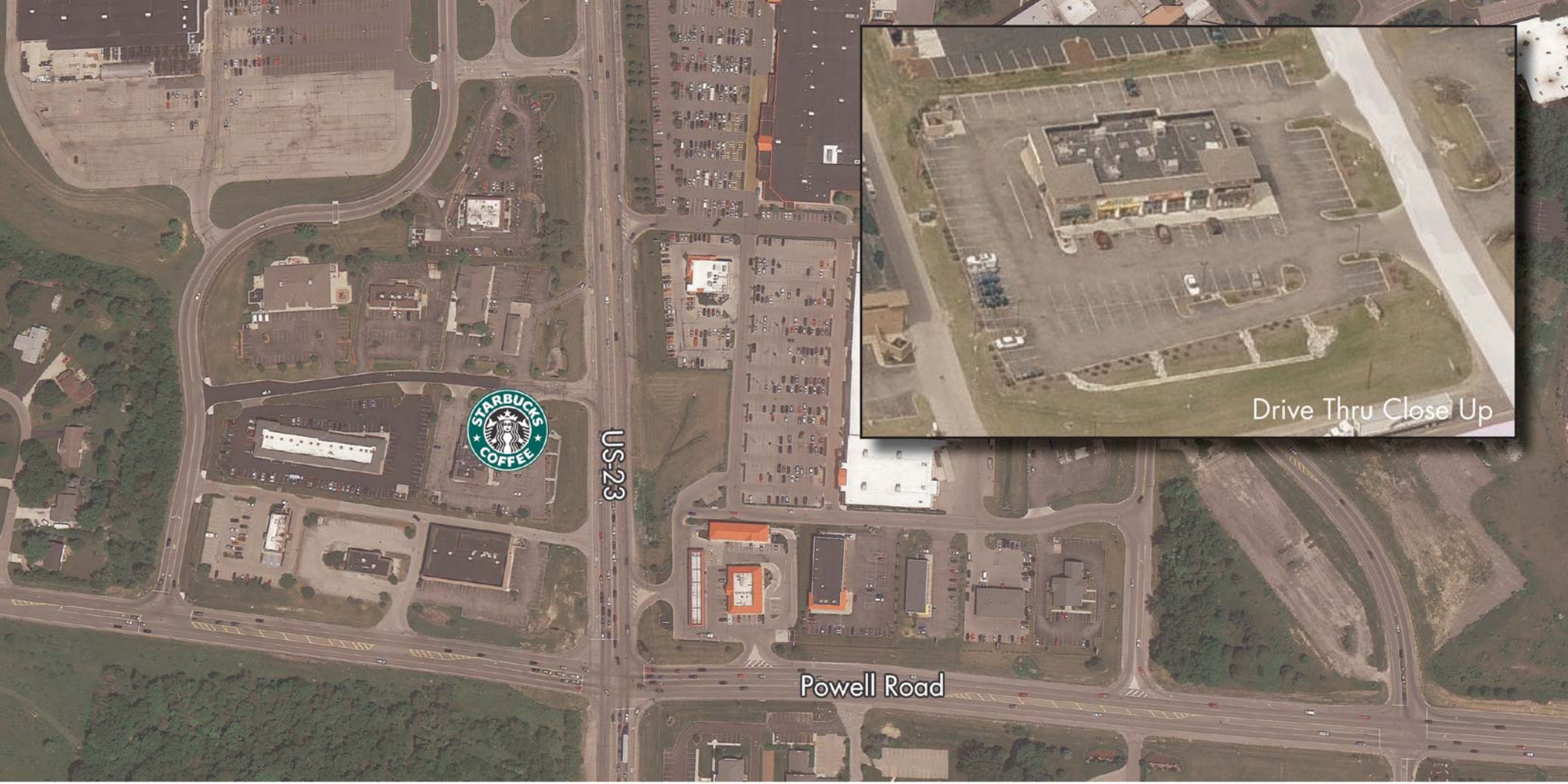
Drive-thru Case Studies

Central Ohio Market

August 12, 2014

DAIMLER

Development • Leasing • Construction • Sales



21 Neverland Drive, Lewis Center

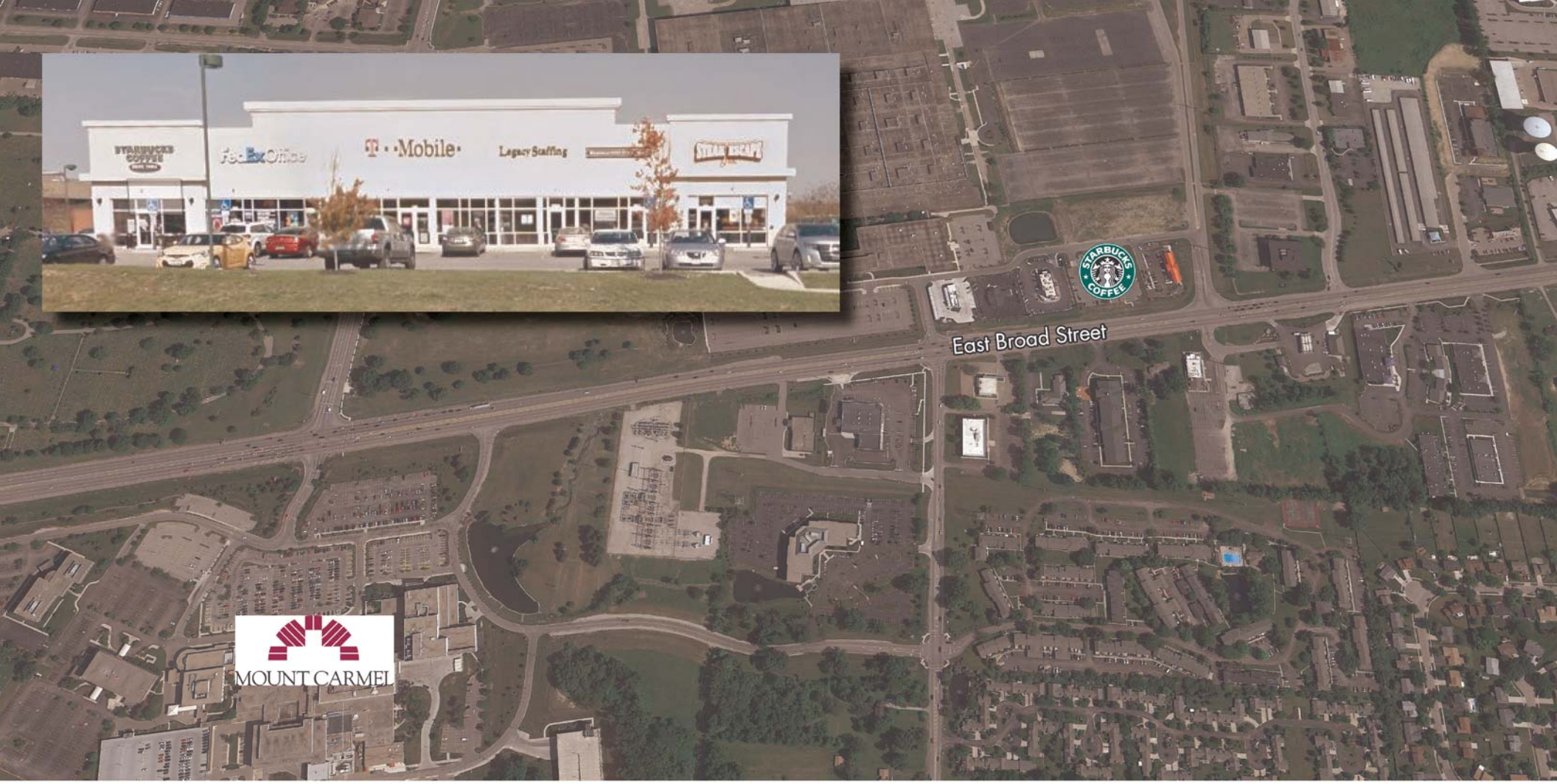
Corner of Powell Road and US-23

Parcel - 1.52 acres
Building - 7,182 sf
Average Annual Daily Traffic - 41,750*

*Source: Ohio Department of Transportation 2012

Morning Customer Statistics

Start Time	End Time	No. of Customers
7:00am	7:30am	31
7:30am	8:00am	38
8:00am	8:30am	45
8:30am	9:00am	47
	Total	161



6264 East Broad Street, Columbus

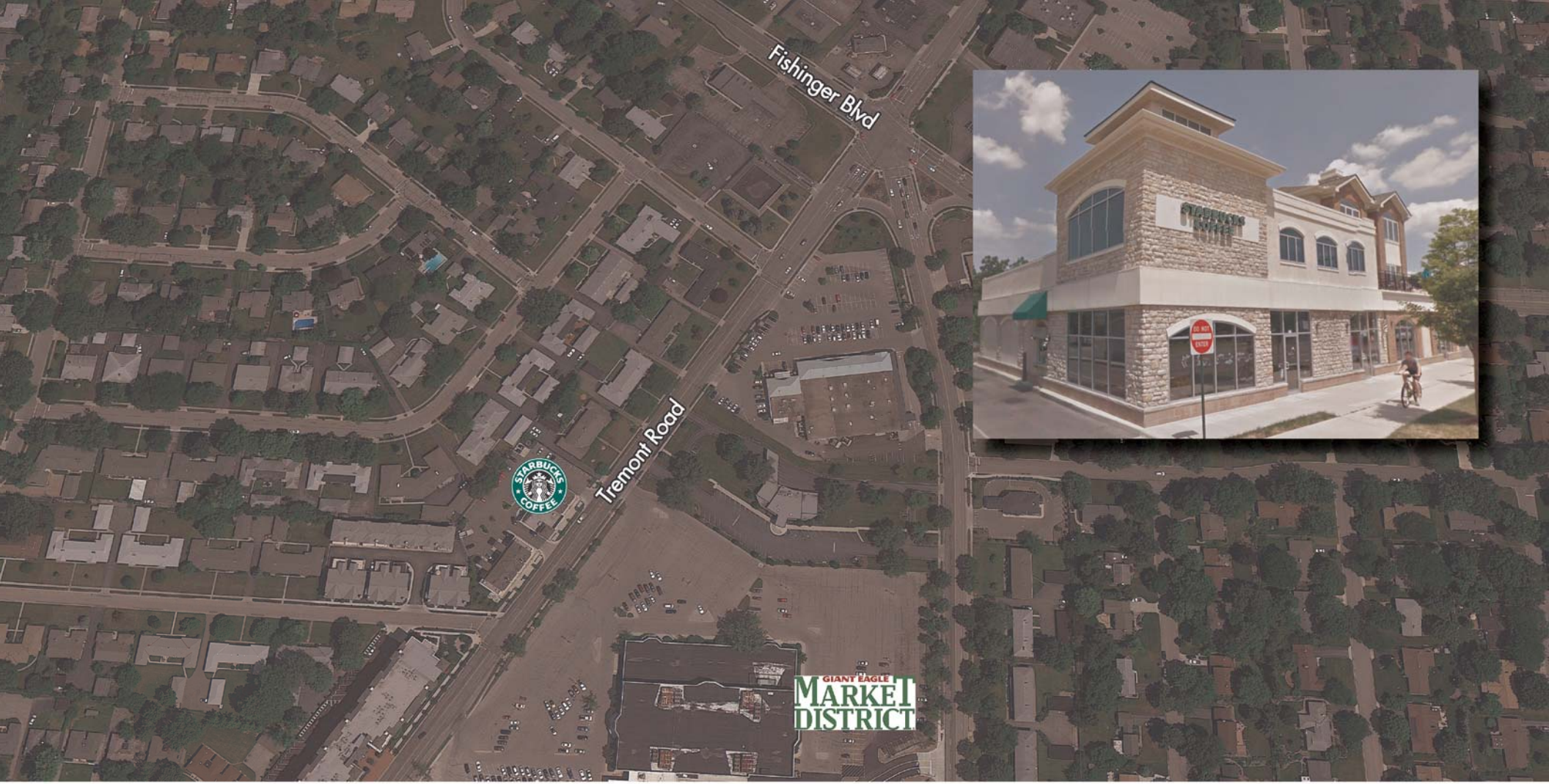
Adjacent to Mount Carmel Hospital East

Parcel - 2.044 acres
Building - 9,272 sf
Average Annual Daily Traffic - 29,200

*Source: Ohio Department of Transportation 2010

Morning Customer Statistics

Start Time	End Time	No. of Customers
7:00am	7:30am	48
7:30am	8:00am	65
8:00am	8:30am	52
8:30am	9:00am	44
	Total	209



3235 Tremont Road, Upper Arlington

Corner of Tremont Road and Fishinger Blvd

Parcel - 0.86 acres
Building - 5,060 sf

Morning Customer Statistics

Start Time	End Time	No. of Customers
7:00am	7:30am	36
7:30am	8:00am	43
8:00am	8:30am	47
8:30am	9:00am	48
	Total	174

QTY	KEY	BOTANICAL NAME	COMMON NAME	SIZE	COND.	REMARKS
	SHADE TREES					
11	ARA	ACER FREEMANII 'CELEBRATION'	CELEBRATION MAPLE	2" CAL.	B&B	
6	CC	CORYLUS COLURNA	TURKISH FILBERT	2" CAL.	B&B	
10	QI	QUERCUS IMBRICARIA	SHINGLE OAK	2" CAL.	B&B	
4	QR	QUERCUS RUBRA	RED OAK	2" CAL.	B&B	
5	UH	ULMUS P.H.C. 'HOMESTEAD'	HOMESTEAD ELM	2" CAL.	B&B	
9	GT	GLEDITSIA TRIACANTHOS INERMIS 'IMPERIAL'	IMPERIAL HONEYLOCUST	2" CAL.	B&B	
1	AGG	GINKGO BILOBA 'AUTUMN GOLD GINKGO'	AUTUMN GOLD GINKGO	2" CAL.	B&B	
	ORNAMENTAL TREES					
7	MS	MALUS SPRING SNOW	SPRING SNOW CRABAPPLE	1 3/4" CAL.	B&B	
	EVERGREEN TREES					
98	JC	JUNIPERUS CHINENSIS 'HOOKS'	HOOKS JUNIPER	6' HT.	B&B	3,5' O.C. when used for screening
12	HFC	PICEA GLAUCA 'CONICA'	WEEPING WHITE SPRUCE	36" HT. NO.5	CONT.	
	SHRUBS					
73	SG	JUNIPERUS CHINENSIS 'SEA GREEN'	SEA GREEN JUNIPER	24" HT.	B&B	3.5' O.C.
116	BMW	BUXUS MEDIA 'WINTERGEM BOXWOOD'	WINTERGEM BOXWOOD	24" HT.	B&B	3.5' O.C.
244	VB	BUXUS SEMPERVIRENS 'VARDAR VALLEY'	VARDAR VALLEY BOXWOOD	NO. 3	CONT.	
98	BR	ROSA 'CAREFREE BEAUTY ROSE'	CAREFREE BEAUTY ROSE	15" HT. NO.3	CONT.	
5	MG	MISCHANTHUS SINENSIS 'GRACILLIMA'	MAIDEN GRASS	NO. 1	CONT.	
	PERENNIALS/GRASSES/GROUNDCOVERS					
NA	VM	VINCA MINOR - (SUBSTITUTED WITH DAYLILY DURING DEVELOPMENT)		2 1/2" P.P.	FLAT	
114	LB	PENNESETUM ALOPECUROIDES 'LITTLE BUNNY'	LITTLE BUNNY FOUNTAIN GRASS	NO. 1	CONT	
NA	SD	HEMEROCALLIS	STELLA D'ORO DAYLILY	NO. 2	CONT	
139	BF	FESTUCA OVINA 'ELIJA BLUE' - (SUBSTITUTED WITH CATMINT DURING DEVELOPMNT)		NO. 1	CONT	
4	CT	CLEMATIS TERNIFLORA	SWEET AUTUMN CLEMATIS	NO. 3	CONT	TRELLIS
6	CJS	CLEMATIS 'JACKMANII SUPERBA'	JACKMANII SUPERBA	NO. 3	CONT	TRELLIS

GENERAL PLANTING NOTES:

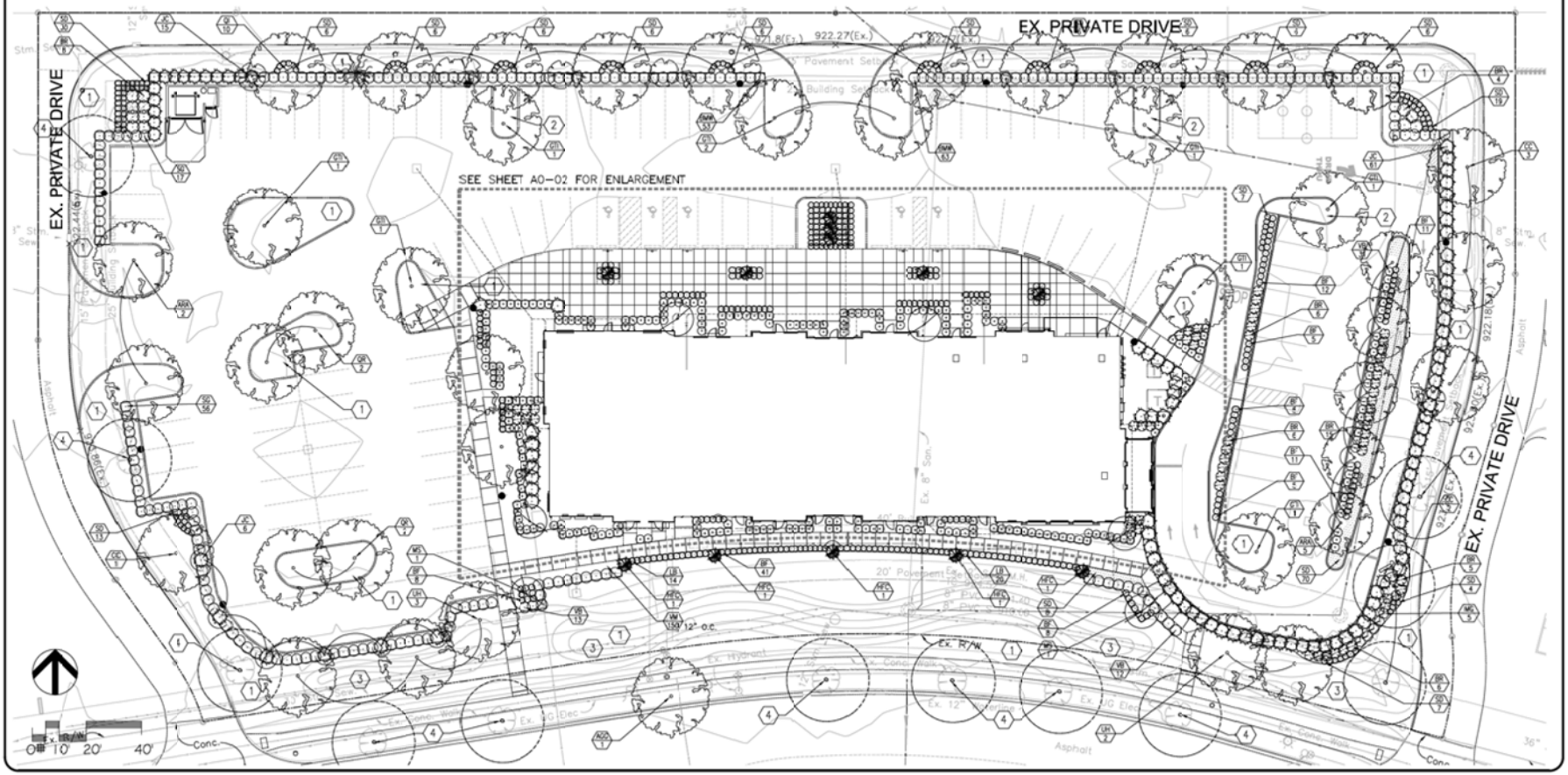
1. BOUNDARY, TOPOGRAPHIC, AND UTILITY SURVEY WAS PREPARED C,F, BIRD AND R,,, BULL INC.
2. ALL PLANTS SHALL MEET OR EXCEED STANDARDS SET IN THE USA STANDARD FOR NURSERY STOCK.
3. ALL PLANTING OPERATIONS SHALL ADHERE TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.
4. PLANT LOCATIONS AND BEDS SHALL BE LOCATED BY CONTRACTOR AND APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INST.ALLATION.
5. CONTRACTOR SHALL SEED ALL AREAS DISTURBED DURING CONSTRUCTION.
6. PLANTING BEDS AND SHRUB MASSES SHALL HAVE A MINIMUM 3" DEEP SHREDDED HARDWOOD BARK MULCH. MULCH HEDGES IN A CONTINUOUS BED.
7. ALL PLANTING BEDS TO BE TILLED TO A MINIMUM DEPTH OF 12".
8. ALL PLANTING BEDS TO BE FERTILIZED WITH 10-10-10 OR APPROVED EQUAL.
9. SEEDING BY LANDSCAPE CONTRACTOR.
10. ALL DIMENSIONS ARE TAKEN TO FACE OF CURB OR BUILDING WHERE APPLICABLE UNLESS OTHERWISE NOTED.
11. USE DIMENSIONAL INFORMA'TION GIVEN. IDO NOT SCALE DRAWINGS.
12. CONTRACTOR SHALL REFER QUESTIONS ON MATERIALS, FINISHES, LABOR, AND/OR PERFORMANCE STANDARDS NOT SPECIFIED HEREIN TO THE LANDSCAPE ARCHITEC".
13. THE LOCATION OF THE EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES PRIOR TO COMMENCING WORK AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
14. CONTRACTOR SHALL PROVIDE TEMPORARY BARRIERS AT LIMITS OF CONSTRUCTION TO ASSURE PUBLIC SAFETY DURING CONSTRUCTION.
15. ALL AREAS DISTURBED BY CONSTRUCTION ARE TC BE RESTORED, FINE GRADED AND SEEDED, (SEE LANDSCAPE PLANS)
16. ALL EXISTING PLANT MATERIAL SHOWN ON THIS PLAN IS TO BE PRESERVED UNLESS SPECIFICALLY NOTED OTHERWISE.
17. CONTRACTOR TO PROVIDE SPRAY IRRIGATION FOR ENTIRE SITE FOR EXCEPTION OF INTERIOR/ISOLATED PARKING ISLANDS.
18. QUANTITIES ARE SHOWN PER CITY REQUIREMENTS. CONTRACTOR IS RESPONSIBLE FOR ALL PLANT MATERIAL SHOWN ON PLANS. INFORM LANDSCAPE ARCHITECT IF ANY DISCREPANCY ARISES.

CONSTRUCTION NOTES

1. SEED AREA, FILL WITH TOPSOIL, MINIMUM DEPTH SHALL BE 6". MEET ADJACENT SURFACES FLUSH. MOUND TO PROVIDE POSITIVE DRAINAGE ACROSS ALL SURFACES.
2. MULCH AREA
3. EARTH MOUNDING, TO BE 3'-6" ABOVE PAVEMENT, DASHED LINE INDICATES OUTLINE OF MOUNDING.
4. EXISTING TREE TO REMAIN

LANDSCAPE CALCULATIONS

LOT COVERAGE	
- VEHICULAR USE AREA	50,472 S.F.
- BUILDING AREA	14,906 S.F.
INTERIOR GREENSPACE REQUIRED	
- 50,472 S.F. X 5% = 2,523 S.F. REQUIRED	
- 5,455 S.F. PROVIDED 11.3%	
GROUND COVERAGE TREE REQUIREMENTS - 1 / 12 SPACES	
- 111 PARKING SPACES	
- 10 TREES AT 2" MIN. CALIPER NCHES REQUIRED	
- 17 TREES AT 2" MIN. CALIPER NCHES PROVIDED	
ADDITIONAL SITE PLANTING - BUSINESS AND COMM. SHOPPING	
- 14,906 S.F. OF PROPOSED BUILDING COVERAGE	
- 14,906 S.F. x 2% = 298 S.F. REQUIRED	
- 563 S.F. PROVIDED	



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STATE OF OHIO
BRENT A. KING 918
REGISTERED LANDSCAPE ARCHITECT

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Perimeter Retail

6510 - 6570 Perimeter Road
Dublin, Ohio 43017

The Daimler Group
1533 Lake Shore Drive
Columbus Ohio 43204

KLA STUDIOS PROJECT NO:
20-0250

ISSUE DATE:
2014.07.23

SHEET INFORMATION

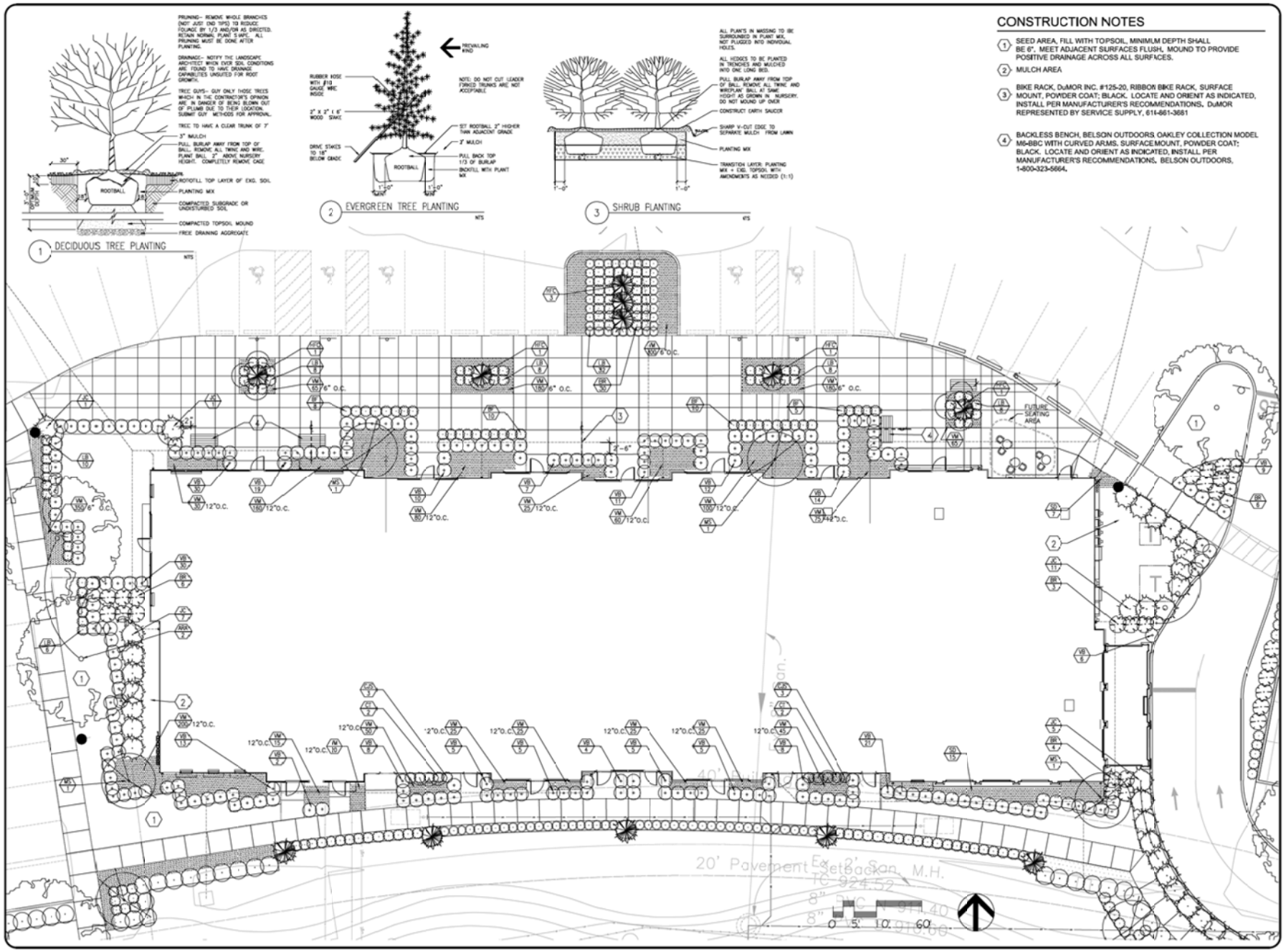
CURRENT DATE
2014.08.11

REVISIONS

SHEET TITLE
LANDSCAPE PLAN

SCALE
1"=20'

SHEET NO.
A0
01



CONSTRUCTION NOTES

1. SEED AREA, FILL WITH TOPSOIL, MINIMUM DEPTH SHALL BE 6". MEET ADJACENT SURFACES FLUSH. MOUND TO PROVIDE POSITIVE DRAINAGE ACROSS ALL SURFACES.
2. MULCH AREA
3. BIKE RACK, DuMOR INC. #125-20, RIBBON BIKE RACK, SURFACE MOUNT, POWDER COAT; BLACK. LOCATE AND ORIENT AS INDICATED, INSTALL PER MANUFACTURER'S RECOMMENDATIONS. DuMOR REPRESENTED BY SERVICE SUPPLY, 611-861-3681
4. BACKLESS BENCH, BELSON OUTDOORS, OAKLEY COLLECTION MODEL M6-BBC WITH CURVED ARMS. SURFACE MOUNT, POWDER COAT; BLACK. LOCATE AND ORIENT AS INDICATED, INSTALL PER MANUFACTURER'S RECOMMENDATIONS. BELSON OUTDOORS, 1-800-323-5664.

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STATE OF OHIO
BRENT A. KING
918
REGISTERED
LANDSCAPE ARCHITECT

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1533 Lake Shore Drive
Columbus Ohio 43204

KLA STUDIOS PROJECT NO:
20-0250

ISSUE DATE
2014.07.03

SHEET INFORMATION

CURRENT DATE
2014.08.11

REVISIONS

SHEET TITLE
ENLARGEMENT PLAN

SCALE
1"=10'

SHEET NO.
A0
02

Division 32 - Exterior Improvements __ Section 32 93 00
PLANTS

PART 1 -GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Trees.
2. Shrubs.
3. Ground cover.
4. Plants.
5. Tree stabilization.
6. Edgings.
7. Accessories.

1.3 DEFINITIONS.

A. Backfill: The earth used to replace or the act of replacing earth in an excavation.

B. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of tree or shrub required: wrapped, tied, rigidly supported and drum laced as recommended by ANSI Z60.1.

C. Balled and Potted Stock: Exterior plants dug with firm, natural balls of earth in which they are grown and placed, unbroken, in a container. Ball size is not less than diameter and depth recommended by ANSI Z60.1 for type and size of exterior plant required.

D. Bare-Root Stock: Exterior plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 for type and size of exterior plant required.

E. Clump: Where three or more young trees were planted in a group and have grown together as a single tree having three or more main stems or trunks.

F. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of exterior plant required.

G. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted exterior plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth and volume required by ANSI Z60.1 for type and size of exterior plant.

H. Finish Grade: Elevation of finished surface of planting soil.

I. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

J. Multi-Stem: Where three or more main stems arise from the ground from a single root crown or at a point right above the root crown.

K. Planting Soil: Native or imported topsoil, manufactured topsoil or surface soil modified to become topsoil; mixed with soil amendments.

L. Subgrade: Surface or elevation of subsoil remaining after completing excavation or top surface of a fill or backfill, before placing planting soil.

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

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each of the following:
1. 2 lb (2.2 kg) of mineral mulch for each color and texture of mulch required, in labeled plastic bags.
2. Edging materials and accessories, of manufacturer's standard size, to verify color selected.

C. Qualification Data: For qualified landscape installer.

D. Product Certificates: For each type of manufactured product, from manufacturer and complying with the following:
1. Manufacturer's certified analysis for standard products.
2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

E. Material Test Reports: For existing surface soil imported topsoil.

F. Planting Schedule: Indicating anticipated planting dates for exterior plants.

G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods.

H. Warranty: Sample of special warranty.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients, soil amendments and fertilizer to be added to produce satisfactory topsoil.

D. Provide quality, size, genus, species and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
2. Selection of exterior plants purchased under allowances will be made by Architect, who will tag plants at their place of growth before they are prepared for transplanting.

E. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 12-inches (300-mm) above the ground for trees up to 4-inch (100-mm) caliper size and larger. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

F. Observation: Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size and quality. Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

G. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver exterior plants freshly dug.
2. Immediately after digging up bare-root stock, pack root system in wet straw, hay or other suitable material to keep root system moist until planting.

B. Do not prune trees and shrubs before delivery except as approved by Architect. Protect bark, branches and root systems from sun scald, drying, sweating, whipping and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery and handling.

C. Handle planting stock by root ball.

D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants and trees in shade, protect from weather and mechanical damage and keep roots moist.
1. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.
2. Set balled stock on ground and cover ball with soil, peat moss, sawdust or other acceptable material.
3. Do not remove container-grown stock from containers before time of planting.
4. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.7 PROJECT CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
1. Spring Planting: April 1 to June 15.
2. Fall Planting: September 1 to October 15.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed according to manufacturer's written instructions and warranty requirements.

C. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns unless otherwise acceptable to Architect.
1. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.8 WARRANTY

A. Special Warranty: Installer's standard form in which Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
1. Failures include, but are not limited to, the following:
a. Death and unsatisfactory growth, except for defects resulting from abuse by Owner or incidents that are beyond Contractor's control.
b. Structural failures including plantings falling or blowing over.
c. Faulty operation of tree stabilization edgings.
d. Deterioration of metals, metal finishes and other materials beyond normal weathering.
2. Warranty Periods from Date of Substantial Completion:
e. Trees and Shrubs: One year.
f. Ground Cover and Plants: One year.
3. Include the following remedial actions as a minimum:
a. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.
b. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
c. A limit of one replacement of each exterior plant will be required except for losses or replacements due to failure to comply with requirements.
d. Provide extended warranty for replaced plant materials; warranty period equal to original warranty period.

PART 2 -PRODUCTS

2.1 MANUFACTURERS

A. Aluminum edging by Permaloc Corporation forms the Basis-of-Design. Products with comparable designs, materials, performance characteristics and finishes by the following manufacturers are also acceptable:
1. Curv-Rite, Inc.
2. Russell, J. D. Company.
3. Sure-Loc Edging Corporation.

2.2 TREE AND SHRUB MATERIAL

B. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae and defects such as knots, sun scald, injuries, abrasions and disfigurement.

C. Provide trees and shrubs of sizes, grades and ball or container sizes complying with ANSI Z60.1 for types and form of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.

D. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

E. Label each tree and shrub with securely attached, waterproof tag bearing legible designation of botanical and common name.

F. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.

G. If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

2.3 SHADE AND FLOWERING TREES

H. Type 1 Shade Trees: Single-stem trees with straight trunk, well-balanced crown and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required as indicated on Drawings.
1. Tree Characteristics: As indicated on Drawings.
2. Branching Height: As indicated on Drawings.

B. Small Upright Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height and branching according to ANSI Z60.1; stem form as follows:
1. Stem Form: As indicated on Drawings.
2. Tree Characteristics: As indicated on Drawings.

C. Small Spreading Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height and branching according to ANSI Z60.1; stem form as follows:
1. Stem Form: As indicated on Drawings.
2. Tree Characteristics: As indicated on Drawings.

2.4 DECIDUOUS SHRUBS

A. Form and Size: Shrubs with not less than the minimum number of canes required by and measured according to ANSI Z60.1 for type, shape and height of shrub.
1. Shrub sizes indicated are sizes after pruning.
2. Shrub Characteristics: As indicated on Drawings.

2.5 CONIFEROUS EVERGREENS.

A. Form and Size: Normal-quality, well-balanced, coniferous evergreens, of type, height, spread and shape required, complying with ANSI Z60.1.

2.6 GROUND COVER PLANTS

A. Ground Cover: Provide ground cover of species indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1 and the following requirements:
1. Plants: As indicated on Drawings.

2.7 PLANTS

A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed, complying with requirements in ANSI Z60.1.

2.8 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 6 percent organic material content; free of stones 1-inch (25-mm) or larger in any dimension and other extraneous materials harmful to plant growth.
2. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps and other extraneous materials harmful to plant growth.
a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4-inches (100-mm) deep; do not obtain from agricultural land, bogs or marshes.

B. USDA Particle Size Analysis. USDA soil texture classification of Silty Clay Loam, Clay Loam, Silt Loam, Loam, Sandy Loam or Sandy Clay Loam. Sand, silt and clay determined by ASTM D 422.
1. Gravel: Plus 2-mm; less than 10 percent.
2. Sand: 0.05-mm to 2-mm; 15 to 40 percent.
3. Silt: 0.002-mm to 0.05-mm; 25 to 65 percent.
4. Clay: Minus 0.002-mm; 20 to 35 percent.

C. Topsoil tested by qualified laboratory as indicated in this Section. Correct deficiencies in organic matter content using specified amendments in compliance with soil test report recommendations.

D. Amend topsoil with lime to achieve specified pH in accordance with laboratory's recommendations if an acidic soil condition exists.

2.9 INORGANIC SOIL AMENDMENTS

A. Refer to Topsoil Analysis report for selection of required inorganic soil amendments and their application rates.

B. Lime: ASTM C 602, agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent and as follows:
1. Class: O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through No. 60 (0.25-mm) sieve.
2. Provide lime in form of dolomitic limestone.

C. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through No. 40 (0.425-mm) sieve.

D. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

E. Aluminum Sulfate: Commercial grade, unadulterated.

F. Perlite: Horticultural perlite, soil amendment grade.

G. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

H. Sand: Clean, washed, natural or manufactured, free of toxic materials.

I. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

J. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.10 ORGANIC SOIL AMENDMENTS

A. Refer to Topsoil Analysis report for selection of required organic soil amendments and their application rates.

B. Compost: Well-composted, stable and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1/2-inch (13-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 50 to 60 percent of dry weight per ASTM D 2974.
2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

C. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.

D. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed and material harmful to plant growth.

2.11 FERTILIZER

A. Refer to Topsoil Analysis report for selection of required fertilizers and their application rates.

B. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 12 percent phosphoric acid.

C. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

D. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous and potassium in the following composition:
1. Composition: Nitrogen, phosphorous and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

E. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus and potassium in the following composition:
1. Composition: Nitrogen, phosphorous and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.12 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
1. Type: Shredded hardwood Ground or shredded bark, or Wood and bark chips.

2.13 WEED-CONTROL BARRIERS

A. Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd. (162 g/sq. m).

2.14 TREE STABILIZATION MATERIALS

A. Stakes and Guys:
1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood or pressure-preservative-treated softwood, free of knots, holes, cross grain and other defects, 2-by-2-inch nominal (38-by-38-mm actual) by length indicated, pointed at one end.
2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
3. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, 2-strand, twisted, 0.106-inch (2.7-mm) in diameter.
4. Guy Cables: 5-strand, 3/16-inch (4.8-mm) diameter, galvanized-steel cable, with zinc-coated turnbuckles a minimum of 3-inches (75-mm) long, with two 3/8-inch (10-mm) galvanized eyebolts.
5. Flags: Standard surveyor's plastic flagging tape, white, 6-inches (150-mm) long.

2.15 LANDSCAPE EDGINGS

A. Aluminum Edging: Standard-profile extruded-aluminum edging, ASTM B 221 (ASTM B 221M), Alloy 6063-T6, fabricated in standard lengths with interlocking sections with loops stamped from face of sections to receive stakes.
1. Product: CleanLine.
2. Edging Size: 3/16-inch (4.8-mm) wide by 5-1/2-inches (140-mm) deep.
3. Stakes: Aluminum, ASTM B 221 (ASTM B 221M), Alloy 6061-T6, approximately 1-1/2-inches (38-mm) wide by 12-inches (300-mm) long.
4. Finish: Black anodized.

2.16 MISCELLANEOUS PRODUCTS

A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed and fully labeled containers and mix according to manufacturer's written instructions.

B. Trunk-Wrap Tape: Two layers of crinkled paper cemented together with bituminous material, 4-inch (100-mm) wide minimum, with stretch factor of 33 percent.

2.17 PLANTING SOIL MIX

A. Planting Soil Mix: Topsoil mixed with soil amendments and fertilizers in compliance with the Topsoil Analysis Report.

PART 3 -EXECUTION

3.1 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements and other facilities, and lawns and existing exterior plants from damage caused by planting operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested and obtain Architect's acceptance of layout before planting. Make minor adjustments as required.

D. Lay out exterior plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

E. Trunk Wrapping: Inspect tree trunks for injury, improper pruning and insect infestation; take corrective measures required before wrapping. Wrap trees of 2-inch (50-mm) caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width and securely attach without causing girdling.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs and foliage to protect during digging, handling and transportation.
1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

G. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs and foliage to protect from wind and other damage during digging, handling and transportation.

3.3 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 6-inches (150-mm). Remove stones larger than 1-inch (25-mm) in any dimension and sticks, roots, rubbish and other extraneous matter and legally dispose of them off Owner's property.
1. Apply superphosphate fertilizer directly to subgrade before loosening.
2. Thoroughly blend planting soil mix off-site before spreading.
a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
3. Spread planting soil mix to a depth of 12-inches (300-mm) but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
b. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 4-inches (100-mm) of subgrade. Spread remainder of planting soil mix.

B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges and fill depressions to meet finish grades.

C. Before planting, restore planting beds if eroded or otherwise disturbed after finish grading.

3.4 EXCAVATION FOR TREES AND SHRUBS

A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
1. Excavate approximately three times as wide as ball diameter for balled and burlapped balled and potted container-grown stock.
2. Excavate at least 12-inches (300-mm) wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
3. If drain tile is shown or required under planted areas, excavate to top of porous backfill over tile.

B. Subsoil removed from excavations may not be used as backfill.

C. Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
1. Hardpan Layer: Drill 6-inch (150-mm) diameter holes, 24-inches (600-mm) apart, into free-draining strata or to a depth of 10-feet (3-m), whichever is less, and backfill with free-draining material.

D. Drainage: Notify Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE AND SHRUB PLANTING

A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1.

B. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball 2-inches (50-mm) above adjacent finish grades.
1. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

C. Set balled and potted and container-grown stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
1. Carefully remove root ball from container without damaging root ball or plant.
2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

D. Set fabric bag-grown stock plumb and in center of pit or trench with top of root ball flush with adjacent finish grades.
1. Carefully remove root ball from fabric bag without damaging root ball or plant. Do not use planting stock if root ball is cracked or broken before or during planting operation.
2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

E. Set and support bare-root stock in center of pit or trench with trunk flare flush with adjacent finish grade. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots. Tamp final layer of backfill. Remove injured roots by cutting cleanly; do not break.

F. Organic Mulching: Apply 3-inch (75-mm) average thickness of organic mulch extending 12-inches (300-mm) beyond edge of planting pit or trench. Do not place mulch within 3-inches (75-mm) of trunks or stems.

G. Trunk Wrapping: Inspect tree trunks for injury, improper pruning, and insect infestation; take corrective measures required before wrapping. Wrap trees of 2-inch (50-mm) caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width and securely attach without causing girdling.

3.6 TREE AND SHRUB PRUNING

A. Prune, thin and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character.

3.7 TREE STABILIZATION

A. Trunk Stabilization: Unless otherwise indicated, provide trunk stabilization as follows:
1. Use 2 stakes for trees up to 12-feet (3.6-m) high and 2-1/2-inches (63-mm) or less in caliper; 3 stakes for trees less than 14-feet (4.2-m) high and up to 4-inches (100-mm) in caliper. Space stakes equally around trees.
2. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

B. Guying and Staking: Guy and stake trees exceeding 14-feet (4.2-m) in height and more than 3-inches (75-mm) in caliper unless otherwise indicated. Securely attach no fewer than 3 guys to stakes 30-inches (760-mm) long, driven to grade.
1. For trees more than 6-inches (150-mm) in caliper, anchor guys to pressure-preservative-treated deadmen 8-inches (200-mm) in diameter and 48-inches (1200-mm) long buried at least 36-inches (900-mm) below grade. Provide compression spring for each guy wire and tighten securely.
2. Support trees with bands of flexible ties at contact points with tree trunk and reaching to compression spring. Allow enough slack to avoid rigid restraint of tree.
3. Attach flags to each guy wire, 30-inches (760-mm) above finish grade.

3.8 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants as indicated on Drawings.

B. Dig holes large enough to allow spreading of roots and backfill with planting soil.

C. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water.

D. Water thoroughly after planting, taking care not to cover plant crowns with wet soil.

E. Protect plants from hot sun and wind; remove protection if plants show evidence of recovery from transplanting shock.

3.9 PLANTING BED MULCHING

A. Install weed-control barriers before mulching according to manufacturer's written instructions. Completely cover area to be mulched, overlapping edges a minimum of 6-inches (150-mm).
1. Material and Seam Treatment: Nonwoven fabric with seams pinned.

B. Mulch backfilled surfaces of planting beds and other areas indicated. Provide mulch ring around trees in lawn areas.
2. Organic Mulch: Apply 3-inch (75-mm) average thickness of organic mulch and finish level with adjacent finish grades. Do not place mulch against plant stems.
3. Mineral Mulch: Apply average thickness of mineral mulch as indicated on Drawings, and finish level with adjacent finish grades. Do not place mulch against plant stems.

3.10 EDGING INSTALLATION

A. Aluminum Edging: Install aluminum edging where indicated according to manufacturer's written instructions. Anchor with aluminum stakes spaced approximately 36-inches (900-mm) apart, driven below top elevation of edging.

3.11 PLANT MAINTENANCE

A. Tree and Shrub Maintenance: Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, adjusting and repairing stakes and guy supports and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree wrappings.

B Ground Cover and Plant Maintenance: Maintain and establish plantings by watering, weeding, fertilizing, mulching and other operations as required to establish healthy, viable plantings.

3.12 CLEANUP AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged plantings.

C. Return at end of warranty period remove stakes and guy supports, and trunk wrapping.

3.13 DISPOSAL

A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash and debris, and legally dispose of them off Owner's property.

END OF SECTION

kla studios
Landscape Architecture Site Planning

STATE OF OHIO
BRENT A. KING 918
REGISTERED
LANDSCAPE ARCHITECT

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KLA STUDIOS PROJECT NO:
20-0250

ISSUE DATE
2014.07.03

SHEET INFORMATION

CURRENT DATE
2014.08.11

REVISIONS

SHEET TITLE
SPECIFICATIONS
PLANTS
SCALE

SHEET NO.
A0
03

TURF AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Seeding.
2. Erosion-control material(s).
3. Accessories.

1.3 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

C. Subgrade: Surface or elevation of subsoil remaining after completing excavation or top surface of a fill or backfill immediately beneath planting soil.

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

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination and weed seed. Include the year of production and date of packaging.

C. Qualification Data: For qualified landscape Installer.

D. Material Test Reports: For existing surface soil and imported topsoil.

E. Planting Schedule: Indicating anticipated planting dates for each type of planting.

F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of lawns during a calendar year. Submit before expiration of required initial maintenance periods.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful lawn establishment.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
2. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients, soil amendments and fertilizer to be added to produce satisfactory topsoil.

D. Preinstallation Conference: Conduct conference at Project site.

1.6 DELIVERY, STORAGE AND HANDLING

A. Seed: Deliver seed in original sealed, labeled and undamaged containers.

1.7 PROJECT CONDITIONS

B. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
1. Spring Planting: April 1 to June 15.
2. Fall Planting: September 1 to October 15.

C. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.8 MAINTENANCE SERVICE

A. Initial Lawn Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
1. Seeded Lawns: 60 days from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Species: Seed of grass species as follows, with not less than 80 percent germination, not less than 95 percent pure seed and not more than 0.5 percent weed seed:
1. Full Sun: Kentucky bluegrass (Poa pratensis), a minimum of three cultivars.
2. Sun and Partial Shade: Proportioned by weight as follows:
a. 58 percent Kentucky bluegrass (Poa pratensis).
b. 38 percent chewings red fescue (Festuca rubra variety).
c. 10 percent perennial ryegrass (Lolium perenne).
d. 10 percent redtop (Agrostis alba).
3. Sowing Rate 8 lb per acre broadcast, 5.3 lb/acre drilled.

2.2 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 6 percent organic material content; free of stones 1-inch (25-mm) or larger in any dimension and other extraneous materials harmful to plant growth.
1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps and other extraneous materials harmful to plant growth.
a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4-inches (100-mm) deep; do not obtain from agricultural land, bogs or marshes.
2. Topsoil Source: Import topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4-inches (100-mm) deep; do not obtain from agricultural land, bogs or marshes.

2.3 INORGANIC SOIL AMENDMENTS

A. Refer to Topsoil Analysis report for selection of required inorganic soil amendments and their application rates.

B. Lime: ASTM C 602, agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent and as follows:
1. Class: O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through No. 60 (0.25-mm) sieve.
2. Provide lime in form of dolomitic limestone.

C. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through No. 40 (0.425-mm) sieve.

D. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

E. Aluminum Sulfate: Commercial grade, unadulterated.

F. Perlite: Horticultural perlite, soil amendment grade.

G. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

H. Sand: Coarse sand per ASTM C 33, Fine Aggregate with fineness modulus index of 2.7 to 3.1.
1. Sand: Clean, sharp natural sands, free of toxic materials.
2. ASTM Size Gradation.
a. Sieve Designation / Percent Passing

	Sieve Designation	Percent Passing
1)	3/8-inch	100.
2)	No. 4	95-100.
3)	No. 8	80-100.
4)	No. 16	50-85.
5)	No. 30	25-60.
6)	No. 50	10-30
7)	No. 100	2-10

I. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

J. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.4 ORGANIC SOIL AMENDMENTS

A. Refer to Topsoil Analysis report for selection of required organic soil amendments and their application rates.

B. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch (19-mm) sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
1. Organic Matter Content: 25 to 65 percent of dry weight per ASTM D 2974.
2. Feedstock: Agricultural, food or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

C. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.

D. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed and material harmful to plant growth.

2.5 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.

2.6 FERTILIZER

A. Refer to Topsoil Analysis report for selection of required fertilizers and their application rates.

B. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 20 percent phosphoric acid.

C. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

D. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous and potassium in the following composition:
1. Composition: Nitrogen, phosphorous and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

E. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus and potassium in the following composition:
1. Composition: 20 percent nitrogen, 10 percent phosphorous and 10 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.7 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats or barley.

2.8 EROSION-CONTROL MATERIALS

B. Erosion-Control Blankets: Biodegradable wood excelsior, straw or coconut-fiber mat enclosed in a photodegradable plastic mesh. Includes manufacturer's recommended steel wire staples, 6-inches (150-mm) long.
1. Application: Slopes 1:3 to 1:5.

2.9 PLANTING SOIL MIX

A. Planting Soil Mix: Topsoil mixed with soil amendments and fertilizers materials in compliance with Topsoil Analysis Report.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements and other facilities, trees, shrubs and plantings from damage caused by planting operations.
1. Protect grade stakes set by others until directed to remove them.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 LAWN PREPARATION

A. Limit lawn subgrade preparation to areas to be planted.

B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6-inches (150-mm). Remove stones larger than 1-inch (25-mm) in any dimension and sticks, roots, rubbish and other extraneous matter and legally dispose of them off Owner's property.
1. Apply superphosphate fertilizer directly to subgrade before loosening.
2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
b. Mix lime with dry soil before mixing fertilizer.
3. Spread planting soil mix to a depth of 6-inches (150-mm) but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy or excessively wet.
c. Spread approximately 1/2 the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 4-inches (100-mm) of subgrade. Spread remainder of planting soil mix.

C. Unchanged Subgrades: If lawns are to be planted in areas unaltered or undisturbed by excavating, grading or surface-soil stripping operations, prepare surface soil as follows:
1. Remove existing grass, vegetation and turf. Do not mix into surface soil.
2. Loosen surface soil to a depth of at least 6-inches (150-mm). Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 6-inches (150-mm) of soil. Till soil to a homogeneous mixture of fine texture.
d. Apply fertilizer directly to surface soil before loosening.
3. Remove stones larger than 1-inch (25-mm) in any dimension and sticks, roots, trash and other extraneous matter.
4. Legally dispose of waste material, including grass, vegetation and turf, off Owner's property.

D. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2-inch (13-mm) of finish elevation. Roll and rake, remove ridges and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.

E. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Before planting, restore areas if eroded or otherwise disturbed after finish grading.

3.4 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Lawn Preparation" Article.

B. For erosion-control blanket install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.5 SEEDING

A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph (8 km/h). Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
1. Do not use wet seed or seed that is moldy or otherwise damaged.
2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.

B. Sow seed at a total rate as recommended by the seed supplier.

C. Rake seed lightly into top 1/8-inch (3-mm) of soil, roll lightly and water with fine spray.

D. Protect seeded areas with slopes exceeding 1:4 with erosion-control fiber mesh installed and stapled according to manufacturer's written instructions.

E. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre (42 kg/92.9 sq. m) to form a continuous blanket 1-1/2-inches (38-mm) in loose depth over seeded areas. Spread by hand, blower or other suitable equipment.
1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.

F. Protect seeded areas from hot, dry weather or drying winds by applying within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a depth of 3/16-inch (4.8-mm) and roll surface smooth.

3.6 LAWN RENOVATION

A. Apply seed and protect with straw mulch as required for new lawns.

3.7 LAWN MAINTENANCE

A. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting and other operations. Roll, regrade and replant bare or eroded areas and remulch to produce a uniformly smooth lawn. Provide materials and installation the same as those used in the original installation.
13. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

B. Watering: Provide and maintain temporary piping, hoses and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 4-inches (100-mm).
1. Schedule watering to prevent wilting, puddling, erosion and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
2. Water lawn with fine spray at a minimum rate of 1-inch (25-mm) per week unless rainfall precipitation is adequate.

C. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
1. Mow grass to a height of 2- to 3-inches (50- to 75-mm).

D. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) to lawn area.

3.8 SATISFACTORY LAWNS

A. Lawn installations shall meet the following criteria as determined by Architect:
1. Satisfactory Seeded Lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10-sq. ft. (0.92-sq. m) and bare spots not exceeding 5 by 5-inches (125- by 125-mm).

B. Use specified materials to reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.9 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks or other paved areas.

B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after lawn is established.

C. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION

kla studios
Landscape Architecture Site Planning

STATE OF OHIO
BRENT A. KING 918
REGISTERED
LANDSCAPE ARCHITECT

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SHEET INFORMATION

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REVISIONS

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SPECIFICATIONS
TURF / GRASSES

SCALE

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