drawing and/or proposal form.

Water thoroughly immediately after mulching.

Hose down planting area with fine spray to wash leaves of plants.

GUYING AND STAKING OF TREES

Stake trees on Plant List up to 2-1/2 inches (65 mm) caliper and those over 2-1/2 inches (65 mm) planted in special locations where guying is not feasible.

Guy trees over 3 inch caliper.

Stake installation:

Drive stakes perpendicularly, 3 ft. (1 m) into ground at edge of root ball.

Number of stakes/caliper of trees:

2-1/2 inch (65 mm) or more - two each (see detail drawing).

Under 2-1/2 inches (65 mm) caliper - one each.

For trees under 2-1/2 inch (65 mm) caliper:
Place stake toward prevailing wind.

Tie tree with double strand of guy wire run through an acceptable length of rubber hose.

Cross sheathed guy wire once between stake and tree to prevent direct contact between stake and tree.

Guying installation:
Drive guying stakes at an angle into ground two feet deep at the edge of tree pit.

Number of stakes per tree - three minimum.
Equally spaced around tree.

See detail drawing.

PRUNING

Prune branches or deciduous stock after planting, to balance the loss of roots, in such manner as to retain the natural form of the plant type. All cut surfaces over one inch diameter shall be painted with tree wound dressing.

Evergreens shall be pruned only to the extent of removing broken or damaged branches, and in no case will undertrimming or heading back to meet sizes be permitted.

All pruning shall be done by workers experienced in this type of work, in conformance with the details shown on the plants or as directed by the Landscape Architect.

WRAPPING

Wrap trees immediately after planting, but not before the conditions of the trunks have been inspected and approved. Trunks of all deciduous trees, and the lower part of their largest branches in the case of trees of more than a 5 inch caliper, shall be carefully wrapped with tree wrapping paper.

Wrapping shall begin at the base of the trunk just above the roots and below the normal ground line and shall extend upward in a spiral manner with an overlap of one-half the width of the paper strip. The portion of the wrapping below the finished grade shall be covered with soil.

Wrapping shall be held in place with approved twine, tied at the top of the wrapping in such a manner that there will be two ends which shall be wound spirally downward in opposite directions. At the bottom, the twine shall be fastened by tying, binding directly around, and tying again. Twine shall be tied around the tree in at least 3 places in addition to the top and bottom.

Wrap shall be removed at end of guarantee period and disposed of.

CLEAN UP

At all times during the progress of the work, keep the site free from accumulation of waste matter or rubbish and confine apparatus, materials and operations of workers to limits prescribed by law or by the Contract Limit Lines, except as the latter may be extended with the approval of the Landscape Architect.

Upon completion of the work, leave the completed project ready for use and occupancy without the need of further cleaning of any kind and with all work in new condition and perfect order. In addition, remove from the vicinity of the work and from the property of the Owner all rubbish, unused materials and other materials used during construction. Restore all areas affected by the work to their original or specified condition.

DIVISON 2

SECTION 2G - Seeding

The requirements of Section 1A apply to all work hereunder.

SCOPE

Furnish all material, labor, and equipment necessary to completely install all seeding as shown on the drawings and as specified herein.

WORK INCLUDED IN THIS SECTION

Fine grading
Seeding
Clean up and disposal

SEEDING

The Contractor shall, in all areas to be seeded, scarify to a depth of 2 inches and remove all stones over 1 inch in any diameter, sticks, roots, rubbish and other extraneous matter.

Fertilizer shall be a commercial fertilizer of a nitrogen phosphoric acid and potash content of 12-12-12. Shall be uniformly distributed on the topsoil at rate of 20 lbs. per 1000 S.F. The fertilizer shall be mixed into the topsoil. A certification of the total nitrogen, total available phosphoric acid and total available potash shall be shown on the bag or furnished separately for bulk shipments.

Seed mixture shall be comprised of the following:

Proportion by Weight	Variety	Purity	Germination
50%	Kentucky Blue Grass	90%	80%
25%	Creeping Red Fescue	98%	85%
10%	Chewing Fescue	96%	80%
15%	Norlea Perennial Rye	90%	90%

Maximum weed content shall be 0.30%.

Seed at the rate of 6 lbs. per 1,000 square feet of area and lightly work seed into surface. The Contractor may increase the quantity of seed at his option at no increase in cost to the Owner. The seed shall be sown following or in conjunction with the fertilizer while the seed bed is in a friable condition. The seed mixture is required to be sown or resown at the rate specified with either mechanical drills such as Lawn Maker, Brillion, or approved equal, broadcast, or hydroseeded type equipment. Areas which are sown by hydroseeders or broadcast method witll be visually inspected for uniformity of application. Immediately after completion of the seeding operation, the seeded areas shall be mulched.

Mulch: apply straw or other approved mulch by mechanical means at the rate of at least 2 tons per acre with 75 gals. per ton of #SS-1 MSHD asphalt emulsion or other approved tie-down material.

It is the responsibility of the Contractor to establish a dense lawn of permanent grasses, free from humps and depressions. Any part of the area that fails to show a uniform germination shall be reseeded and such reseeding shall continue until a dense lawn is established. Damage to seeded areas resulting from erosion shall be repaired by the Contractor.

MAINTENANCE

Maintenance of lawns will be the responsibility of the Contractor for a period of 4 consecutive weeks and will consist of watering, mowing, repairing erosion, reseeding and control of diseases.

The lawn areas shall be mowed with a reel type mower equipped with rollers before the grass exceeds 2-1/2 inches in height. The grass will be cut to not less than 1-1/4 inches at each cutting.

ACCEPTANCE OF THE WORK

When the above requirements of the Specifications have been fulfilled, the Contractor will request acceptance of the initial maintenance period and after acceptance the Owner will continue the maintenance.

CLEAN UP AND DISPOSAL

Upon completion of all work related to this section and before final acceptance, the Contractor shall remove all tools, surplus materials, apparatus, debris, etc., from the site and the site shall be left in a clean, neat condition acceptable to the Owner.

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