Planning Commission
September 25, 2023
7:00PM
City Hall, 6090 Woodson Street

Agenda

I. Call to Order
II. Approval of Minutes from September 25, 2023 Delayed Until November
III. New Business
    1. *Case #23-21 - Mohawk Park Phase II Preliminary Development Plan*
IV. Old Business
V. Planning Commission Comments
VI. Staff Updates

Questions concerning this meeting may be addressed to the staff contact, Karie Kneller, City Planner, at (913) 676-8366 or kkneller@missionks.org

At A Glance

Applicant:
Confluence

Location:
6649 Lamar Avenue

Property ID:
KP22500008 0006

Current Zoning:
R-1

Proposed Zoning:
N/A

Current Land Use:
Park/Public

Proposed Land Use:
N/A

[X] Public Hearing Required

Legal Notice:
October 3, 2023

Case Number:
23-21

Project Name:
Mohawk Park Phase II

Project Summary:
The City of Mission Parks + Recreation Department submitted a preliminary development plan for phase two of park improvements at Mohawk Park. Improvements include new trail, playground equipment, pickleball court with half-court basketball, and parallel on-street parking. The plan includes landscaping and preserved sports fields.

Staff Contact:
Karie Kneller, City Planner

Property Background and Information

The subject property, Mohawk Park is owned by the City of Mission and managed by the Parks and Recreation Department. It is located at 6649 Lamar Avenue, on the northeast corner of 67th Street and Lamar Avenue. The parcel is also bounded by Horton Drive on the east and residential properties on the north. It is located at the southernmost border of Mission, with the boundary of Overland Park across 67th Street to the south and Lamar to the west. The property and surrounding neighborhood is zoned “R-1” Single-Family Residential District and Mohawk Park is enveloped by residential single-family homes. The Millhaven neighborhood in Mission is adjacent to the property on the northeast. The Walmer, Southmoor Gardens, and Highland Plains neighborhoods in Overland Park are adjacent to the west and south of the property.

Terrain is relatively flat, with the highest point in the northwest and water runoff generally draining to the west and south. There is a gradual 10-foot elevation change across the almost 8-acre site. Currently, some minor pooling during heavy rain events occurs at the northwest corner of the property in the open grassy area. Existing stormwater inlets at the northwest and southern borders of the property capture stormwater runoff from the site. The site has access to water, sewer, and electrical utilities.

The first phase of Mohawk Park improvements were completed in August 2023, which included amenities such as bathrooms, a covered pavilion, parking lot, and landscaping. Phase two of the Mohawk Park improvements were dependent upon the sales tax approval in 2022. The City issued bonds to pay for park improvements in the same year. The Parks + Recreation Department contracted Confluence to develop a second phase of improvements with a budget that the City Council’s Finance and Administration Committee initially approved with the adopted package of park improvements in 2023. The design of the phase two improvements are based on the previously determined budgetary constraints. During the Phase I development approval, the Planning Commission and attendees from the public provided input that expressed a priority for universal and inclusive design in the playground equipment and safe crossings where the trail intersected the vehicular entrance. The site has had some stormwater drainage issues in the past, and these issues were also a concern during the Phase I design process.

Project Proposal

The project proposal will realign the current walking trail and provide a ten-foot trail loop around and throughout the site. New playground equipment will be constructed to the east of the phase one pavilion and restrooms, and a combined half-court basketball and pickleball sport court is proposed to the east of the new playground. Chain link fencing around the sport court will be coated with black vinyl.

The existing playground will be removed, and the proposed playground will be designed with universal design features. ADA features such as a “crow’s nest” play area, swing, and accessible ramp are included in the proposal, as well as sensory equipment for additional universal inclusivity. Sensory equipment may include musical chimes and communication board with symbols. Poured in place rubber surfacing

is designed with ADA considerations for sloped entry. Proposed play equipment is proposed for children aged 2-5 and 5-12. The proposal includes six benches beneath 12'X12' hyperbolic umbrellas at an 8' height. Features throughout the playground provide intermittent shade.

An existing parking and drive loop in the northeast corner of the site will be replaced with landscaping and open space, with 12 new proposed parallel on-street parking spaces along Horton Street. There are ADA standard sidewalk ramps at the northeast park entrance adjacent to parking, at the vehicular entry on 67th Street and at the crosswalk on 67th Street, and at the southernmost corners of the site where sidewalks meet the road at crossing locations.

The proposed impervious surface, including new playground, sport court, trail, and parallel parking, will increase the existing impervious area, but will decrease the impervious area from the conditions when the site was developed as a school. Two proposed BMP (Best Management Practice) stormwater detention areas are located in the northwest and southeast areas of the site in green space adjacent to the trail loop. BMP areas will be planted with a mixture of various grass species. Two additional BMP locations exist in the south parking lot that were included in phase one. The south parking lot has incorporated drainage tie-in with an existing stormwater inlet near the vehicular entrance on 67th Street.

Landscaping will be native to northeast Kansas. The proposal includes a variety of shade trees, ornamental trees, conifer trees, and native grasses including a meadow mix within areas in the northernmost areas of the site. Fescue grass will be planted in other landscaped areas, including on the west, south, and in narrow strips around the playground and sport court areas, as well as on the east side of the existing parking lot.

Plan Review and Analysis

Mission Comprehensive Plan (2007)

The Comprehensive Plan recommends preserving open green spaces in Mission and maintaining existing parks and recreation facilities. These amenities promote neighborhood stability, public health and safety, provide outdoor recreation opportunities as well as visual enjoyment, and promote environmental benefits such as carbon capture, air and water purification, and wildlife habitat. The City has committed to the maintenance and enhancement of its existing parklands. The Plan also calls for sustainability practices and building standards for facilities that align with Leadership in Energy and Environmental Design (LEED) principles and practices.

Parks and Recreation Master Plan (2018)

The Parks and Recreation Master Plan recommends implementing the following improvements for Mohawk Park that are included in this proposal:

- Redesign Mohawk Park in a way that reconfigures the playing fields to allow for the same programs, but in a more efficient manner (high priority)

- Design and construct a permanent shelter that includes restrooms, a storage facility, and water fountain stations (medium priority, completed in phase one)
- Replace and expand existing site furnishings (medium priority).
- Incorporate irrigation for field improvements (low priority).

The Mohawk Phase II proposal incorporates many of the elements that were discussed by members of the Planning Commission during the first phase of improvements, as well as the features that residents and stakeholders recommended.

Analysis

The plan conforms with the adopted Comprehensive Plan and the Parks and Recreation Master Plan by including preservation of green space and maintaining existing parks and recreation facilities. Mohawk Park is enhanced by the phase two proposed improvements to include practices that promote sustainability practices. The unprogrammed playing fields are also preserved and promote more efficient use of space. Additional furnishings such as park benches, shade structures, and play equipment is part of the expanded improvements on the site. Irrigation conduit will be included during construction so that a watering system may be installed at a later date should the need arise.

Staff recommends that the Planning Commission recommend approval of the Mohawk Park Phase II Preliminary Development Plan with the following conditions:

Recommendation

1. Include safety crossing feature at the vehicular entrance in the final development plan; include painted crosswalk and signs on both sides of the entrance/exit.

2. Include BMP details in the final development plan that adhere to the adopted MARC/APWA 5600 BMP Manual.

3. Provide the required number of ADA parking spaces on-site per code.

4. Playground equipment shall include sensory and universal design features that also conform to ADA standards.

5. Include a lighting plan with a photometric diagram in the final development plan if additional lighting is included with phase two improvements.

6. Lighting shall meet or exceed International Dark Sky standards, including but not limited to LED light fixture, full cutoff, and 3000K specifications.

7. Include an irrigation plan showing location of proposed conduit with the Landscaping Plan in the final development plan.

8. All signage shall be submitted as a separate sign permit application to the Community Development Department prior to installation.

Planning Commision Action

The Planning Commission will consider the Mohawk Park Phase II Preliminary Development Plan at its October 23, 2023 public hearing.

City Council Action

Upon Planning Commission recommendation, the City Council will consider the Mohawk Park Phase II Preliminary Development Plan at its November 15, 2023 public hearing.

MOHAWK PARK PHASE 2
6649 LAMAR STREET
MISSION, KS 66202

Confluence

Project No. 23093

September 2023 to March 2024

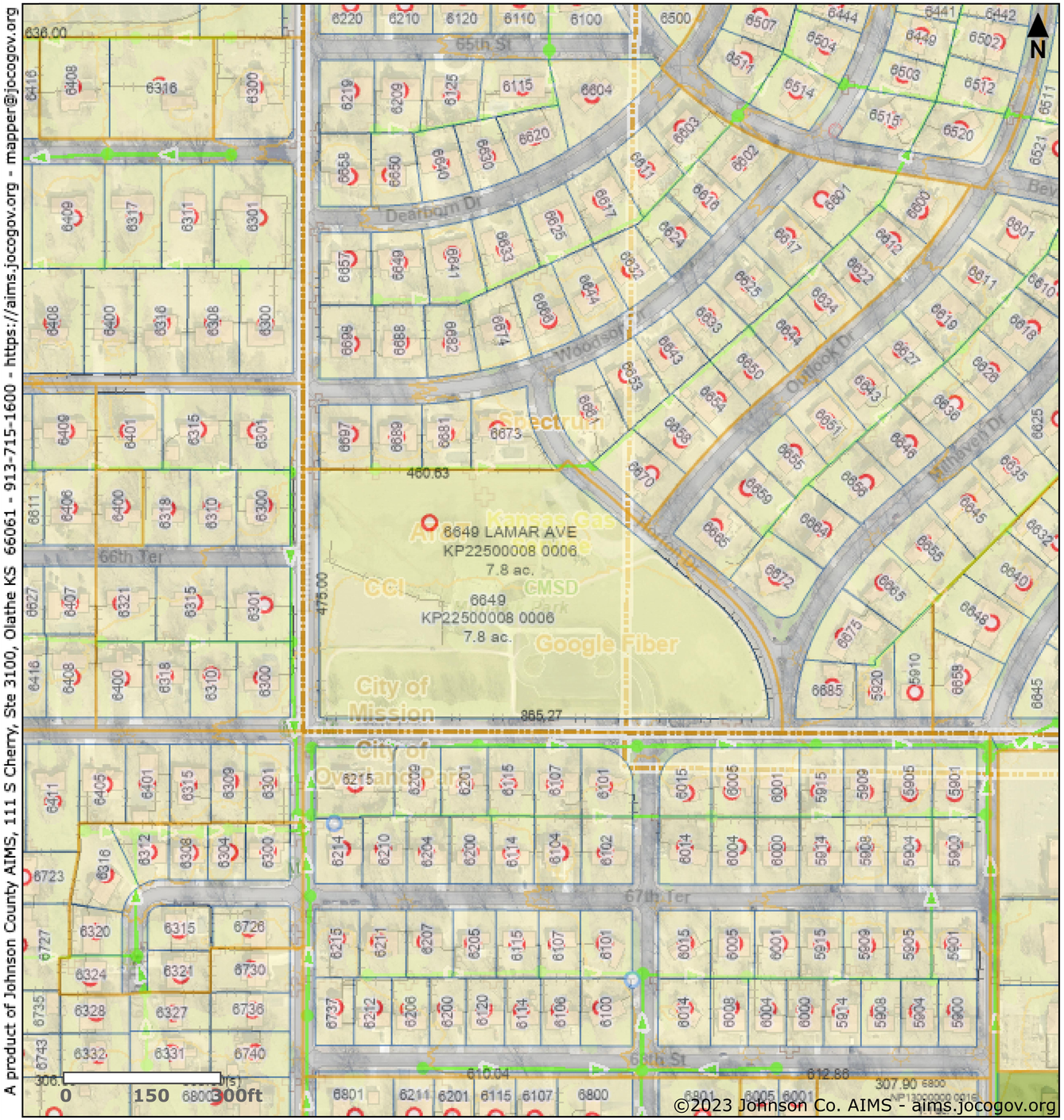
Project narrative

The project site consists of the 7.82 acre city-owned tract located along 67Th Street and between Lamar Street and Horton Street in Mission, KS. The property currently consists of an existing public park with accompanying playground, trails and open space areas. The second phase of work will consist of a primary loop trail around the site, incorporating parallel parking on the northern edge. A half-court basketball / 2 pickleball courts that is placed just off of the new parking lot. Additionally, a new all-inclusive playground boasting a large attraction of play equipment will be installed near the parking lot and shelter. Finally, a planting plan incorporating shade and vibrant plants will surround the site and provide interest in addition to the play fields.

DESCRIPTION OF WORK - PHASE 2:

The second phase of work for the project will consist of the sequence indicated below.

- Install perimeter erosion control measures and tree protection fencing.
- install temporary construction entrance around site.
- install temporary swales and diversion berms, with rock check dams and silt fencing where necessary.
- remove trees and clear and grub initial work areas.
- remove existing parking drive off of horton st.
- remove additional existing pavement in accordance with plans.
- remove existing play area
- install erosion control measures around storm sewers.
- install intermediate silt fences on slopes as embankment occurs across site temporarily seed areas downstream.
- mass grade permanent berms, play fields, and loop trail
- install loop trail and sport court
- install perimeter curb and gutter and base course of asphalt in perimeter drive area.
- install additional erosion control measures at toes of slope adjacent to curb line as applicable.
- complete final grading, seed/sod, and landscape perimeter areas.
- install surface course on parking drive, walks and flatwork.
- install playground/surfacing per manufacturer instructions
- complete final grading and sod/landscape around site and sidewalk areas.
- final site cleanup.
- maintain erosion control measures until site is stabilized.
- inspect and reseed remaining disturbed areas, washouts, etc.
- remove sediment buildup, reseed and stabilize as erosion control measures are removed.



Johnson Co AIMS Map

LEGEND

- Address Point
- Address Point - Other

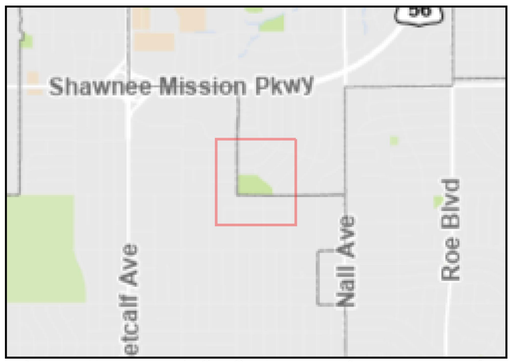
Parcel Line

- Plat
- Lot Line
- Original Lot

- Address Point
- Building/Structure

Property

- Untaxed
- Common Interest
- Vertical
- Platted
- Unplatted
- Right-of-way
- Mineral Rights
- Leased Land



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JOHNSON COUNTY KANSAS
AIMS GIS & Mapping

9/26/2023

01 SP001 PLANIMETRICS

0' 25' 50' 100'

CONFLUENCE
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417 Delaware Street
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NOT FOR CONSTRUCTION

Revision Schedule

No.	Date	Description

MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
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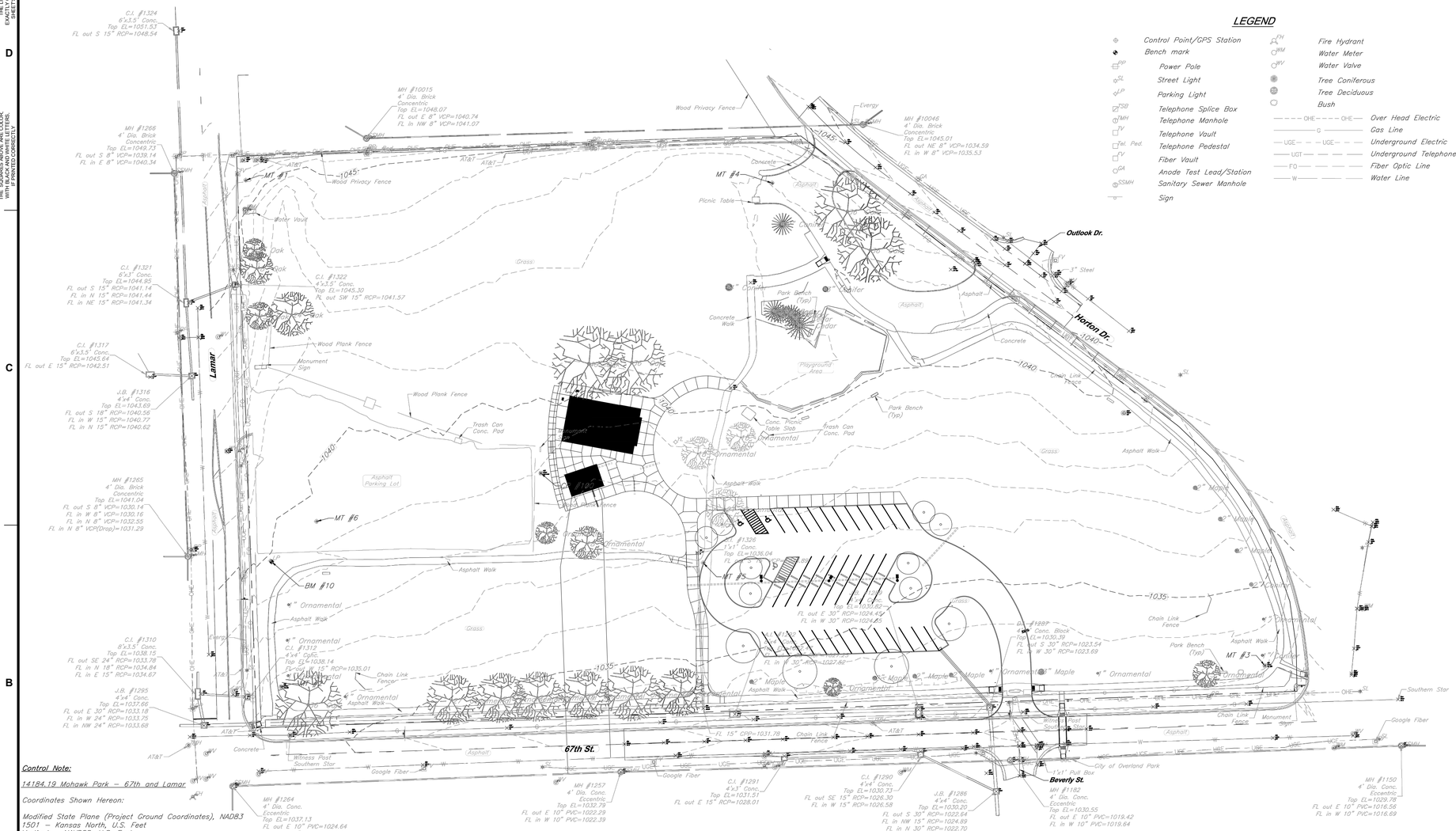
PLANIMETRICS

SP001



Control Note:

14184.19 Mohawk Park – 67th and Lamar

Coordinates Shown Hereon:

Modified State Plane (Project Ground Coordinates), NADB3
1501 – Kansas North, U.S. Feet
Vertical – NAVD88, U.S. Feet

CAF = 0.9999211
To get to State Plane:
Coordinates x CAF = State Plane

CP #100 – Set ½" bar Near the Northeast Corner of Parking Lot of Mohawk Park
Ties:
1. 23.09 feet North Northwest of Duplex Nail Top of Centerline of Wood Plank Fence Corner Post
2. 5.50 feet West Southwest of Duplex Nail Top of Centerline of Wood Plank Fence Corner Post
3. 8.45 feet West of East Edge of Asphalt Parking Lot
Coordinates:
N: 263367.175
E: 2262139.538
EL: 1038.653

BM #10 – Set chiseled "+" cut Top Southeast of Corner Concrete, Base of Parking Light Pole at Southwest Corner of the West Parking Lot of Mohawk Park
Coordinates:
N: 263293.318
E: 2261915.234
EL: 1041.201

MT #1 – Found ½" bar set at Northwest of Corner Property of Mohawk Park
Ties:
1. 22.10 feet Northeast of Top Southeast Corner of most East Concrete Base of AT&T Splice Boxes
2. 14.25 feet North of Top Southeast Corner of most West Concrete Base of AT&T Splice Boxes
3. 5.84 feet West Northwest of Top Southeast Corner of most Southwest AT&T Telephone Vault
4. 28.30 feet South of Top Southeast Corner of Water Vault
Coordinates:
N: 263611.339
E: 2261893.430
EL: 1047.214

MT #2 – Found ½" bar set Near the Southwest Corner of Park Property, Northeast Corner of Intersection of 67th and Lamar
Ties:
1. 10.67 feet Northeast Near side of 1" Tree
2. 2.90 feet West of East Edge of Asphalt Walk
3. 25.97 feet South Southwest of Centerline of Gatepost at Walk
Coordinates:
N: 263189.127
E: 2261923.166
EL: 1036.748

MT #3 – Found ½" bar set at Southeast Corner of Park Property, Northwest Corner of Intersection of 67th and Horton Drive
Ties:
1. 9.08 feet North Northwest Near side of 1" Cedar Tree
2. 4.39 feet East of West Edge of Asphalt Walk
3. 23.27 feet East of Centerline of North most Chainlink Gate post
4. 52.00 feet East of Centerline of Horton Drive
Coordinates:
N: 263206.836
E: 2262743.403
EL: 1033.139

MT #4 – Found Mag and Shiner set at Northwest Corner of the East Parking Lot of Mohawk Park
Ties:
1. 11.15 feet Northwest of Back of Curb at End of Concrete Walk
2. 10.50 feet West of West Edge of Asphalt Parking Lot
3. 75.00 feet East of Centerline of Horton Drive
Coordinates:
N: 263608.993
E: 2262332.634
EL: 1040.876

01 SP100 SURVEY

0' 25' 50' 100'

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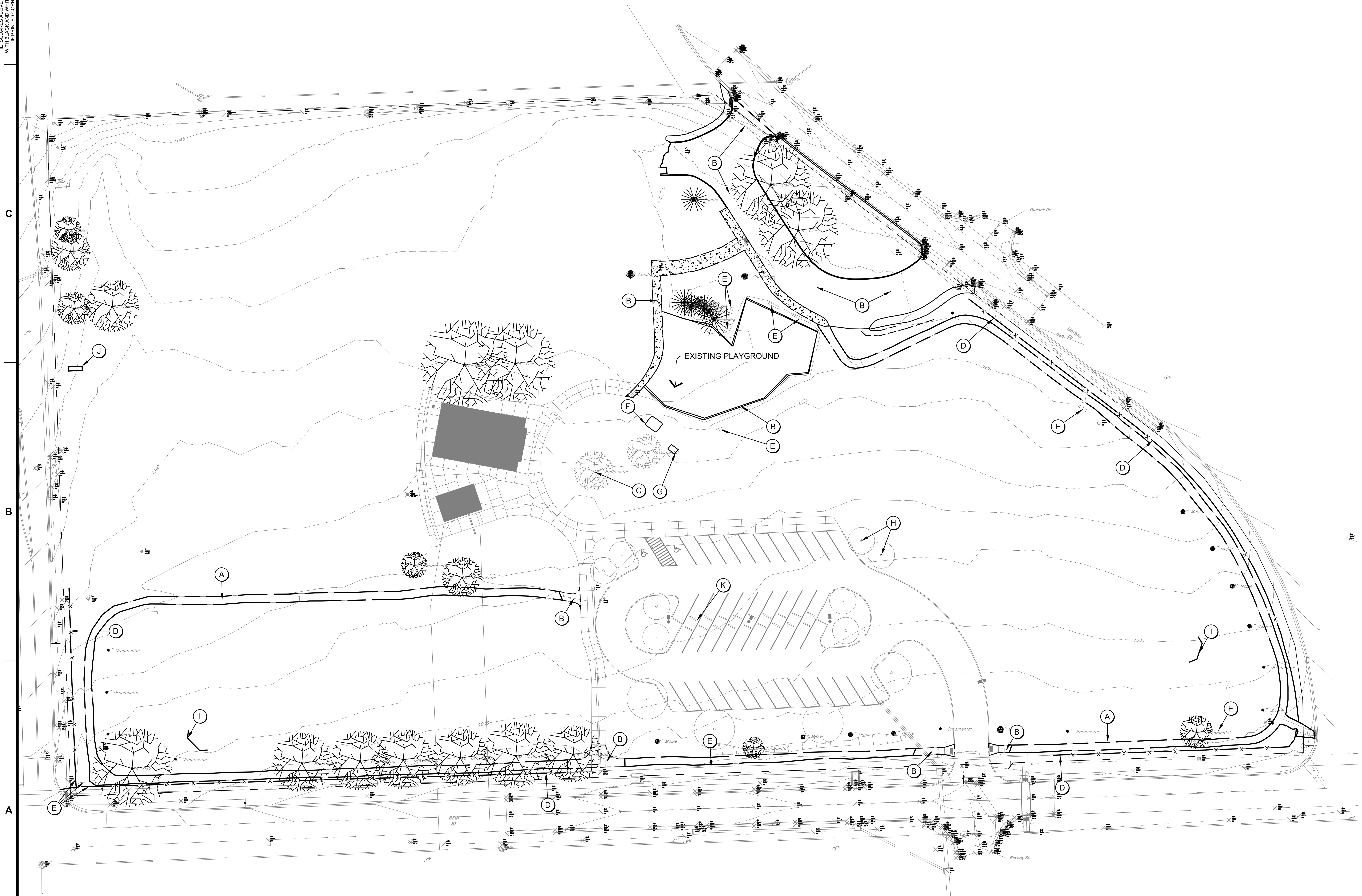
SURVEY

SP100

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

THE SQUARES ABOVE ARE COLOR, WITH BLACK AND WHITE LETTERS, IF PRINTED CORRECTLY

C M Y K



DEMOLITION GENERAL NOTES

A. PRIOR TO ANY EXCAVATION AT THE SITE, CONTRACTOR SHALL CONSULT WITH OWNER'S PERSONNEL AND UTILITY COMPANIES REPRESENTATIVES TO DETERMINE POSSIBLE UTILITY LOCATIONS AND DEPTHS. NO COMPENSATION WILL BE ALLOWED FOR DAMAGE RESULTING FROM FAILURE TO COMPLY WITH THIS REQUIREMENT. REPORT ANY DAMAGE TO EXISTING UTILITIES PRIOR TO REPAIR. DAMAGE TO UTILITIES AND STRUCTURES SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER OF THE UTILITY.

B. FIELD VERIFY EXISTING GRADES AND LOCATIONS OF EXISTING UTILITIES, CONDUIT, LINES, POLES, TREES, PAVING, BUILDING AND OTHER SITE STRUCTURES PRIOR TO DEMOLITION OR CONSTRUCTION AND IMMEDIATELY INFORM THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES. THE CONTRACTOR SHALL REPORT TO THE OWNER ANY DAMAGE TO OWNER'S PROPERTY PRIOR TO REPAIR.

C. PROTECT ALL ITEMS WITHIN CONTRACT LIMITS NOT INDICATED TO BE REMOVED. NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.

D. CONTACT THE LANDSCAPE ARCHITECT PRIOR TO REMOVING ANY PLANT MATERIAL NOT INDICATED TO BE PROTECTED OR REMOVED.

E. CONTRACTOR TO PROVIDE ADEQUATE BARRICADES AND TRAFFIC CONTROL. COMPLY WITH REQUIREMENTS OF LOCAL JURISDICTION.

F. CONTRACTOR SHALL SAW CUT ALL ASPHALT OR CONCRETE TO BE REMOVED TO THE NEAREST CONTROL JOINT WHERE PRACTICAL.

G. PROTECT ALL ITEMS WITHIN CONTRACT LIMITS NOT INDICATED TO BE REMOVED. NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.

KEYNOTES

A. REMOVE EXISTING ASPHALT PATH
B. REMOVE EXISTING CONCRETE SIDEWALK AND CURB
C. REMOVE EXISTING VEGETATION
D. REMOVE EXISTING FENCE
E. REMOVE AND PRESERVE BENCHES
F. REMOVE AND PRESERVE TABLE SHADE STRUCTURE
G. REMOVE TRASH BINS
H. PRESERVE AND RELOCATE EXISTING TREES
I. REMOVE BACKSTOP
J. REMOVE EXISTING MONUMENT SIGNAGE
K. REMOVE EXISTING PARKING BLOCK

01 SP101 DEMOLITION PLAN

0' 20' 40' 80'

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DEMOLITION PLAN

SP101

EROSION CONTROL GENERAL NOTES

A. POTENTIAL SOURCES OF POLLUTION: SITE SOURCES OF POLLUTION GENERATED AS A RESULT OF THIS PROJECT RELATED TO SILTS AND SEDIMENT AND OTHER MATERIALS WHICH MAY BE TRANSPORTED AS A RESULT OF A STORM EVENT FROM THE CONSTRUCTION SITE.

B. RESPONSIBILITY: THIS POLLUTION PREVENTION PLAN ILLUSTRATES GENERAL MEASURES TO BE TAKEN FOR COMPLIANCE WITH THE PERMIT. ALL MITIGATION MEASURES REQUIRED, AS A RESULT OF ACTIVITIES, ARE THE RESPONSIBILITY OF THE CONTRACTOR SHALL TAKE ALL ACTIONS NECESSARY FOR INSTALLATION OF CONTROL MEASURES FOR COMPLIANCE WITH PERMIT REQUIREMENTS.

C. CONTROLS: THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLIANCE AND FULFILLING ALL THE REQUIREMENTS OF THE GENERAL PERMIT INCLUDING BUT NOT LIMITED TO, THE FOLLOWING:

D. THE CONTRACTOR SHALL PROTECT ADJOINING PROPERTY INCLUDING PUBLIC UTILITIES, SANITARY AND STORM DRAINAGE SYSTEMS AND STREETS FROM ANY DAMAGE RESULTING FROM MOVEMENT OF EARTH OR OTHER DEBRIS FROM PROJECT SITE. REPAIR ANY DAMAGE IMMEDIATELY AT NO ADDITIONAL COST.

E. THE CONTRACTOR SHALL PREVENT ACCUMULATION OF EARTH, SILTATION OR DEBRIS ON ADJOINING PUBLIC OR PRIVATE PROPERTY FROM PROJECT SITE. REMOVE ANY ACCUMULATION OF EARTH OR DEBRIS IMMEDIATELY AND TAKE REMEDIAL ACTIONS FOR PREVENTION.

F. PRIOR TO SITE CLEARING AND GRADING OPERATIONS, CONTRACTOR SHALL INSTALL SILT FENCE ALONG THE PERIMETER OF THE PROJECT ON THE DOWNSLOPE SIDES OF THE SITE AND EXCAVATE THE TEMPORARY SILTATION BASINS IN THE EXISTING DRAINAGE WAY AS SHOWN ON THE PLANS.

G. THE CONTRACTOR SHALL PRESERVE EXISTING VEGETATION IN AREAS NOT NEEDED FOR CONSTRUCTION.

H. A COMBINATION OF SILT FENCES, MULTIPLE SEDIMENT TRAPS OR EQUIVALENT SEDIMENT CONTROLS ARE REQUIRED FOR ALL SIDE SLOPES AND DOWNSLOPE BOUNDARIES OF THE DISTURBED AREA.

I. AS AREAS REACH THEIR FINAL GRADE AND UPON THE COMPLETION OF THE STORM SEWERS, PROVIDE ADDITIONAL SILTATION FENCE, TEMPORARY SILT BASINS, DIVERSION DIKES AND EARTH DIKES, SILT FENCE AND STRAW BALES WRAPPED WITH FILTER FABRIC, DITCH CHECKS AND SILT FENCE ENCLOSURES AROUND ALL STORM SEWER OUTFALLS. THE CONTRACTOR SHALL PROVIDE ADDITIONAL SILTATION FENCE AND EARTH DIKES AS MAY BE REQUIRED ON ALL EMBANKMENTS, EARTH STOCKPILES AND OTHER AREAS TO PROVIDE CONTROL.

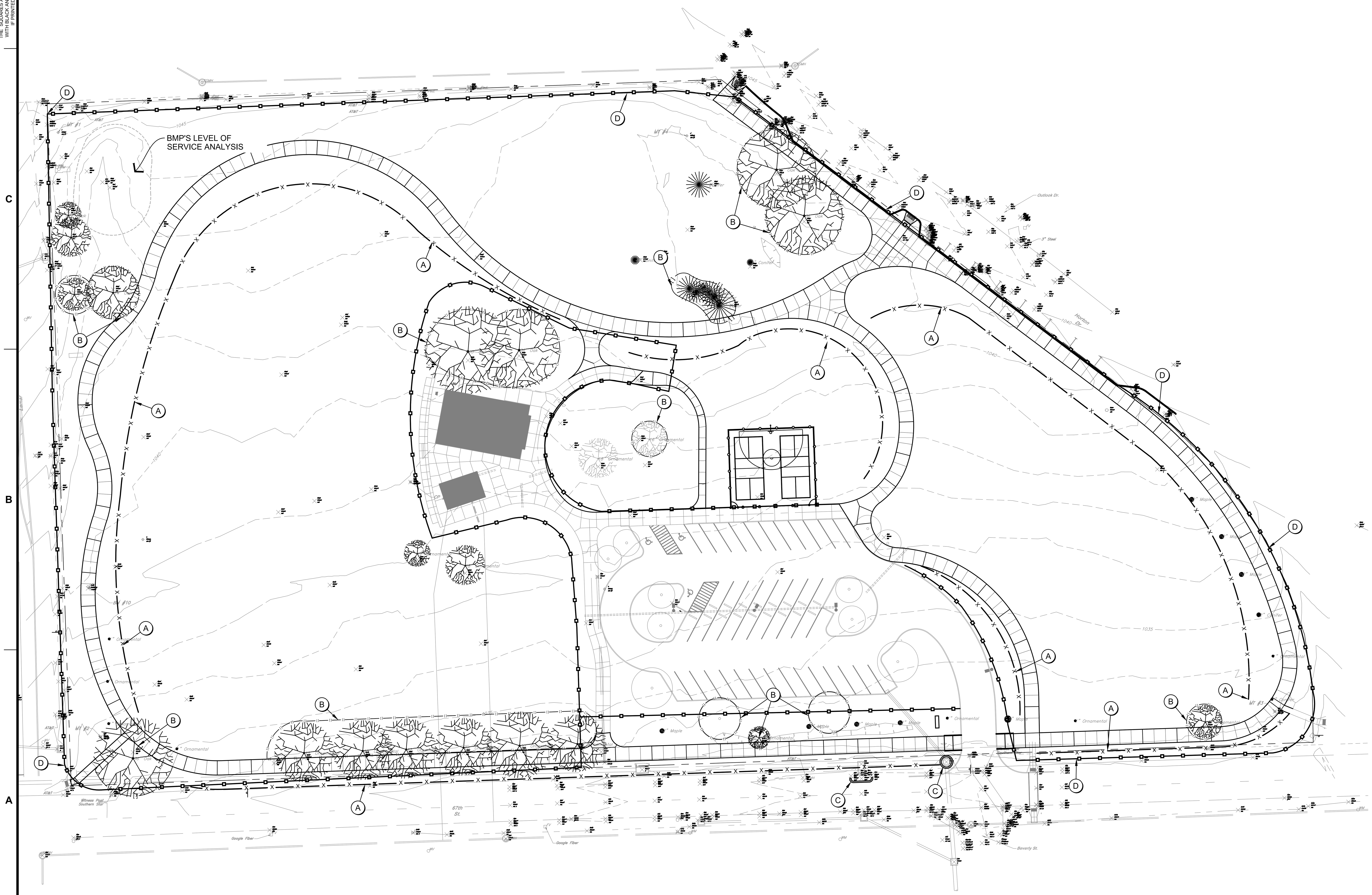
J. THE CONTRACTOR SHALL PROVIDE TEMPORARY AND/OR PERMANENT SEEDING OF AREAS UPON COMPLETION OF GRADING AS SOON AS PRACTICAL. "FINAL STABILIZATION" MEANS ALL SOIL DISTURBING ACTIVITIES ARE COMPLETE AND A UNIFORM PERENNIAL VEGETATIVE COVER WITH A MINIMUM DENSITY OF 70% FOR THE AREA HAS BEEN ESTABLISHED OR AN EQUIVALENT STABILIZATION MEASURE.

K. IF CONSTRUCTION ACTIVITY IS NOT PLANNED TO OCCUR IN A DISTURBED AREA FOR AT LEAST 21 DAYS, THE AREA SHALL BE STABILIZED BY TEMPORARY EROSION CONTROLS WITHIN 14 DAYS OF CEASING CONSTRUCTION ACTIVITIES.

L. THE CONTRACTOR IS REQUIRED TO MAINTAIN ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES IN WORKING ORDER, INCLUDING CLEANING, REPAIRING, REPLACEMENT AND SEDIMENT REMOVAL THROUGHOUT THE PERMIT PERIOD. CLEANING OF SILT CONTROL DEVICES SHALL BEGIN WHEN THE FEATURES HAVE LOST A MAXIMUM OF 50% OF THEIR CAPACITY.

M. THE PROJECT AREA AND CONTROL DEVICES WILL BE INSPECTED BY PERSONNEL ASSIGNED BY THE CONTRACTOR EVERY SEVEN CALENDAR DAYS AND WITHIN 48 HOURS AFTER EACH RAIN EVENT OF 1/2" OR GREATER OR HEAVY SNOW MELT. THE FINDINGS AND ACTIONS TAKEN OF THIS INSPECTION SHALL BE RECORDED IN THE PROJECT DIARY WITH A COPY SUBMITTED WEEKLY TO THE OWNER DURING THE PROJECT. THIS PLAN MAY BE REVISED BASED UPON FINDINGS OF THE INSPECTION. THE CONTRACTOR SHALL IMPLEMENT ALL REVISIONS.

H. TEMPORARY CONSTRUCTION FENCING TO BE REMOVED AS SECTIONS OF SITE ARE COMPLETED. CONTRACTOR TO PROVIDE PHASED WORK PLAN TO RE-OPEN AREAS.



KEYNOTES

A. INSTALL SILT FENCE; RE:07-08/SP400

B. INSTALL CONSTRUCTION FENCE AROUND TREES TO BE PRESERVED; RE:10-11/SP400

C. INSTALL CONSTRUCTION WADDLE; RE: 04/SP400

D. INSTALL CHAIN LINK CONSTRUCTION FENCE

01 SP102 EROSION CONTROL PLAN

0' 20' 40' 80'

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EROSION CONTROL PLAN

SP102

GENERAL NOTES

A. IMMEDIATELY NOTIFY THE LANDSCAPE ARCHITECT OF ANY ANY DISCREPANCIES BETWEEN THE SURVEY AND FIELD CONDITIONS.

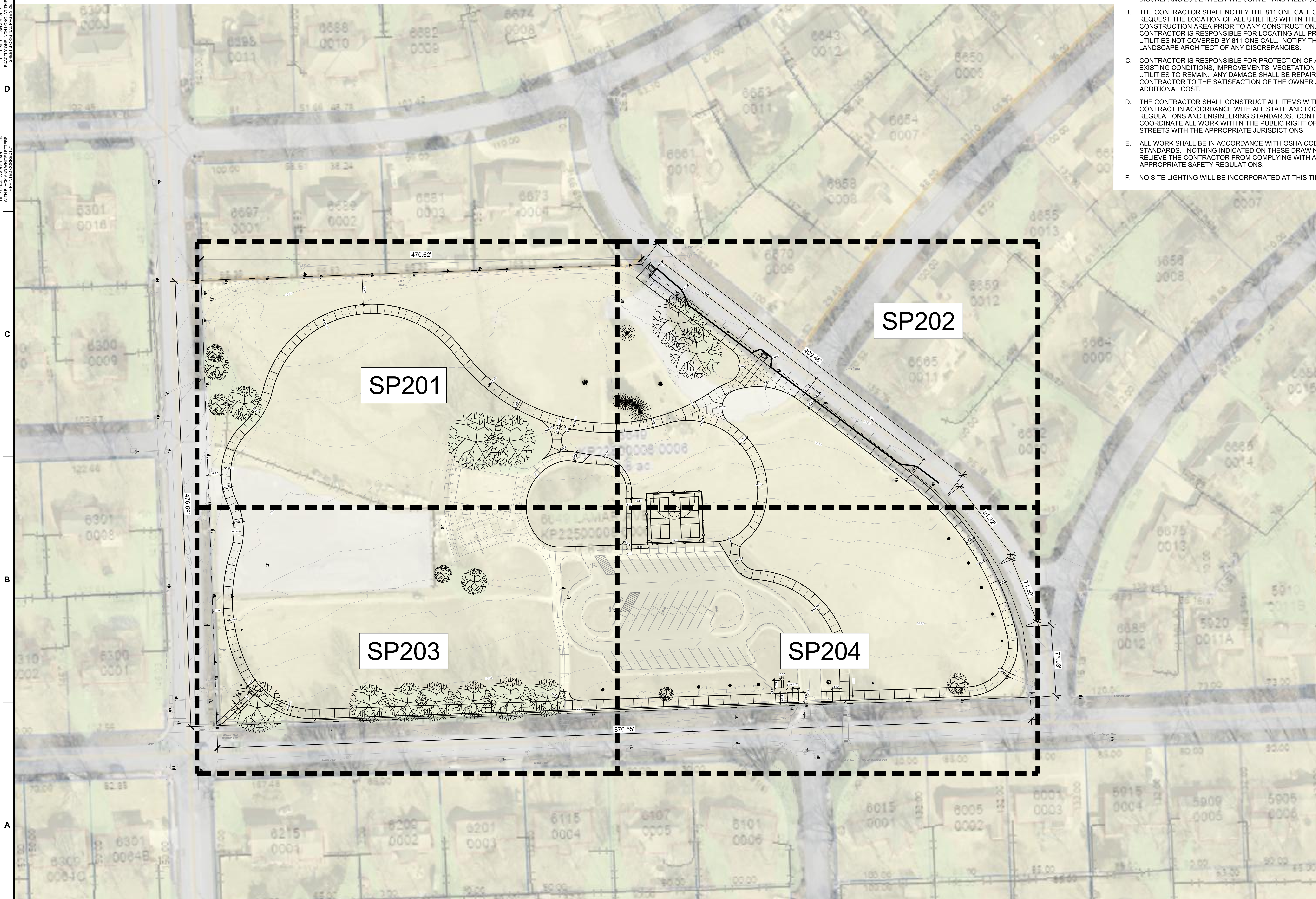
B. THE CONTRACTOR SHALL NOTIFY THE 811 ONE CALL CENTER TO REQUEST THE LOCATION OF ALL UTILITIES WITHIN THE CONSTRUCTION AREA PRIOR TO ANY CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR LOCATING ALL PRIVATE UTILITIES NOT COVERED BY 811 ONE CALL. NOTIFY THE LANDSCAPE ARCHITECT OF ANY DISCREPANCIES.

C. CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF ALL EXISTING CONDITIONS, IMPROVEMENTS, VEGETATION AND UTILITIES TO REMAIN. ANY DAMAGE SHALL BE REPAIRED BY THE CONTRACTOR TO THE SATISFACTION OF THE OWNER AT NO ADDITIONAL COST.

D. THE CONTRACTOR SHALL CONSTRUCT ALL ITEMS WITHIN THIS CONTRACT IN ACCORDANCE WITH ALL STATE AND LOCAL CODES, REGULATIONS AND ENGINEERING STANDARDS. CONTRACTOR TO COORDINATE ALL WORK WITHIN THE PUBLIC RIGHT OF WAY OR STREETS WITH THE APPROPRIATE JURISDICTIONS.

E. ALL WORK SHALL BE IN ACCORDANCE WITH OSHA CODES AND STANDARDS. NOTHING INDICATED ON THESE DRAWINGS SHALL RELIEVE THE CONTRACTOR FROM COMPLYING WITH ANY APPROPRIATE SAFETY REGULATIONS.

F. NO SITE LIGHTING WILL BE INCORPORATED AT THIS TIME.



01 SP200 LAYOUT PLAN

0' 20' 40' 80'

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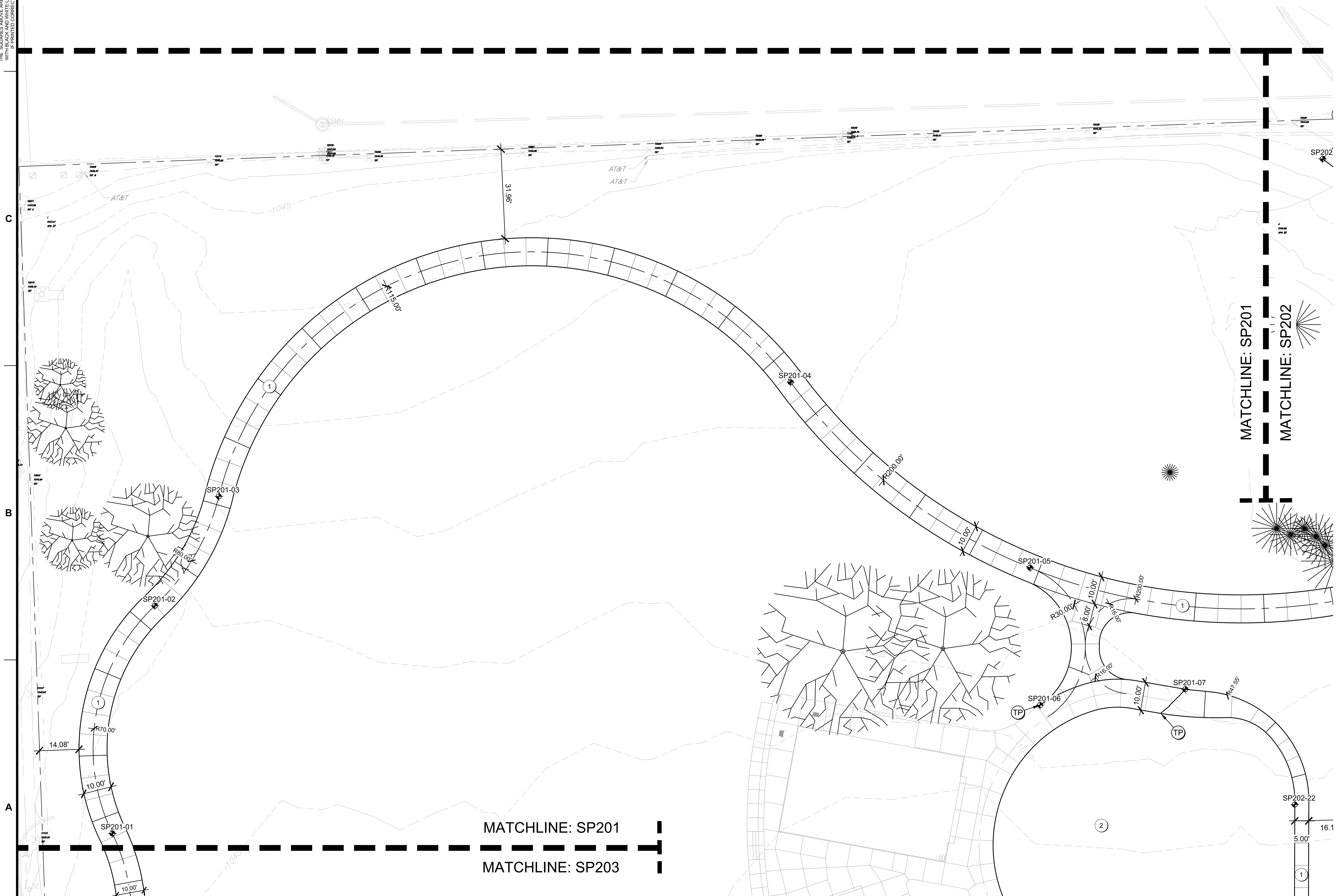
LAYOUT PLAN

SP200

KEYNOTES

1. CONCRETE LOOP TRAIL; RE: 03/SP400
2. PLAYGROUND
3. BASKETBALL COURT (HALF) / 2 PICKLEBALL COURTS WITH REMOVABLE NETS; RE: 05/SP401 - 14/SP400
4. PICKLEBALL NET; RE:01/SP401
5. PLAY COURT FENCE; RE:12/SP400
6. PLAY COURT FENCE GATE; RE:11/SP400
7. BASKETBALL GOAL; RE:13/SP400
8. EXISTING PARKING LOT
9. ADA PARKING STALL/ STRIPING; RE:15/SP400

#	Position X	Position Y
SP201-01	2261919.10	263393.38
SP201-02	2261934.26	263474.63
SP201-03	2261957.09	263513.62
SP201-04	2262161.08	263554.40
SP201-05	2262246.53	263488.19
SP201-06	2262250.09	263439.17
SP201-07	2262301.90	263444.84



02 SP201 LAYOUT PLAN ENLARGEMENT

0' 10' 20' 40'

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MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

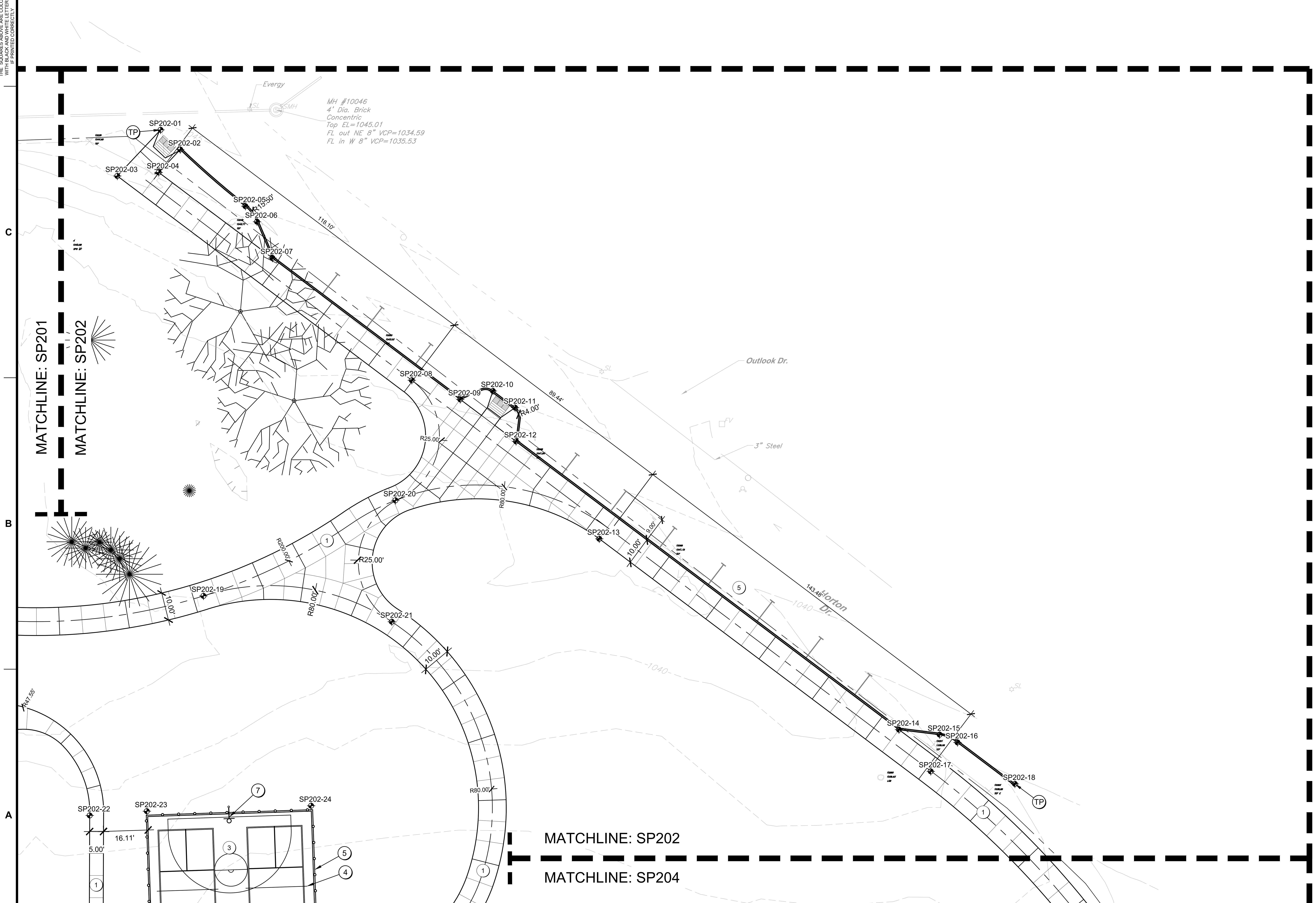
LAYOUT PLAN ENLARGEMENT

SP201

KEYNOTES

1. CONCRETE LOOP TRAIL; RE: 03/SP400
2. PLAYGROUND
3. BASKETBALL COURT (HALF) / 2 PICKLEBALL COURTS WITH REMOVABLE NETS; RE: 05/SP401 - 14/SP400
4. PICKLEBALL NET; RE:01/SP401
5. PLAY COURT FENCE; RE:12/SP400
6. PLAY COURT FENCE GATE; RE:11/SP400
7. BASKETBALL GOAL; RE:13/SP400
8. EXISTING PARKING LOT
9. ADA PARKING STALL/ STRIPING; RE:15/SP400

#	Position X	Position Y
SP203-01	2261922.57	263341.55
SP203-02	2261933.63	263210.41
SP203-03	2261939.86	263192.31
SP203-04	2261904.02	263159.88
SP203-05	2261908.23	263156.95
SP203-06	2261943.21	263188.61
SP203-07	2262007.26	263167.51
SP203-08	2262259.40	263181.11
SP203-09	2262269.06	263191.08
SP203-10	2262279.06	263192.10
SP203-11	2262289.40	263182.14



03 SP202 LAYOUT PLAN ENLARGEMENT

0' 10' 20' 40'

CONFLUENCE

LANDSCAPE ARCHITECT
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Revision Schedule

No.	Date	Description

MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

LAYOUT PLAN ENLARGEMENT

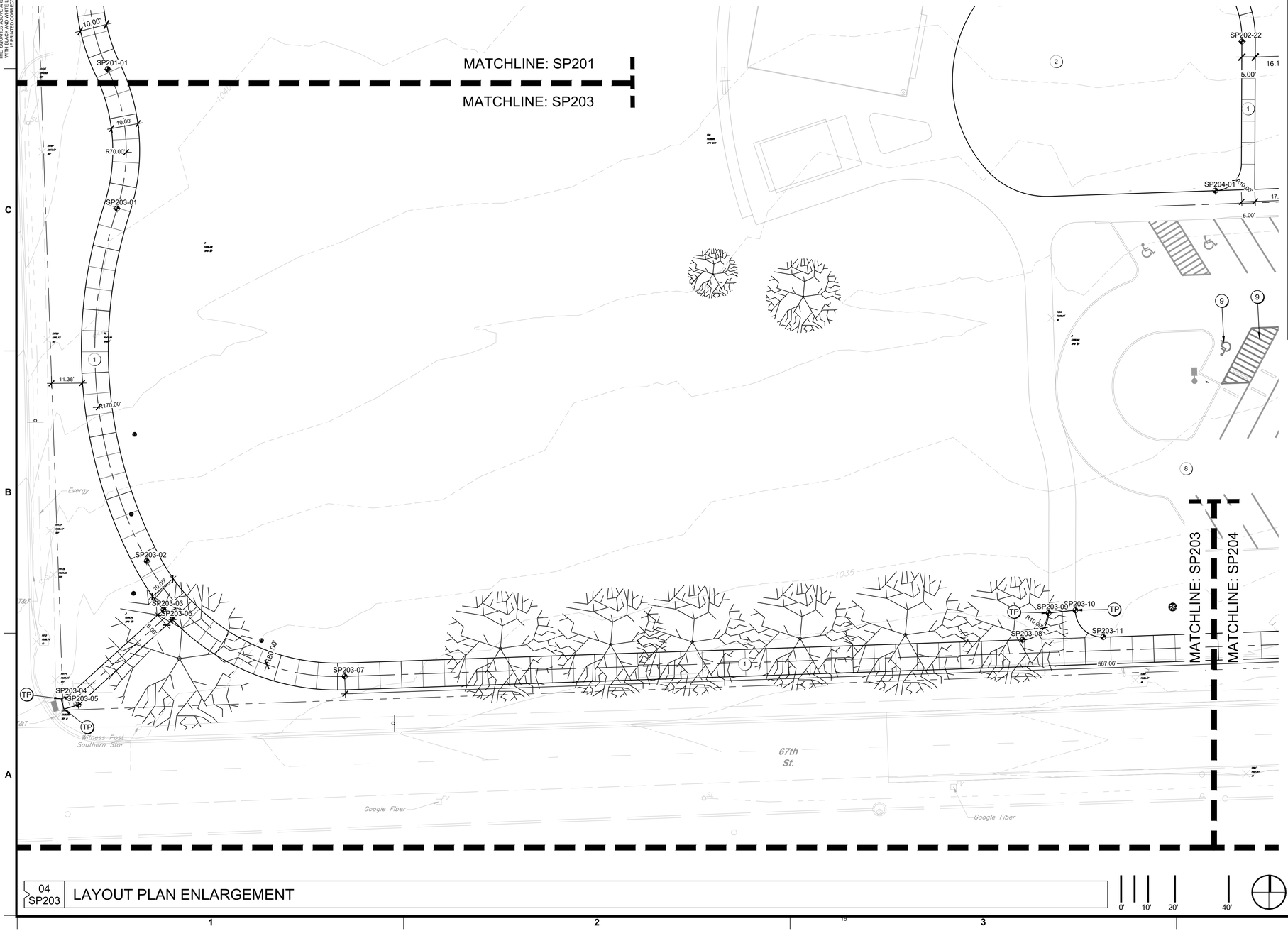
SP202

IF LINE SHOWN ABOVE IS NOT 1" LONG, DRAWING IS NOT AT THIS SHEET'S ORIGINAL PAGE SIZE

THE SQUARES ABOVE ARE COLOR, WHITE, BLACK AND GREY LEVELS IF PRINTED CORRECTLY

KEYNOTES

1. CONCRETE LOOP TRAIL; RE: 03/SP400
2. PLAYGROUND
3. BASKETBALL COURT (HALF) / 2 PICKLEBALL COURTS WITH REMOVABLE NETS; RE: 05/SP401 - 14/SP400
4. PICKLEBALL NET; RE:01/SP401
5. PLAY COURT FENCE; RE:12/SP400
6. PLAY COURT FENCE GATE; RE:11/SP400
7. BASKETBALL GOAL; RE:13/SP400
8. EXISTING PARKING LOT
9. ADA PARKING STALL/ STRIPING; RE:15/SP400



#	Position X	Position Y
SP203-01	2261922.57	263341.55
SP203-02	2261933.63	263210.41
SP203-03	2261939.86	263192.31
SP203-04	2261904.02	263159.88
SP203-05	2261908.23	263156.95
SP203-06	2261943.21	263188.61
SP203-07	2262007.26	263167.51
SP203-08	2262259.40	263181.11
SP203-09	2262269.06	263191.08
SP203-10	2262279.06	263192.10
SP203-11	2262289.40	263182.14

04 SP203 LAYOUT PLAN ENLARGEMENT

0' 10' 20' 40'

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Project Number	23093
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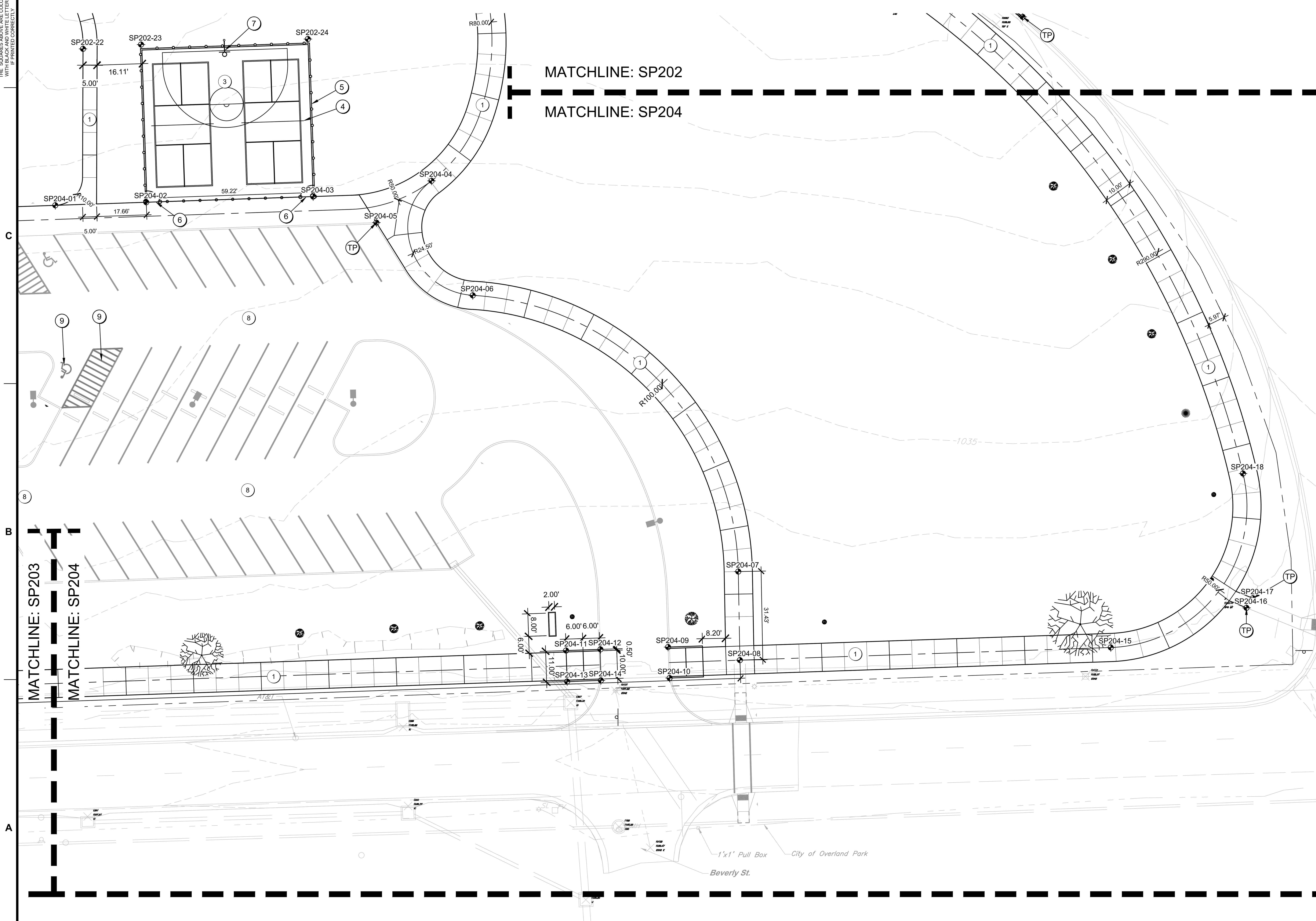
LAYOUT PLAN ENLARGEMENT

SP203

KEYNOTES

1. CONCRETE LOOP TRAIL; RE: 03/SP400
2. PLAYGROUND
3. BASKETBALL COURT (HALF) / 2 PICKLEBALL COURTS WITH REMOVABLE NETS; RE: 05/SP401 - 14/SP400
4. PICKLEBALL NET; RE:01/SP401
5. PLAY COURT FENCE; RE:12/SP400
6. PLAY COURT FENCE GATE; RE:11/SP400
7. BASKETBALL GOAL; RE:13/SP400
8. EXISTING PARKING LOT
9. ADA PARKING STALL/ STRIPING; RE:15/SP400



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SP204-02	2262363.42	263349.28
SP204-03	2262422.60	263351.30
SP204-04	2262464.60	263356.87
SP204-05	2262445.04	263342.05
SP204-06	2262479.23	263316.25
SP204-07	2262573.41	263218.26
SP204-08	2262573.99	263186.84
SP204-09	2262548.51	263191.47
SP204-10	2262549.07	263180.48
SP204-11	2262512.33	263190.24
SP204-12	2262524.52	263190.65
SP204-13	2262512.71	263179.24
SP204-14	2262524.70	263179.65
SP204-15	2262705.55	263191.32
SP204-16	2262753.68	263205.39
SP204-17	2262755.93	263208.80
SP204-18	2262752.45	263253.04

05 SP204 LAYOUT PLAN ENLARGEMENT

0' 10' 20' 40'

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LAYOUT PLAN ENLARGEMENT

SP204

GRADING NOTES

A. ALL SPOT ELEVATIONS ARE AT THE TOP OF FINISHED SURFACES UNLESS NOTED OTHERWISE. SPOT ELEVATIONS SHOWN IN PARKING ARE AT THE BOTTOM OF CURB. ADD 6" TO COMPUTE TOP OF CURB ELEVATION.

B. CONTRACTOR TO VERIFY ALL SPOT ELEVATIONS FOR POSITIVE DRAINAGE BEFORE INSTALLATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSITIVE SURFACE DRAINAGE IN ALL AREAS, UNLESS OTHERWISE NOTED. ALL NEWLY GRADED GROUND SURFACES SHALL BE FINISHED TO UNIFORM GRADES AND SLOPED IN SUCH A MANNER TO BE FREE OF DEPRESSIONS THAT CAUSE AREAS OF STANDING WATER. THE CONTRACTOR SHALL REPORT ANY CONFLICTS WITH THIS REQUIREMENT TO THE LANDSCAPE ARCHITECT FOR RESOLUTION PRIOR TO FINAL GRADING OPERATIONS.

C. WALK CROSS SLOPE MAY NOT EXCEED 2.0%. RUNNING SLOPE MAY NOT EXCEED 5.0%. RUNNING SLOPE FOR RAMPS MAY NOT EXCEED 1:12 WITH LANDINGS THAT DO NOT EXCEED 2.0% IN ANY DIRECTION.

D. WHERE PROPOSED GRADES MEET EXISTING, BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN THE NEW WORK AND EXISTING WORK. PONDING AT JOINTS WILL NOT BE ACCEPTED.

E. CONTACT LANDSCAPE ARCHITECT PRIOR TO BACKFILLING AGAINST EXISTING BUILDINGS. PROVIDE WATERPROOFING WHEN BACKFILLING AGAINST EXISTING BUILDINGS.

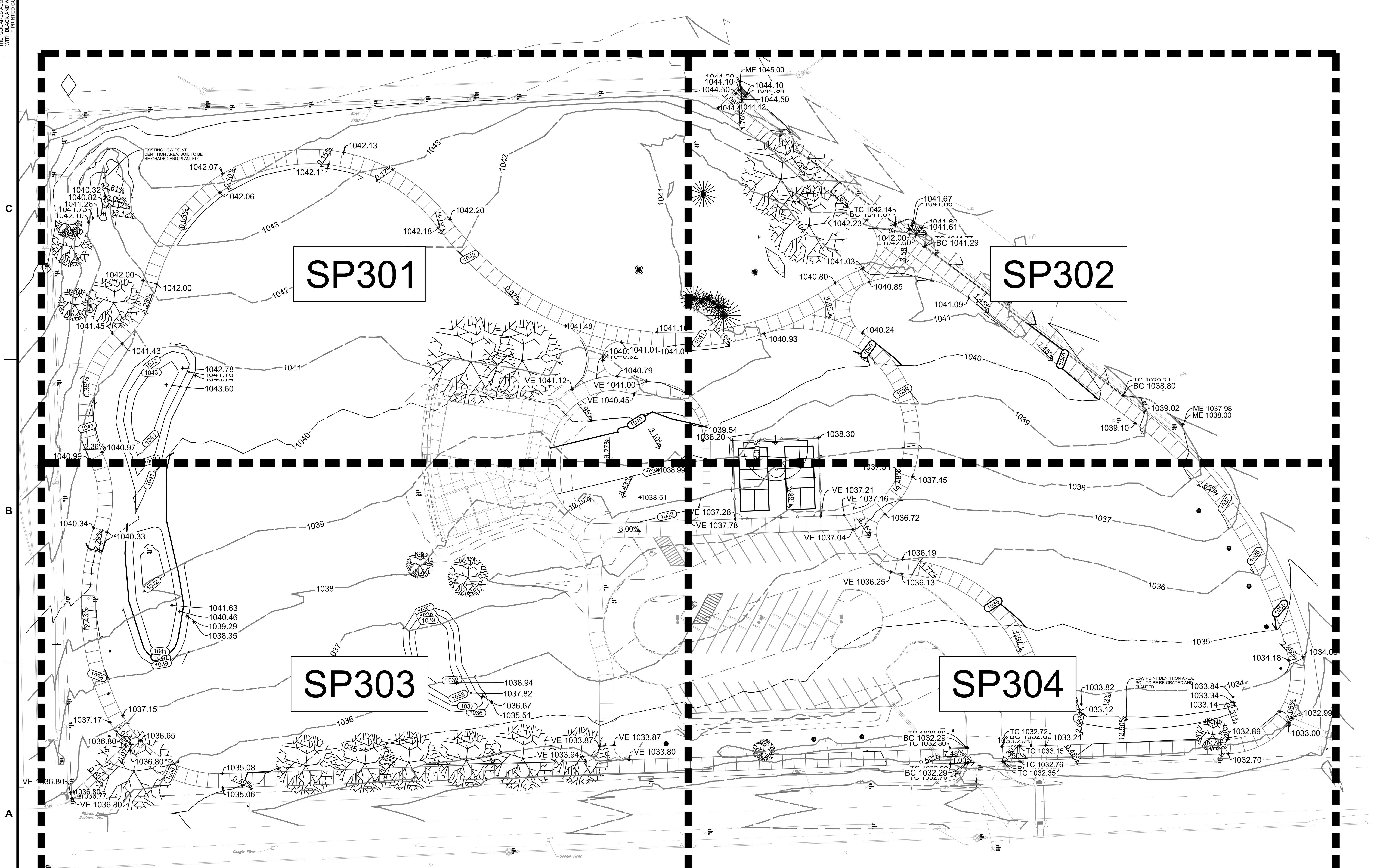
F. FINAL BERM SHAPE TO BE APPROVED BY LANDSCAPE ARCHITECT.

G. SEE SPECIFICATIONS FOR MINIMUM DEPTH OF TOPSOIL FOR ALL LAWN AREAS AND PLANTING BEDS.

H. DEBRIS SHALL BE REMOVED AND PAVEMENT WITHIN THE RIGHT-OF-WAY SWEPT AT THE END OF EACH WORKING DAY.

I. CONTRACTOR TO FIELD ADJUST ALL EXISTING SITE UTILITIES TO NEW FINISHED GRADES. EXISTING UTILITIES INCLUDE, BUT ARE NOT LIMITED TO, FIRE HYDRANTS, MANHOLE RIMS, INLETS, WATER VALVES, AND LIGHT BASES.

J. SILT FENCE AND INLET PROTECTION SHALL BE MAINTAINED UNTIL ESTABLISHMENT OF PERMANENT GROUND COVER.



01 SP300 GRADING PLAN

0' 20' 40' 80'

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Project Number	23093
Issue	00000
Date	YYYY-MM-DD

GRADING PLAN

SP300

BMP GRADING NOTES

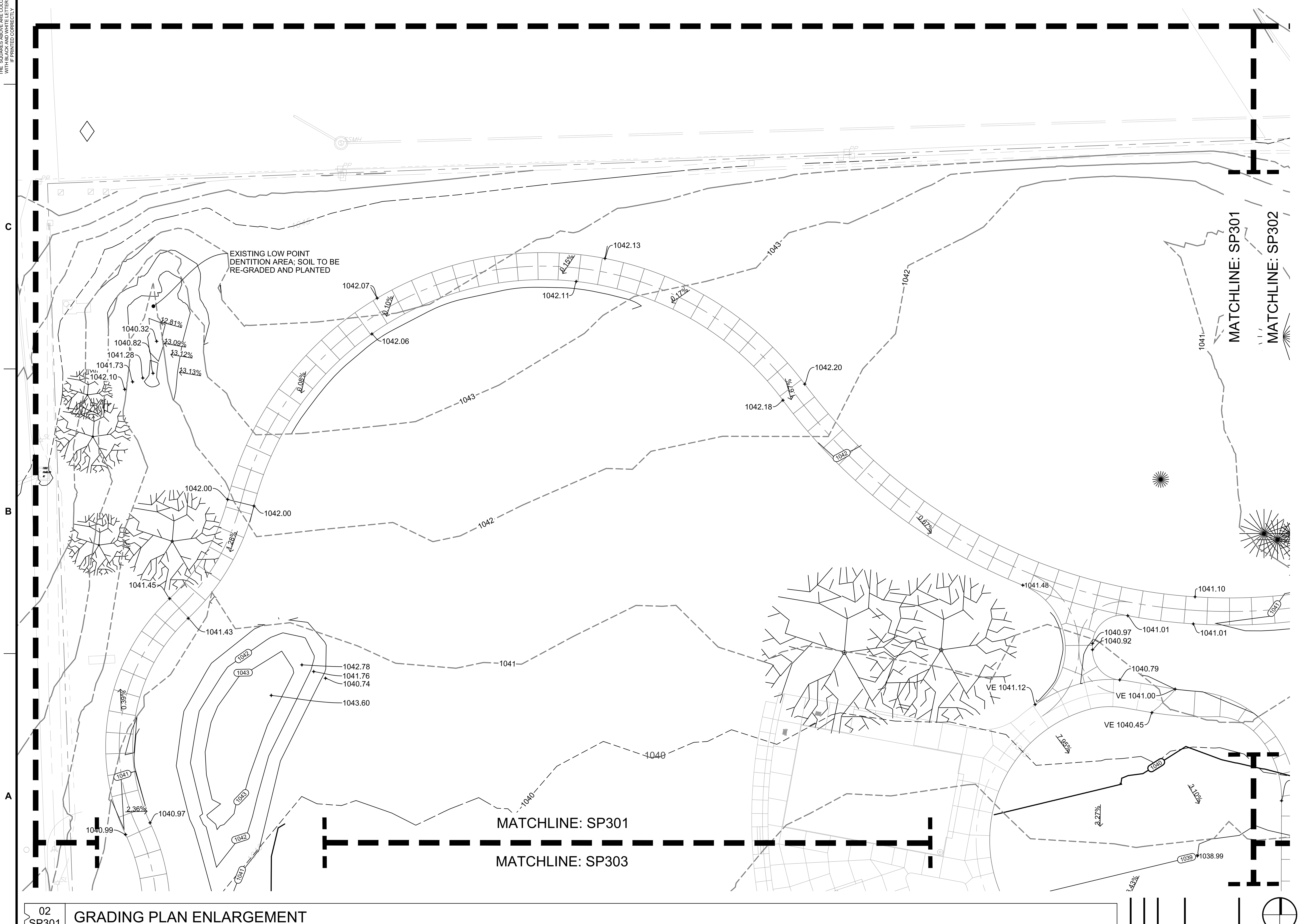
A. WHERE PROPOSED GRADES MEET EXISTING, BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN THE NEW WORK AND EXISTING WORK.

B. SILT FENCE AND INLET PROTECTION SHALL BE MAINTAINED UNTIL ESTABLISHMENT OF PERMANENT GROUND COVER.

C. SOIL TO BE 12"-18" SAND / LOAM MIX

D. BMP TO MEET APWA SECTION 5600 AND MARC BMP MANUAL REQUIREMENTS.

E. BMP TO OVERFLOW DRAIN INTO EXISTING WATER VAULT. CONTRACTOR TO VERIFY.



02
SP301
GRADING PLAN ENLARGEMENT

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MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

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Date	YYYY-MM-DD

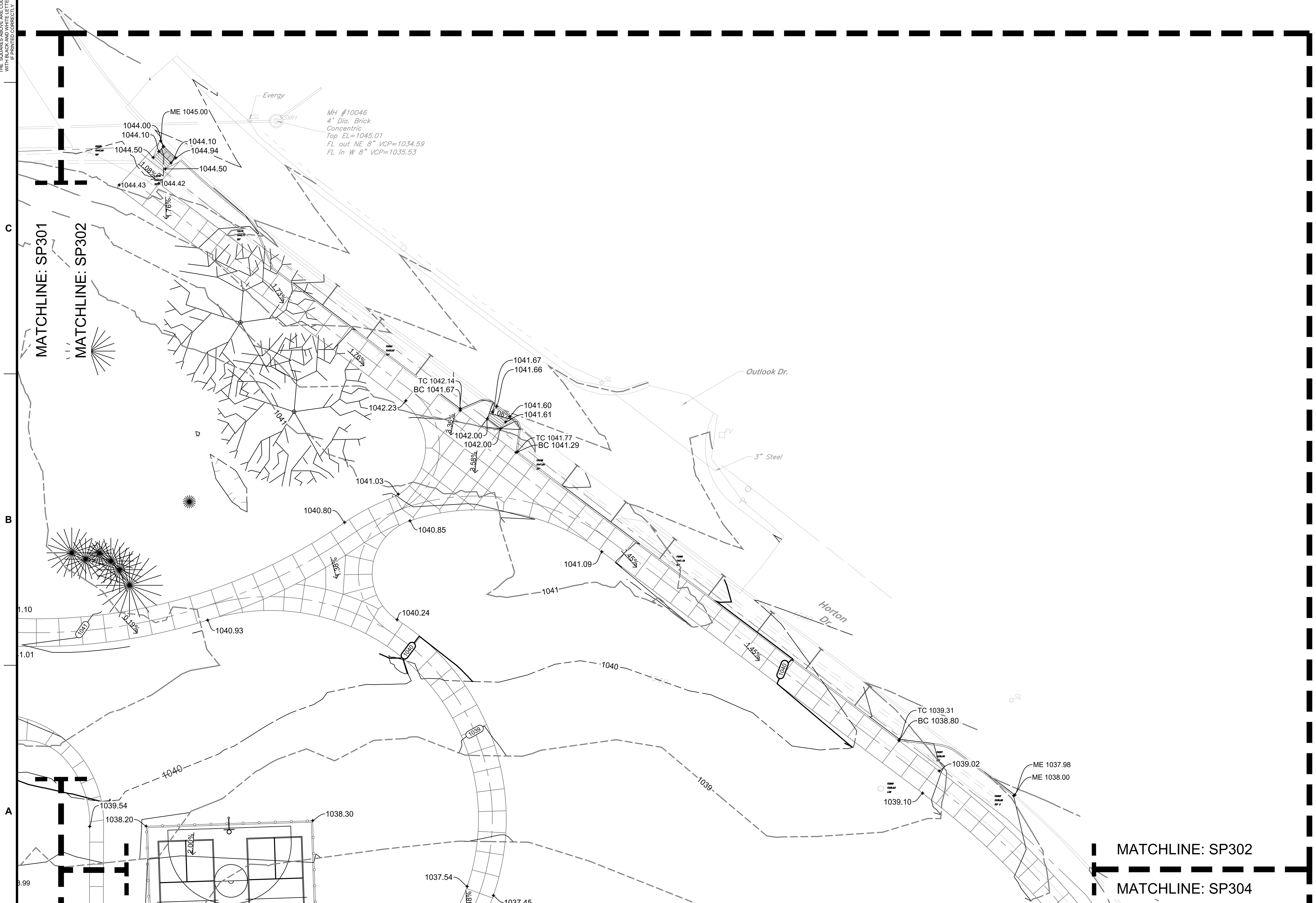
GRADING PLAN ENLARGEMENT

SP301

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

THE SQUARES ABOVE ARE COLOR, WITH BLACK AND WHITE LETTERS, IF PRINTED CORRECTLY

C M Y K



03 SP302	GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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6090 WOODSON ST. MISSION, KS 66202

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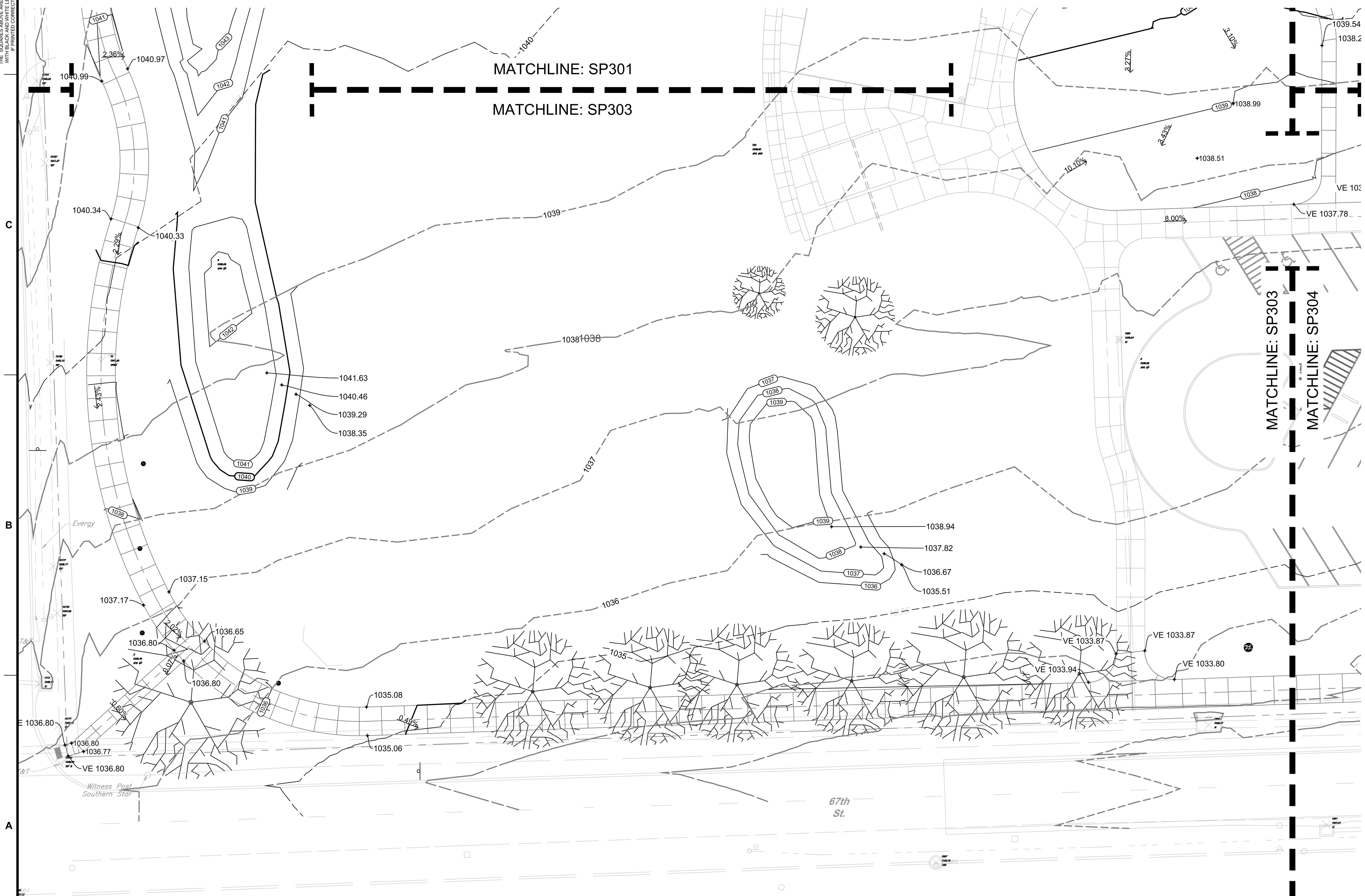
GRADING PLAN ENLARGEMENT

SP302



04
SP303
GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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Issue	00000
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GRADING PLAN
ENLARGEMENT

SP303

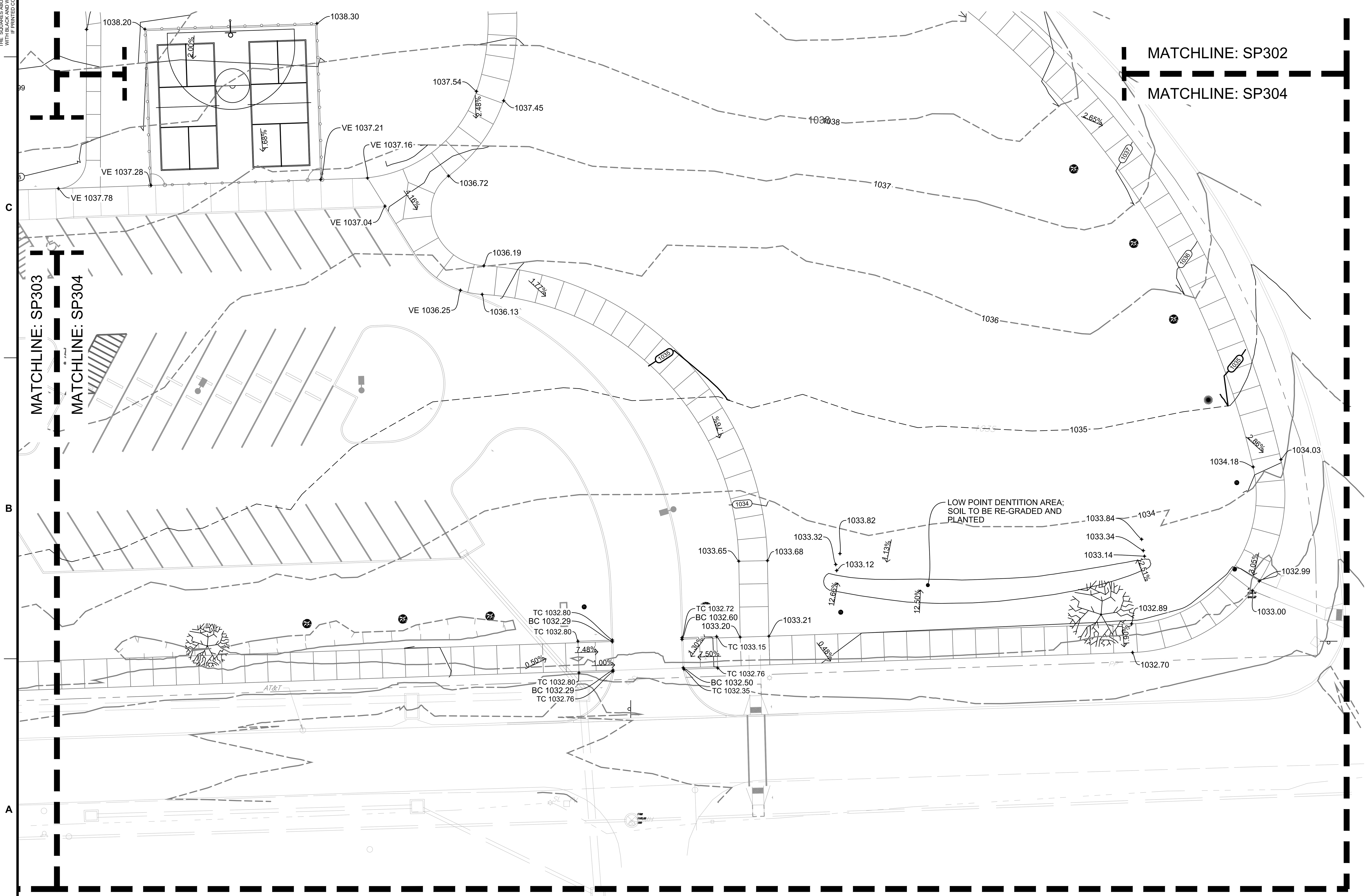
BMP GRADING NOTES

A. WHERE PROPOSED GRADES MEET EXISTING, BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN THE NEW WORK AND EXISTING WORK.

B. SILT FENCE AND INLET PROTECTION SHALL BE MAINTAINED UNTIL ESTABLISHMENT OF PERMANENT GROUND COVER.

C. SOIL TO BE 12"-18" SAND / LOAM MIX

D. BMP TO MEET APWA SECTION 5600 AND MARC BMP MANUAL REQUIREMENTS.



05 SP304 GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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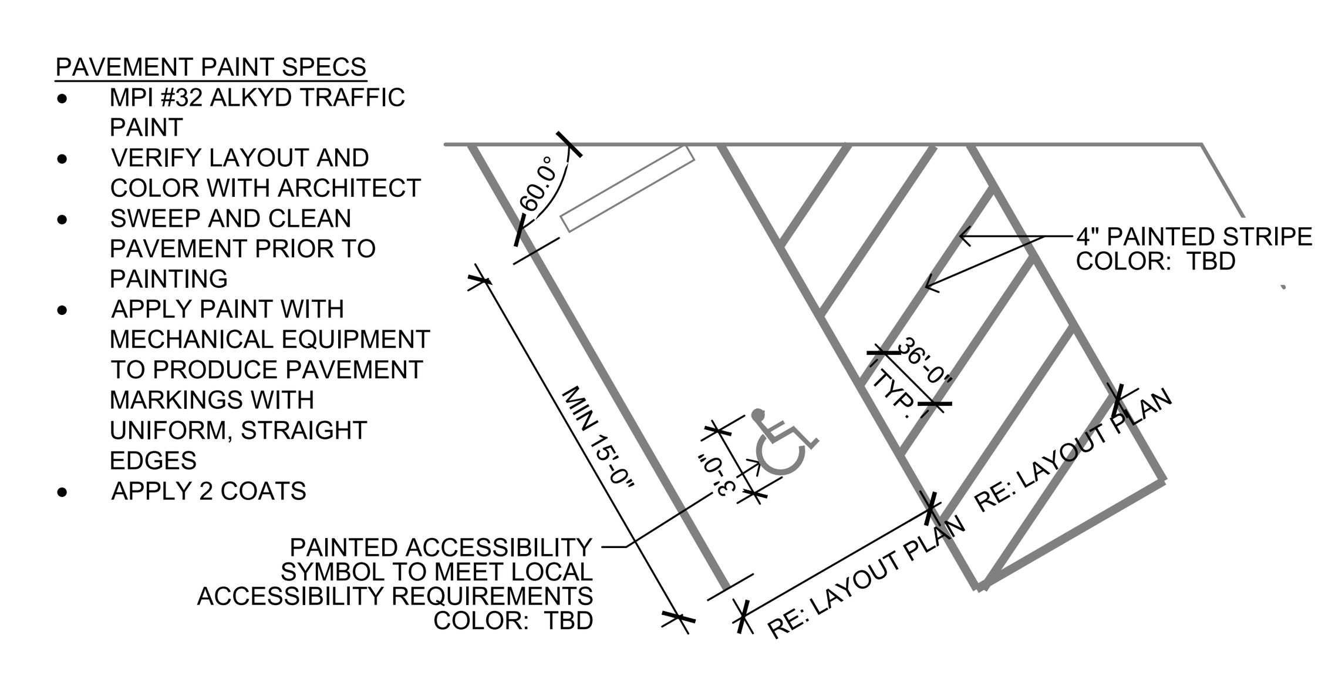
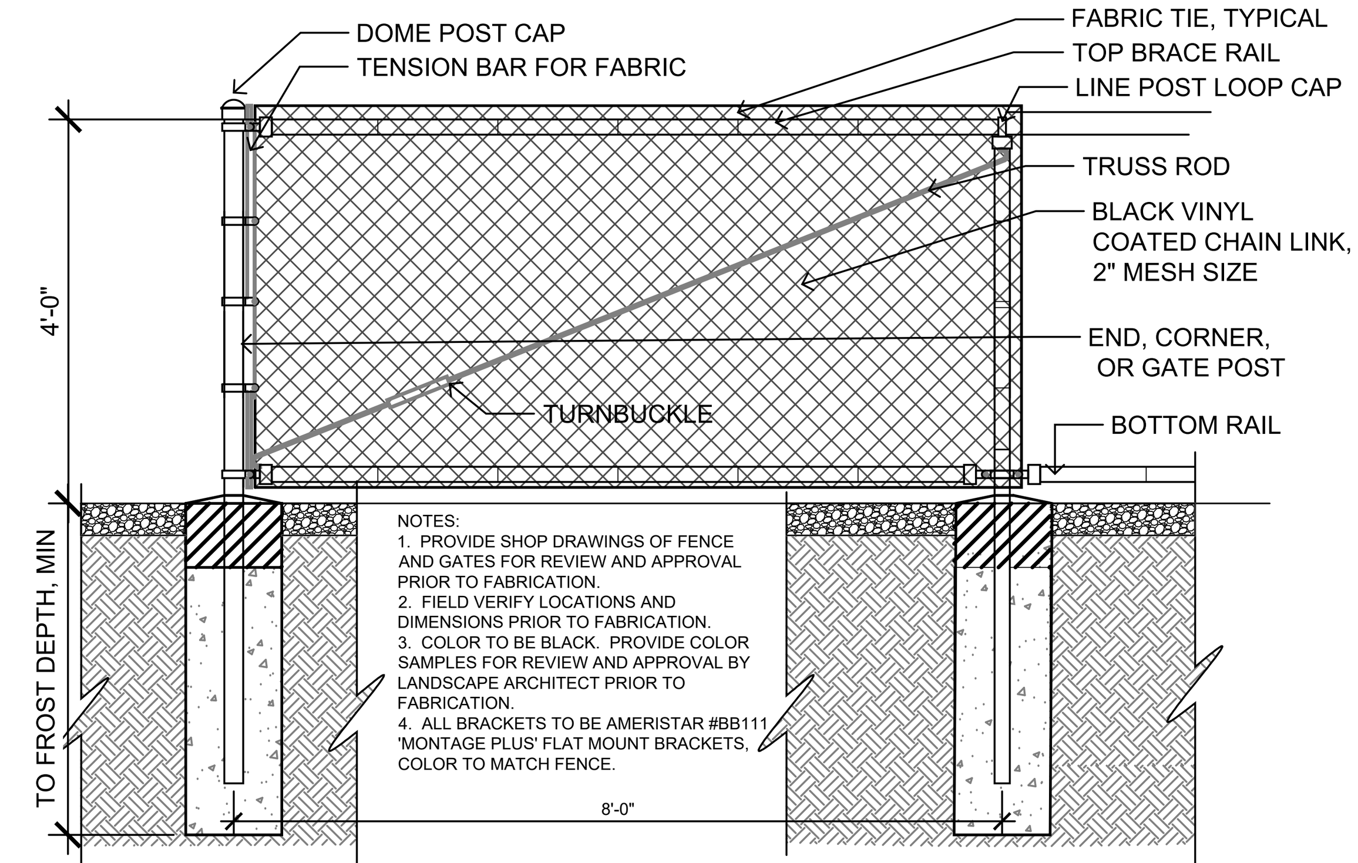
GRADING PLAN ENLARGEMENT

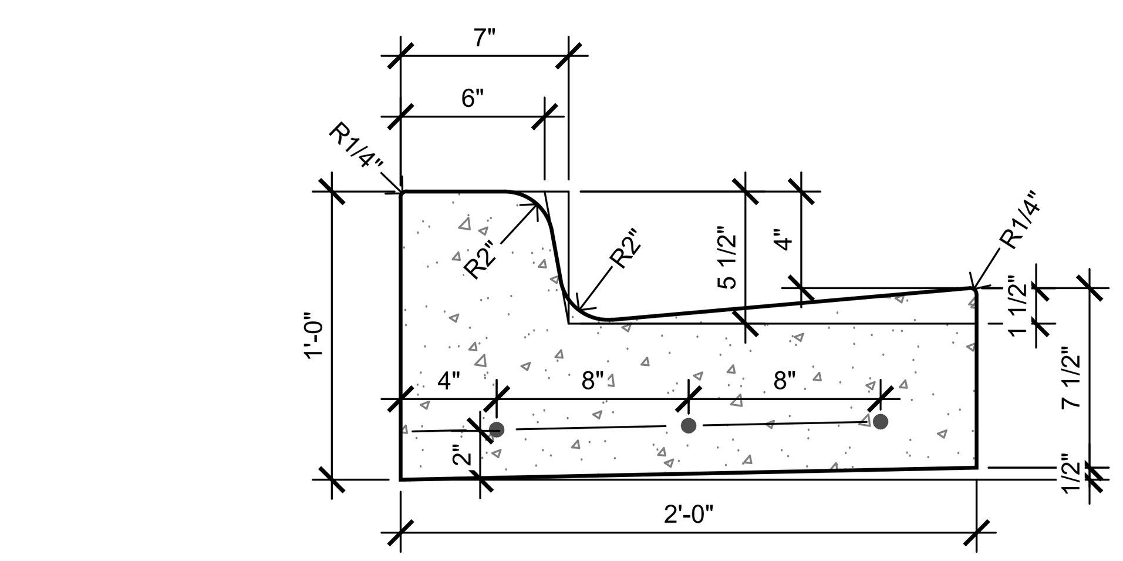
SP304



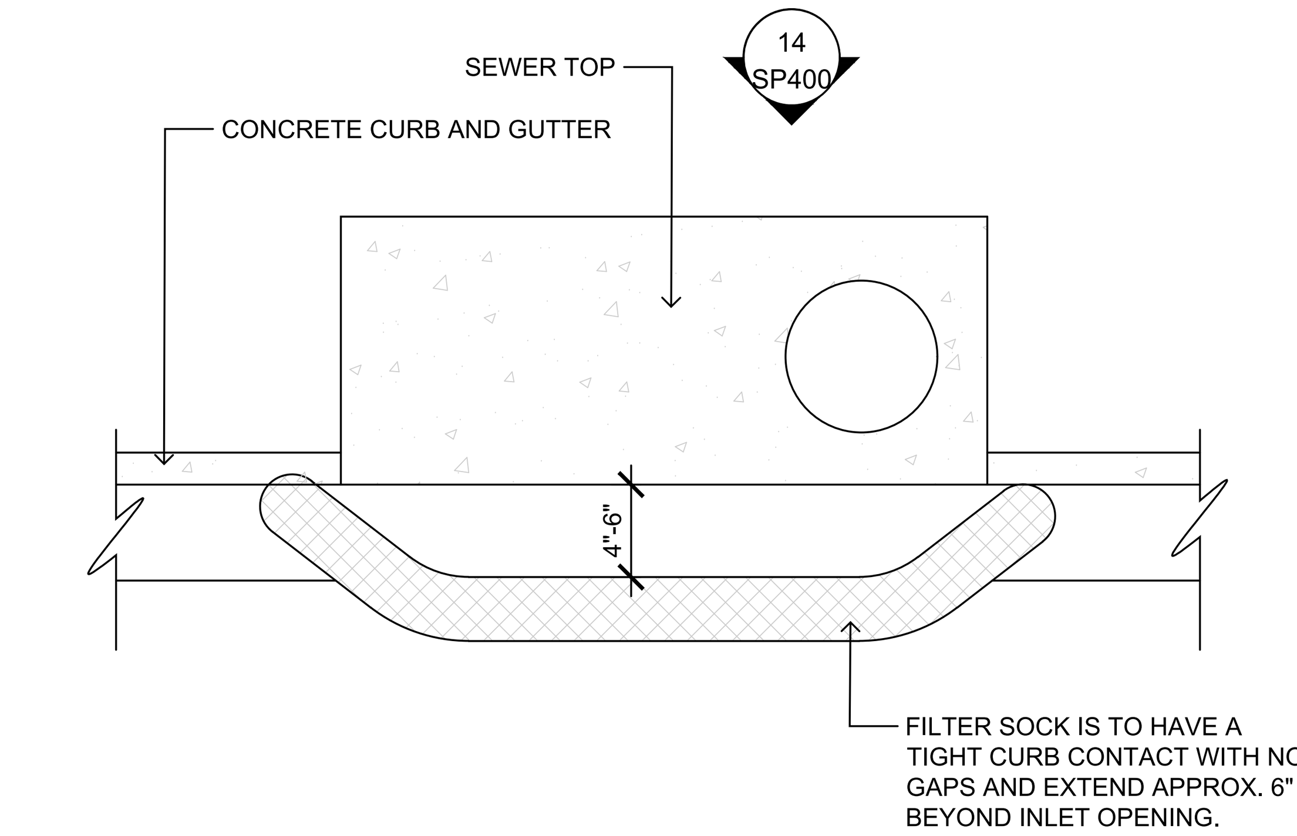
15 SP400 PLAN: ADA PARKING STRIPING SCALE: 1/4" = 1'-0"



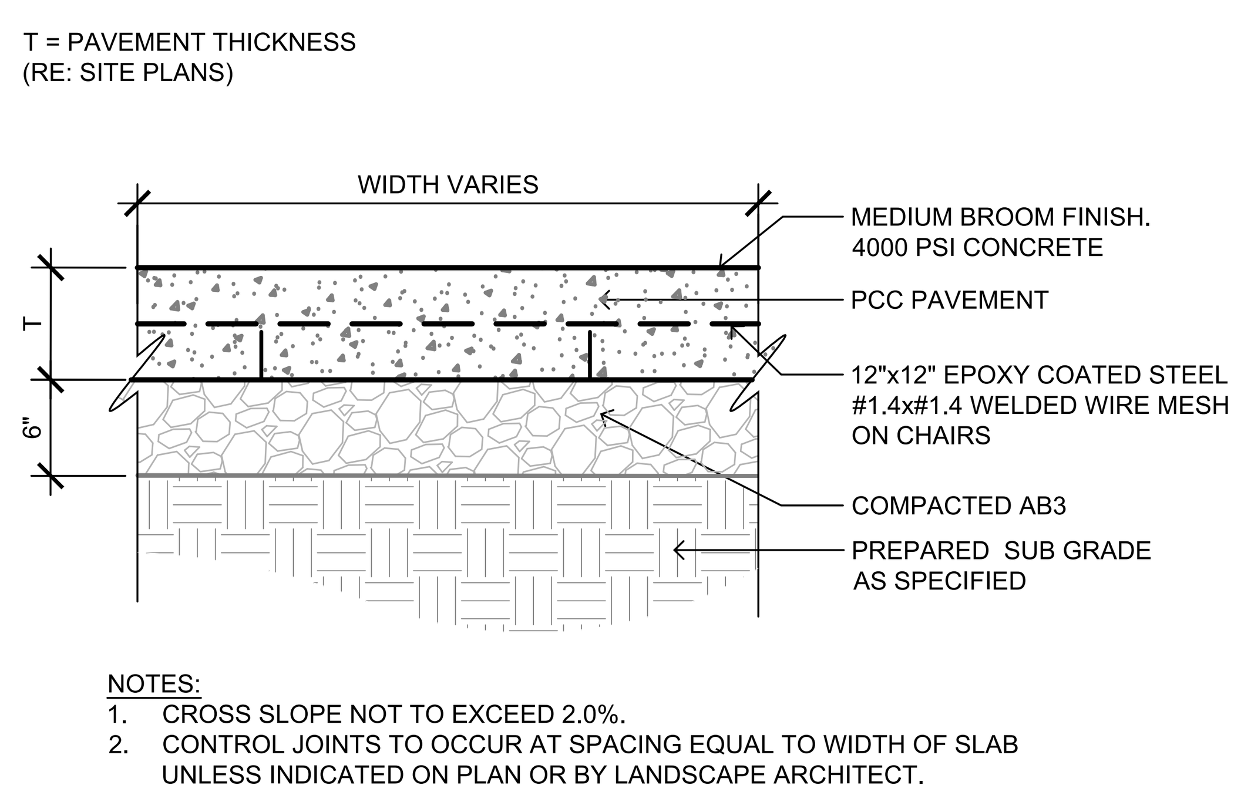
12 SP400 SECTION: 4'-0" BLACK VINYL CHAINLINK SCALE: 1/2" = 1'-0"



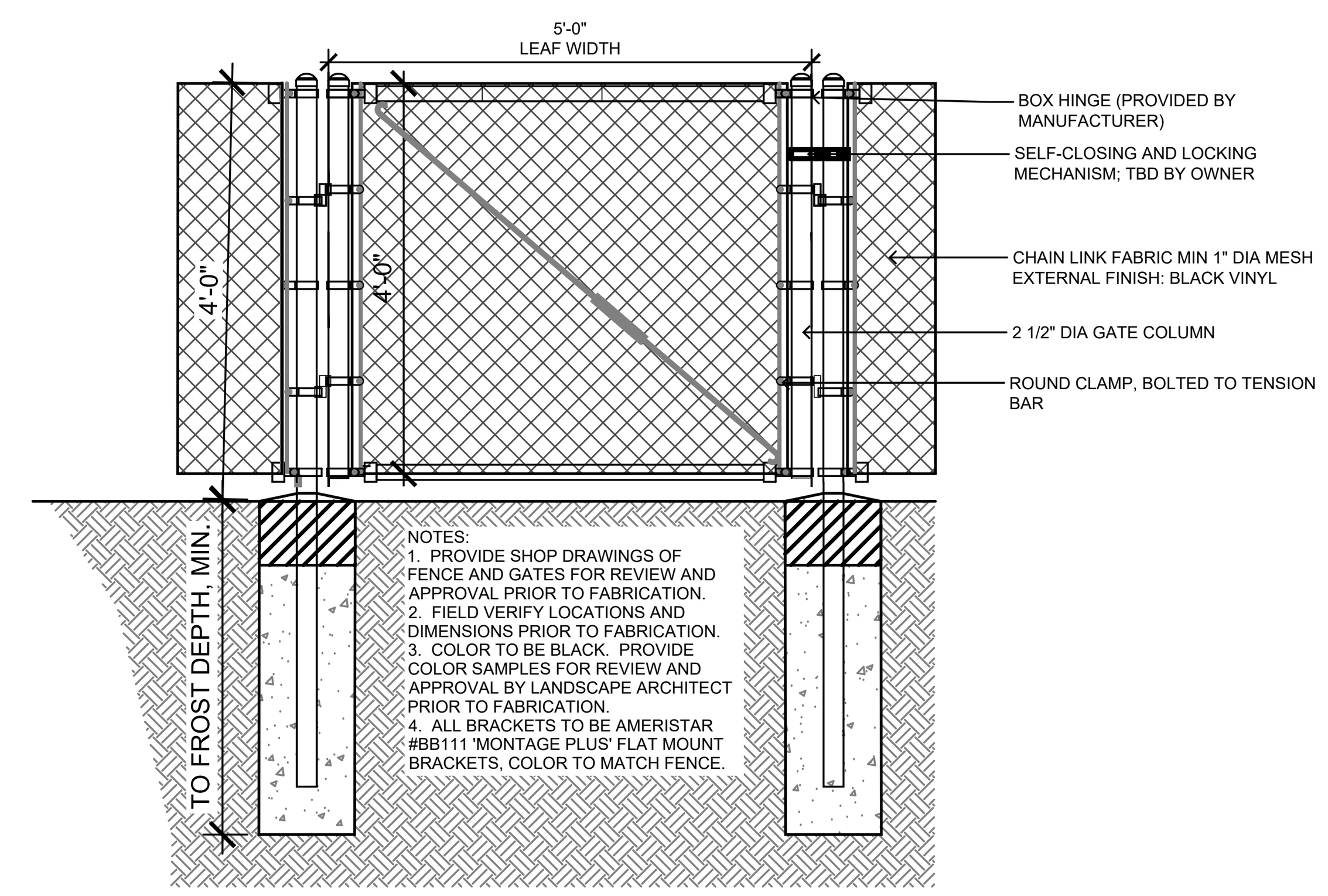
08 SP400 SECTION: CONCRETE CURB SCALE: 1 1/2" = 1'-0"



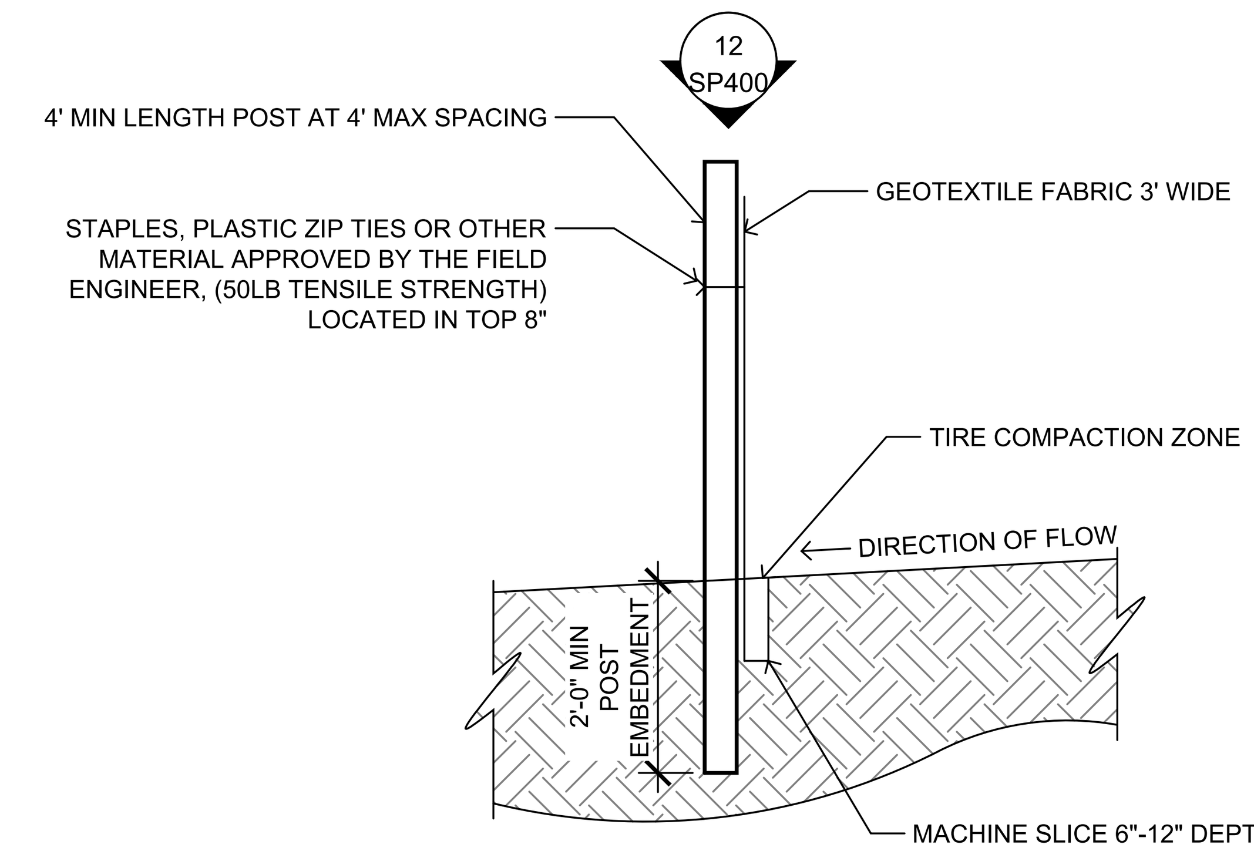
04 SP400 PLAN: SUMP INLET FILTER SCALE: 1" = 1'-0"



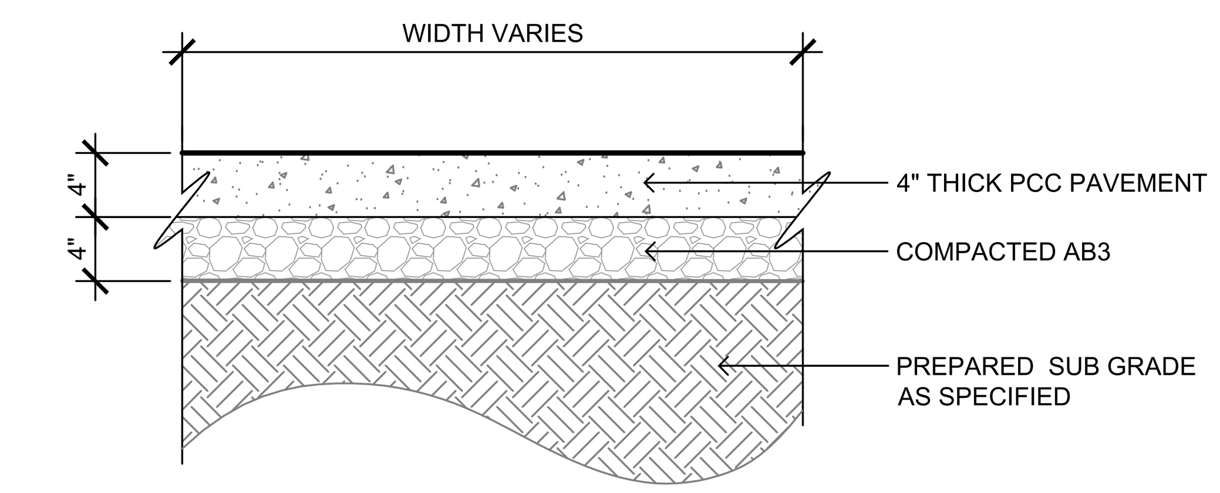
14 SP400 5" PCC CONCRETE COURT SCALE: 1" = 1'-0"



11 SP400 ELEVATON: GATE VINYL CHAINLINK SCALE: 1/2" = 1'-0"



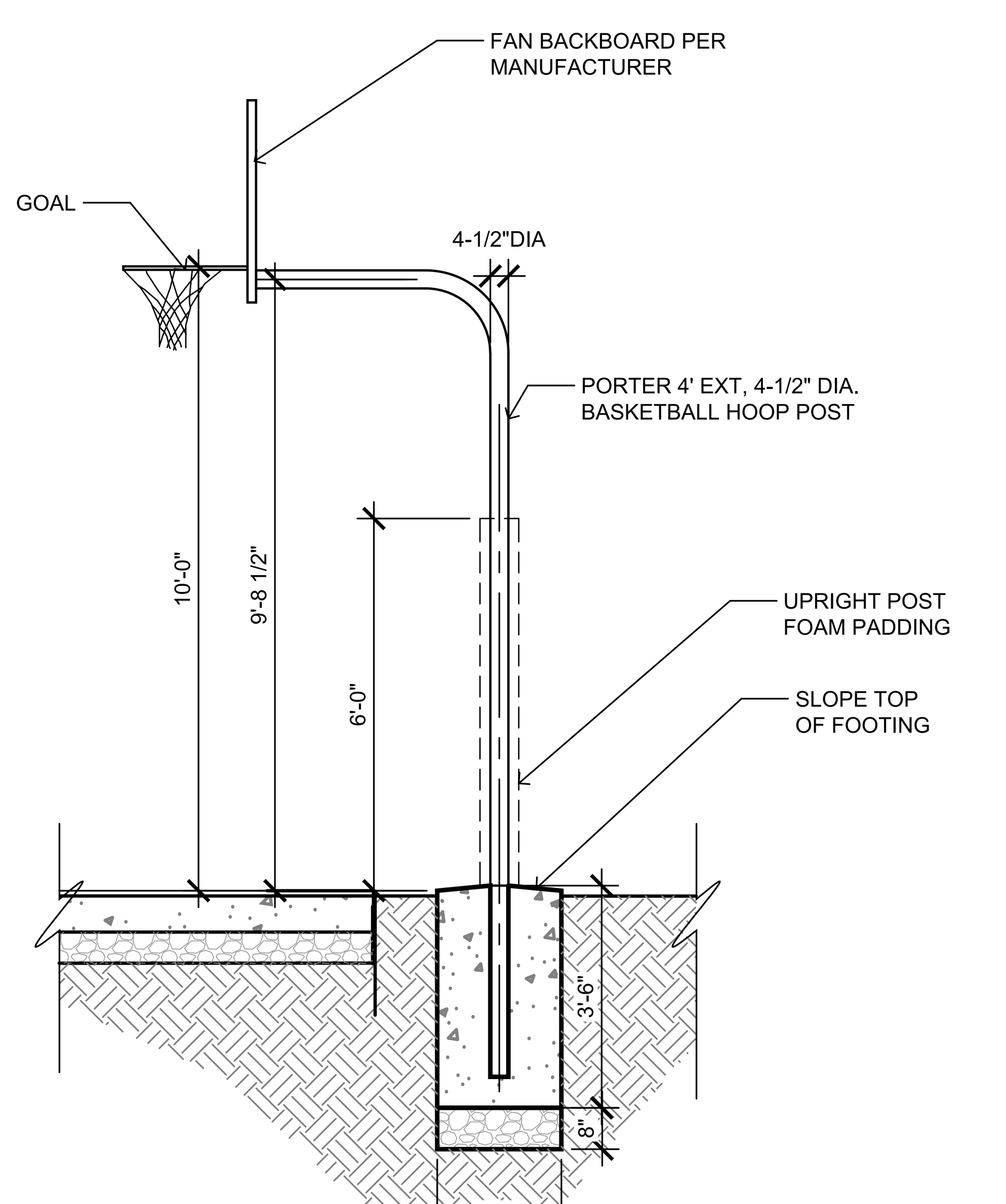
07 SP400 SECTION: SILT FENCE SCALE: 1/2" = 1'-0"



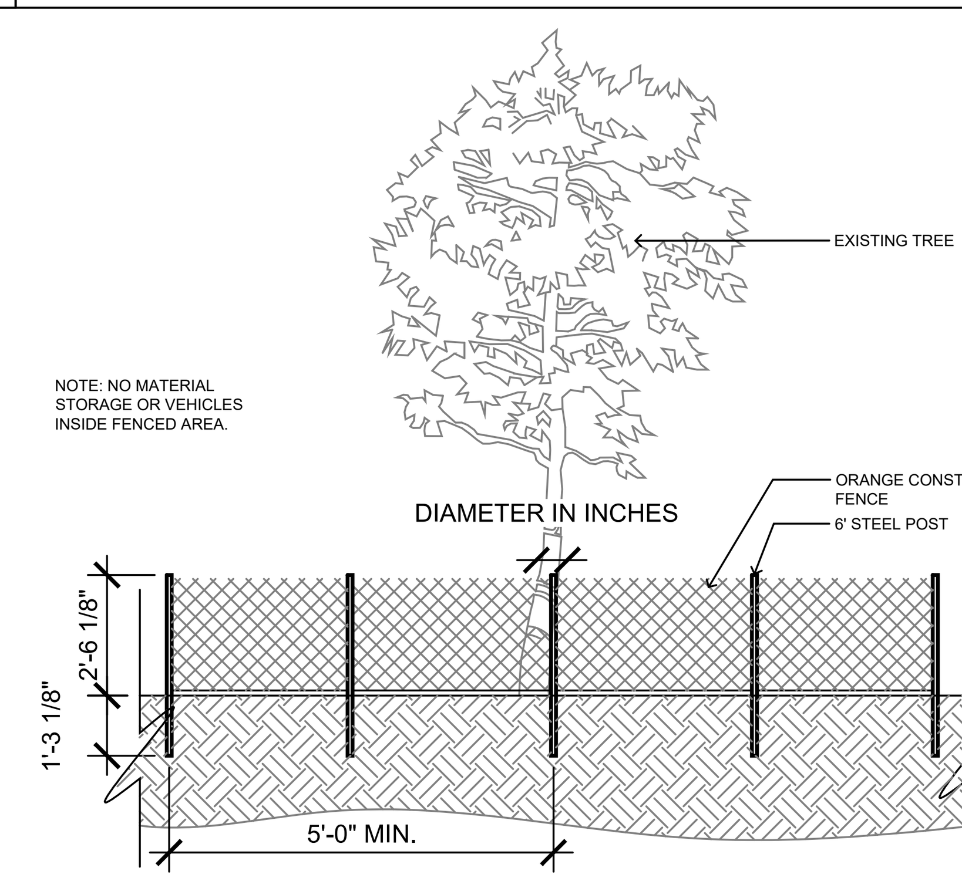
NOTES:
1. CROSS SLOPE NOT TO EXCEED 2.0%.
2. CONTROL JOINTS TO OCCUR AT SPACING EQUAL TO WIDTH OF SLAB UNLESS INDICATED ON PLAN OR BY LANDSCAPE ARCHITECT.

03 SP400 4" PCC CONCRETE SCALE: 1" = 1'-0"

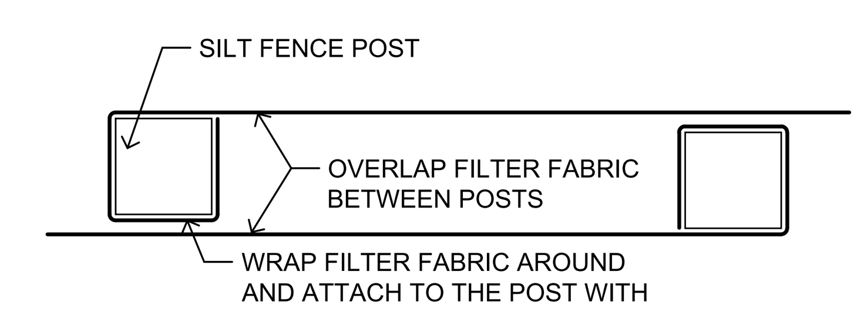
NOTES:
1. MODEL: PORTER 4' EXT, 4-1/2"DIA. BASKETBALL HOOP WITH POST
2. MANUFACTURER: ANTHEM SPORTS(WWW.ANTHEM-SPORTS.COM)
3. MINIMUM RECOMMENDED FOOTING SIZE SHOWN PER MANUFACTURER'S INSTRUCTION AND RECOMMENDATION. CONTRACTOR TO VERIFY WITH GEO-TECH REPORT TO ENSURE THE SIZE OF FOOTING MEET THE REQUIREMENTS AND LOCAL BUILDING CODES REGARDING THE MINIMUM WIND SPEEDS.
4. CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR LANDSCAPE ARCHITECT'S REVIEW AND OWNER'S APPROVAL.



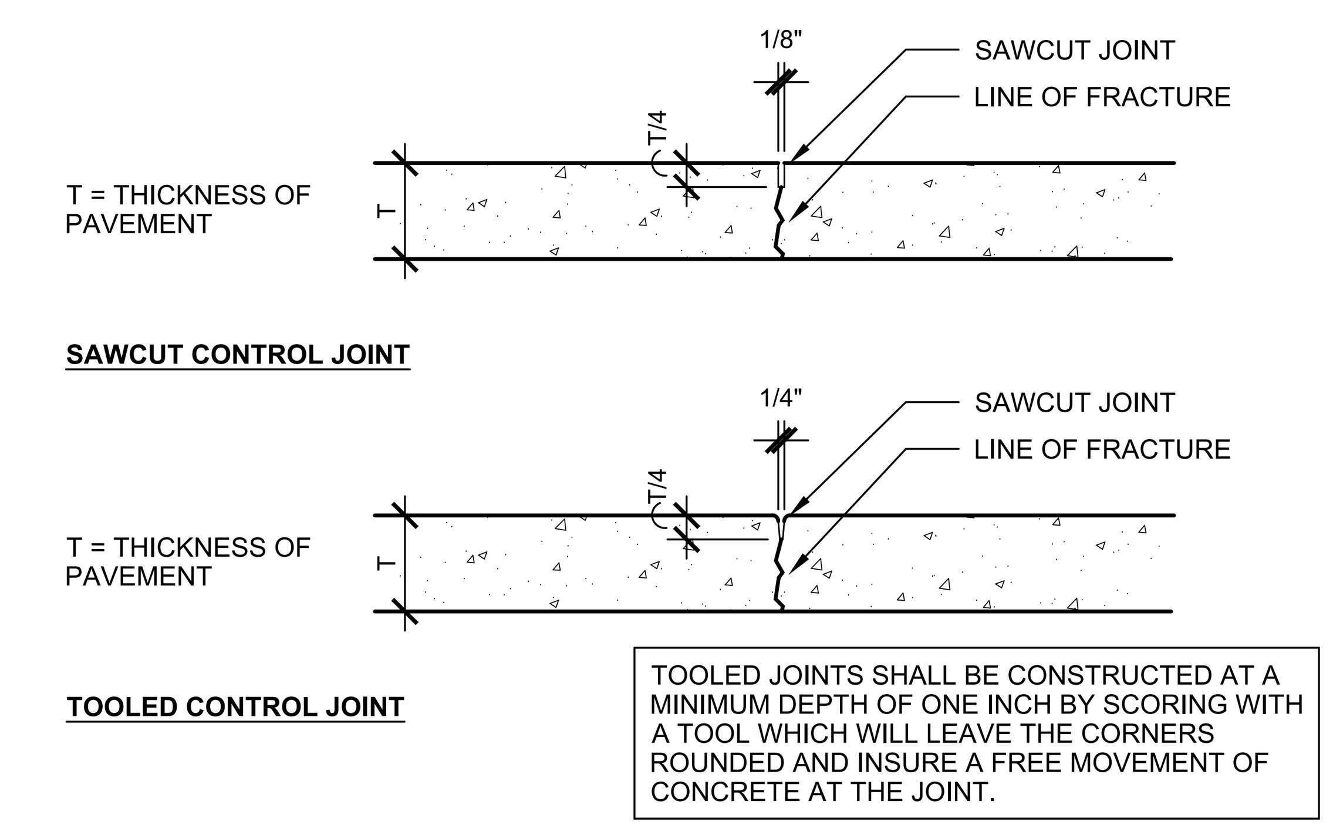
13 SP400 ELEVATON: BASKETBALL GOAL POST SCALE: 3/8" = 1'-0"



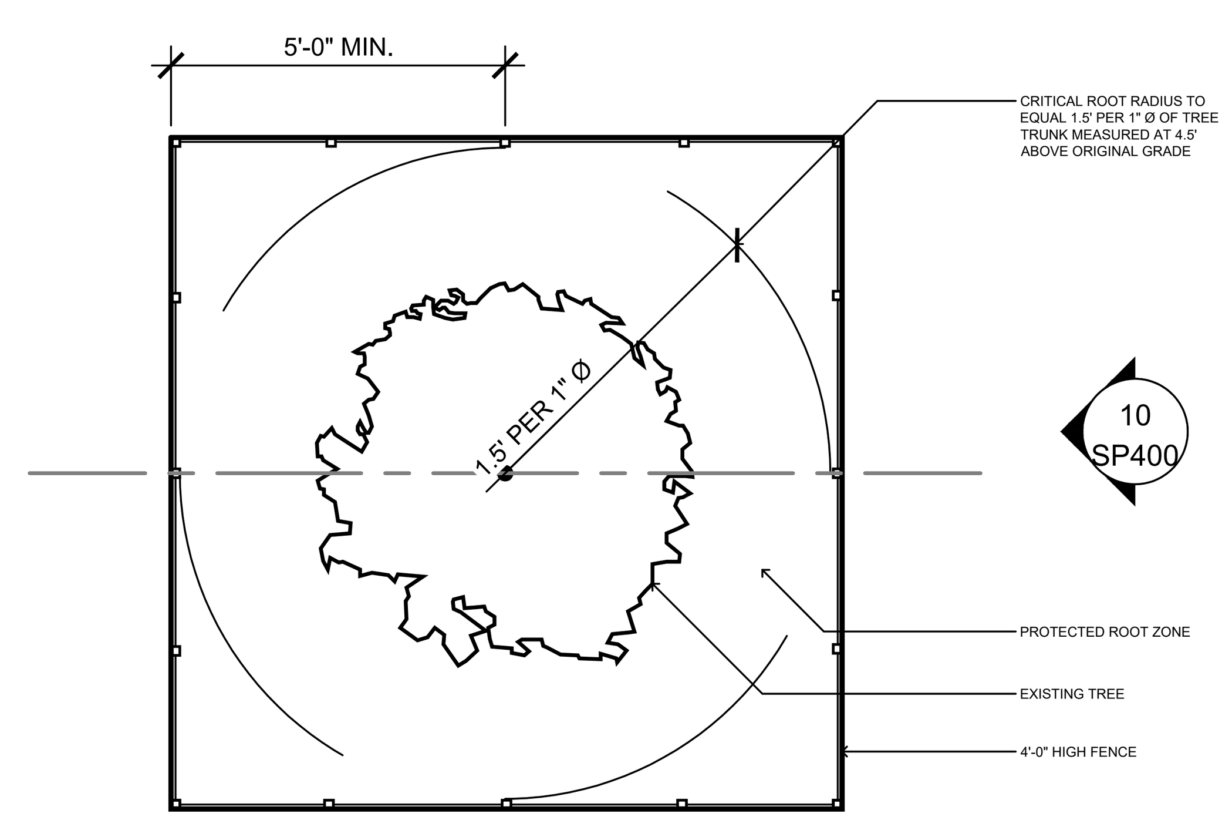
10 SP400 ELEVATION: TREE PROTECTION SCALE: 1/4" = 1'-0"



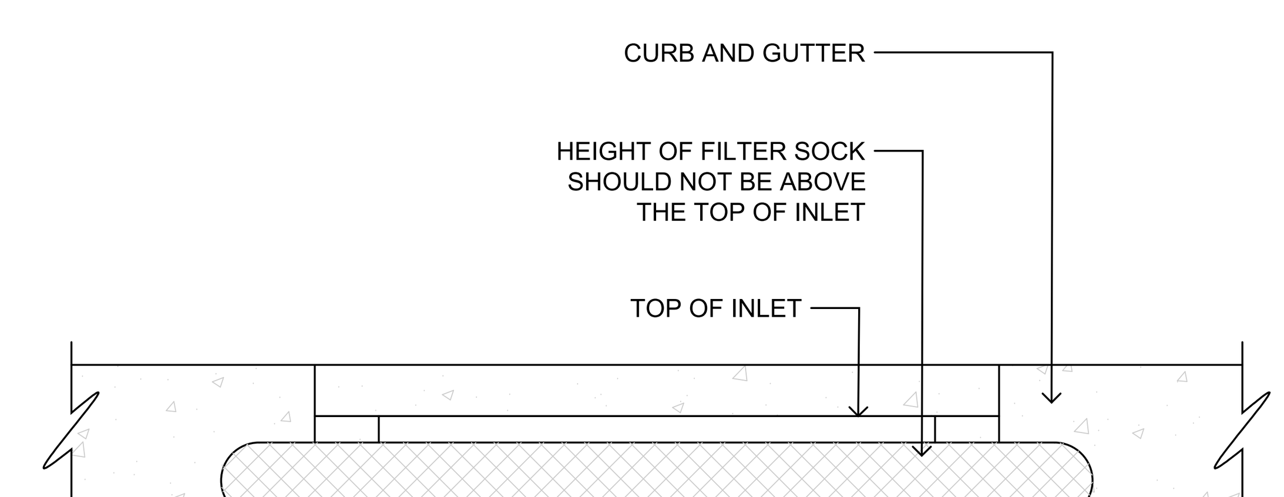
06 SP400 PLAN: JOINING SILT FENCE SECTIONS SCALE: 1 1/2" = 1'-0"



02 SP400 CONTROL JOINT SCALE: 1 1/2" = 1'-0"



09 SP400 PLAN: TREE PROTECTION SCALE: 1/4" = 1'-0"

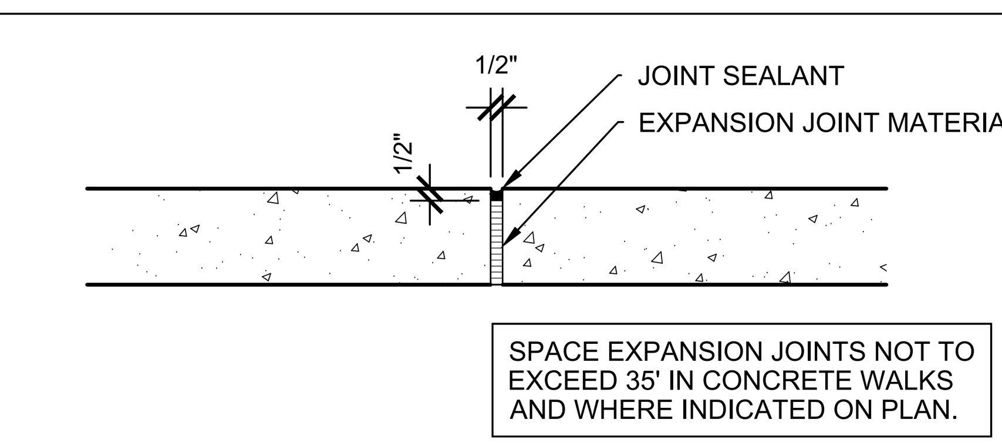


05 SP400 ELEVATION: SUMP INLET FILTER SCALE: 1" = 1'-0"

ALL EXPANSION JOINTS IN WALKS SHALL BE SEALED WITH A SELF LEVELING URETHANE JOINT SEALANT.
ASTM C920 , MULTI-COMPONENT (M), GRADE P, CLASS 25, TRAFFIC (T) EXPOSURE. COLOR TO BE MANUFACTURERS STANDARD GRAY OR LIMESTONE.

CLEAN, PRIME, AND BACK JOINTS AS RECOMMENDED BY SEALANT MANUFACTURER. INSTALL IN ACCORDANCE WITH ASTM C1193.

CLEAN OFF EXCESS SEALANT AND SMEARS ADJACENT TO JOINTS AS THE WORK PROGRESSES BY METHODS AND MATERIALS APPROVED IN WRITING BY THE SEALANT MANUFACTURER.



01 SP400 EXPANSION JOINT SCALE: 1 1/2" = 1'-0"

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MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

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Issue	00000
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DETAILS

SP400

IF LINE SHOWN ABOVE IS NOT 1" WHEN PLOTTED, ADJUST SHEETS ORIGINAL PAGE SIZE

THE SQUARES ABOVE ARE COLOR, WHEN PLOTTED, SHOULD LOOK IF PRINTED CORRECTLY

C M Y K

PICKLEBALL NOTES:

A. PICKLEBALL COATING NOTES:

a. THE CONCRETE SURFACE SHALL BE CLEAN PRIOR TO APPLYING COLOR COAT.
b. IT SHALL BE DRY AND FREE OF DUST, DIRT DURING THE APPLICATION OF THE PAVEMENT SURFACE SYSTEM.

c. TO CORRECT MINOR SURFACE IRREGULARITIES, APPLY A FILLER COAT. CHECK THE FILLER COAT COMPATIBILITY WITH THE COLOR SURFACE SUPPLIER.

d. APPLY AT LEAST ONE COAT OF ACRYLIC RESURFACER AND AT LEAST 2 COATS OF 'LIQUID APPLIED' CUSHIONING SYSTEM TO THE CONCRETE BASE.

e. CONTRACTOR SHALL FOLLOW MANUFACTURER'S INSTALLATION SPECIFICATIONS

B. PICKELBALL COURT MARKING NOTES:

a. ALL WHITE LINE STRIPING SHALL BE 2" WIDE EXCEPT FOR BASE LINES WHICH SHALL BE 4" WIDE WHITE.

b. DIMENSIONS GIVEN ARE MEASURED TO THE OUTSIDE OF THE LINE EXCEPT FOR THE CENTER SERVICE LINE AND THE CENTER MARK, BOTH OF WHICH SHALL BE ON THE CENTERLINE OF THE COURT.

c. PLAYING LINES SHALL NOT VARY MORE THAN 1/4" FROM THE EXACT MEASUREMENTS.

C. PROJECT COMPLETION:

a. UPON COMPLETION OF WORK THE CONTRACTOR SHALL CAREFULLY CLEAN-UP AND REMOVE ALL LEFT OVER MATERIALS SO AS TO RETURN THE WORK SITE TO THE CONDITION IT WAS PRIOR TO CONSTRUCTION ACTIVITIES.

KEYNOTES - PICKLEBALL COURT COLORS

A. COURT: BLUE

B. NON-VALLEY AREA: GREEN

C. BORDER AREA: DOVE GREY

D. BASE LINE: WHITE

E. KITCHEN'S HOT LOGO: ORANGE

MANUFACTURER: SPORT MASTER (WWW.SPORTMASTER.NET)

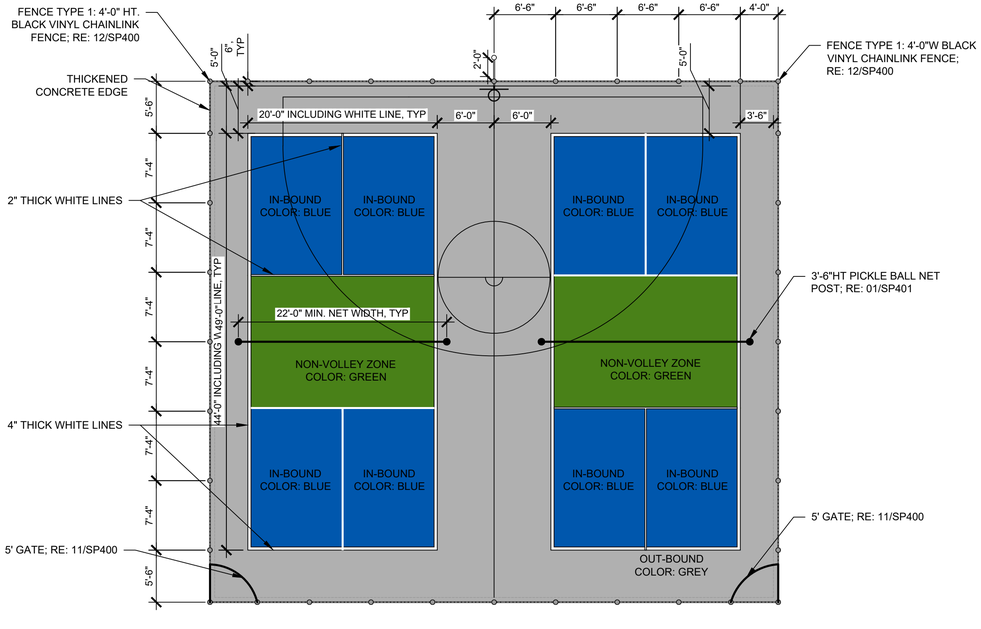
- SPORTMASTER PO BOX 2277 SANDUSKY, OH 44870
- TEL) 800-395-7325

F. CONTRACTOR TO PROVIDE TWO 6"X6" SAMPLES OF THE IN-BOUND COURT COLOR.

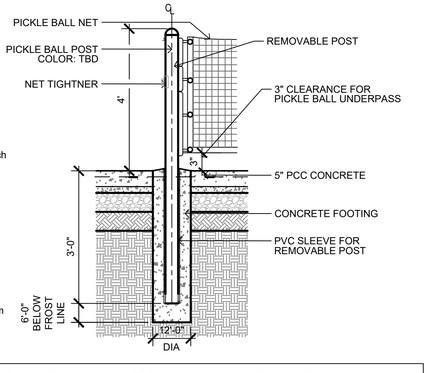
LANDSCAPE ARCHITECT AND OWNER TO CHOOSE FROM THE BLUE AND THE GREEN

COLOR SECTION SAMPLES.

SHOP DRAWINGS REQUIRED



05 SP401 PLAN: COURT MARKINGS SCALE 1/8"=1'-0"



PICKLE BALL NET

MFR: WILSON SPORTING GOODS
OR AS APPROVED EQUAL
MODEL NO: WILSON 36' H x 21' 9 Inch
(Model #501-727W)
COLOR: WHITE
CONTACT: www.pickleballcentral.com

PICKLE BALL POSTS

MFR: WILSON SPORTING GOODS
OR AS APPROVED EQUAL
MODEL NO: WILSON HEAVY DUTY
54 INCH (MODEL #3441W)
COLOR: TBD
CONTACT: www.pickleballcentral.com

01 SP401 SECTION: PICKLEBALL POST AND NET DETAIL 1/2"=1'-0"

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CONFLUENCE
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Kansas City, MO 64105
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PRELIMINARY
NOT FOR CONSTRUCTION

Revision Schedule

No.	Date	Description

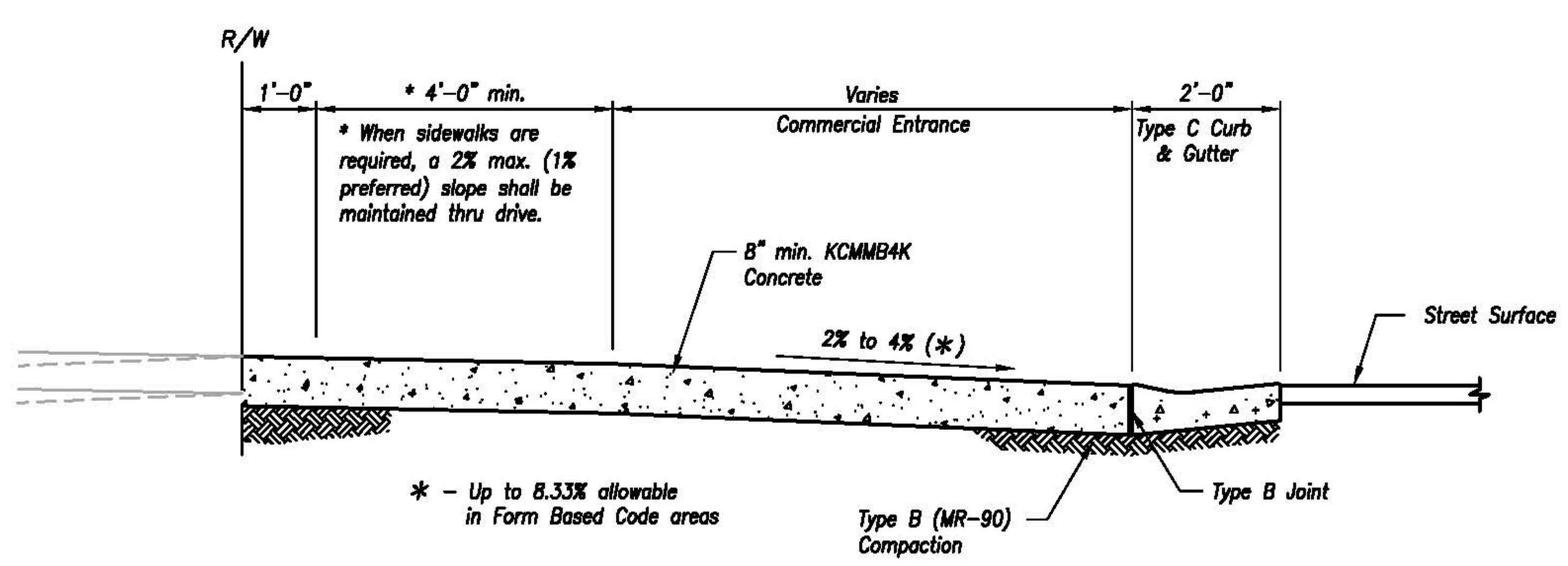
MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

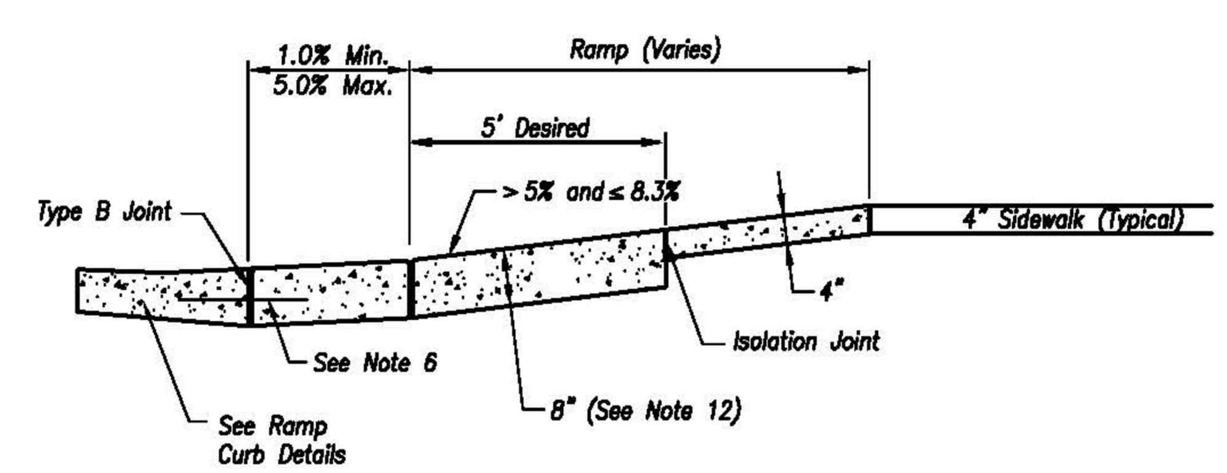
Project Number	23093
Issue	00000
Date	YYYY-MM-DD

SITE DETAIL

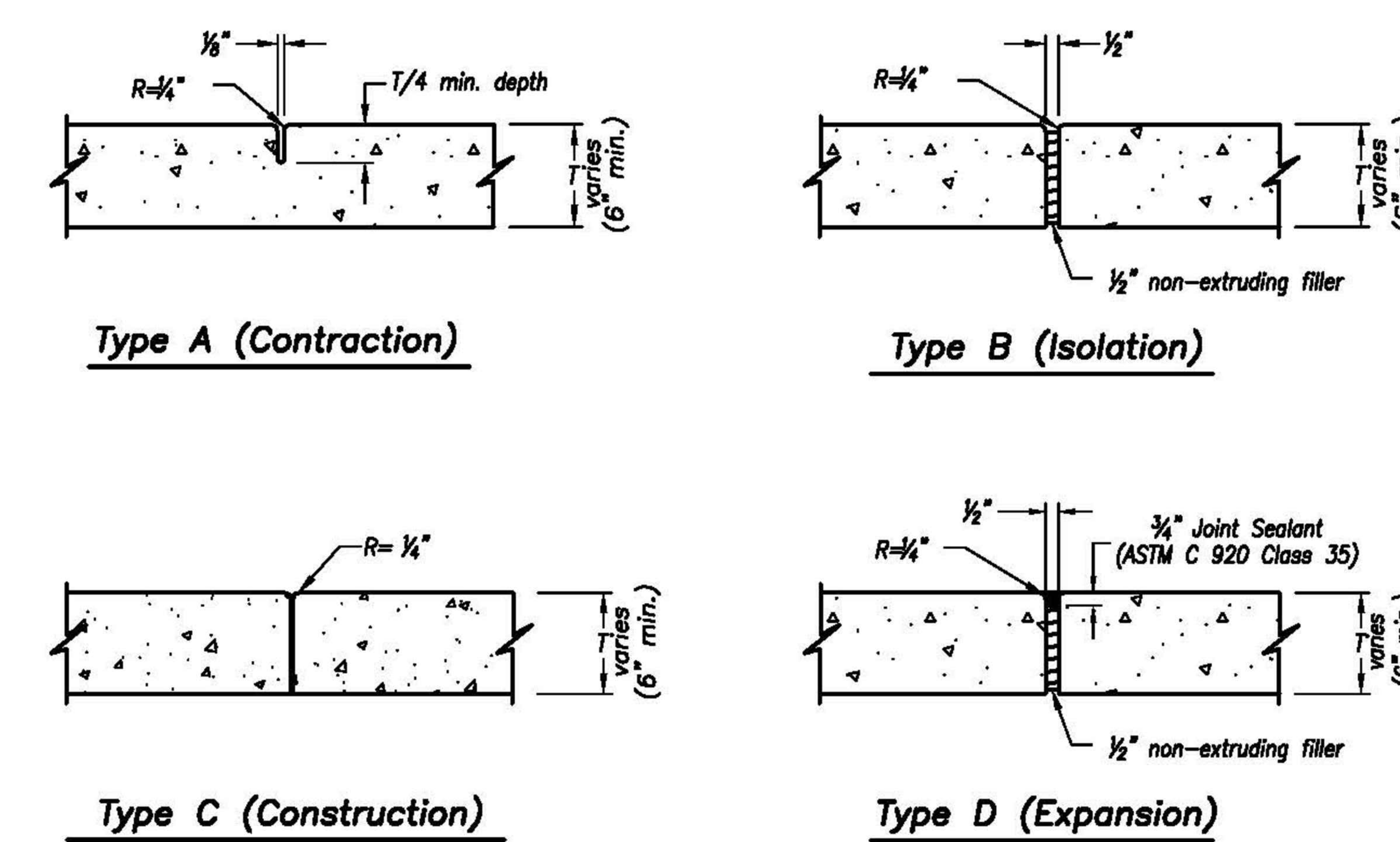
SP401



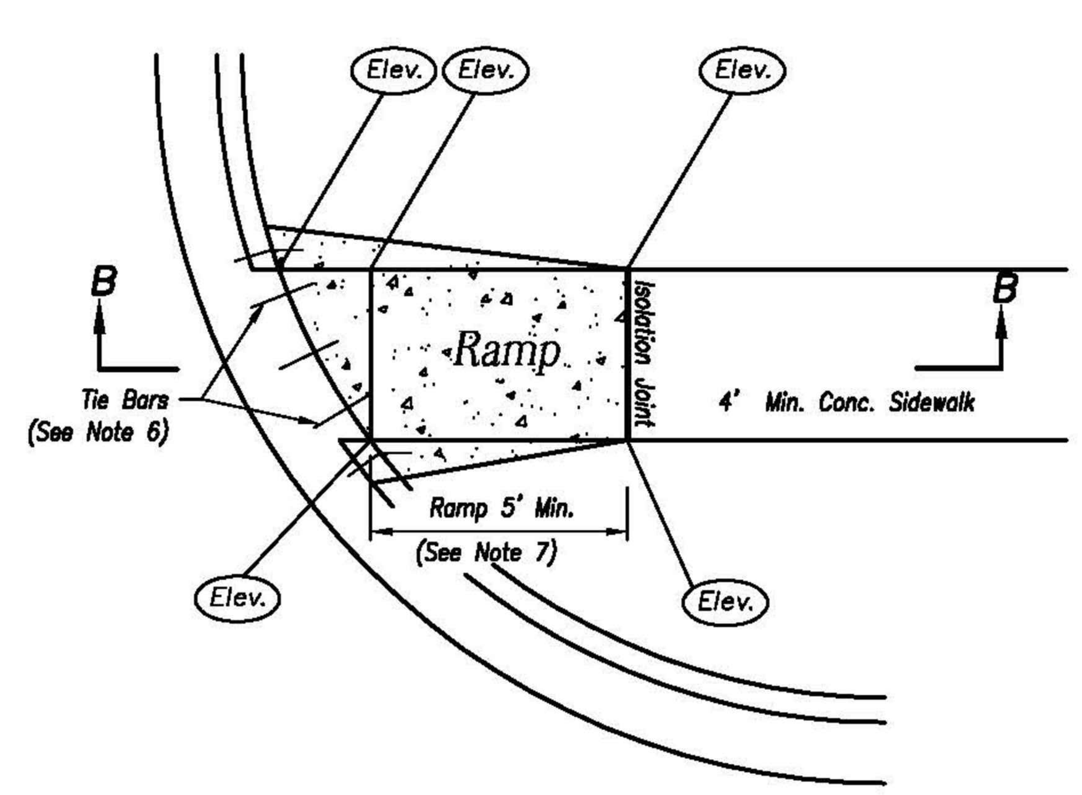
Section A–A
Not to Scale



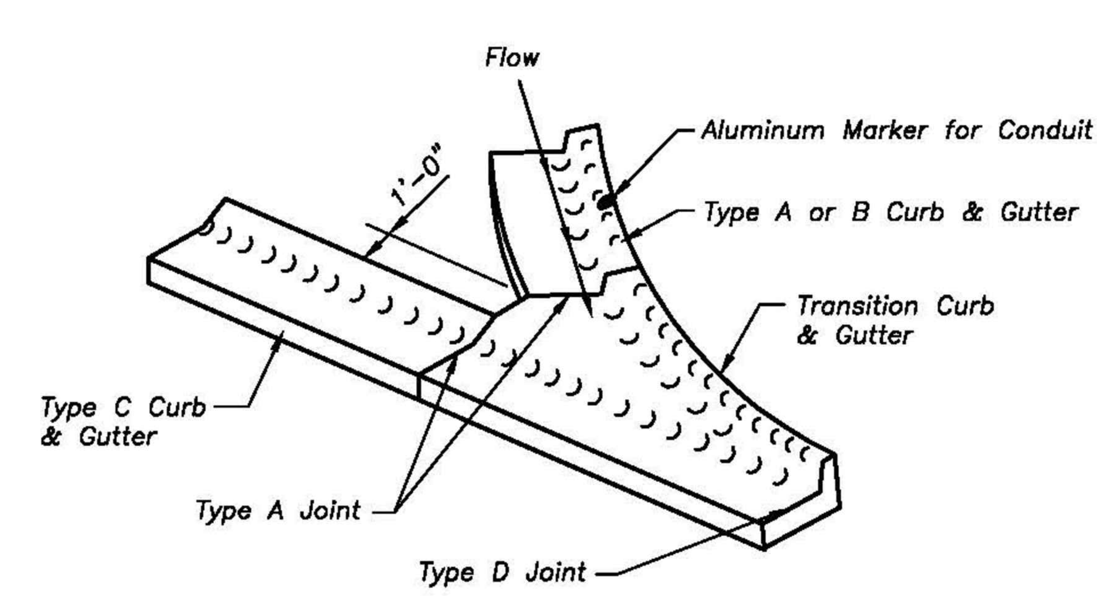
Section B–B (*)
* - See Note 4 for application of Detectable Warning Surface
Not to Scale



JOINT DETAILS
Not to Scale



Detail A
Not to Scale



Detail B
Not To Scale

COMMERCIAL ENTRANCE DETAIL

Commercial Drive Notes:

1. Overland Park Municipal Code (OPMC) and Overland Park Design and Construction Standards Manual (OPDCSM) are incorporated, except as otherwise noted.
2. KCMMB4K Concrete shall be used throughout.
3. Concrete pavement shall be jointed with Type A joints. No jointed slab shall exceed 12' x 12'.
4. Detectable warning surfaces are not required at non–signalized entrances.
5. ADA compliance will be measured at points labeled (Elev.) .
6. Install 18" tie bars #4 epoxy coated @ 18" o.c. and through wings as shown.
7. Sidewalk Ramp shall be lengthened to provide ADA compliant slope, but need not exceed 15'.
8. ADA maximum ramp slope = 1"/Ft. ADA maximum cross slope = 2%.
9. Top of curb elevations shall be shown at quarter points and curb returns.
10. Any additional steel reinforcement shall be approved by the City Engineer.
11. See Curb Replacement Detail for additional requirements.
12. Only 8" thick panels will be paid for as "RAMP". Sidewalk behind isolation joint will be paid for as "4" SIDEWALK".

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6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
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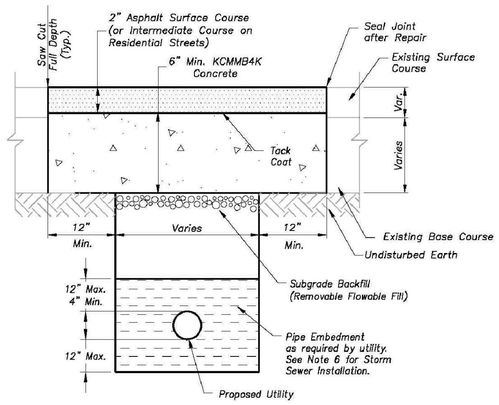
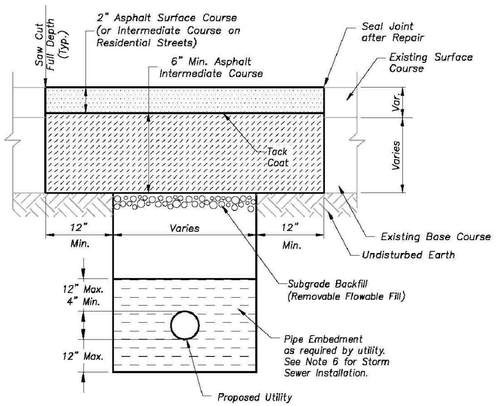
STANDARD DETAIL

SP402



Asphaltic Concrete Street Repair Type I

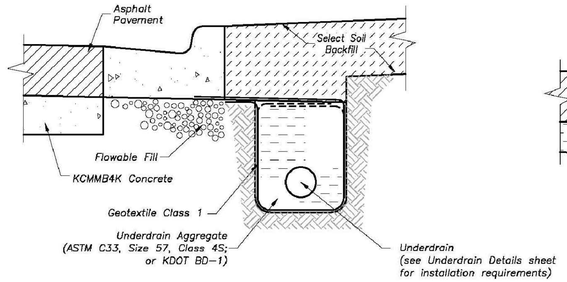
(Concrete Base /w Asphaltic Concrete Surface)



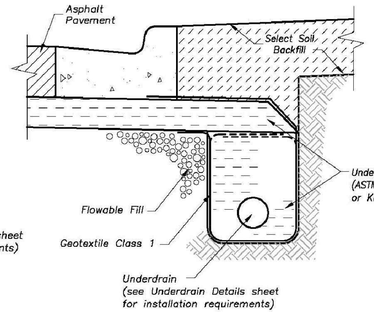
Asphaltic Concrete Street Repair Type II *

(Full Depth Asphaltic Concrete)

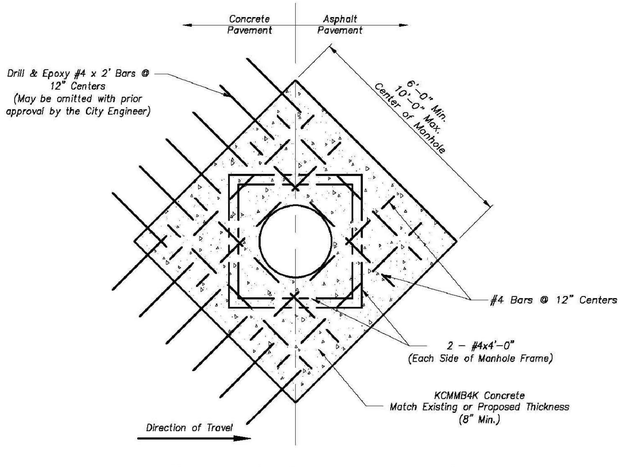
* – Type II Street Repair May be Used Only if Excavation Width Exceeds 6'



Pipe Underdrain Repair

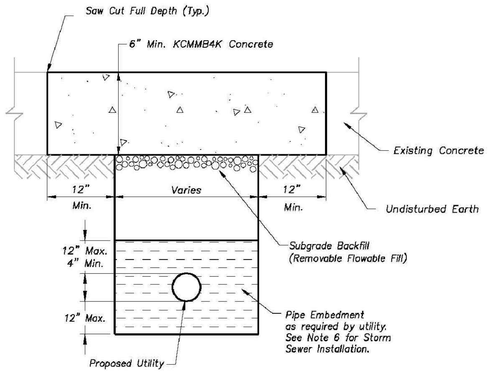


Pipe Underdrain Repair with OP Special



Manhole in Paved Area ****

**** – Detail applies to improved thoroughfares and all improved concrete streets. For existing concrete streets, coordinate with existing joints.



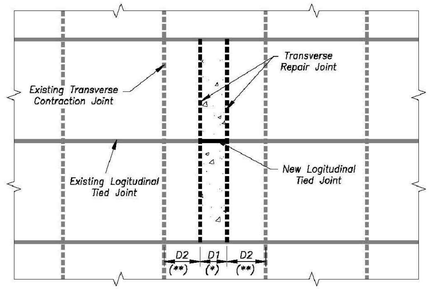
Drill and epoxy #4 Deformed Tie Bars 30" @ 2' ctrs. into existing pavement when T < 6". Drill and epoxy 1" Smooth Dowel Bars 18" @ 12" Ctrs. (6 per panel) into existing pavement when T > 6".

Transverse Repair Joint

(See Sht.13 for additional Joint Details)

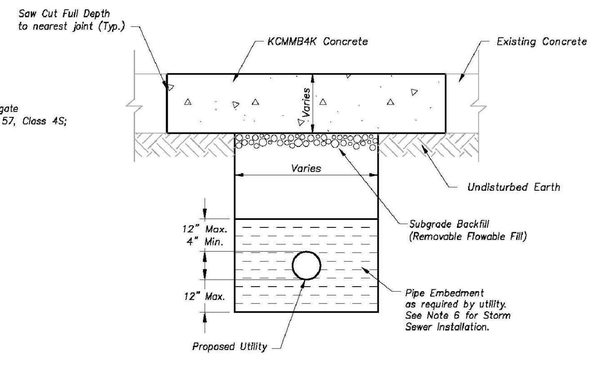
Portland Cement Concrete Street Repair **

** – May be Used Only on Existing Concrete Streets



(*) – When street repair (D1) is greater than 50% of the slab, replace the entire slab.

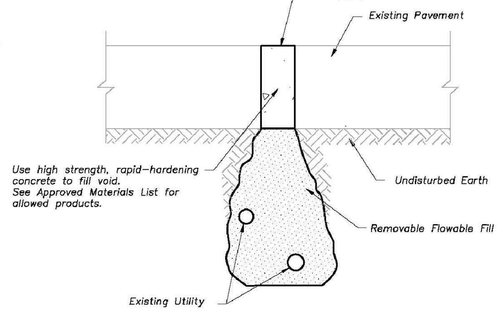
(**) – When the distance between the repair joint and the existing joint (D2) is less than 3', replace panel to the existing joint. (See Transverse Construction Joint Detail). When D2 is more than 3' – see Transverse Repair Joint Detail.



Repair Under Curb, Sidewalk or Driveway

Repair under curb/sidewalk/driveway notes:

1. Curbs, sidewalks and driveways shall be sawed full depth, removed and replaced to nearest contraction or expansion joint.
2. If adjacent section of curb, sidewalk or driveway is cracked, chipped or otherwise damaged, it shall also be removed and replaced to nearest joint.
3. All concrete used in this work shall be KCMMB4K.



Utility Investigation Excavation Repair ***

*** – for repair areas under 1 s.f.

Utility Investigation Excavation Repair Notes:

1. For repair areas greater then 1 s.f. or non-core drilled pavement cut see Street Repair Detail.
2. Contact the City Representative regarding approved bonding agent.
3. High Strength, rapid hardening concrete may be substituted with non-shrink grout, having a minimum compressive strength of 3000 psi in 24 hours and conforming to ASTM C1107, with a 2" cap of asphalt repair material.

Street Repair Notes:

1. Overland Park Municipal Code (OPMC) and Overland Park Design and Construction Standards Manual (OPDCSM) are incorporated, except as otherwise noted. In restoring the Right-of-Way, the Permittee guarantees its work and shall maintain it for 24 months following its completion.
2. The Manual on Uniform Traffic Control Devices, the Overland Park Traffic Control Handbook for Street Maintenance and Construction Operations, and the latest edition of the O.P. Manual of Infrastructure Standards are incorporated except as otherwise noted.
3. Any excavation left open overnight in any roadway shall be securely plated. Plates shall be properly anchored and all edges of the plate shall be ramped with asphalt surface mix to prevent rattling.
4. All KCMMB4K Concrete, removable flowable fill and asphaltic concrete shall conform to OPMC Title 13.
5. When trenching through OP Special Aggregate Base, flowable fill shall be used to backfill the trench to the elevation of the bottom of the OP Special Aggregate Base, then backfilled and compacted to the bottom of pavement with ASTM C33, Size 57, Class 4S aggregate.
6. For Storm Sewer Installation pipe embedment shall be filled to 4" above the top of pipe.
7. Permanent pavement markings shall be replaced with like materials within fourteen days after the pavement surface has been replaced, unless otherwise authorized by the City Engineer.

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Revision Schedule

No.	Date	Description

MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

STANDARD DETAIL

SP403

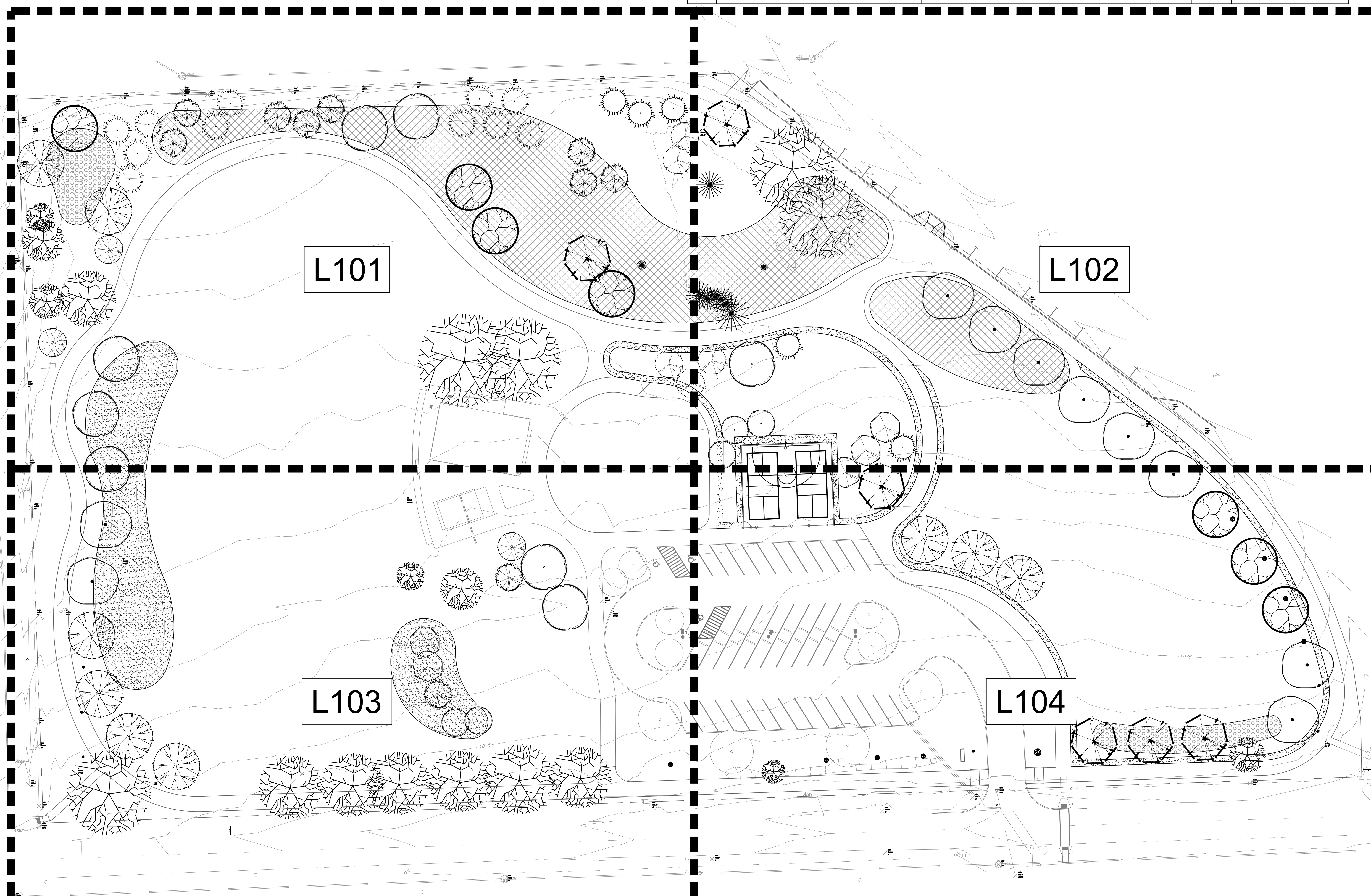
PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	ROOT	SPACING/REMARKS
CANOPY TREES						
AS	6	Acer saccharum 'JFS-Caddo2'	FLASHFIRE SUGAR MAPLE	3" CAL	B&B	SPECIMEN QUALITY
GT	9	Gleditsia triacanthos f. inermis 'Skyline'	SKYLINE HONEYLOCUST	3" CAL	B&B	SPECIMEN QUALITY
PT	8	Populus tremuloides 'NE Arb'	PRAIRIE GOLD ASPEN	3" CAL	B&B	SPECIMEN QUALITY
QR	10	Quercus rubra	NORTHERN RED OAK	3" CAL	B&B	SPECIMEN QUALITY
UA	6	Ulmus americana 'Pioneer'	PIONEER ELM	3" CAL	B&B	SPECIMEN QUALITY
ORNAMENTAL TREES						
AG	5	Acer griseum 'JFS KW22AGRI'	COPPER ROCKET PAPERBARK MAPLE	2" CAL	B&B	SPECIMEN QUALITY
CC	3	Cercis canadensis 'JN2' The Rising Sun	THE RISING SUN EASTERN REDBUD	2" CAL	B&B	SPECIMEN QUALITY
MV	5	Magnolia virginiana	SWEETBAY MAGNOLIA	2" CAL	B&B	SPECIMEN QUALITY
SR	5	Syringa reticulata 'Ivory Silk'	JAPANESE TREE LILAC	2" CAL	B&B	SPECIMEN QUALITY
CONIFER TREES						
JC	10	Juniperus chinensis 'Torulosa'	TORULOSA JUNIPER	6' HT.	B&B	
PS	11	Pinus Strobus 'Fastigiata'	EASTERN WHITE PINE	6' HT.	B&B	
TO	5	Thuja occidentalis 'Green Giant'	GREEN GIANT ARBORVITAE	6' HT.	B&B	

MEADOW MIX						
BC		Bouteloua curtipendula	SIDE OATS GRAMA	#1	CONT.	3'-0" O.C.
EC		Echinacea pallida	PALE PURPLE CONEFLOWER	#1	CONT.	3'-0" O.C.
PC		Phemeranthus calycinus	FAME FLOWER	#1	CONT.	3'-0" O.C.
SH		Sporobolis heterolepis	PRAIRIE DROPSEED	#1	CONT.	3'-0" O.C.
SL		Symphyotrichum laeve	SMOOTH ASTER	#1	CONT.	3'-0" O.C.
SS		Schizachyrium scoparium 'Blue Heaven'	BLUE HEAVEN LITTLE BLUESTEM	#1	CONT.	3'-0" O.C.
TD		Tripsacum dactyloides	EASTERN GRAMA GRASS	#1	CONT.	3'-0" O.C.
TOTAL	33645 SF					
BMP MIX						
CC		Conoclinium coelestinum	MIST FLOWER	#1	CONT.	3'-0" O.C.
JE		Juncus effusus	COMMON RUSH	#1	CONT.	3'-0" O.C.
PV		Panicum virgatum	SWITCHGRASS	#1	CONT.	3'-0" O.C.
SP		Spartina pectinata	PRAIRIE CORDGRASS	#1	CONT.	3'-0" O.C.
VB		Vernonia baldwinii	WESTERN IRONWEED	#1	CONT.	3'-0" O.C.
TOTAL	4087 SF					
GRASS						
CD	18456 SF	Cynodon dactylon	TALL FESCUE	SEED		

PLANTING NOTES:

1. SEED ALL AREAS WITHIN CONTRACT LIMITS, NOT COVERED BY PAVING, BUILDINGS, OR SOD, UNLESS OTHERWISE NOTED.
2. PLANT QUANTITIES ARE FOR INFORMATION ONLY; DRAWING SHALL PREVAIL IF CONFLICT OCCURS.
3. NOTIFY LANDSCAPE ARCHITECT AFTER STAKING IS COMPLETED AND BEFORE PLANT PITS ARE EXCAVATED.
4. CONTRACTOR SHALL PLACE WEED BARRIER AND CEDAR MULCH AROUND ALL TREES AND IN ALL PLANTING BEDS TO A DEPTH OF 3".
5. KIND, SIZE AND QUALITY OF PLANT MATERIAL SHALL CONFORM TO AMERICAN STANDARDS FOR NURSERY STOCK, ANSI 260-1992, OR MOST RECENT EDITION.
6. THE CONTRACTOR SHALL REPORT SUBSURFACE SOIL OR DRAINAGE PROBLEMS TO THE LANDSCAPE ARCHITECT.
7. THE CONTRACTOR SHALL SHOW PROOF OF PROCUREMENT, SOURCES, QUANTITIES AND VARIETIES FOR ALL PERENNIALS, ORNAMENTAL GRASSES, AND ANNUALS WITHIN 21 DAYS FOLLOWING THE AWARD OF CONTRACT. TIMELY PROCUREMENT OF ALL PLANT MATERIAL IS ESSENTIAL TO THE SUCCESSFUL COMPLETION AND INITIAL ACCEPTANCE OF THE PROJECT.
8. SUBSTITUTIONS SHALL ONLY BE ALLOWED WHEN THE CONTRACTOR HAS EXHAUSTED ALL SOURCES FOR THE SPECIFIED MATERIAL, AND HAS PROVEN THAT THE SPECIFIED MATERIAL IS NOT AVAILABLE. THE CONTRACTOR MUST PROVIDE NAME AND VARIETY OF SUBSTITUTION TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO TAGGING OR PLANTING. SUBSTITUTIONS SHALL BE NEAREST EQUIVALENT SIZE OF VARIETY OF PLANT HAVING SAME ESSENTIAL CHARACTERISTICS.
9. ALL PLANT MATERIAL SHALL BE NURSERY GROWN, SOUND, HEALTHY, VIGOROUS AND FREE FROM INSECTS, DISEASE AND INJURIES, WITH HABIT OF GROWTH THAT IS NORMAL FOR THE SPECIES. SIZES SHALL BE EQUAL TO OR EXCEEDING SIZES INDICATED ON THE PLANT LIST. THE CONTRACTOR SHALL SUPPLY PLANTS IN QUANTITY AS SHOWN ON THE DRAWINGS.
10. STAKE OR PLACE ALL PLANTS IN FIELD AS INDICATED ON THE DRAWINGS OR AS DIRECTED BY THE LANDSCAPE ARCHITECT FOR APPROVAL BY THE OWNER PRIOR TO PLANTING.
11. THE VARIOUS PLANTS IN PLANT MIXES TO BE DISPERSED RANDOMLY SO ALL SPECIES ARE SPREAD THROUGHOUT THE DESIGNATED PLANTING AREAS.
12. APPROXIMATE TREE PLANTING DATE: BETWEEN SEPTEMBER AND OCTOBER 2023/4
13. ALL DISTURBED AREAS FROM CONSTRUCTION SHALL BE RE-SEEDED UNLESS CALLED OUT AS OTHER PLANTING.
14. ALL GRASSES, PERENNIALS AND ANNUALS HAVE BEEN VERIFIED BY THE NE KS REGION OF THE KANSAS STATE EXTENSION OFFICE FOR NATIVE CONFORMANCE AND NON INVASIVE SPECIES.



01 L100 PLANTING PLAN

0' 20' 40' 80'

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MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

PLANTING PLAN

L100

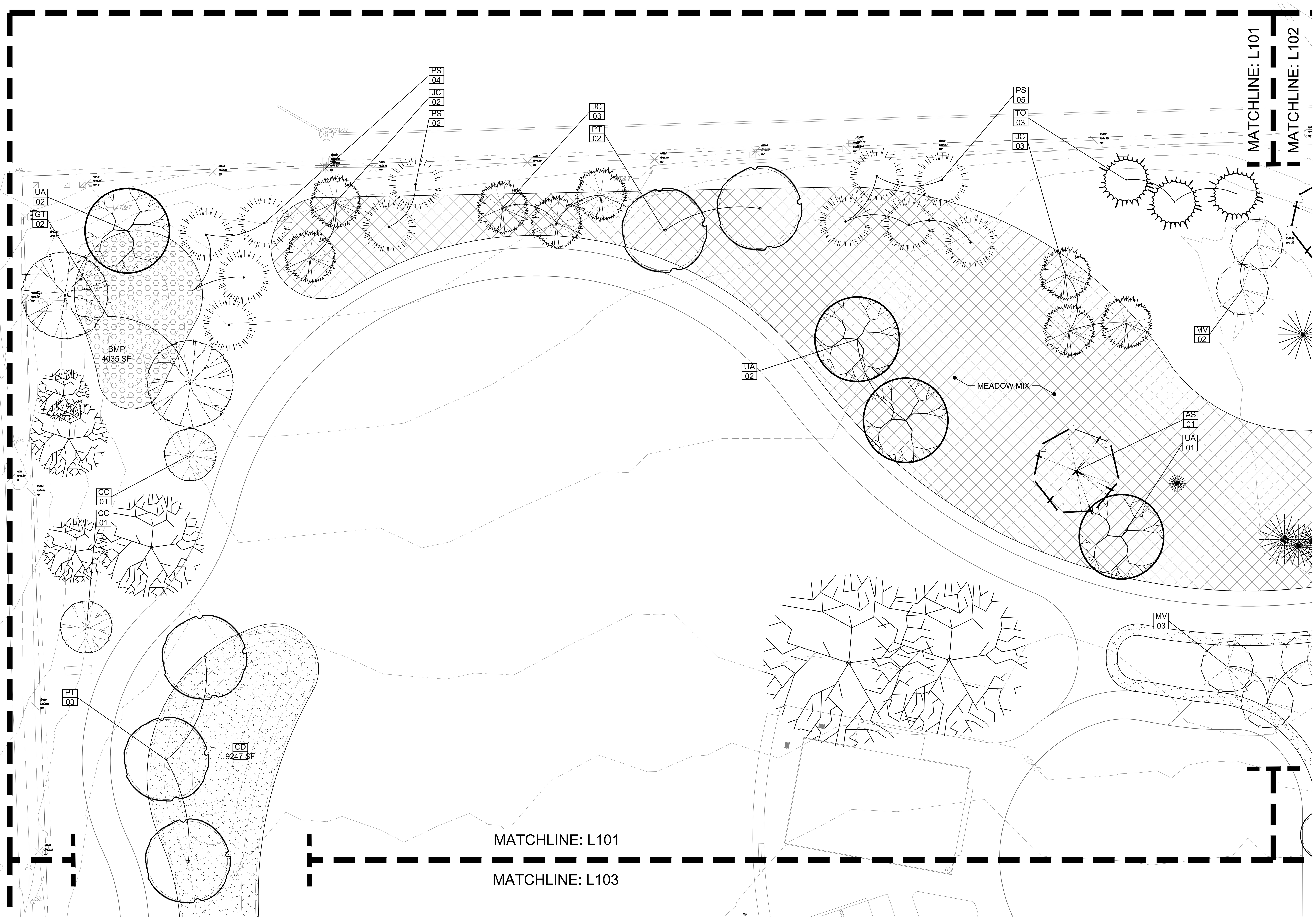
D C B A

1 2 3 4

THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

C M Y K

THE SQUARES ABOVE ARE COLOR, WITH BLACK AND WHITE LETTERS, IF PRINTED CORRECTLY



02 L101 PLANTING PLAN ENLARGEMENT

0' 10' 20' 40'

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PLANTING PLAN ENLARGEMENT

L101

IF LINE SHOWN ABOVE IS NOT 1" LONG, PRINT IS NOT AT THIS SHEET'S ORIGINAL PAGE SIZE

THE SQUARES ABOVE ARE COLOR, WHICH MAY NOT SHOW CORRECTLY IF PRINTED CORRECTLY

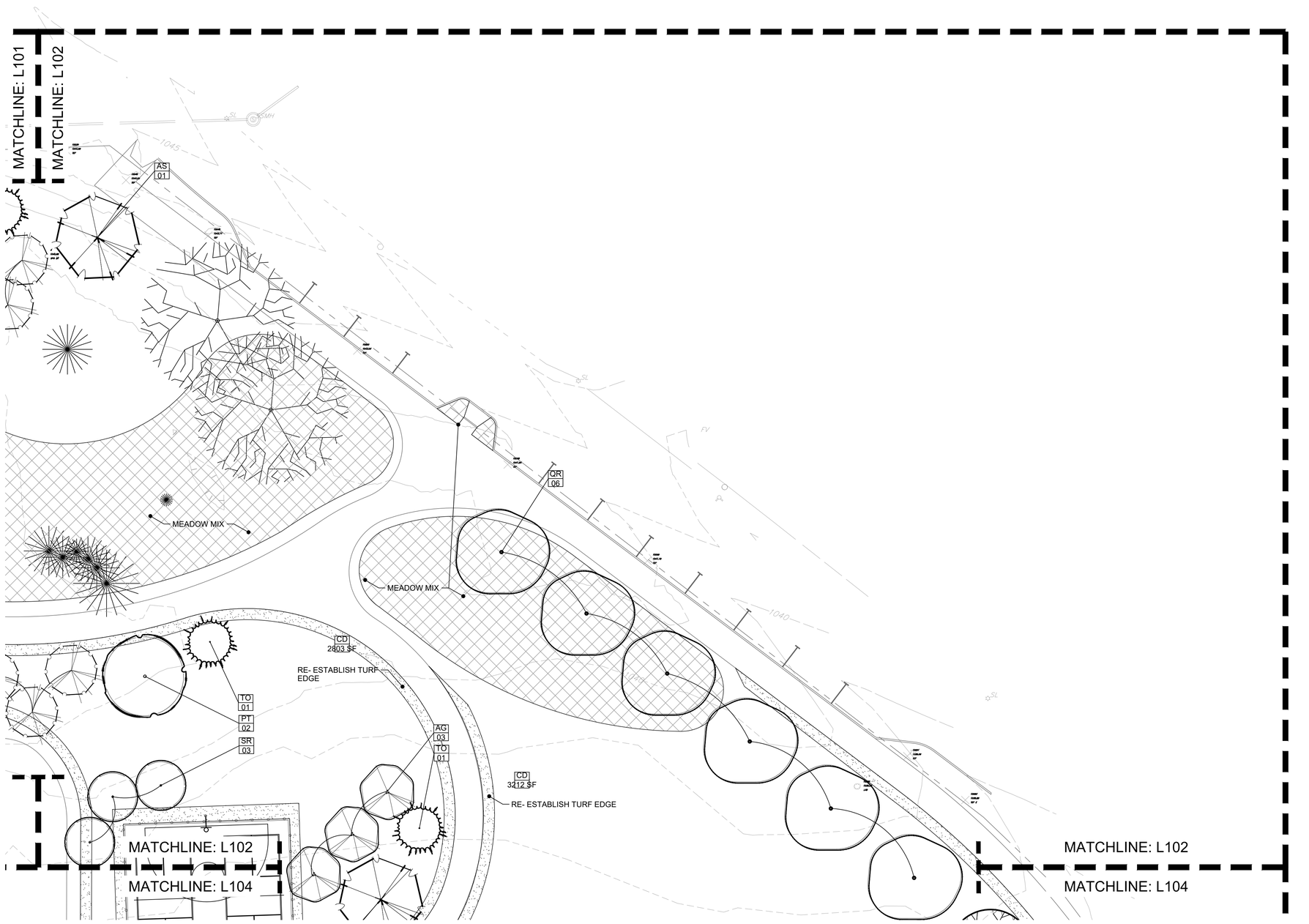
C M Y K

D

C

B

A



03 L102 PLANTING PLAN ENLARGEMENT

1 2 3 4

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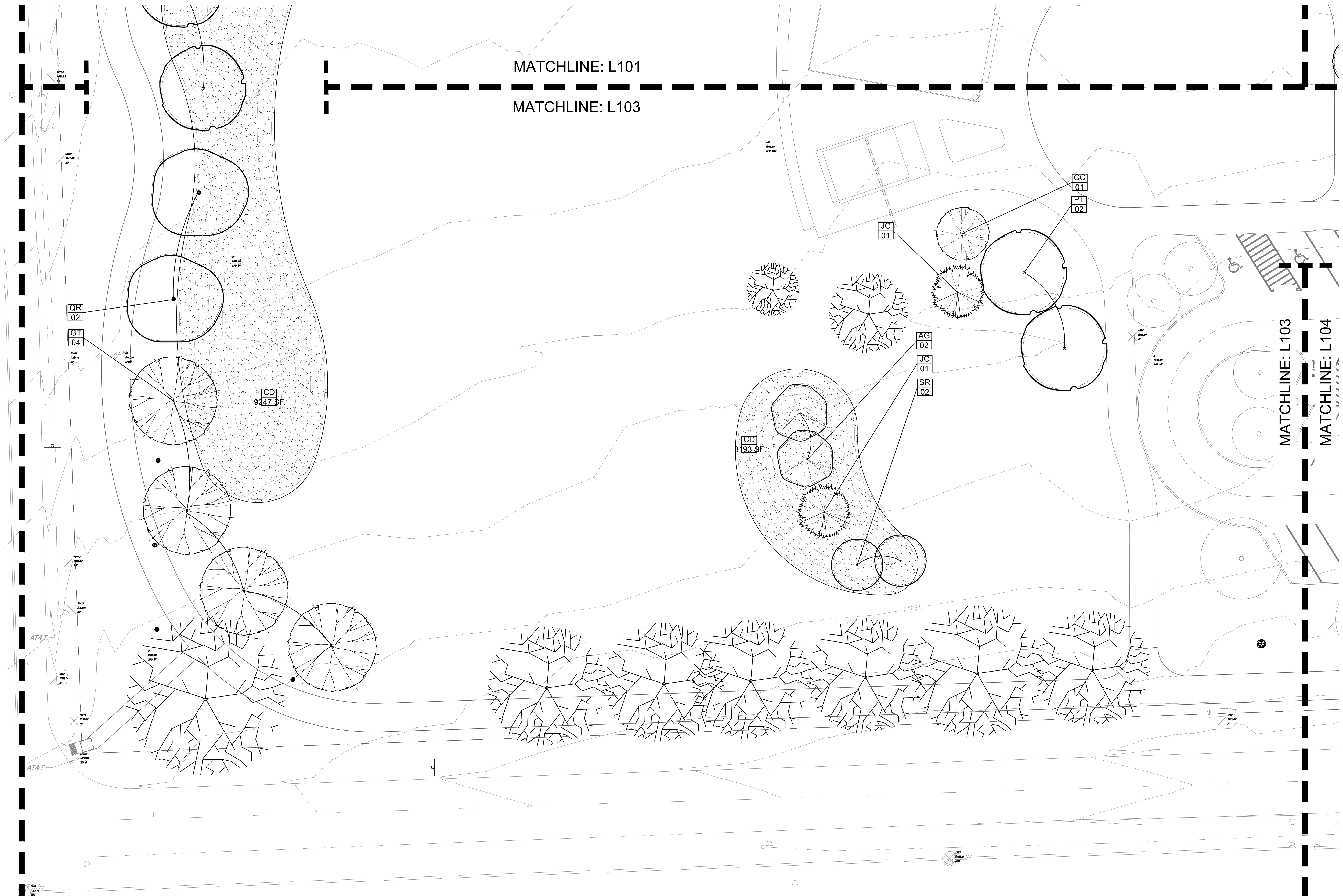
PLANTING PLAN ENLARGEMENT

L102



04
L103

PLANTING PLAN ENLARGEMENT

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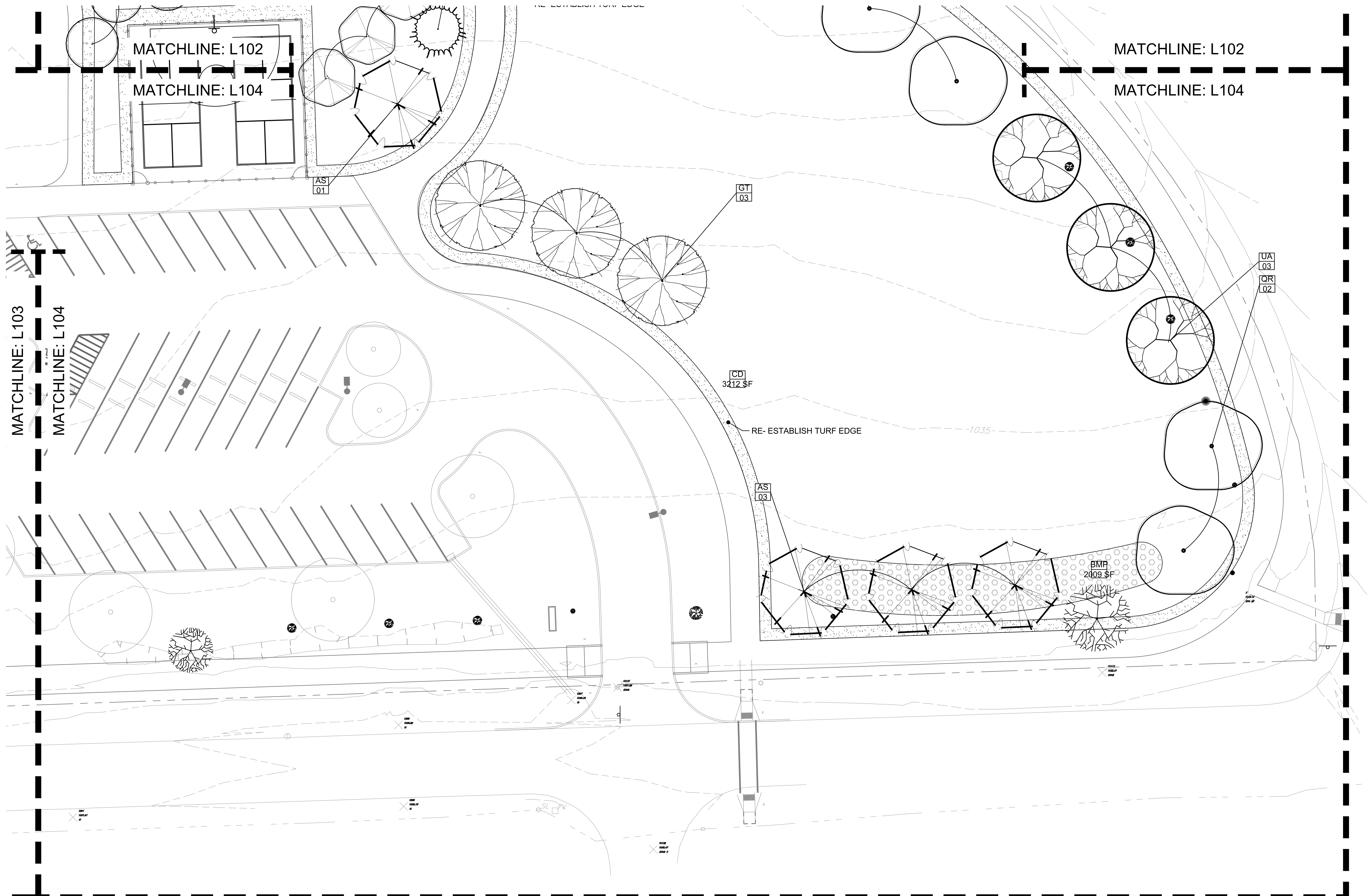
PLANTING PLAN ENLARGEMENT

L103



05 L104 PLANTING PLAN ENLARGEMENT

0' 10' 20' 40'

LANDSCAPE ARCHITECT

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PLANTING PLAN ENLARGEMENT

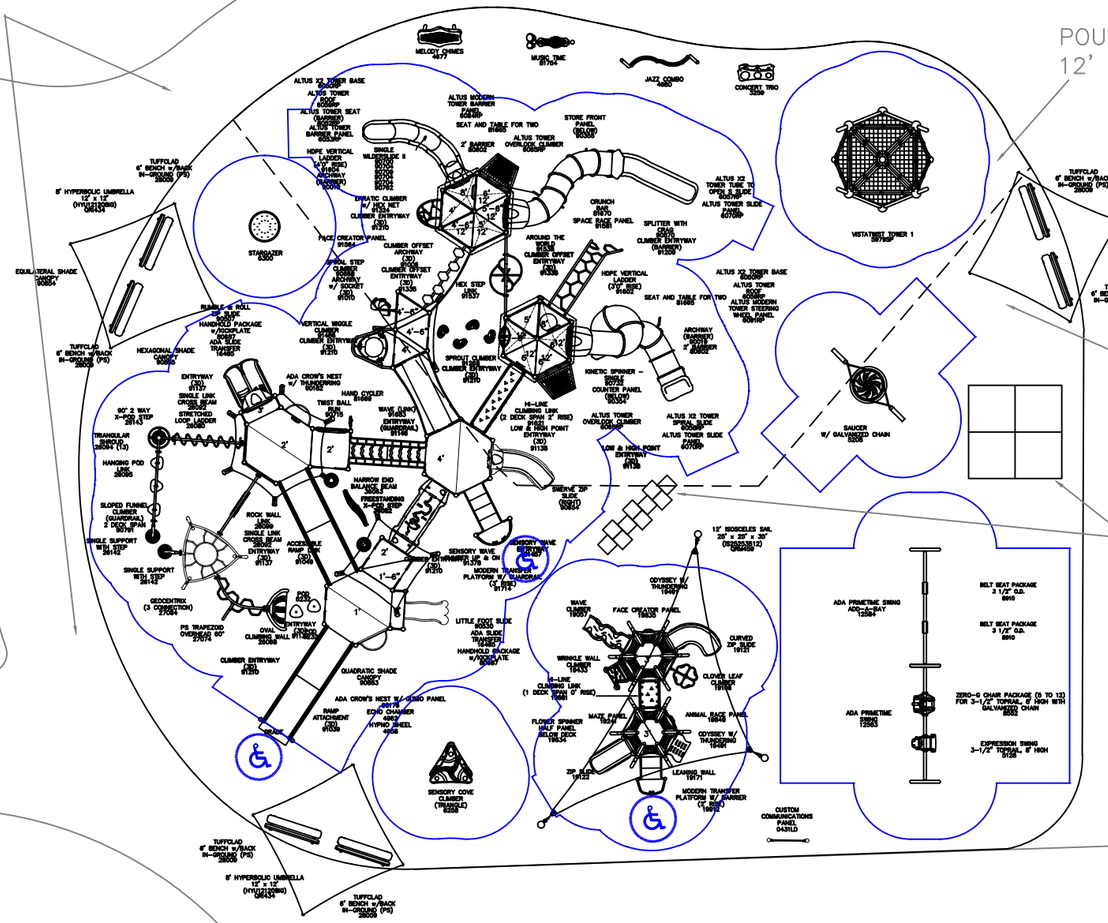
L104

EXISTING SIDEWALK

POURED IN PLACE RUBBER SURFACING
12' CFH AREA – 2935 SF

POURED IN PLACE RUBBER SURFACING
8' CFH AREA – 5685 SF

POURED IN PLACE RUBBER DESIGNS
HOPSCOTCH & 4–SQUARE



0 10' 20'
0' 15'

GameTime
A PLAYCORE Company
ISO 9001 CERTIFIED
ISO 14001 CERTIFIED

150 PlayCore Drive SE
Fort Payne, AL 35967
www.gametime.com

Mission Parks and Recreation
Mohawk Park Playground
Mission, KS

Representative
Cunningham Recreation

This play equipment is recommended for children ages
2-5 and 5-12

Minimum Area Required:

Scale:
This drawing can be scaled only when in an 24" x 36" format

IMPORTANT: Soft resilient surfacing should be placed in the use zones of all equipment, as specified for each type of equipment, and at depths to meet the critical fall heights as specified by the U.S. consumer Product Safety Commission, ASTM standard F 1487 and Canadian Standard CAN/CSA-Z-614

Drawn By:
LS/CW/MW

Date:
5-24-23

Drawing Name:
164948-02 Mohawk

PO Box 680121
Fort Payne, AL 3568

150 Playcore Drive SE
Fort Payne, AL 35967

05/30/2023
Quote #
164948-01-02

Mohawk Park Playground - Rev 1

Mission Parks and Recreation
Attn: Penn Almoney
67th & Lamar
Mission, KS 66202
Phone: 913-722-8210
Fax:913-722-8208
palmoney@missionks.org

Ship to Zip 66202

Quantity	Part #	Description	Unit Price	Amount
1	RDU	GameTime - 5-12 Yr Old Powerscape Structure	$369,908.00	$369,908.00
1	RDU	GameTime - 2-5 Yr Old PrimeTime Structure	$63,580.00	$63,580.00
1	INSTALL	MISC - Installation of Above Structures	$128,615.00	$128,615.00
1	81754	GameTime - Music Time	$2,228.00	$2,228.00
1	4677	GameTime - Melody Chimes	$7,567.00	$7,567.00
1	4680	GameTime - Jazz Combo	$8,221.00	$8,221.00
1	3259	GameTime - Concert Trio	$5,743.00	$5,743.00
1	6258	GameTime - Sensory Cove Climber - Triangle	$3,202.00	$3,202.00
1	6300	GameTime - Stargazer	$2,499.00	$2,499.00
1	0431LD	GameTime - F/S Custom Communication Board - 45 Symbols on Each Side	$7,040.00	$7,040.00
1	INSTALL	MISC - Installation of Above Freestanding Items	$10,365.00	$10,365.00
1	5979SP	GameTime - VistaTwist Tower 1	$72,533.00	$72,533.00
1	INSTALL	MISC - Installation of Net	$22,390.00	$22,390.00
1	RDU	GameTime - PrimeTime Swings	$6,248.00	$6,248.00
1	5208	GameTime - Saucer Swing (Galv)	$7,060.00	$7,060.00
1	INSTALL	MISC - Installation of Swings	$3,700.00	$3,700.00
6	28009	GT-Site - 6' P/S Bench W/Back Inground	$978.00	$5,868.00
6	INSTALL	MISC - Installation of Benches	$310.00	$1,860.00
3	QRI434	GT-Shade - HYU121208IG HYPERBOLIC UMB 12X12X8	$4,618.00	$13,854.00
3	INSTALL	MISC - Installation of Single Post Shades	$2,040.00	$6,120.00
1	QRM459	GT-Shade - IS25253512 ISOSCELES SAIL 25X25X35X12	$11,410.00	$11,410.00
1	INSTALL	MISC - Installation of Shade over 2-5 Structure	$4,015.00	$4,015.00
8620	PIP	GT-Impax - Per SF Poured in Place Rubber Surfacing- • Price includes materials, shipping, installation at standard wages, and trash removal. • 2935 SF @ 5.25" Thick for 12' CFH • 5685 SF @ 3.75" Thick for 8' CFH • 50/50 Black/Standard Color: _____ • Aromatic binder included. Selected colors may amber. • Includes simple graphics. • Includes 4-Square & Hopscotch graphics • 5 year standard warranty • Site security by others.	$23.21	$200,070.20
8620	INSTALL	MISC - Supply/Install 4" Stone Base for PIP	$4.63	$39,910.60
1	INSTALL	MISC - Drainage	$2,160.00	$2,160.00

PO Box 680121
Fort Payne, AL 3568

150 Playcore Drive SE
Fort Payne, AL 35967

05/30/2023
Quote #
164948-01-02

Mohawk Park Playground - Rev 1

Quantity	Part #	Description	Unit Price	Amount
1	INSTALL	MISC - Ancillary Services - Final grade work, Seed/Straw Disturbed Areas	$1,485.00	$1,485.00
1	178749	GameTime - Owner's Kit	$84.00	$84.00
1	14928	GameTime - NDS Inclusive Play Sign Package		
1	14927	GameTime - NDS Play On Sign Package		
Contract: OMNIA	#2017001134		**Sub Total**	$1,007,735.80
			Discount	($157,365.47)
			Freight	$15,733.26
			Total	**$866,103.59**

Comments

- Site must be clear, level, free of obstructions and accessible.
- All site prep, excavation and grading by others. (other than fine grading for equipment footings and drainage to daylight)
- Perimeter sidewalk by others.
- Taxes not included.
- EXTENDED LEAD TIME: Please be advised this quote contains products which may require extended lead times of up to 18 weeks or more based on date of order.

GAMETIME - TERMS & CONDITIONS:

- PRICING: **Due to volitile economic demand, pricing is valid for 30 days. Pricing is subject to change. Request updated pricing when purchasing from quotes more than 30 days old.**
- **TERMS OF SALE:** For equipment & material purchases, Net 30 days from date of invoice for governmental agencies and those with approved credit. All others, full payment for equipment, taxes and freight up front. Balance for services & materials due upon completion or as otherwise negotiated upon credit application review. Pre-payment may be required for equipment orders totaling less than $5,000. Payment by VISA, MasterCard, or AMEX is accepted (**If you elect to pay by credit card, GameTime charges a 2.50% processing fee that is assessed on the amount of your payment. This fee is shown as a separate line item and included in the total amount charged to your credit card. You have the option to pay by check, ACH or Wire without any additional fees.)**. Checks should be made payable to Playcore Wisconsin, Inc. d/b/a GameTime unless otherwise directed.
- **CREDIT APPLICATION:** Required for all non-governmental agencies and those entities who have not purchased from GameTime within the previous twelve calendar months.
- **FINANCE CHARGE:** A 1.5% monthly finance charge (or maximum permitted by law) will be added to all invoices over 30 days past due.
- **CASH WITH ORDER DISCOUNT:** Orders for GameTime equipment paid in full at time of order via check or electronic funds transfer (EFT) are eligible for a 3% cash-with-order (CWO) discount.
- **ORDERS:** All orders shall be in writing by purchase order, signed quotation or similar documentation. Purchase orders must be made out to Playcore Wisconsin, Inc. d/b/a GameTime.
- **FREIGHT CHARGES:** Shipments shall be F.O.B. destination. Freight charges prepaid and added separately.
- **SHIPMENT: Standard Lead time is 12-14 weeks** (some items may take longer) after receipt and acceptance of purchase order, credit application, color selections and approved drawings or submittals.
- **PACKAGING:** All goods shall be packaged in accordance with acceptable commercial practices and marked to preclude confusion during unloading and handling.
- **RECEIPT OF GOODS:** Customer shall coordinate, receive, unload, inspect and provide written acceptance of shipment. Any damage to packaging or equipment must be noted when signing delivery ticket. If damages are noted, receiver must submit a claim to Cunningham Recreation within 15 Days. Receiver is also responsible for taking inventory of the shipment and reporting any concealed damage or discrepancy in quantities received within 60 days of receipt.
- **RETURNS:** Returns are only available on shipments delivered within the last 60 days. A 25% (min.) restocking fee will be deducted from any credit due. Customer is responsible for all packaging & shipping charges. Credit is based on condition of items upon return. All returns must be in unused and merchantable condition. GameTime reserves the right to deduct costs associated with restoring returned goods to merchantable condition. Uprights & custom products cannot be returned.
- **TAXES:** Sales tax is shown as a separate line item when included. A copy of your tax exemption certificate must be submitted at time of order or taxes will be added to your invoice.

PO Box 680121
Fort Payne, AL 3568

150 Playcore Drive SE
Fort Payne, AL 35967

05/30/2023
Quote #
164948-01-02

Mohawk Park Playground - Rev 1

INSTALLATION CONDITIONS:

- **ACCESS:** Site should be clear, level and allow for unrestricted access of trucks and machinery.
- **STORAGE:** Customer is responsible for providing a secure location to off-load and store the equipment during the installation process. Once equipment has delivered to the site, the owner is responsible should theft or vandalism occur unless other arrangements are made and noted on the quotation.
- **FOOTER EXCAVATION:** Installation pricing is based on footer excavation through earth/soil only. Customer shall be responsible for unknown conditions such as buried utilities (public & private), tree stumps, rock, or any concealed materials or conditions that may result in additional labor or materials cost.
- **UTILITIES:** Installer will contact 811 to locate all public utilities prior to layout and excavation of any footer holes. Owner is responsible for locating any private utilities.
- **ADDITIONAL COSTS:** Pricing is based on a single mobilization for installation unless otherwise noted. Price includes ONLY what is stated in this quotation. If additional site work or specialized equipment is required, pricing is subject to change.

ACCEPTANCE OF QUOTATION:

Acceptance of this proposal indicates your agreement to the terms and conditions stated herein.

Accepted By (printed): _____ Title: _____

Telephone: _____ Fax: _____

P.O. Number:_____ Date: _____

Purchase Amount: **$866,103.59**

SALES TAX EXEMPTION CERTIFICATE #:_____

(PLEASE PROVIDE A COPY OF CERTIFICATE)

_____ _____
Salesperson's Signature Customer Signature

PO Box 680121
Fort Payne, AL 3568

150 Playcore Drive SE
Fort Payne, AL 35967

05/30/2023
Quote #
164948-01-02

Mohawk Park Playground - Rev 1

BILLING INFORMATION:

Bill to: _____

Contact: _____

Address: _____

Address: _____

City, State: _____ Zip: _____

Tel: _____ Fax: _____

E-mail: _____

SHIPPING INFORMATION:

Ship to: _____

Contact: _____

Address: _____

Address: _____

City, State: _____ Zip: _____

Tel: _____ Fax: _____

E-mail: _____

	Previous Development	Phase 1		Phase 2	
		Removed	Added	Removed	Added
Impervious surface sq.ft.	129335 sq.ft.	108752 sq.ft.	35738 sq.ft.	20583 sq.ft.	44669 sq.ft.
Total	**129,335 sq.ft.**	**56,321**		**80,407**	
% of Decrease		Previous to Phase 1:	**56.45%**	Previous to Phase 2:	**37.83%**

SCALE: 1"=50'
0 12.5' 25' 50' 100'

MOHAWK PARK EXISTING CONDITIONS - IMPERVIOUS SURFACES

Misson, Kansas

CONFLUENCE

	Previous Development	Phase 1		Phase 2	
		Removed	Added	Removed	Added
Impervious surface sq.ft.	129335 sq.ft.	108752 sq.ft.	35738 sq.ft.	20583 sq.ft.	44669 sq.ft.
Total	**129,335 sq.ft.**	**56,321**		**80,407**	
% of Decrease		Previous to Phase 1:	**56.45%**	Previous to Phase 2:	**37.83%**

MOHAWK PARK PHASE 1 - IMPERVIOUS SURFACES

Misson, Kansas

SCALE:1"=50' 0 12.5' 25' 50' 100'

CONFLUENCE

	Previous Development	Phase 1		Phase 2	
		Removed	Added	Removed	Added
Impervious surface sq.ft.	129335 sq.ft.	108752 sq.ft.	35738 sq.ft.	20583 sq.ft.	44669 sq.ft.
Total	**129,335 sq.ft.**	**56,321**		**80,407**	
% of Decrease		Previous to Phase 1:	**56.45%**	Previous to Phase 2:	**37.83%**

MOHAWK PARK PHASE 2 - IMPERVIOUS SURFACES

Misson, Kansas

SCALE:1"=50'
0 12.5' 25' 50' 100'

CONFLUENCE

IF LINE SHOWN ABOVE IS NOT ONE INCH LONG, THIS SHEET'S ORIGINAL PAGE SIZE IS NOT ANSI D

THE SQUARES ABOVE ARE COLOR, WITH BLACK AND WHITE LINES IF PRINTED CORRECTLY

CUT / FILL Table			
Number	Minimum	Maximum	Color
1	-5.00%	-1.00%	
2	-1.00%	-.002%	
3	-.002%	.002%	
4	.002%	1.00%	
5	1.00%	5.00%	

GRADING NOTES

A. ALL SPOT ELEVATIONS ARE AT THE TOP OF FINISHED SURFACES UNLESS NOTED OTHERWISE. SPOT ELEVATIONS SHOWN IN PARKING ARE AT THE BOTTOM OF CURB. ADD 6" TO COMPUTE TOP OF CURB ELEVATION.

B. CONTRACTOR TO VERIFY ALL SPOT ELEVATIONS FOR POSITIVE DRAINAGE BEFORE INSTALLATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR POSITIVE SURFACE DRAINAGE IN ALL AREAS, UNLESS OTHERWISE NOTED. ALL NEWLY GRADED GROUND SURFACES SHALL BE FINISHED TO UNIFORM GRADES AND SLOPED IN SUCH A MANNER TO BE FREE OF DEPRESSIONS THAT CAUSE AREAS OF STANDING WATER. THE CONTRACTOR SHALL REPORT ANY CONFLICTS WITH THIS REQUIREMENT TO THE LANDSCAPE ARCHITECT FOR RESOLUTION PRIOR TO FINAL GRADING OPERATIONS.

C. WALK CROSS SLOPE MAY NOT EXCEED 2.0%. RUNNING SLOPE MAY NOT EXCEED 5.0%. RUNNING SLOPE FOR RAMPS MAY NOT EXCEED 1:12 WITH LANDINGS THAT DO NOT EXCEED 2.0% IN ANY DIRECTION.

D. WHERE PROPOSED GRADES MEET EXISTING, BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN THE NEW WORK AND EXISTING WORK. PONDING AT JOINTS WILL NOT BE ACCEPTED.

E. CONTACT LANDSCAPE ARCHITECT PRIOR TO BACKFILLING AGAINST EXISTING BUILDINGS. PROVIDE WATERPROOFING WHEN BACKFILLING AGAINST EXISTING BUILDINGS.

F. FINAL BERM SHAPE TO BE APPROVED BY LANDSCAPE ARCHITECT.

G. SEE SPECIFICATIONS FOR MINIMUM DEPTH OF TOPSOIL FOR ALL LAWN AREAS AND PLANTING BEDS.

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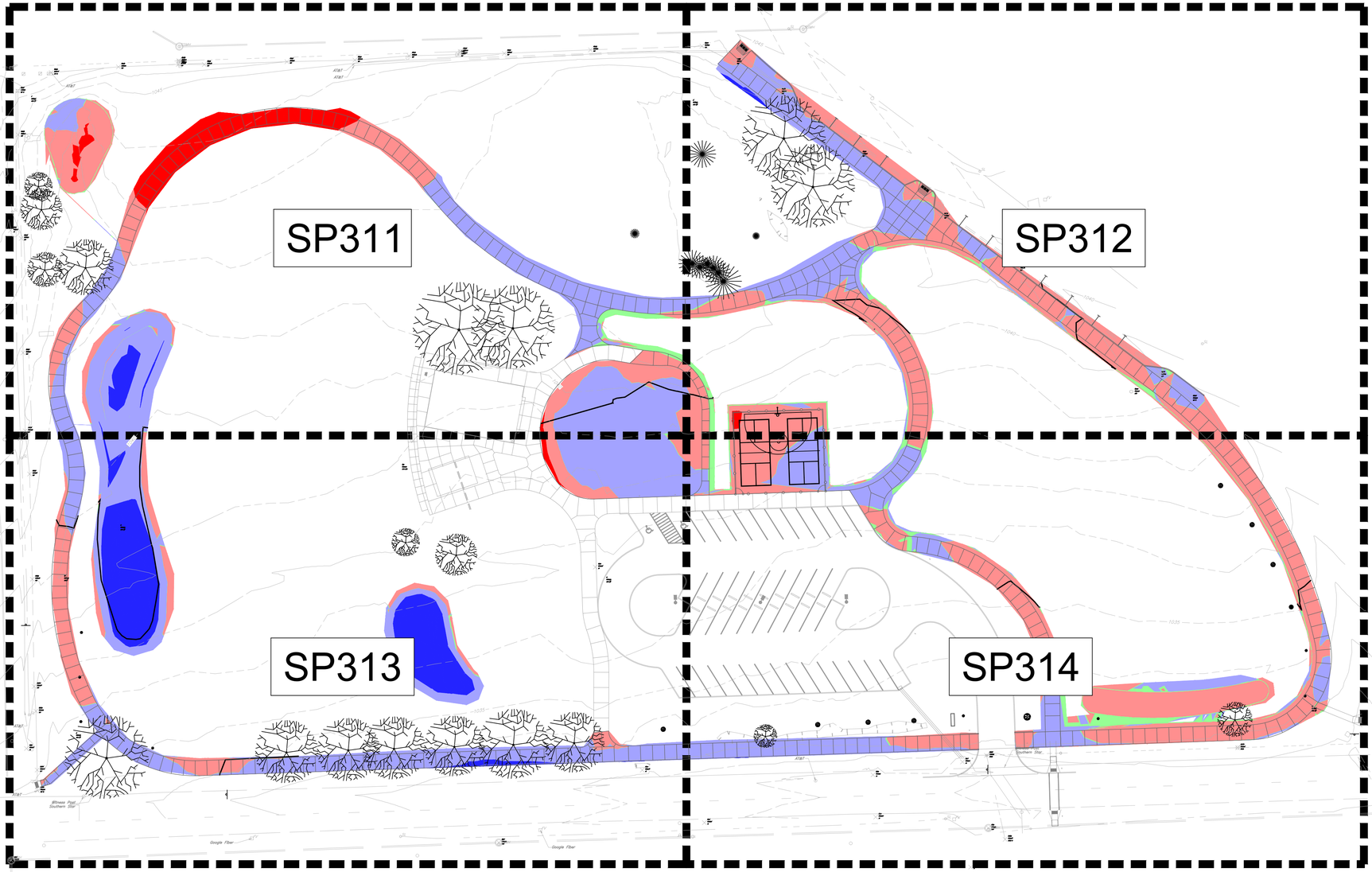
J. SILT FENCE AND INLET PROTECTION SHALL BE MAINTAINED UNTIL ESTABLISHMENT OF PERMANENT GROUND COVER.



01 SP300 GRADING PLAN

0' 20' 40' 80'

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Revision Schedule

No.	Date	Description

MOHAWK PARK PHASE 2

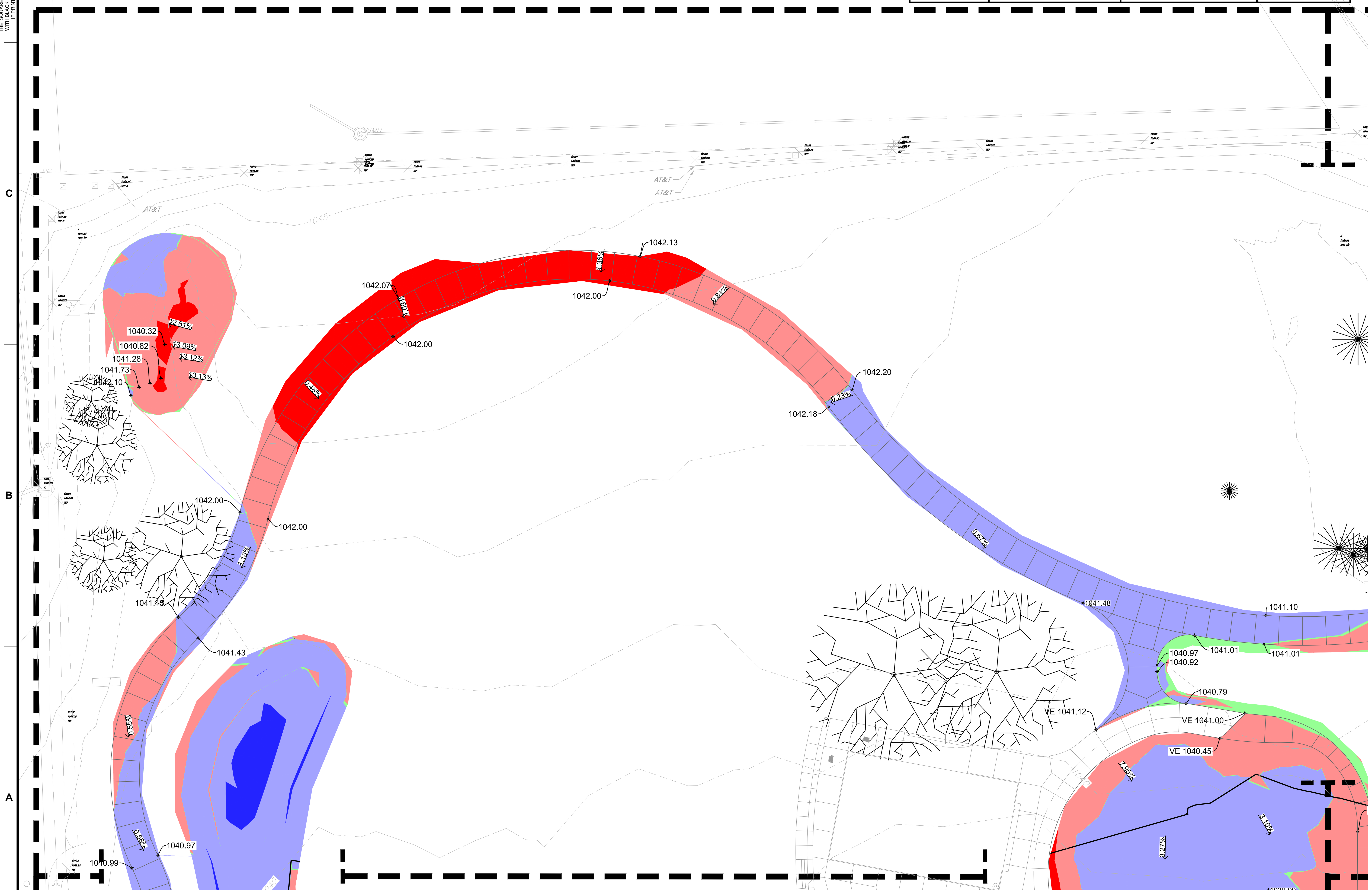
MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

CUT / FILL

SP310

CUT / FILL Table			
Number	Minimum	Maximum	Color
1	-5.00%	-1.00%	
2	-1.00%	-.002%	
3	-.002%	.002%	
4	.002%	1.00%	
5	1.00%	5.00%	



02
SP301
GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

CUT / FILL
ENLARGEMENT

SP311

CUT / FILL Table			
Number	Minimum	Maximum	Color
1	-5.00%	-1.00%	
2	-1.00%	-.002%	
3	-.002%	.002%	
4	.002%	1.00%	
5	1.00%	5.00%	

03
SP302
GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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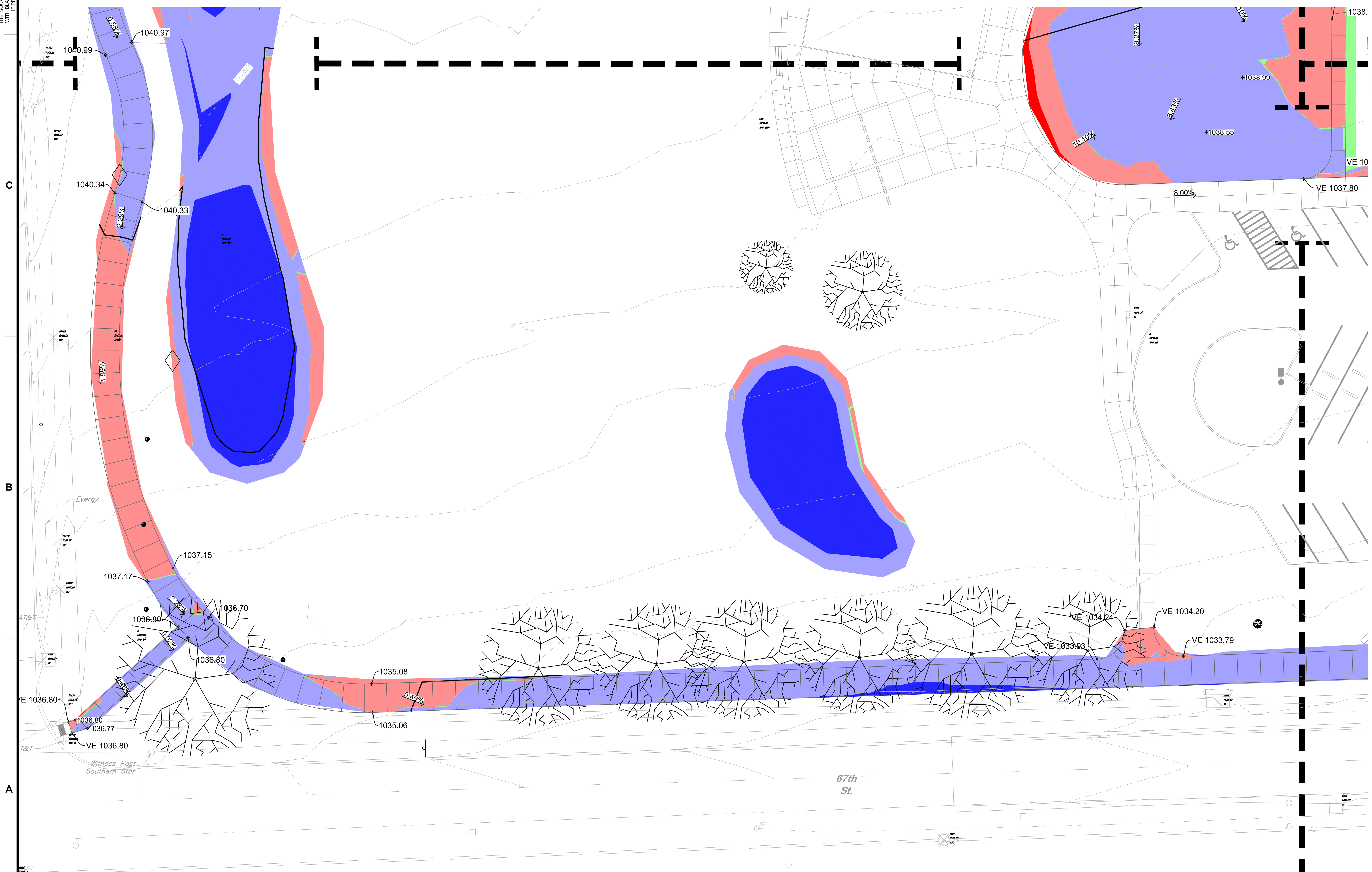
MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

CUT / FILL ENLARGEMENT

SP312

CUT / FILL Table			
Number	Minimum	Maximum	Color
1	-5.00%	-1.00%	
2	-1.00%	-.002%	
3	-.002%	.002%	
4	.002%	1.00%	
5	1.00%	5.00%	



04 SP303 GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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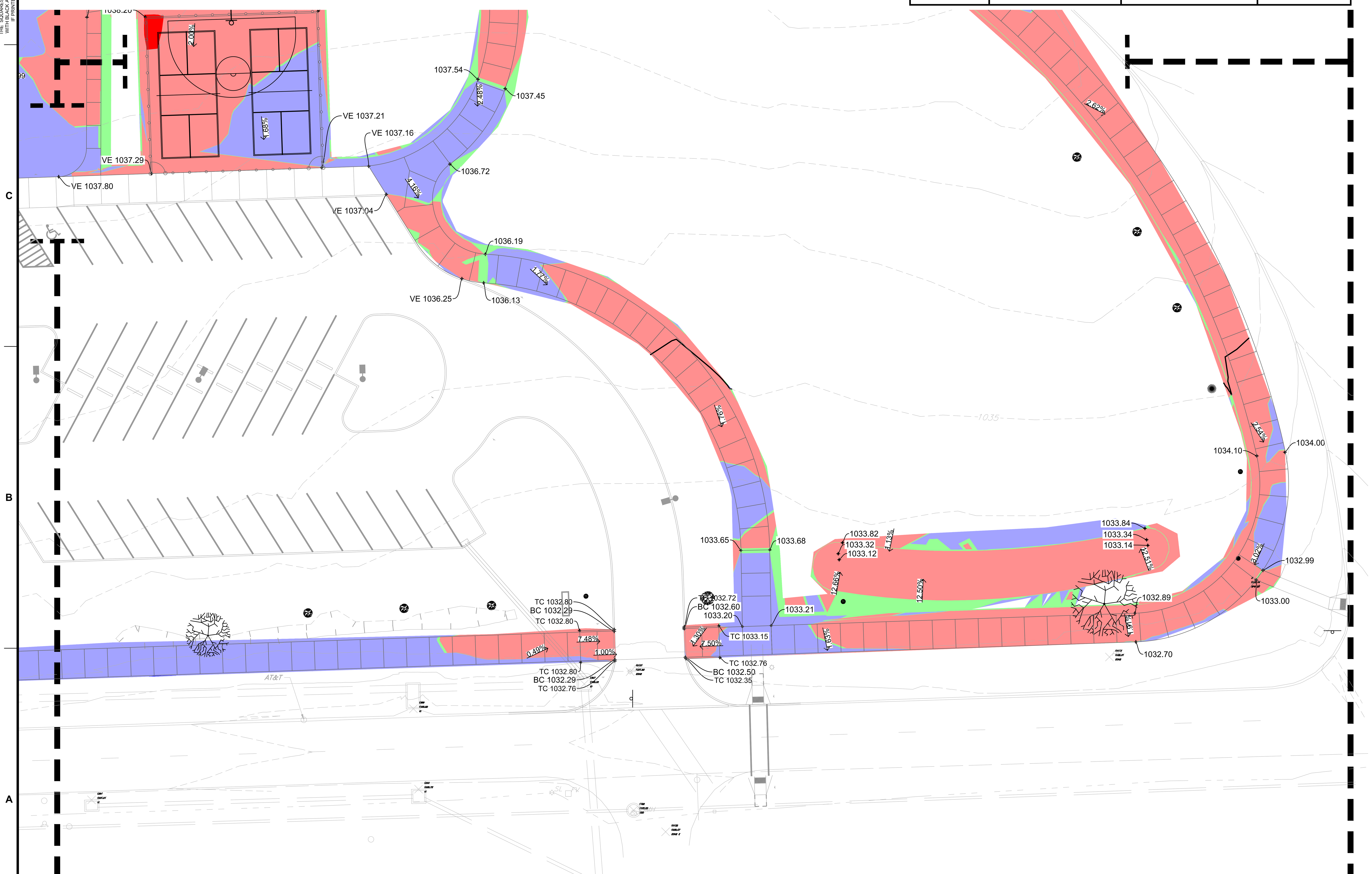
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

CUT / FILL ENLARGEMENT

SP313

CUT / FILL Table			
Number	Minimum	Maximum	Color
1	-5.00%	-1.00%	red
2	-1.00%	-.002%	light red
3	-.002%	.002%	green
4	.002%	1.00%	light blue
5	1.00%	5.00%	blue



05 SP304 GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

CUT / FILL ENLARGEMENT

SP314

Cut/Fill Report

Generated: 2023-09-27 09:53:35

By user: anichols

Drawing: S:\1-PROJECTS\2023\23093_Mohawk Park Phase II\23093_WORKING\AUTOCAD\S:\1-PROJECTS\2023\23093_Mohawk Park Phase II\23093_WORKING\AUTOCAD\X-23093 GRADING.dwg

Volume Summary

Name	Type	Cut Factor	Fill Factor	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Confluence Cut Fill	full	1.000	1.000	73770.83	429.73	817.17	387.44<Fill>

Totals

	2d Area (Sq. Ft.)	Cut (Cu. Yd.)	Fill (Cu. Yd.)	Net (Cu. Yd.)
Total	73770.83	429.73	817.17	387.44<Fill>

* Value adjusted by cut or fill factor other than 1.0

Slopes Table			
Number	Minimum Slope	Maximum Slope	Color
1	0.00%	5.00%	
2	5.00%	10.00%	
3	10.00%	17.00%	
4	17.00%	100.00%	

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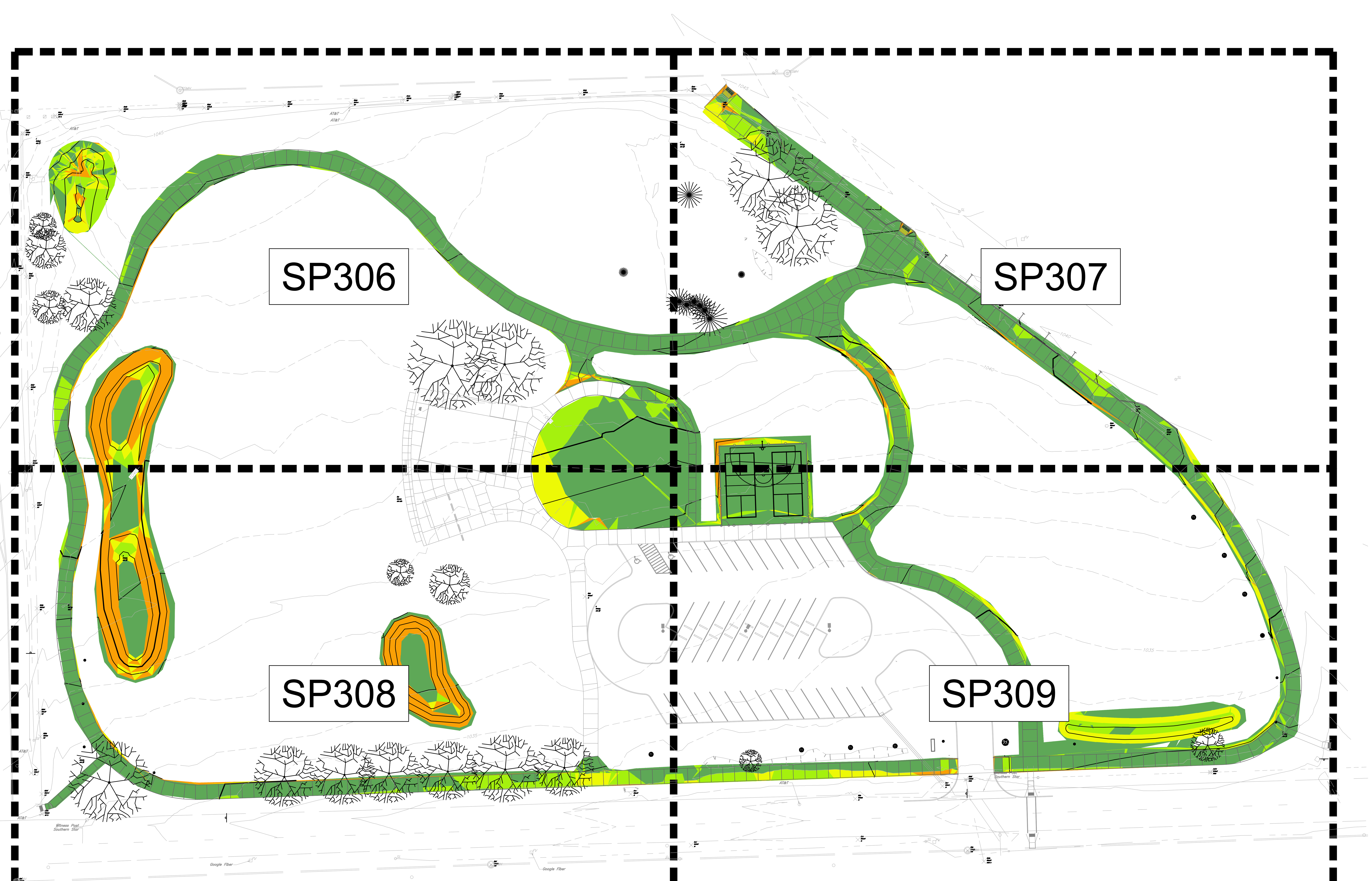

01
SP300
GRADING PLAN

0' 20' 40' 80'

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Revision Schedule

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MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

SLOPE ANALYSIS

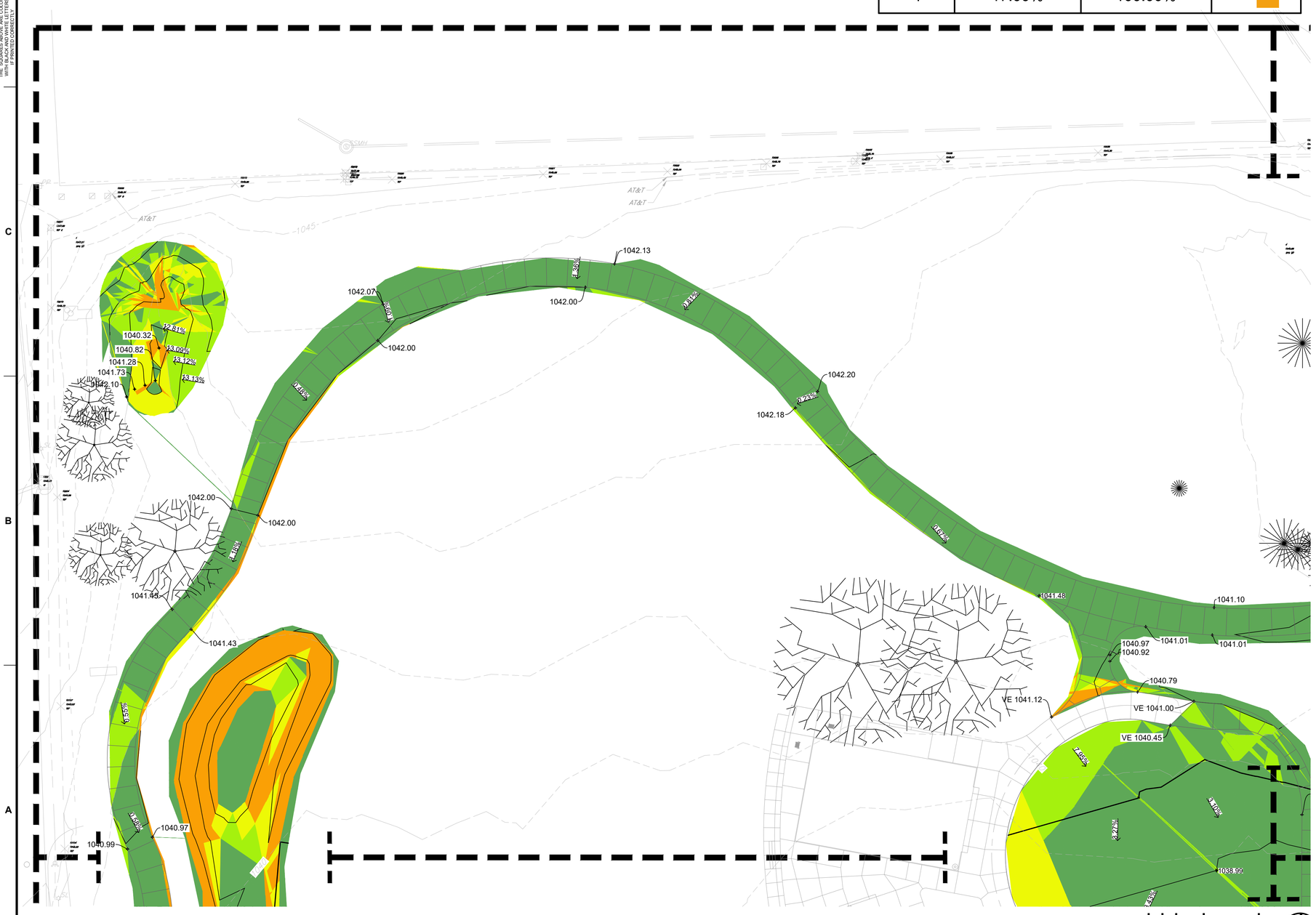
SP305

IF LINE SHOWN ABOVE IS NOT EXACTLY 1" LONG, ADJUST ALL SHEETS ORIGINAL PAGE SIZE

THE SQUARES ABOVE ARE COLOR, WITH MAXIMUM COVERAGE IF PRINTED CORRECTLY

C M Y K

Slopes Table			
Number	Minimum Slope	Maximum Slope	Color
1	0.00%	5.00%	
2	5.00%	10.00%	
3	10.00%	17.00%	
4	17.00%	100.00%	



02 SP301 GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

SLOPE ANALYSIS ENLARGEMENT

SP306

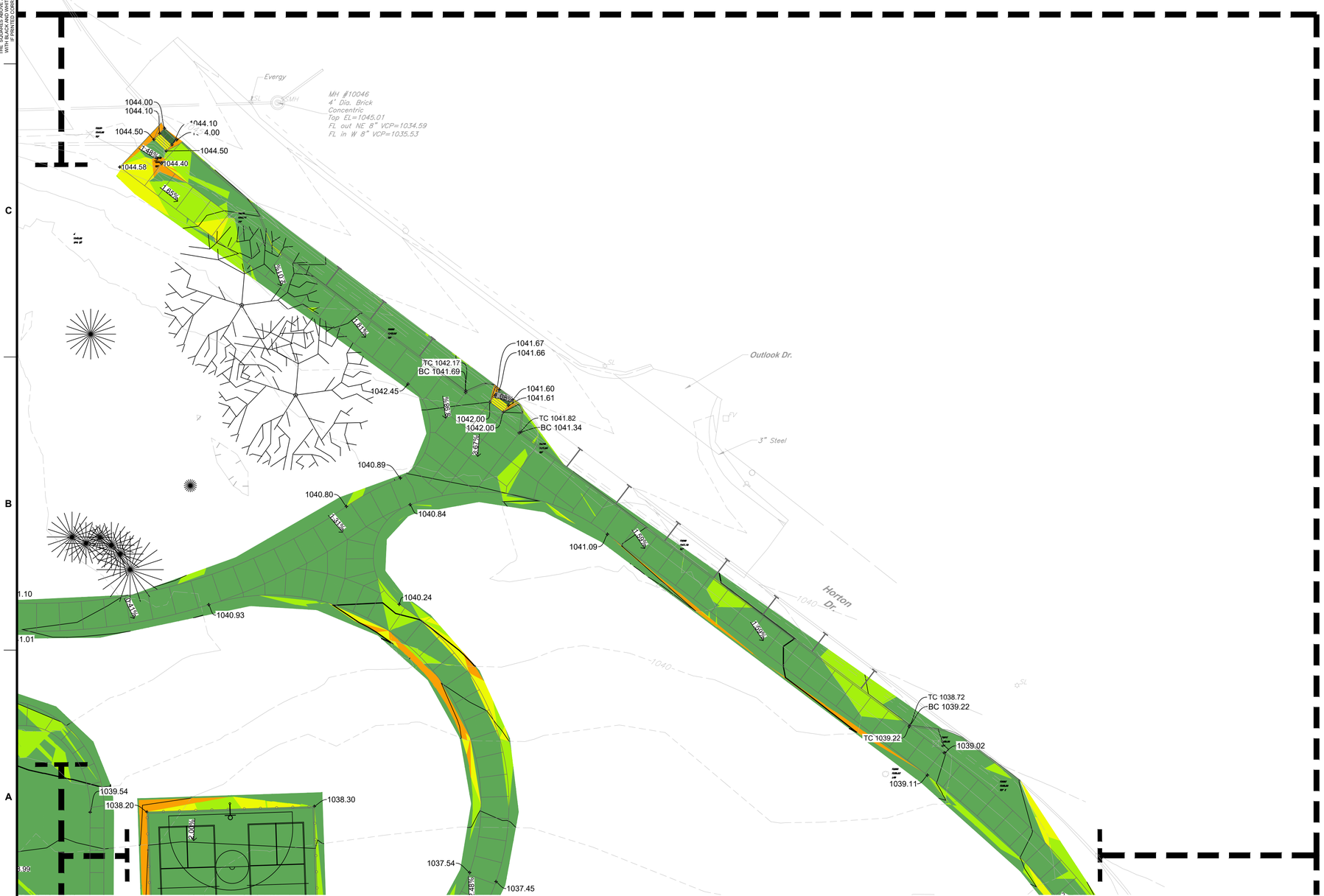
THE LINE SHOWN ABOVE IS EXACTLY ONE INCH LONG AT THIS SHEET'S ORIGINAL PAGE SIZE

C M Y K

THE SQUARES ABOVE ARE COLOR, WITH BLACK AND WHITE LETTERS, IF PRINTED CORRECTLY

Slopes Table

Number	Minimum Slope	Maximum Slope	Color
1	0.00%	5.00%	🟩
2	5.00%	10.00%	🟩
3	10.00%	17.00%	🟨
4	17.00%	100.00%	🟧



03
SP302

GRADING PLAN ENLARGEMENT

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MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

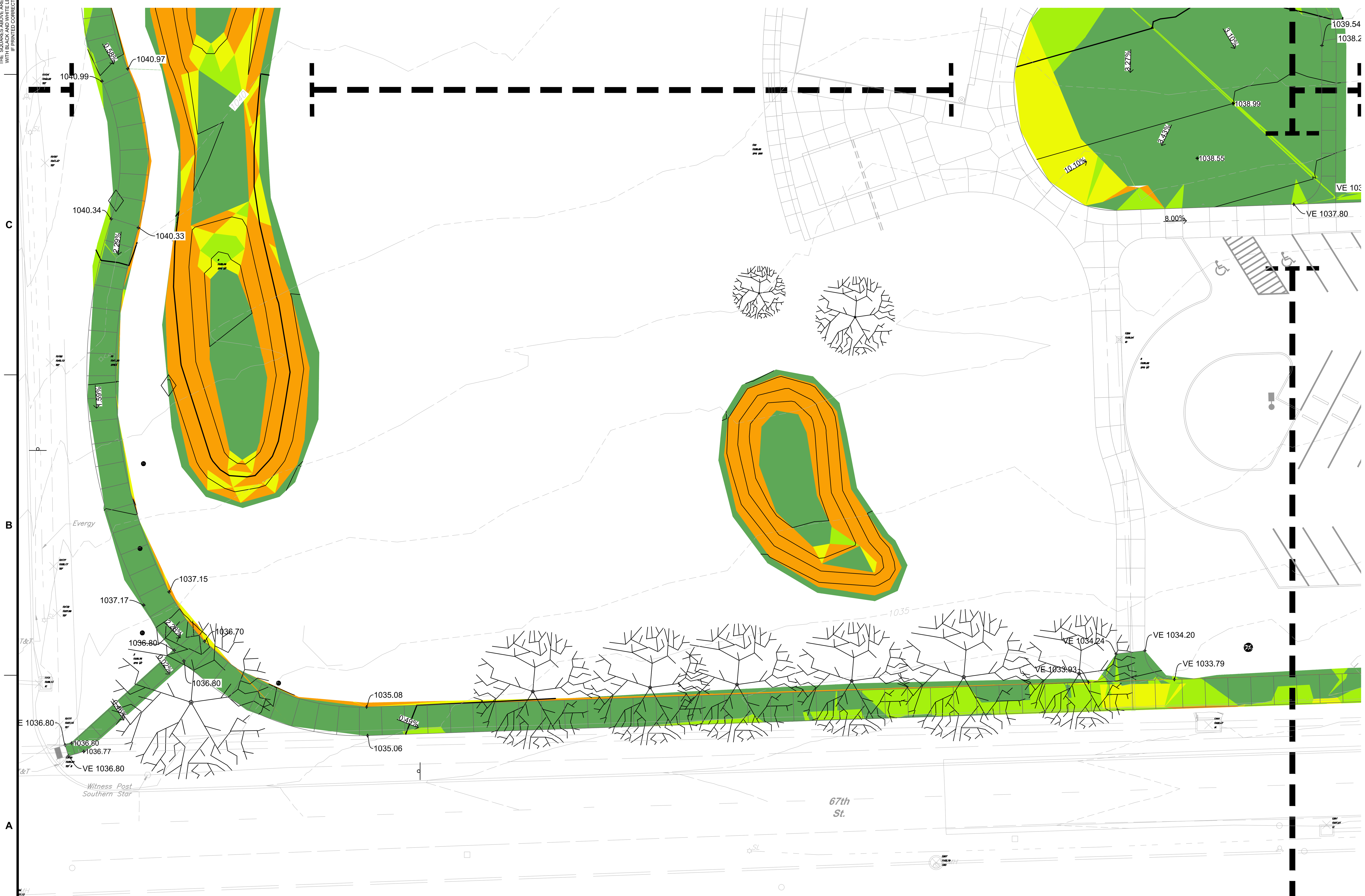
Project Number	23093
Issue	00000
Date	YYYY-MM-DD

SLOPE ANALYSIS
ENLARGEMENT

SP307

Slopes Table

Number	Minimum Slope	Maximum Slope	Color
1	0.00%	5.00%	(dark green)
2	5.00%	10.00%	(light green)
3	10.00%	17.00%	(yellow)
4	17.00%	100.00%	(orange)



04
SP303

GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

SLOPE ANALYSIS ENLARGEMENT

SP308

Slopes Table			
Number	Minimum Slope	Maximum Slope	Color
1	0.00%	5.00%	(dark green)
2	5.00%	10.00%	(light green)
3	10.00%	17.00%	(yellow)
4	17.00%	100.00%	(orange)

05 SP304	GRADING PLAN ENLARGEMENT

0' 10' 20' 40'

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Revision Schedule

No.	Date	Description

MOHAWK PARK PHASE 2

MISSION KS PARKS AND RECREATION
6090 WOODSON ST. MISSION, KS 66202

Project Number	23093
Issue	00000
Date	YYYY-MM-DD

SLOPE ANALYSIS ENLARGEMENT

SP309

MOHAWK PARK PHASE 2
6649 LAMAR STREET
MISSION, KS 66202

NPDES Storm Water Pollution Prevention Plan for
Storm Water Discharges Associated with
Construction Activity

Confluence

Project No. 23093

November 2023 to August 2024

Insert Contractors Certification and NOT Here

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9.0 **Project Completion** 18

Appendix A: Construction Activity Record
Appendix B: Completed Inspection Forms

1.0 Purpose of Plan

The purpose of this Construction Storm Water Pollution Prevention Plan is to demonstrate compliance with the requirements of the National Pollutant Discharge Elimination System (NPDES) for issuance of a General Permit for storm water discharges associated with construction activity. The General Permit requires the preparation and implementation of such a plan to prevent, as much as practicable, the release of pollutants in storm water runoff from the construction site to waters of the United States.

This Plan provides information associated with construction of a public park and accompanying parking lot, walking trail, buildings, and stormwater facilities in Mission, Kansas. Administrative requirements and potential storm water and non-storm water pollutant sources are identified. Best management practices to prevent the discharge of non-storm water materials in storm water runoff are also described.

The project site consists of the 7.82 acre city-owned tract located along 67Th Street and between Lamar Street and Horton Street in Mission, KS. The property currently consists of an existing public park with accompanying playground, trails and open space areas. A project location map is shown in Figure 1.

Figure 1: Vicinity Map, NOT TO SCALE

2.0 Site Evaluation

The following sections describe existing conditions at the site.

2.1 Topography and Drainage

The existing topography of the project area includes a gentle slope across the site with elevations ranging from 1048' to 1032'. The project includes one benchmark as presented in the Land Disturbance Plans.

2.2 Soils

The soils on the project site were identified according to the soil survey maps in the *Soil Survey of Johnson County, Kansas*. The following soils are found on the Project Site:

7545—Sharpsburg-Urban land complex, 4 to 8 percent slopes

Drainage class: Moderately well drained
Runoff class: Medium
Parent material: Silty and clayey loess
Hydrologic Soil Group: C

2.3 Runoff Water Quality

No surface water quality data is available for the project sites. However, due to the nature of the site, runoff could be expected to contain some suspended solids.

2.4 Receiving Waters

Runoff from the project site flows by overland flow to on site storm sewer. Mohawk Park is within the Brush Creek watershed, which is approximately 13,500 total acres.

3.0 Site Construction Plan

The following sections describe the proposed development and site construction plan.

3.1 Construction Activities

The project includes the construction of new public park facilities in Mohawk Park in Mission, Kansas. Soil disturbing activities will include clearing, grubbing, demolition of existing pavements, mass grading, and final grading. Site activities will also include: grading permanent swales and berms; construction of proposed parking lot; construction of proposed buildings and parking facilities; installation of site utilities – sanitary, water, and storm sewer; installation of erosion control structures throughout the site; and permanent site landscaping. The project will have construction access off of Lamar Street, at the existing parking lot. This construction entrance will eventually be removed and re-established as landscaped turf area. The construction entrance will be stabilized with aggregate to reduce tracking of soil onto the surrounding roadways.

A record of the project site construction activities must be maintained as part of this Plan. Appendix A includes a form and instructions to record such information on an ongoing basis.

3.2 Construction Sequence

The project will be constructed generally following the sequence indicated below.

DESCRIPTION OF WORK - PHASE 2:

- INSTALL PERIMETER EROSION CONTROL MEASURES AND TREE PROTECTION FENCING.
- INSTALL TEMPORARY CONSTRUCTION ENTRANCE AROUND SITE.
- INSTALL TEMPORARY SWALES AND DIVERSION BERMS, WITH ROCK CHECK DAMS AND SILT FENCING WHERE NECESSARY.
- REMOVE TREES AND CLEAR AND GRUB INITIAL WORK AREAS.
- REMOVE EXISTING PARKING DRIVE OFF OF HORTON ST.
- REMOVE ADDITIONAL EXISTING PAVEMENT IN ACCORDANCE WITH PLANS.
- REMOVE EXISTING PLAY AREA
- INSTALL EROSION CONTROL MEASURES AROUND STORM SEWERS.
- INSTALL INTERMEDIATE SILT FENCES ON SLOPES AS EMBANKMENT OCCURS ACROSS SITE TEMPORARILY SEED AREAS DOWNSTREAM.
- MASS GRADE PERMANENT BERMS, PLAY FIELDS, AND LOOP TRAIL
- INSTALL LOOP TRAIL AND SPORT COURT

- INSTALL PERIMETER CURB AND GUTTER AND BASE COURSE OF ASPHALT IN PERIMETER DRIVE AREA.
- INSTALL ADDITIONAL EROSION CONTROL MEASURES AT TOES OF SLOPE ADJACENT TO CURB LINE AS APPLICABLE.
- COMPLETE FINAL GRADING, SEED/SOD, AND LANDSCAPE PERIMETER AREAS.
- INSTALL SURFACE COURSE ON PARKING DRIVE, WALKS AND FLATWORK.
- INSTALL PLAYGROUND/SURFACING PER MANUFACTURER INSTRUCTIONS
- COMPLETE FINAL GRADING AND SOD/LANDSCAPE AROUND SITE AND SIDEWALK AREAS.
- FINAL SITE CLEANUP.
- MAINTAIN EROSION CONTROL MEASURES UNTIL SITE IS STABILIZED.
- INSPECT AND RESEED REMAINING DISTURBED AREAS, WASHOUTS, ETC.
- REMOVE SEDIMENT BUILDUP, RESEED AND STABILIZE AS EROSION CONTROL MEASURES ARE REMOVED.

4.0 Storm Water Management Plan

This storm water management plan was designed following EPA guidelines. Structural sediment control devices will be the main means of storm water management. Storm water sediment controls will be installed before any construction begins.

4.1 General Description of Storm Water Management System

The potential for storm water runoff pollution will be present during construction of the subdivision. This risk will be minimized through the use of several control measures implemented before and during the construction sequence.

The storm water management system was designed in accordance with the EPA's guidance document entitled *Storm Water Management for Construction Activities – Developing Pollution Prevention Plans and Best Management Practices* (EPA 832-R-92-005, September 1992). Structural measures are the main means of storm water management. Storm water control measures are described and shown on the Land Disturbance Plan Drawings.

It will be the responsibility of the Contractor to revise the Land Disturbance Plan Drawings if the location or types of control measures are changed in the field.

4.2 Project Site

The surface water management during construction will be through the use of silt fencing. The silt fencing will remove suspended solids before runoff outfalls from the site.

4.2.1 Stabilization Practices

Temporary and permanent stabilization methods will be used on the project site. Two major stabilization methods that will be used on the site are preserving existing vegetation where possible and disturbing only the area needed for project construction. Disturbed portions of the site will be stabilized within 14 days after construction activity has permanently ceased, with two exceptions – when snow cover precludes construction or construction will resume within 21 days. Stabilization practices may include permanent seeding and mulching.

4.2.2 Structural Practices

Temporary and permanent structural devices to divert, store, or limit runoff from disturbed areas will be used on the project site. Such devices may include: silt fences, swales, berms, inlet protection, and a temporary construction entrance. Details of the structural control measures are shown on the Land Disturbance Plans.

5.0 Potential Storm Water Pollutant Sources and Control Measures

Pollutants from various sources have the potential to enter the storm water system during project construction. A description of these potential pollutants and control measures to reduce the risk of storm water contamination is provided below.

5.1 Construction Silt and Dust

The post-development site runoff flows by overland flow to a downstream pond. Construction of the project will generate silt and fugitive dust.

Silt barriers (fences) will be installed perpendicular to the storm runoff on all disturbed slopes as shown on the Erosion Control Plan to control offsite discharges of silt. The silt barrier will be installed after the clearing and grubbing necessary for placement of the silt barrier is complete, but before the clearing and grubbing of the remaining work area is started. The silt barrier will remain in place until the up-slope surface is permanently stabilized. If construction in a particular area will cease temporarily, temporary soil stabilization will be implemented no more than 14 days after the construction has ceased unless activity will resume in that area within 21 days. Permanent stabilization will take place no later than 14 days after construction activities have permanently ceased in an area.

Fugitive dust may be generated during dry weather conditions. Dust control will be directed by the Construction Manager. Water sprays will be used for dust control.

5.2 Offsite Sediment Tracking

The surrounding streets will be kept relatively free of excess mud, dirt, and rock tracked from the project site. The site access drive will be constructed with a stabilized construction entrance to reduce tracking of sediment offsite.

5.3 Petroleum Products

Construction equipment will require diesel fuel and oil on a regular basis so the potential exists for spills or leaks. All onsite vehicles will be monitored for leaks and receive regular preventative maintenance to ensure proper operation and reduce the chance of leaks. No "*topping off*" of fuel tanks will be allowed to reduce the possibility of spills.

Petroleum products will be stored in clearly labeled and tightly sealed containers or tanks. Any asphalt used onsite will be applied according to the manufacturer's recommendations. Any soil contaminated by fuel or oil spills will be removed and disposed of at an approved disposal site by the Contractor.

5.4 Sanitary Wastes

A licensed sanitary waste management contractor will collect all construction or temporary sanitary wastes from portable units. The units will be maintained on a regular basis.

5.5 Hazardous Wastes

All hazardous waste materials will be disposed of according to local or state regulation or the manufacturer's recommendations. The Construction Manager who will also be responsible for their implementation will instruct site personnel of these regulations and recommendations.

5.6 Fertilizers

Fertilizers will be applied as recommended by the manufacturer. After application the fertilizer will be worked into the soil to limit exposure to storm waters. Fertilizers will be stored in a covered area or in watertight containers. Any partially used bags or containers will be properly sealed and stored to avoid spills or leaks.

5.7 Waste Materials

All construction waste material will be collected, deposited, and stored in metal dumpsters from a licensed solid waste management contractor. No construction waste materials will be buried onsite. Any burning will be conducted in accordance with local or state regulations. It is the responsibility of the Construction Manager to obtain any and all permissions and permits for burning if so locally allowed. All site personnel will be instructed of the proper waste disposal procedures by the Construction Manager.

5.9 Allowable Non-Storm Water Discharges

The following sources of non-storm water discharges from project construction activities may be combined with storm water discharges.

- Waters used to wash vehicles or to control dust
- Uncontaminated dewatering discharges
- Fire fighting waters
- Vegetation watering
- Potable or spring water discharges

6.0 Best Management Practices

Chemicals, petroleum products, and other materials will be used and stored on the project site. Best Management Practices, such as good housekeeping measures, inspections, containment, and spill prevention practices will be used to limit contact between storm water and potential pollutants.

6.1 Good Housekeeping

The good housekeeping practices listed below will be followed to reduce the risk of potential pollutants entering storm water discharges. All construction personnel will be responsible for monitoring and maintaining housekeeping tasks or notifying the appropriate person of a problem.

- Store only enough product to do the job.
- Store all materials in a neat and orderly manner, in the appropriate containers and, if possible, under a roof or within an enclosure.
- Keep products in the original container with the original manufacturer's label.
- Do not mix products unless recommended by the manufacturer.
- Use all of a product before disposing of the container.
- Use and dispose of products according to the manufacturer's recommendations or the Construction Manager's direction.
- Perform regular inspections of the storm water system and the material storage areas.
- When and where appropriate, use posters, bulletin boards, or meetings to remind and inform construction personnel of required procedures.

6.2 Hazardous Materials

Storage areas for hazardous materials such as oils, greases, paints, fuels, and chemicals, must be provided with secondary containment to ensure that spills in these areas do not reach waters of the State. Contingencies for the proper disposal of contaminated soils shall be established (use of licensed hauler and approved landfill, for example) early in the construction period.

6.3 Spill Prevention and Response

In addition to the good housekeeping and hazardous materials storage procedures described above, spill prevention and cleanup practices will be as follows.

- Construction personnel will be informed of the manufacturer's recommended spill cleanup methods and the location of that information and cleanup supplies.
- Materials and equipment for the cleanup of a relatively small spill will be kept in the materials storage area. These facilities may include brooms, rags, gloves, shovels, goggles, sand, sawdust, plastic or metal trash containers, and protective clothing.
- All containers will be labeled, tightly sealed, and stacked or stored neatly and securely.

The spill response procedure will be as follows:

Step 1. Upon discovery of a spill, stop the source of the spill.
Step 2. Cease all spill material transfer until the release is stopped and waste removed from the spill site.
Step 3. Initiate containment to prevent spill from reaching State waters.
Step 4. Notify a Supervisor or the Construction Manager of the spill.
Step 5. The Construction Manager will coordinate further cleanup activities.
Step 6. Any significant spill of hazardous material will be reported to the appropriate state and or local agencies at the following numbers:

National Response Center	1-800-424-8802
State Contacts:	
KDHE	785-296-1679 (24 Hours)
KEM	785-296-8013 (24 Hours)
Local Contacts:	
Police	911

Step 7. Review the construction storm water pollution prevention plan and amend if needed. Record a description of the spill, cause, and cleanup measures taken.

7.0 Inspection, Maintenance, and Reporting Procedures

Site inspection and facility maintenance are important features of an effective storm water management system. Qualified personnel will inspect disturbed areas of the site not finally stabilized, storage areas exposed to precipitation, all control measures, and site access areas to determine if the control measures and storm water management system are effective in preventing significant impacts to receiving waters.

7.1 Erosion and Sediment Controls

The following procedures will be used to maintain erosion and sedimentation controls.

- All control measures will be inspected at least once a week and after each rainfall event producing runoff and daily during prolonged rainfall periods.
- All measures will be maintained in good working order. If a repair is necessary, it will be made within 24 hours of the inspection.
- Sediment will be removed from the silt barriers when it has reached one-third of the height of the barrier.
- Silt barriers will be inspected for depth of accumulated sediment, tears, attachment to posts, and stability on a weekly basis.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- The Construction Manager will select individuals to be responsible for inspections, maintenance, repairs, and reporting. The designated individuals will receive the necessary training from the Construction Manager to properly inspect and maintain the controls in good working order.
- Inspection Form 1 will be completed after each inspection.
- The completed Inspection Forms will be kept with this Plan in Appendix B.

7.2 Non-Storm Water Controls

The following procedures will be used to maintain the non-storm water controls.

- All control measures will be inspected at least once a week and after each runoff producing rainfall event and daily during prolonged rainfall periods.
- All measures will be maintained in good working order. If a repair is necessary, it will be initiated within 24 hours of the inspection.
- The Construction Manager will select individuals to be responsible for inspections, maintenance, repairs, and reporting. The designated individuals will receive the necessary training from the Construction Manager to properly inspect and maintain the controls in good working order.
- Inspection Form 2 will be completed after each inspection.
- The completed Inspection Forms will be kept with this Plan in Appendix B.

7.3 Reporting

Two inspection forms are provided on the following pages for recording inspections and maintenance of the control measures: Erosion and Sedimentation Controls (Inspection Form 1), and Non-Storm Water Source Controls (Inspection Form 2). All disturbed areas and materials storage areas require inspection at least every 7 days and within 24 hours of a ½ inch or more rainfall. After each inspection, the inspector completes an inspection report and inserts that report in Appendix B of this Plan. Any required maintenance is initiated within 24 hours of the inspection.

A fully signed copy of this Plan and any supporting materials must be maintained at the project site from the date of project initiation to the date of final stabilization. All records and supporting documents will be compiled in an orderly manner and maintained for a period of three years following final stabilization.

The generation of reports, as part of the construction process and inspection or amendment procedures, provides accurate records that can be used to evaluate the effectiveness of this Plan and document the plans compliance. Changes in design or construction of the storm water management system are documented and included with the Plan to facilitate Plan review or evaluation. Four forms have been developed to assist the Construction Manager with record-keeping activities.

- Record of Plan Amendments Form 3
- Construction Activity Record
- Erosion and Sedimentation Controls Inspection Form 1
- Non-Storm Water Source Controls Inspection Form 2

Plan amendments will be documented on the form in the front of this Plan and on the drawings. A record of construction activities will be maintained in Appendix A of this Plan. Completed inspection and maintenance forms will be kept in Appendix B of this Plan.

Inspection Form 1
Erosion and Sedimentation Controls

Visually inspect disturbed areas of the construction site that have not been finally stabilized. Inspections to be completed every 7 days and within 24 hours of a rainfall event of ½ inch or more. Maintenance to be performed within 24 hours of inspection.

Inspector: _____

Inspection Date: _____

Date of last rainfall: _____

Amount of last rainfall: _____inches

Report on the condition of the erosion and sedimentation controls installed at the construction site. Check for tears in silt barriers, for securely attached fabric to fence posts, and for depth of sediment in front of the silt barriers. The depth of sediment should not exceed one-third of the barrier height. Seeding/planting areas and rip/rap aggregate areas should be inspected for bare spots and washouts.

Area	Condition of Control	Maintenance Required/Completion Date

_____

Inspection Form 2
Non-Storm Water Source Controls

Visually inspect material storage and construction areas. Inspections to be completed every 7 days and within 24 hours of a rainfall event of ½ inch or more. Maintenance to be performed within 24 hours of inspection.

Inspector: _____

Inspection Date: _____

Date of last rainfall: _____

Amount of last rainfall: _____inches

Construction Dust – Is there excessive dust at the site that requires watering?

_____

_____

Sediment Tracking – Are the adjacent public streets mostly free from mud, dirt, or rock?

Is washdown required?_____

Are graveled areas adequately covered?_____

Petroleum/Chemical Products – Are spill containment structures secure? Product containers securely sealed?_____

Sanitary Waste – Do portable sanitary units need service?_____

Hazardous Waste – Are hazardous wastes stored and disposed of in compliance with state and local regulations?_____

Inspection Form 2
Non-Storm Water Source Controls
(Continued)

Construction Waste – Are all construction waste materials collected and stored in approved dumpsters? _____

Material Storage Areas Exposed to Precipitation – Are materials handled and stored in a manner to prevent leakage and prevent pollutants from entering the storm water system?

_____

Other Non-Storm Water Discharges – Are waters from line flushing, pavement washdown, and dewatering directed to the storm water system prior to discharge?

_____

Maintenance Required	Maintenance Completed Date

Inspection Form 3
Record of Plan Amendments

Mohwak Park Site

Storm Water Pollution Prevention Plan

INSPECTION AND MAINTENANCE REPORT FORM

CHANGES REQUIRED TO THE POLLUTION PREVENTION PLAN:

_____
_____
_____
_____
_____

REASONS FOR CHANGES:

_____
_____
_____
_____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for the gathering of information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

SIGNATURE: _____ DATE: _____

8.0 Certification of Compliance

This Construction Storm Water Pollution Prevention Plan reflects best management practices and erosion and sedimentation control measures for storm water management as recommended by the Environmental Protection Agency.

8.1 Contractor Certifications

The Contractor Certification forms provided in this section and in the beginning of this report indicate that each contractor or subcontractor working on the project site understands the terms, conditions, and intent of the NPDES General Permit for Construction Storm Water Discharges Associated with Construction Activity and will implement the measures described in this Plan appropriate to his area of work.

All contractors and subcontractors must complete the two separate forms. If additional sheets are needed due to more subcontractors on site than sheets provided herein, additional sheets may be copied and inserted into booklet at the job site.

9.0 Project Completion

Construction is considered complete when the project site is 90 percent (density) stabilized. The Construction Manager may terminate construction erosion and sediment control measures at this time. A Notice of Termination should be submitted to the Kansas Department of Health – Bureau of Water requesting termination of the Construction Storm Water Pollution Prevention Plan Permit.

Permanent storm water control measures incorporated into the project site design include vegetated swales, aggregate surfacing of facility areas, culvert inlet/outlet protection.

Appendix A
Construction Activity Record

Construction Activity Record

An accurate and up-to-date record of construction activity must be maintained as a part of this Plan. Record the information below on an ongoing basis.

- Dates when major soil disturbing activities occur
- Dates when construction activities temporarily cease on a portion of the site
- Dates when construction activities permanently cease on a portion of the site
- Dates when stabilization measures are initiated

Date	Activity

Appendix B
Completed Inspection Forms

SECTION 00 0107
SEALS PAGE

DESIGN PROFESSIONALS OF RECORD
PROFESSIONAL LANDSCAPE ARCHITECT:
HANK MOYERS
LICENSE #:

RESPONSIBLE FOR:

SPECIFICATIONS:

01 5639	**TREE PROTECTION AND TRIMMING**
02 4100	**DEMOLITION**
31 0000	**EARTHWORK**
32 1313	**CAST IN PLACE CONCRETE**
32 9000	**EXTERIOR PLANTINGS**
32 9200	**SEEDING AND SODDING**

DRAWINGS PHASE 2:

SP100	**SURVEY**
SP101	**DEMOLITION PLAN**
SP102	**EROSION CONTROL PLAN**
SP200	**LAYOUT PLAN**
SP201	**LAYOUT PLAN ENLARGEMENT**
SP202	**LAYOUT PLAN ENLARGEMENT**
SP203	**LAYOUT PLAN ENLARGEMENT**
SP204	**LAYOUT PLAN ENLARGEMENT**
SP300	**GRADING PLAN**
SP301	**GRADING PLAN ENLARGEMENT**
SP302	**GRADING PLAN ENLARGEMENT**
SP303	**GRADING PLAN ENLARGEMENT**
SP304	**GRADING PLAN ENLARGEMENT**
SP400	**SITE DETAILS**
SP401	**SITE DETAILS**
SP402	**STANDARD DETAILS**
SP403	**STANDARD DETAILS**
L100	**LANDSCAPE PLAN**

L101	**LANDSCAPE PLAN ENLARGEMENT**
L102	**LANDSCAPE PLAN ENLARGEMENT**
L103	**LANDSCAPE PLAN ENLARGEMENT**
L104	**LANDSCAPE PLAN ENLARGEMENT**

END OF SECTION

SECTION 015639 - TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades and specifications.

1.03 SUBMITTALS

A. See Section 01 3000 – Administrative Requirements for submittal procedures.

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

C. Tree Pruning Schedule: Written schedule from arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

D. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

E. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.04 QUALITY ASSURANCE

A. Arborist Qualifications: An arborist certified by ISA or licensed in the jurisdiction where Project is located.

B. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."

PART 2 - PRODUCTS

2.01 MATERIALS

A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch (63-mm) sieve and not more than 10 percent passing a 3/4-inch (19-mm) sieve.

B. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch (25 mm) in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
   1. Obtain topsoil only from well-drained sites where topsoil is 4 inches (100 mm) deep or more; do not obtain from bogs or marshes.

C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Chain-Link Fence: Metallic-coated steel chain-link fence fabric of 0.120-inch- (3-mm-) diameter wire; a minimum of 72 inches high and maximum 96 inches high; with 1.9-inch- (48-mm-) diameter line posts; 2-3/8-inch- (60-mm-) diameter terminal and corner posts; 1-5/8-inch- (41-mm-) diameter top rail; and 0.177-inch- (4.5-mm-) diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.

E. Organic Mulch: Shredded hardwood, free from deleterious materials.

PART 3 - EXECUTION

3.01 PREPARATION

A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Tree protection zone to extend to drip line of trees. Maintain temporary fence and remove when construction is complete.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.
   1. Apply 3-inch (75-mm) average thickness of organic mulch. Do not place mulch within 6 inches (150 mm) of tree trunks.

D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

3.02 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

3.03 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.

B. Minor Fill: Where existing grade is 6 inches (150 mm) or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

C. Moderate Fill: Where existing grade is more than 6 inches (150 mm) but less than 12 inches (300 mm) below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
   1. Carefully place drainage fill against tree trunk approximately 2 inches (50 mm) above elevation of finish grade and extend not less than 18 inches (450 mm) from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches (150 mm) below elevation of grade.
   2. Place filter fabric with edges overlapping 6 inches (150 mm) minimum.
   3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.04 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction.

B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.

C. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
   1. Type of Pruning: Cleaning.

D. Cut branches with sharp pruning instruments; do not break or chop.

E. Chip removed tree branches and dispose of off-site.

3.05 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

3.06 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner's property.

END OF SECTION

SECTION 02 2700 - PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Silt fences

B. Inlet Filters

1.02 RELATED SECTIONS:

A. Section 329119- Landscape Grading.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with Kansas Department of Transportation standards.

1.04 SUBMITTALS FOR REVIEW

A. Submittals: Procedures for submittals and SWPPP Plan

B. Product Data: Provide data for silt fence fabric and posts.

C. Manufacturer's Installation Instructions: Indicate special procedures, positioning of posts, attachment, and perimeter conditions requiring special attention.

PART 2 - PRODUCTS

2.01 SILT FENCE MATERIALS

A. Manufacturers:
   1. Reference Manufacturer: Mercantile Development, Inc. - Product: Geofab Silt Fence.
   2. Other acceptable Manufacturers:
      a. Amoco Construction Fabrics.
   3. Section 01600 - Materials and Equipment: Product options and substitutions. Substitutions: Permitted.

B. Silt Fence Fabric: 100 percent spunbound nylon reinforced with polyester netting, 4.2 ounces per square yard minimum, 36 inches minimum width; equip with enclosed attachment and support cord.

C. Posts: Steel, 'T' section, 1.3 pounds per foot; equip with anchor plate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of existing conditions before starting work.

B. Verify that subgrade is ready to receive the work of this section.

3.02 PREPARATION

A. Trench along silt fence line to required elevations.

B. Remove large stones or other hard matter which could damage silt fence or impede consistent backfilling or compaction.

3.03 INSTALLATION - SILT FENCES

A. Install silt fence and posts in accordance with fence manufacturer's instructions.

B. Space posts 8 feet apart to height of 24 inches above subgrade.

C. Secure fabric to posts, drape bottom of fabric into trench, backfill trench.

3.04 CLEANING

A. Remove accumulated sediment and repair silt fence periodically.

B. Remove silt fence, posts, and accumulated sediment prior to landscape grading.

END OF SECTION

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

B. Abandonment in place of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Sequencing and staging requirements.

C. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

D. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

E. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

F. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Site Plan: Showing:
   1. Vegetation to be protected.
   2. Areas for temporary construction and field offices.
   3. Areas for temporary and permanent placement of removed materials.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

A. Remove portions of existing buildings as required to maintain facility operations. Contractor shall determine appropriate scheduling and coordinate with Owner with minimum 14 days in advance of demolition activities.

B. Remove paving and curbs as required to accomplish new work.

C. Within area of new construction, remove foundation walls and footings to a minimum of 2 feet (600 mm) below finished grade.

D. Remove concrete slabs on grade as needed to achieve new work or as indicated on drawings.

E. Remove other items indicated, for salvage, relocation, and recycling.

F. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in Section 01 7000.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Use of explosives is not permitted.
   3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   7. Do not close or obstruct roadways or sidewalks without permit.
   8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Do not begin removal until built elements to be salvaged or relocated have been removed.

E. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.

F. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

G. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

H. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

I. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Dismantle existing construction and separate materials.
   2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 0000
EARTHWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 01 Specification Sections, apply to work specified in this Section.
B. APWA 2100 Grading and Site Preparation
C. APWA 2400 Seeding, Sodding and Overseeding

1.02 SUMMARY

A. This Section includes all labor, materials, equipment and supervision required to furnish and install the following:

1. Protecting existing vegetation to remain
2. Removing existing vegetation
3. Clearing and grubbing
4. Stripping and stockpiling topsoil
5. Stripping and stockpiling rock
6. Removing above- and below-grade site improvements
7. Temporary erosion control

1.03 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work and pay any fees required for permits.
B. The entire installation shall fully comply with all local and state laws and ordinances, and with all established codes applicable thereto.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and place in designated area with adequate protection.

1.05 COORDINATION

A. Coordinate installation of required devices and other structural components as they are constructed.
B. Coordinate installation of identifying devices after completing covering and painting if devices are applied to surfaces.

1.06 JOB CONDITIONS

A. Existing Utilities:
1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during this work.
2. Underground utilities shown on the drawings have been taken from existing public records, Owner's records available drawings and are correct to the best of our knowledge, provided for information only.
3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities caused by Contractor's negligence to the satisfaction of Utility Owner at no cost to the Project Owner.

4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Landscape Architect and then only after acceptable temporary utility services have been provided.
5. Provide minimum of 48-hour notice to Owner and Landscape Architect and receive written notice to proceed before interrupting any utility.

B. Protection of Persons and Property:
PRODUCT DATA SHEET 1 -

1. Barricade open excavations occurring as part of this work and post with warning lights.
2. Operate warning lights as recommended by authorities having jurisdiction.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by this work.

1.09 INSPECTION AND APPROVAL

A. All materials described and specified herein are subject to inspection and approval by Owner's Representative.
B. Materials may be inspected by the Owner's Representative at source of supply or the Owner's Representative may require the Contractor to submit color photographs which illustrate the specified plant material at the source of supply.
C. This inspection does not waive the right to reject any material after it has been delivered to the site and/or installed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Only soil approved by the County of Johnson County, respective APWA Sections will be allowed.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.
B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protected zones have been identified and enclosed.
C. Protecting existing site improvements to remain from damage during construction.
D. Restore damaged improvements to their original conditions, as accepted to the Owner.

3.02 TEMPORARY EROSION AND SEDIMENT CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.03 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to drawings.

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to drawings.

3.04 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or be relocated.
2. Grind down stumps and remove roots larger than 2 inches (50 mm) in diameter, obstructions, and debris to a depth of 48 inches (1,200 mm) below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and stockpile in areas approved by Architect.

B. Fill depressions caused be clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.05 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches (150 mm) in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and non-soil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 96 inches (2400 mm).
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for re-spreading deeper topsoil.

3.06 STOCKPILING ROCK

A. Remove from construction area naturally formed rocks that measure more than 1 foot (300 mm) across in least dimension. Do not include excavated or crushed rock.

1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

B. Stockpile rock away from edge of excavations without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.

1. Limit height of rock stockpiles to 36 inches (900 mm).
2. Do not stockpile rock within protection zones.
3. Dispose of surplus rock. Surplus rock is that which exceeds quantity indicated to be stockpiled or reused.

3.07 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.08 DISPOSAL OF SURPLUS AND WASTE MATERIAL

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Burning tree, shrub, and other vegetation waste is permitted according to burning requirements and permitting of authorities having jurisdiction. Control such burning to produce the least smoke or air pollutants and minimum annoyance to surrounding properties. Burning of other waste and debris is prohibited.

C. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

SECTION 321313 - CAST-IN-PLACE CONCRETE

PART 1- GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division I Specification Sections, apply to work specified in this Section.

B. Comply with ACI 301-8 and 318-83 for all work.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades.

1.03 WORK INCLUDED

A. Provide all labor, materials, equipment and supervision required to construct concrete steps, walls, and bollards, etc., including:

1. Concrete.
2. Curing Compounds.
3. Expansion and contraction joints and fillers.
4. Sleeves.

1.04 QUALITY ASSURANCE

A. Owner to provide all testing of on-site concrete. Lab reports shall be simultaneously forwarded to the Owner, Contractor, Architect and Landscape Architect.

B. Testing:

1. Slump to be checked in accordance with ASTM C143. One test minimum per day.
2. Air content measured in accordance with ASTM C231, or C173. One test minimum daily.
3. Strength tests:
   a. Take one (1) cylinder for each fifty (50) cubic yards or part thereof. Minimum one set of One (1) cylinder per each day's pour.
   b. Each cylinder shall be plainly marked showing cylinder designation (1A, 1B, 1C, etc.).
   c. Job cure each cylinder three (3) days.
   d. After three (3) days, Owner will test at ages seven (7) days and set of two at twenty-eight (28) days. Additional Cylinders to remain at the job as a "spare" cured under same conditions as concrete in the area from which it was taken.
   e. The date and location of each sample shall be marked on the Contractor's job set of plans.
   f. Load and core tests shall be required only if cylinder tests indicate concrete does not meet Specifications. Such tests, if deemed advisable by the Landscape Architect, shall be arranged and paid for by the Contractor.

1.05 SUBMITTALS

A. Certification of concrete design mix by a testing laboratory. Submit prior to placement.

B. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

C. Joint Sealer color samples for approval

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing reshoring.

1.06 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work.

B. The entire installation shall fully comply with all state laws and ordinances, and with all established codes applicable thereto.

1.07 SITE DISTURBANCES

A. Take precautions to ensure that equipment and vehicles do not disturb or damage existing site grading, walks, drives, utilities, plants, etc.
B. Verify locations and depths of all underground utilities prior to excavation.
C. Protect adjacent work. Repair and/or return to original condition any damage caused by Contractor's negligence at no cost to Owner.
D. Provide temporary barricades and warning lights as required for protection of project work and public safety.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

A. ASTM C150, type 1 or type 111.

2.02 SAND

A. Clean, hard, washed and well graded. Sand shall conform with ASTM C33. Provide tests providing compliance with this Section.

2.03 COARSE AGGREGATE

A. Aggregate shall conform to ASTM C33. Aggregate for footings and other unexposed concrete may be gravel. Aggregate for exterior concrete and surfaces shall be KCMMB aggregate, max. size 1". No substitutions will be allowed. Evidence of staining due to impurities will be cause for rejection of work.
B. Class: Severe weathering region, but not less than 3S

2.04 MIXING WATER

A. Clean and free from oil, acid and injurious amounts of vegetable matter, alkalies and other impurities. Complying with ASTM C 94.

2.05 ADMIXTURES

A. Air-entraining agents shall conform to ASTM C260. Calcium Chloride is not to be used. No other admixtures shall be used without the expressed, written consent of the Landscape Architect. A water reducing agent may be used as deemed necessary, to be in conformance with the latest ASTM requirements. A maximum of 15% replacement of cement with fly ash will be permitted.

2.06 CURE AND SEAL

A. CS-309 W.R. Meadows, Inc. or equivalent.

PART 3- EXECUTION

3.01 SUBGRADE PREPARATION

A. Excavate, fill, compact, grade and prepare subgrade as specified in Earthwork and Site Grading: Section 31 2200.

3.02 FORMS

A. Use wood or steel forms adequately staked and braced for all exposed slab edges. Construct curve forms with flexible material, adequately braced to provide a smooth continuous curved walk or wall surfaces.
B. Secure forms in place to maintain grade and alignment while concrete is placed and finished.
C. Set base of form at subgrade elevation or below with top of form at pavement surface elevation at edge of slab; set forms on properly compacted materials.
D. Oil forms before concrete is placed.

E. Leave forms in place not less than eight (8) hours after concrete is placed. If removal causes damage to concrete, leave forms on as long as necessary to prevent damage.

F. Remove forms with care to prevent cracking, spalling or overstressing concrete.

3.03 CONCRETE MIX

A. Concrete mix for concrete steps and walls:

1. KCMMB 4K - Minimum of 4,000 psi compressive strength at twenty-eight (28) days.
2. Maximum of five (5) gallons of water per sack of cement (including free moisture in aggregate).
3. Minimum of six (6) sacks of cement per cubic yard.
4. Slump four inch (4") maximum.
5. Air content 5% - 7%.

3.4 MIXING

A. Except as otherwise specified, concrete shall be ready-mixed or job-mixed at the Contractor's option, and in accordance with requirements of ACI 318-77. Ready-mixed concrete shall be mixed and delivered to the project in accordance with ASTM C94. Maximum mixing time is one (1) hour.

3.5 JOINTS

A. Construction Joint - Keyed joints or doweled joints shall be used at ends of all concrete pours. Bars to extend through joints a minimum of twenty-four (24) bar diameters.

B. Tooled expansion joints at exterior concrete slabs shall be installed as shown on the plans.

C. Expansion joints to be placed at all turns horizontally or changes vertically and for every 30’.

D. Tooled contraction joints shall be and one-half (1/2) inch maximum wide and two (2) inches of slab thickness in depth with one-quarter (1/4) inch radius edge.

E. Sidewalk construction joints shall be spaced as shown on Plans.

3.6 PLACING AND PROTECTING CONCRETE

A. No concrete shall be placed until Landscape Architect has inspected and approved forms, placement of reinforcement, pipes, sleeves, conduit and other inserts.

B. Before placing concrete, remove all debris, water and ice from the place to be occupied by the concrete. Wet subgrade and forms immediately prior to placing concrete.

C. Concrete shall be deposited in the forms as nearly as possible to final location. The placing or depositing of all concrete shall be done in accordance with requirements of the ACI 318-77. Brush on neat grout where placing against hardened concrete.

D. Erect windbreaks to prevent strong, hot winds from drying exposed slabs while they are being finished. Keep concrete moist.

E. Use of salt or other chemicals is prohibited. Use of accelerating admixtures will not be permitted.

F. Cold weather concreting shall be done only if Contractor can maintain temperatures of seventy (70) degrees F. or above for three (3) days or fifty (50) degrees F. or above for five (5) days. Do not allow concrete to freeze for next four (4) days. Keep concrete moist. Place no concrete for foundations on backfilled earth, disturbed or frozen earth. During cold weather concreting, prevent freezing of soil beneath footing. All compacted fill to receive concrete floors shall be brought to a temperature of fifty (50) degrees before concrete floor is placed and shall be maintained at this temperature until concrete has taken its final set.

G. Place concrete continuously between construction joints. Deposit in horizontal layers not greater than 24". Consolidate layers while still plastic to prevent cold joints.

H. Place all footings full thickness in one operation, without changing in proportions; screeded to proper elevation; and floated.

I. Consolidate installed concrete using mechanical vibrating equipment supplemented with hand rodding and tamping. Work concrete thoroughly around reinforcement and other embedded items and into all parts of formwork.

3.7 FINISHING

A. Walls

1. Remove bulges, fins, form marks and roughness from exposed surfaces by grinding.
2. Fill honeycombed and other defective area by cutting out to solid concrete (minimum depth = 1") with straight edges and at right angles to the surface. Dampen area to be patched, brush on grout of equivalent parts Portland Cement and sand and follow immediately with patching mortar.
3. Patching mortar to be not richer than one (1) part Portland Cement to three (3) parts sand. Color of patching mortar shall match the adjacent concrete. (Substitute white Portland Cement for part of the grey cement as needed to provide color match).
4. Trowel or burlap rub patched areas to match the surrounding concrete area. Clean all walls upon completion.
5. Exposed concrete wall faces to have a uniform board form concrete finish.
6. Acceptance: The presence of serious honeycomb or excessive misalignment of forms shall be sufficient cause of rejection and replacement of the concrete affected at the Contractor's expense.

3.8 CONCRETE CURING

A. All concrete shall be kept continuously moist for at least five (5) days after placement. If forms are removed prior to five days, apply liquid membrane-forming curing compound complying with ASTM C309.

B. Formed concrete shall be cured in the forms with the exposed surfaces covered by burlap or polyethylene. Stripping of wall and non-structural forms prior to the end of the curing period will not be permitted, unless provisions are made to keep the concrete covered and sealed tight.

3.9 APPLICATION OF SEALER (ALL EXPOSED CONCRETE SLABS)

A. Apply one coat as a cure as soon after final troweling as possible. Coverage and application in accordance with manufacturer's recommendations.

3.10 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from concrete operations.

END OF SECTION 321313

SECTION 32 9000

EXTERIOR PLANTINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 1 Specification Sections, apply to work specified in this Section.

1.02 SUMMARY

A. This Section includes all labor, materials, equipment and supervision required to furnish and install the following:
   1. Trees
   2. Shrubs.
   3. Ground cover.
   4. Perennials and Grasses.

1.03 WORK SPECIFIED ELSEWHERE

A. Section 31 1000 – 'Clearing and Site Preparation' for site clearing and earth moving.

1.04 DEFINITIONS

A. 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, and rigidly supported, as recommended by ANSI Z60.1. Designated as "B&B".
   1. Balls: Firmly wrapped with burlap or similar biodegradable material and bound with twine, cord or wire mesh.
   2. Broken or loose balls will not be accepted.

B. 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 per Plant Schedule.

C. 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 kind and size of exterior plant required per Plant Schedule.

D. 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 kind, type, and size of exterior plant required per Plant Schedule.

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

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

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

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

I. Plant Schedule: A list of plant materials is scheduled on the Drawing. In the event of any discrepancy between this schedule and the Plan Drawing showing the plants, the Plan Drawing shall govern.

J. PLANET Certification: The Professional Landcare Network (PLANET) is an international association serving lawn care professionals, landscape management, design/build/installation professionals, irrigation & water management and interior plantscapers. The International Certification Council (ICC) is the group that seeks to make that vision a reality by establishing certification programs, administering exams, and enforcing ethical compliance of all certification programs on behalf of PLANET. For more information, visit http://www.landcarenetwork.org.

1.05 SUBMITTALS

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

B. Samples for Verification: For each of the following:
1. 1 quart for each color and texture of wood mulch required, in labeled plastic bags.

C. Product Certificates: For each type of manufactured product, signed by product 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.

D. Qualification Data: For landscape Installer. Submit all applicable corporate certificates and certifications for all technicians and jobsite supervisors.
1. Proof of Contractor PLANET Certification.
a. Proof of certification shall be submitted to Landscape Architect within 21 days following the award of Contract and should be maintained on jobsite at all times.

E. Material Test Reports: For existing surface soil and 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.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified PLANET Landscape Industry Certified Technician (www.landcarenetwork.org) with a minimum of five (5) years experience similar in material, design and extent to that indicated for this project and whose work has resulted in successful establishment of exterior plants.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time PLANET Landscape Industry Certified supervisor on Project site when exterior 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; 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 and soil amendments to be added to produce a 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." In the event there is a discrepancy between these standards and this Specification, the most restrictive requirement shall govern.

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 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
1. Equal or exceed measurements specified in Plant Schedule.

1.07 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work and pay any fees required for permits.

B. The entire installation shall fully comply with all local and state laws and ordinances, and with all established codes applicable thereto.

1.08 JOB CONDITIONS

A. Existing Utilities:
1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during this work.
2. Underground utilities shown on the drawings have been taken from existing public records, Owner's records available drawings and are correct to the best of our knowledge, provided for information only.
3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities caused by Contractor's negligence to the satisfaction of Utility Owner at no cost to the Project Owner.
4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Landscape Architect and then only after acceptable temporary utility services have been provided.
5. Provide minimum of 48-hour notice to Owner and Landscape Architect and receive written notice to proceed before interrupting any utility.

B. Protection of Persons and Property:
1. Barricade open excavations occurring as part of this work and post with warning lights.
2. Operate warning lights as recommended by authorities having jurisdiction.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by this work.

1.09 INSPECTION AND APPROVAL

A. All materials described and specified herein are subject to inspection and approval by Owner's Representative.

B. Materials may be inspected by the Owner's Representative at source of supply or the Owner's Representative may require the Contractor to submit color photographs which illustrate the specified plant material at the source of supply.

C. This inspection does not waive the right to reject any material after it has been delivered to the site and/or installed.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver exterior plants freshly dug.
1. 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 Landscape 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.

C. Lift and handle plants from the bottom of the root ball only.

D. Plants moved with a ball will not be accepted if root ball is cracked, loose or broken before or during planting operations.

E. 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 trees in shade, protect from weather and mechanical damage, and keep roots moist.
1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
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.

F. Deliver fertilizer to site in original, unopened containers, each bearing manufacturer's guaranteed analysis.

G. Store packaged materials off the ground and protect from moisture.

1.11 COORDINATION

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. Deciduous trees and shrubs: April 1 to June 1 and August 15 to November 15.
2. Evergreen trees and shrubs: April 1 to June 1 and August 15 to October 15

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

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

1.12 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with, other warranties made by the contractor under requirements of the Contract Documents.

B. Special Warranty: Warrant living trees and shrubs for a period of one (1) year after date of Substantial Completion, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, abnormal weather conditions unusual for warranty period, or incidents which are beyond Contractor's control.

C. Plants shall be alive and in good, healthy and flourishing condition of growth at the end of the warranty period.

D. At the end of the guaranty period, final inspection will be made by owner's Representative upon written notice requesting such inspection; submit notice to Owner's Representative at least ten (10) days before the anticipated date of inspection.

E. Any plant, required under this Contract, that is dead or not in a vigorous, thriving condition, as determined by Owner's Representative at the time of Final Inspection, will be removed from the site.

F. Plants that are missing at the time of Final Inspection are to be installed during the specified planting season when weather and site conditions permit.

G. In case of any questions regarding the condition and satisfactory establishment of a rejected plant, the Landscape Contractor may elect to allow such plant to remain through another complete growing season. If at that time the rejected plant is found to be dead, in an unhealthy or badly impaired condition, it shall be replaced.

H. After Substantial Completion, replace plants (once during or at the end of the guaranty period) that are observed to be dead or in a badly impaired condition.

I. One replacement after Substantial Completion shall constitute fulfillment of Contractor's warranty for the particular plant replaced.

J. Replacement Plants: Plants of the same kind and size as specified in the Plant Schedule; furnished and planted as specified herein.

K. Replacement Plants: Guyed or staked, mulched, wrapped, fertilized, pruned and restored to original condition as originally specified at no cost to Owner.

L. Make all necessary repairs to grades, lawns and paving required because of plant replacements, at no cost to the Owner.

M. Plant Replacement Cost: Borne by Contractor except for possible replacements resulting from removal, loss or damage due to occupancy of project in any part, vandalism, civil disobedience, or acts of neglect on the part of others, physical damage by animals, vehicles, fire, etc., or losses due to curtailment of water by local authority, or to "Acts of God". Floods, tornadoes, wind of hurricane force, and hail are not normal and the damage they do cannot be calculated in a bid.

1.13 MAINTENANCE

A. Begin immediately following installation of plants and continue until Substantial Completion.

B. Include watering, weeding, cultivating, mulching, removal of dead material, resetting plants to proper grades or upright position and restoration of the planting saucer, and other necessary operations.

C. If any planting is done after lawn preparation, provide proper protection to lawn areas and repair any damage resulting from planting operation promptly at no cost to the Owner.

D. Maintenance after Final Acceptance of the planting will be performed by the Owner.

E. Furnish detailed written recommended maintenance program to the Owner with a copy to Landscape Architect, prior to Substantial Completion of the various planting areas.

F. Maintenance performed by the Owner in accordance with recommended program will not affect the Landscape Contractor's obligation to guarantee and replace defective plants as herein described.

PART 2 - PRODUCTS

2.01 TREE AND SHRUB MATERIAL

A. 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.

B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.

C. Certification of inspection of plant materials required by Federal, State or other governmental agencies to accompany all shipments to be furnished to the Owner's Representative.

D. Nomenclature: The names of plants required under this Contract conform to those given in the "Standardized Plant Names", 1942 Edition, prepared by the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform generally with names accepted in the nursery trade.

E. Species and Variety: True to name as specified. Plants approved as true to name at time of initial acceptance which, during the warranty period, exhibit characteristics indicating they are not true to name will be replaced at no cost to the Owner.

F. Availability: Before submitting his bid, the Contractor shall have investigated the sources of supply and satisfied himself that he can supply the listed plants in the size, variety and quality listed and specified. Failure to take this precaution will not relieve the Contractor from his responsibility for furnishing and installing all plant materials in strict accordance with the Contract Documents without additional cost to the Owner.

G. Quality:
1. Growth habit typical for species and as indicated on the Plant Schedule.
2. Sound, healthy, vigorous and free from insect pests, plant diseases and injuries.
3. One sided plants or plants taken from tightly planted nursery rows will be rejected.

H. Size and Form:
1. Equal or exceed measurements specified in the Plant Schedule.
2. Measured before pruning with branches in normal position. Height and spread specified refers to main body of plant and not from tip to tip of branches or roots.

3. Caliper of trees four inches (4”) and less- taken six inches (6”) above ground level. Trees over four inches (4”) - measured one foot (12”) above ground level.
4. Specified trunk height can be obtained by pruning lower branches of a plant after the plant has been installed; however, pruning to achieve specified trunk height is to occur after owner's Representative has inspected plant and directed Contractor as to the amount of pruning required.
5. Where specified by caliper, no one stem of a specific multi-stemmed plant shall be smaller than the caliper size specified.

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

J. 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.

K. 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.

2.02 OVERSTORY TREES

A. Overstory 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 by Plant Schedule.
1. Provide balled and burlapped trees.

B. Root-Ball Depth: Furnish trees 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.

2.03 UNDERSTORY TREES

A. Understory 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 by Plant Schedule.
1. Provide balled and burlapped trees.

B. Root-Ball Depth: Furnish trees 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.

2.04 DECIDUOUS SHRUBS

A. Form and Size: Deciduous 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 required by Plant Schedule.

B. Root-Ball Depth: Furnish 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.

2.05 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 Plant Schedule.

2.06 PLANTS

A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

B. Grasses: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

2.07 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 6 to 7, a minimum of 4 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.
1. Topsoil Source: Reuse surface soil stockpiled on-site. Independent soil testing is required to verify suitability of stockpiled surface soil to produce topsoil. Amend soil as recommended by soil testing agency to meet organic content and pH requirements. 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 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 deep; do not obtain from agricultural land, bogs or marshes.
3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
   a. Surface soil may be supplemented with imported 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 deep; do not obtain from agricultural land, bogs or marshes.

2.08 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
   1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
   2. Class: Class O, with a minimum 95 percent passing through No. 8 (2.36-mm) sieve and a minimum 55 percent passing through No. 60 (0.25-mm) sieve.
   3. Provide lime in form of dolomitic limestone.

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

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

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

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

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

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

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

2.09 ORGANIC SOIL AMENDMENTS

A. 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 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.
   2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

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

C. 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.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
   1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cubic foot (cubic meter) of loose sawdust or ground bark.

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.

2.10 FERTILIZER

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

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

C. 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: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. 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.

2.11 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
2. Sive range: 3 inches maximum, ½ inch minimum
3. Color: Natural
4. Walnut products are prohibited.
5. Depth and locations as shown on drawings.
6. Furnish in bags or bulk.
7. Submit sample for approval by Landscape Architect.

2.12 TREE STABILIZATION MATERIALS

A. Stakes and Guys
1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, 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. Wood Deadmen: Timbers measuring 8 inches (200 mm) in diameter and 48 inches (1200 mm) long, treated with specified wood pressure-preservative treatment.
3. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
4. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch (2.7 mm) in diameter.
5. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
6. Guy Cables: Five-strand, 3/16-inch- (4.8-mm-) diameter, galvanized-steel cable, with zinc-coated turn-buckles, a minimum of 3 inches (75 mm) long, with two 3/8-inch (10-mm) galvanized eyebolts.
7. Flags: Standard surveyor's plastic flagging tape, white, 6 inches (150 mm) long.
8. Proprietary Staking-and-Guying Devices: Proprietary stake and adjustable tie systems to secure each new planting by plant stem; sized as indicated and per manufacturer's written recommendations.
9. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Arborbrace; ArborBrace Tree Guying System.
   b. Decorations for Generations, Inc.; Mega Stake System.

2.13 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.

2.14 PLANTING SOIL MIX

A. Planting soil is defined as soil to be used at open planting areas greater than 100 square feet in surface area or above ground raised planters.

B. Furnish planting soil consisting of partially decomposed vegetable matter of natural occurrence; black, clean, low in content of mineral or woody material, mildly acid, fertile and friable. Mix with one (1) part of peat to five (5) parts of soil.

C. Dispose of soil excavated from planting hole that is determined not to be of quality required or is not needed to be used for planting soil.

PART 3 - EXECUTION

3.01 COMMENCEMENT DATE

A. At the earliest possible date site conditions permit.

3.02 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 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. Stake out on the ground the location of all plantings and obtain approval of the Landscape Architect before excavation is begun.

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

E. Relocate incorrectly located plants at no expense to the Owner.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks, 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.

3.04 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 8 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
   1. Apply fertilizer directly to subgrade before loosening.
   2. 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 8 inches 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.
      a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches 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. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.05 TREE AND SHRUB EXCAVATION

A. Pits and Trenches: Excavate the plant pit, centered at the stake locations. 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 a pit at least twice the diameter of the root ball diameter for balled and burlapped or containerized stock.
   2. If drain tile is shown or required under planted areas, excavate to top of porous backfill over tile.

B. Subsoil removed from excavations may be used as backfill.

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

D. Drainage: Notify Landscape 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.

3.06 DRAINAGE TEST

A. Randomly select a representative number of shrub plant pits in each shrub planting area and test for drainage prior to planting.

B. Test all tree plant pits for drainage.

C. Fill each selected plant pit with water and let stand for twenty-four (24) hours.

D. Do not proceed with planting where drainage problems are apparent.

E. Report to the Landscape Architect areas which do not fully drain within twenty-four (24) hours.

3.07 FERTILIZING B&B AND CONTAINER GROWN PLANTS

A. Trees and Shrubs: Mix with backfill.

B. Overstory Trees: Two (2) pounds per inch of caliper.

C. Understory Trees: One (1) pound per inch of caliper.

D. Shrubs: One-quarter (1/4) pound per foot height.

E. Perennials and Grasses: One-eighth (1/8) pound per plant.

3.08 FERTILIZING MACHINE MOVED PLANTS

A. Plants moved with tree spade: Spread ten (10) pounds Milorganite or equal in plant pit prior to planting.

B. Plants moved with tree mover: Spread fifty (50) pounds Milorganite or equal in plant pit priot to planting.

3.09 TREE AND SHRUB PLANTING

A. Set balled and burlapped and container grown stock plumb and in center of pit or trench with top of root ball even with the adjacent finish grades.
   1. Cut cord or wire securing burlap at base of B&B plant and remove burlap from top half of root ball. Remove all excess soil on top of the ball, just exposing the root flare.
   2. Remove container from container grown plant and “butterfly” bottom of root ball to expose healthy white roots.
   3. Make sure the plant is straight before backfilling. Backfill the plant hole with planting soil placed in layers around the root ball.

4. Carefully tamp each layer in place in a manner to avoid injury to roots or ball.
5. When approximately two-thirds (2/3) of the plant hole, has been backfilled, fill the hole with water and allow the soil to settle around the roots.
6. Set top of root ball 1” above the surrounding grade as shown in the Planting Details.
7. Place mulch as indicated in the Landscape Details.

3.10 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs as directed by Landscape Architect.

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

3.11 GUYING AND STAKING

A. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Use the number of stakes 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.

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 turnbuckles for each guy wire and tighten securely.
   2. Attach flags to each guy wire, 30 inches (760 mm) above finish grade.
   3. Paint turnbuckles with luminescent white paint.

3.12 GROUND COVER AND PLANT PLANTING

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

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.

3.13 PLANTING BED MULCHING

A. Mulch backfilled surfaces of planting beds and other areas indicated.
   1. Install at consistent depths as shown on the drawings.
   2. Sub-grade surface of areas to receive mulch shall be sloped to drain, smooth and free of ruts and clods.

3.14 CLEANUP AND PROTECTION

A. During exterior planting, keep adjacent pavings 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 exterior planting.

3.15 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

SECTION 32 9200

SEEDING AND SODDING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section covers the furnishing of all labor, equipment, tools, and materials necessary for the performance of seeding and sodding operations as required by the project plans and specifications.

B. The seeding work shall consist of furnishing and drilling in or sowing seed by an experienced seeding contractor having approved equipment manufactured expressly for the purpose, such as a seed drill, mulch chopper and blower for the application of hay or straw mulch, mulch puncher or straight serrated disc for punching mulch into soil and a cultipacker that may be used for final compaction. The contractor may also use a hydroseeder as an alternative seeding method.

C. Sod shall be required where areas are disturbed by construction within the right-of-way in established yards or as directed by the City Engineer.

D. Sod work shall be performed by a Contractor experienced in placing sod.

1.02 REFERENCE STANDARDS

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

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

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades.

1.04 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.
   1. Certification of each seed mixture for turfgrass sod identifying source, including name and telephone number of supplier.

C. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.

D. Qualification Data: For landscape Installer.

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

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

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

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
   1. Sod work shall be performed by a Contractor experienced in placing sod.

2. 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 lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.06 DELIVERY, STORAGE, AND HANDLING

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

B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

1.07 SCHEDULING

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. Seeding and Fertilizing
   a. Spring Planting: November 15 to June 1
   b. Fall Planting: August 15 to October 15
2. Sodding
   a. Spring Planting: March 15 to June 15
   b. Fall Planting: September 15 to October 15

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.
1. Seeding and fertilizing shall not be done during periods of such severe drought, high winds, or excessive moisture, as determined by the Landscape Architect, that satisfactory results are not likely to be obtained.
2. Sod shall not be placed on frozen ground.

C. Any seeding or sodding to be performed during periods other than those previously designated will require a written request to extend the permissible period for performing such work. The Contractor shall explain the reason for the variance and shall include a guarantee of satisfactory results at the end of the first four (4) weeks of the following growing season as previously defined. The Contractor shall agree to perform any necessary re-seeding or re-sodding at that time. The request shall be initiated by the Contractor and submitted to the City Engineer for consideration for approval.

1.08 LAWN MAINTENANCE

A. All seeded areas shall be protected against damage by vehicle and pedestrian traffic by the use of barriers and appropriate warning signs. If at any time before completion and acceptance of the seeding work any portion of the seeded area becomes eroded or otherwise damaged, such damaged areas shall be repaired by filling with soil to original grade, re-seeding and re-mulching. All costs of repair work shall be borne by the Contractor.

B. 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: Thirty-five (35) days from date of Substantial Completion.
   a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.
   b. Sprinkling of the seeded areas shall be carefully done in such manner as to avoid standing water, surface wash, scour or other erosion.

2. Sodded Lawns: Thirty-five (35) days from date of Substantial Completion.
   a. All sodded areas shall be thoroughly watered twice daily for a period of twenty-one days (21) after placing, except when thoroughly wetted by rain of 1/4-inch (1/4") or more in a 24-hour period.

C. 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.
   1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

D. 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 at a minimum rate of 1 inch (25 mm) per week.

E. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent 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 1-1/2 to 2 inches (38 to 50 mm) high.
   2. Mow grass 2 to 3 inches (50 to 75 mm) high.

F. 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.

PART 2 - PRODUCTS

2.01 SEED

A. Seeds for cover crops shall be the kind and mixture of seeds specified herein. Seeds shall be free of prohibited weed seeds and shall not have more than 1 percent (1%) noxious weed seeds. Seeds shall be delivered to the site in labeled containers bearing the name of the producer. A certificate showing the percentage of the purity and germination of each kind of seed specified shall be submitted to the City Engineer for approval.

B. The following formula shall be used to determine the amount of commercial seed required:
   1. Pounds of Commercial Seed Required = 10,000 x Rate of Pure Live Seeds (lbs/acre)
      Purity % x Germination %

C. Where seeding is required in areas of established yards, shoulders, slopes, (in street right-of-way), median islands, and any other areas where a high-quality seeding is deemed necessary, the seed mixture will be as follows:

KIND OF SEED	MINIMUM PURE LIVE SEED (%)	RATE OF PURE LIVE SEED POUNDS/ACRE
Turf-type Tall Fescue (Rebel II or equivalent)	80%	300
		Total 300 lbs/Acre

D. Where seeding is required in areas off street right-of-way that are not maintained periodically, the seed mixture will be as follows:

	MINIMUM PURE	RATE OF PURE LIVE SEED
KIND OF SEED	LIVE SEED (%)	POUNDS/ACRE
Alta Fescue or Kentucky 31 Fescue (Festuca Elatior) Var. Arundinces)	75%	140 lbs.
		Total 140 lbs./Acre

2.02 TURFGRASS SOD

A. Turfgrass Sod: The sod shall be densely-rooted Turf Type Tall Fescue. Kentucky bluegrass sod may be used if matching sod on a specific property. The sod shall contain a growth of not more than 10 percent (10%) of other grasses and clovers, shall be free from all prohibited and noxious weeds, and shall be three-fourths inch (3/4") to one and one-fourth inch (1-1/4") thick; each strip containing at least one (1) square yard. Sod shall be cut in strips not less than twelve inches (12”) wide. Sod placed in existing yards shall match the type in place.

2.03 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.
   3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
      a. Surface soil may be supplemented with imported 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.

2.04 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
   1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
   2. Provide lime in form of dolomitic limestone.

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

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

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

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

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

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

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

2.05 ORGANIC SOIL AMENDMENTS

A. 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-inch (25-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.
   2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

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

C. 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.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
   1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cubic foot (cubic meter) of loose sawdust or ground bark.

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.

2.06 PLANTING ACCESSORIES

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

2.07 FERTILIZER

A. Commercial fertilizer for seeded or sodded areas shall contain 12 percent (12% by weight) nitrogen, 12 percent (12% by weight) phosphoric acid, and 12 percent (12% by weight) potash. It shall be uniform in composition, free flowing, and delivered to the site in standard size bags, showing weight, analysis, and name of manufacturer. It shall be stored until use in a weatherproof storage place in such a manner that it will be kept dry and its effectiveness will not be impaired

2.08 MULCHES

A. Preferred mulch materials for application to seedbed areas are smooth brome grass hay, Sudan grass hay or prairie hay. Prairie hay shall consist chiefly of bluestem grasses, switchgrass, Indian grass and other desirable native perennial grasses. Mulch shall be free of prohibited and noxious weed seeds. Other mulching materials may be used with the approval of the Landscape Architect.

2.09 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydroseeding overspray.

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.

3.03 SEEDING

A. The area to be seeded shall be thoroughly tilled to a depth of at least three inches (3") by discing, harrowing or other approved methods until the soil is well pulverized. After completion of the tilling operation, the surface shall be cleared of all stones, stumps, or other objects larger than 1-1/2 inches (1-1/2") in diameter, and of roots, wire, grade stakes, and other objects that might be a hindrance to maintenance operations. Areas tilled shall then be brought to the desired line and grade and maintained until seeding and mulching is complete to ensure a smooth area with no gullies or depressions.

B. Any objectionable undulations or irregularities in the surface resulting from tilling or other operations shall be removed before planting operations have begun. Seed bed preparation shall be performed only during periods when satisfactory results are likely to be obtained. When results are not satisfactory because of drought, excessive moisture or other causes, the work shall be stopped until such conditions have been corrected to the satisfaction of the City Engineer.

C. Seeding may be accomplished by means of approved mechanical seed drills followed by packer wheels, or by broadcast-type seeders or hydraulic type seeders in small areas not accessible to machine methods, or as approved by the City Engineer. Seed drills shall have depth bands set to maintain a planting depth of at least one-quarter inch (1/4") but not to exceed one-half inch (1/2"). All seed sown by broadcast-type seeders shall be "raked in" or otherwise covered with soil to a depth of at least one-quarter inch (1/4") and rolled to obtain a firm seed bed. Water shall be applied when necessary.
   1. Do not use wet seed or seed that is moldy or otherwise damaged.

D. Hydraulic seeding equipment shall include a pump capable of being operated at 100 gallons per minute and at 100 pounds per square inch pressure, unless otherwise directed. The equipment shall have an acceptable gauge and a nozzle adaptable to hydraulic seeding requirements. Storage tanks shall have a means of agitation and a means of estimation of the volume used, or remaining in the tank.

E. Seed shall not be drilled or sown during windy weather or when the ground is frozen or otherwise untillable. When a seed drill is used, it shall be set to space the rows not more than 4 inches (4") apart.

F. Sow seed at the rate outlining under the ‘Products’ section of this specification.

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

H. Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh and 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.

I. 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 topsoil with suitable mechanical equipment.
   2. Bond straw mulch by spraying with asphalt emulsion at the rate of 10 to 13 gal./1000 sq. ft. (38 to 49 L/92.9 sq. m). Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

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

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

L. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.04 MULCHING

A. Hay mulch shall be applied uniformly to seeded areas at the rate of not less than two (2) tons per acre. Baled hay shall be broken up and loosened sufficiently before being fed into the blower hopper to avoid the placing of matted or unbroken clumps. The use of wet hay is prohibited.

B. Mulching shall be performed within twenty-four (24) hours after seeding, but not be done during windy or rainy weather or when such weather is imminent. Mulching shall be started at the windward side of relatively flat areas, or at the upper part of steep slopes and shall continue uniformly until each area is covered.

C. The mulching material shall be disced or punched into the soil so that it is partially covered. Several passes may be required, if a straight disc is used, in order to mix the mulching material with the topsoil sufficiently to ensure protection from erosion by either wind or water. The mulch tilling operation shall be performed parallel to the ground contours.

3.05 FERTILIZING

A. Once the seed has been installed, the contractor shall apply fertilizer at ½ lb. to 1 lb of nitrogen per 1000 square feet of area. Do Not incorporate fertilizer into the prepared seed bed.

3.06 SODDING

A. The sod bed shall have a uniform surface free from washes and depressions and shall conform to the finished grade profile or cross section shown on the plans. The soil shall be thoroughly tilled to a depth of two inches (8") with 4” of freshly placed topsoil on top to meet desired finished grade. Soils are to be tested as stated above and amended as necessary to meet recommended levels specified by the testing facility. Areas which have become dry and crusted over, shall be tilled as specified above, prior to placing the sod. The Contractor must have the prepared sod bed inspected and approved by the City Engineer prior to any sod being placed. Any sod placed prior to the sod bed being inspected and approved by the City Engineer is subject to being removed, the deficiencies corrected, and the sod replaced at the Contractor’s expense.

B. The sod beds shall be in a firm but not too compacted condition with relatively fine texture at the time of sodding. Sod shall be moist when it is placed. The use of dry sod will not be permitted. Sod strips shall be laid along contour lines by hand, commencing at the lowest point of the area and working upward. The transverse joints of sod strips shall be staggered and the sod carefully placed to reduce tight joints. The sod shall be firmed immediately after it is placed. The "firming" shall be accomplished by application of a roller weighing not less than sixty (60) nor more than ninety (90) pounds per linear foot of roller. On steep slopes, the sod may be firmed by compacting with hand shovels. The firming process shall pack the sod roots firmly into the prepared soil. Do Not water and then roll the sod or firm the sod.

C. Sod shall be transplanted within twenty-four (24) hours from the time it is harvested. All sod in stacks shall be kept moist and protected from exposure to the sun and from freezing.

D. Do not lay sod if dormant or if ground is frozen or muddy.

E. Sod placed next to existing grassy areas, curbs, sidewalks or like boundaries shall be placed to match existing grades.

F. Anchor sod on slopes exceeding 1:6 with steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage

G. The Contractor shall water installed sod immediately after installing and shall water all sod twice daily for a minimum of twenty-one (21) days from initial placement, except on those days where a minimum of 1/4 inch (1/4") of rain falls in a twenty-four hour period.

3.07 LAWN RENOVATION

H. Renovate existing lawn.

B. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
   1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.

C. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.

D. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

E. Mow, dethatch, core aerate, and rake existing lawn.

F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).

I. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches (100 mm) of existing soil. Provide new planting soil to fill low spots and meet finish grades.

J. Apply sod as required for new lawns.

K. Water newly planted areas and keep moist until new lawn is established.

3.08 SATISFACTORY LAWNS

L. 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 70 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).

B. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.

C. Satisfactory Plugged Lawn: At end of maintenance period, the required number of plugs has been established as well-rooted, viable patches of grass; and areas between plugs are free of weeds and other undesirable vegetation.

D. Satisfactory Sprigged Lawn: At end of maintenance period, the required number of sprigs has been established as well-rooted, viable plants; and areas between sprigs are free of weeds and other undesirable vegetation.

E. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.09 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 barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

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

3.10 GUARANTEE.

A. The Contractor will be required to guarantee all sod installed on this project for twenty-one (21) days from the date of installation. After the twenty-one day period, the City Engineer will inspect all sod. Any sod that is dead at the end of the twenty-one day period shall be replaced by the Contractor at his expense and is subject to an additional twenty-one day warranty period. All healthy sod at the end of the twenty-one day period will be accepted by the City Engineer and turned over to the property owner for maintenance. The

Contractor is not required to guarantee any healthy sod accepted by the City Engineer after the twenty-one day period.

B. Seeded areas will not be accepted until there is a minimum of 70% coverage of healthy grass.

3.11 RECORD KEEPING.

A. The Contractor shall maintain a log of his watering operations and rain events to show compliance with the watering requirements for seeding and sodding. The Contractor shall submit the records to the City Engineer at the end of the required maintenance period. The seeded and/or sodded areas shall not be approved until the submittal has been received and reviewed by the City Engineer.

END OF SECTION

SECTION 00 0107
SEALS PAGE

DESIGN PROFESSIONALS OF RECORD
PROFESSIONAL LANDSCAPE ARCHITECT:
HANK MOYERS
LICENSE #:

RESPONSIBLE FOR:

SPECIFICATIONS:

01 5639	**TREE PROTECTION AND TRIMMING**
02 4100	**DEMOLITION**
31 0000	**EARTHWORK**
32 1313	**CAST IN PLACE CONCRETE**
32 9000	**EXTERIOR PLANTINGS**
32 9200	**SEEDING AND SODDING**

DRAWINGS PHASE 2:

SP100	**SURVEY**
SP101	**DEMOLITION PLAN**
SP102	**EROSION CONTROL PLAN**
SP200	**LAYOUT PLAN**
SP201	**LAYOUT PLAN ENLARGEMENT**
SP202	**LAYOUT PLAN ENLARGEMENT**
SP203	**LAYOUT PLAN ENLARGEMENT**
SP204	**LAYOUT PLAN ENLARGEMENT**
SP300	**GRADING PLAN**
SP301	**GRADING PLAN ENLARGEMENT**
SP302	**GRADING PLAN ENLARGEMENT**
SP303	**GRADING PLAN ENLARGEMENT**
SP304	**GRADING PLAN ENLARGEMENT**
SP400	**SITE DETAILS**
SP401	**SITE DETAILS**
SP402	**STANDARD DETAILS**
SP403	**STANDARD DETAILS**
L100	**LANDSCAPE PLAN**

L101	**LANDSCAPE PLAN ENLARGEMENT**
L102	**LANDSCAPE PLAN ENLARGEMENT**
L103	**LANDSCAPE PLAN ENLARGEMENT**
L104	**LANDSCAPE PLAN ENLARGEMENT**

END OF SECTION

SECTION 02 2700 - PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Silt fences

B. Inlet Filters

1.02 RELATED SECTIONS:

A. Section 329119- Landscape Grading.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with Kansas Department of Transportation standards.

1.04 SUBMITTALS FOR REVIEW

A. Submittals: Procedures for submittals and SWPPP Plan

B. Product Data: Provide data for silt fence fabric and posts.

C. Manufacturer's Installation Instructions: Indicate special procedures, positioning of posts, attachment, and perimeter conditions requiring special attention.

PART 2 - PRODUCTS

2.01 SILT FENCE MATERIALS

A. Manufacturers:
   1. Reference Manufacturer: Mercantile Development, Inc. - Product: Geofab Silt Fence.
   2. Other acceptable Manufacturers:
      a. Amoco Construction Fabrics.
   3. Section 01600 - Materials and Equipment: Product options and substitutions. Substitutions: Permitted.

B. Silt Fence Fabric: 100 percent spunbound nylon reinforced with polyester netting, 4.2 ounces per square yard minimum, 36 inches minimum width; equip with enclosed attachment and support cord.

C. Posts: Steel, 'T' section, 1.3 pounds per foot; equip with anchor plate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of existing conditions before starting work.

B. Verify that subgrade is ready to receive the work of this section.

3.02 PREPARATION

A. Trench along silt fence line to required elevations.

B. Remove large stones or other hard matter which could damage silt fence or impede consistent backfilling or compaction.

3.03 INSTALLATION - SILT FENCES

A. Install silt fence and posts in accordance with fence manufacturer's instructions.

B. Space posts 8 feet apart to height of 24 inches above subgrade.

C. Secure fabric to posts, drape bottom of fabric into trench, backfill trench.

3.04 CLEANING

A. Remove accumulated sediment and repair silt fence periodically.

B. Remove silt fence, posts, and accumulated sediment prior to landscape grading.

END OF SECTION

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

B. Abandonment in place of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Sequencing and staging requirements.

C. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

D. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

E. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

F. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Site Plan: Showing:
   1. Vegetation to be protected.
   2. Areas for temporary construction and field offices.
   3. Areas for temporary and permanent placement of removed materials.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

A. Remove portions of existing buildings as required to maintain facility operations. Contractor shall determine appropriate scheduling and coordinate with Owner with minimum 14 days in advance of demolition activities.

B. Remove paving and curbs as required to accomplish new work.

C. Within area of new construction, remove foundation walls and footings to a minimum of 2 feet (600 mm) below finished grade.

D. Remove concrete slabs on grade as needed to achieve new work or as indicated on drawings.

E. Remove other items indicated, for salvage, relocation, and recycling.

F. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in Section 01 7000.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Use of explosives is not permitted.
   3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   7. Do not close or obstruct roadways or sidewalks without permit.
   8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Do not begin removal until built elements to be salvaged or relocated have been removed.

E. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.

F. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

G. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

H. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

I. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Dismantle existing construction and separate materials.
   2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 0000
EARTHWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 01 Specification Sections, apply to work specified in this Section.
B. APWA 2100 Grading and Site Preparation
C. APWA 2400 Seeding, Sodding and Overseeding

1.02 SUMMARY

A. This Section includes all labor, materials, equipment and supervision required to furnish and install the following:

1. Protecting existing vegetation to remain
2. Removing existing vegetation
3. Clearing and grubbing
4. Stripping and stockpiling topsoil
5. Stripping and stockpiling rock
6. Removing above- and below-grade site improvements
7. Temporary erosion control

1.03 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work and pay any fees required for permits.
B. The entire installation shall fully comply with all local and state laws and ordinances, and with all established codes applicable thereto.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and place in designated area with adequate protection.

1.05 COORDINATION

A. Coordinate installation of required devices and other structural components as they are constructed.
B. Coordinate installation of identifying devices after completing covering and painting if devices are applied to surfaces.

1.06 JOB CONDITIONS

A. Existing Utilities:
1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during this work.
2. Underground utilities shown on the drawings have been taken from existing public records, Owner's records available drawings and are correct to the best of our knowledge, provided for information only.
3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities caused by Contractor's negligence to the satisfaction of Utility Owner at no cost to the Project Owner.

4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Landscape Architect and then only after acceptable temporary utility services have been provided.
5. Provide minimum of 48-hour notice to Owner and Landscape Architect and receive written notice to proceed before interrupting any utility.

B. Protection of Persons and Property:
PRODUCT DATA SHEET 1 -

1. Barricade open excavations occurring as part of this work and post with warning lights.
2. Operate warning lights as recommended by authorities having jurisdiction.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by this work.

1.09 INSPECTION AND APPROVAL

A. All materials described and specified herein are subject to inspection and approval by Owner's Representative.
B. Materials may be inspected by the Owner's Representative at source of supply or the Owner's Representative may require the Contractor to submit color photographs which illustrate the specified plant material at the source of supply.
C. This inspection does not waive the right to reject any material after it has been delivered to the site and/or installed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Only soil approved by the County of Johnson County, respective APWA Sections will be allowed.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.
B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protected zones have been identified and enclosed.
C. Protecting existing site improvements to remain from damage during construction.
D. Restore damaged improvements to their original conditions, as accepted to the Owner.

3.02 TEMPORARY EROSION AND SEDIMENT CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.03 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to drawings.

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to drawings.

3.04 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or be relocated.
2. Grind down stumps and remove roots larger than 2 inches (50 mm) in diameter, obstructions, and debris to a depth of 48 inches (1,200 mm) below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and stockpile in areas approved by Architect.

B. Fill depressions caused be clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.05 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches (150 mm) in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and non-soil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 96 inches (2400 mm).
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for re-spreading deeper topsoil.

3.06 STOCKPILING ROCK

A. Remove from construction area naturally formed rocks that measure more than 1 foot (300 mm) across in least dimension. Do not include excavated or crushed rock.

1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

B. Stockpile rock away from edge of excavations without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.

1. Limit height of rock stockpiles to 36 inches (900 mm).
2. Do not stockpile rock within protection zones.
3. Dispose of surplus rock. Surplus rock is that which exceeds quantity indicated to be stockpiled or reused.

3.07 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.08 DISPOSAL OF SURPLUS AND WASTE MATERIAL

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Burning tree, shrub, and other vegetation waste is permitted according to burning requirements and permitting of authorities having jurisdiction. Control such burning to produce the least smoke or air pollutants and minimum annoyance to surrounding properties. Burning of other waste and debris is prohibited.

C. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

SECTION 32 9000

EXTERIOR PLANTINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 1 Specification Sections, apply to work specified in this Section.

1.02 SUMMARY

A. This Section includes all labor, materials, equipment and supervision required to furnish and install the following:
   1. Trees
   2. Shrubs.
   3. Ground cover.
   4. Perennials and Grasses.

1.03 WORK SPECIFIED ELSEWHERE

A. Section 31 1000 – 'Clearing and Site Preparation' for site clearing and earth moving.

1.04 DEFINITIONS

A. 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, and rigidly supported, as recommended by ANSI Z60.1. Designated as "B&B".
   1. Balls: Firmly wrapped with burlap or similar biodegradable material and bound with twine, cord or wire mesh.
   2. Broken or loose balls will not be accepted.

B. 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 per Plant Schedule.

C. 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 kind and size of exterior plant required per Plant Schedule.

D. 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 kind, type, and size of exterior plant required per Plant Schedule.

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

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

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

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

I. Plant Schedule: A list of plant materials is scheduled on the Drawing. In the event of any discrepancy between this schedule and the Plan Drawing showing the plants, the Plan Drawing shall govern.

J. PLANET Certification: The Professional Landcare Network (PLANET) is an international association serving lawn care professionals, landscape management, design/build/installation professionals, irrigation & water management and interior plantscapers. The International Certification Council (ICC) is the group that seeks to make that vision a reality by establishing certification programs, administering exams, and enforcing ethical compliance of all certification programs on behalf of PLANET. For more information, visit http://www.landcarenetwork.org.

1.05 SUBMITTALS

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

B. Samples for Verification: For each of the following:
1. 1 quart for each color and texture of wood mulch required, in labeled plastic bags.

C. Product Certificates: For each type of manufactured product, signed by product 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.

D. Qualification Data: For landscape Installer. Submit all applicable corporate certificates and certifications for all technicians and jobsite supervisors.
1. Proof of Contractor PLANET Certification.
a. Proof of certification shall be submitted to Landscape Architect within 21 days following the award of Contract and should be maintained on jobsite at all times.

E. Material Test Reports: For existing surface soil and 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.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified PLANET Landscape Industry Certified Technician (www.landcarenetwork.org) with a minimum of five (5) years experience similar in material, design and extent to that indicated for this project and whose work has resulted in successful establishment of exterior plants.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time PLANET Landscape Industry Certified supervisor on Project site when exterior 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; 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 and soil amendments to be added to produce a 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." In the event there is a discrepancy between these standards and this Specification, the most restrictive requirement shall govern.

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 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
1. Equal or exceed measurements specified in Plant Schedule.

1.07 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work and pay any fees required for permits.

B. The entire installation shall fully comply with all local and state laws and ordinances, and with all established codes applicable thereto.

1.08 JOB CONDITIONS

A. Existing Utilities:
1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during this work.
2. Underground utilities shown on the drawings have been taken from existing public records, Owner's records available drawings and are correct to the best of our knowledge, provided for information only.
3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities caused by Contractor's negligence to the satisfaction of Utility Owner at no cost to the Project Owner.
4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Landscape Architect and then only after acceptable temporary utility services have been provided.
5. Provide minimum of 48-hour notice to Owner and Landscape Architect and receive written notice to proceed before interrupting any utility.

B. Protection of Persons and Property:
1. Barricade open excavations occurring as part of this work and post with warning lights.
2. Operate warning lights as recommended by authorities having jurisdiction.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by this work.

1.09 INSPECTION AND APPROVAL

A. All materials described and specified herein are subject to inspection and approval by Owner's Representative.

B. Materials may be inspected by the Owner's Representative at source of supply or the Owner's Representative may require the Contractor to submit color photographs which illustrate the specified plant material at the source of supply.

C. This inspection does not waive the right to reject any material after it has been delivered to the site and/or installed.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver exterior plants freshly dug.
1. 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 Landscape 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.

C. Lift and handle plants from the bottom of the root ball only.

D. Plants moved with a ball will not be accepted if root ball is cracked, loose or broken before or during planting operations.

E. 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 trees in shade, protect from weather and mechanical damage, and keep roots moist.
1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
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.

F. Deliver fertilizer to site in original, unopened containers, each bearing manufacturer's guaranteed analysis.

G. Store packaged materials off the ground and protect from moisture.

1.11 COORDINATION

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. Deciduous trees and shrubs: April 1 to June 1 and August 15 to November 15.
2. Evergreen trees and shrubs: April 1 to June 1 and August 15 to October 15

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

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

1.12 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with, other warranties made by the contractor under requirements of the Contract Documents.

B. Special Warranty: Warrant living trees and shrubs for a period of one (1) year after date of Substantial Completion, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, abnormal weather conditions unusual for warranty period, or incidents which are beyond Contractor's control.

C. Plants shall be alive and in good, healthy and flourishing condition of growth at the end of the warranty period.

D. At the end of the guaranty period, final inspection will be made by owner's Representative upon written notice requesting such inspection; submit notice to Owner's Representative at least ten (10) days before the anticipated date of inspection.

E. Any plant, required under this Contract, that is dead or not in a vigorous, thriving condition, as determined by Owner's Representative at the time of Final Inspection, will be removed from the site.

F. Plants that are missing at the time of Final Inspection are to be installed during the specified planting season when weather and site conditions permit.

G. In case of any questions regarding the condition and satisfactory establishment of a rejected plant, the Landscape Contractor may elect to allow such plant to remain through another complete growing season. If at that time the rejected plant is found to be dead, in an unhealthy or badly impaired condition, it shall be replaced.

H. After Substantial Completion, replace plants (once during or at the end of the guaranty period) that are observed to be dead or in a badly impaired condition.

I. One replacement after Substantial Completion shall constitute fulfillment of Contractor's warranty for the particular plant replaced.

J. Replacement Plants: Plants of the same kind and size as specified in the Plant Schedule; furnished and planted as specified herein.

K. Replacement Plants: Guyed or staked, mulched, wrapped, fertilized, pruned and restored to original condition as originally specified at no cost to Owner.

L. Make all necessary repairs to grades, lawns and paving required because of plant replacements, at no cost to the Owner.

M. Plant Replacement Cost: Borne by Contractor except for possible replacements resulting from removal, loss or damage due to occupancy of project in any part, vandalism, civil disobedience, or acts of neglect on the part of others, physical damage by animals, vehicles, fire, etc., or losses due to curtailment of water by local authority, or to "Acts of God". Floods, tornadoes, wind of hurricane force, and hail are not normal and the damage they do cannot be calculated in a bid.

1.13 MAINTENANCE

A. Begin immediately following installation of plants and continue until Substantial Completion.

B. Include watering, weeding, cultivating, mulching, removal of dead material, resetting plants to proper grades or upright position and restoration of the planting saucer, and other necessary operations.

C. If any planting is done after lawn preparation, provide proper protection to lawn areas and repair any damage resulting from planting operation promptly at no cost to the Owner.

D. Maintenance after Final Acceptance of the planting will be performed by the Owner.

E. Furnish detailed written recommended maintenance program to the Owner with a copy to Landscape Architect, prior to Substantial Completion of the various planting areas.

F. Maintenance performed by the Owner in accordance with recommended program will not affect the Landscape Contractor's obligation to guarantee and replace defective plants as herein described.

PART 2 - PRODUCTS

2.01 TREE AND SHRUB MATERIAL

A. 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.

B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.

C. Certification of inspection of plant materials required by Federal, State or other governmental agencies to accompany all shipments to be furnished to the Owner's Representative.

D. Nomenclature: The names of plants required under this Contract conform to those given in the "Standardized Plant Names", 1942 Edition, prepared by the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform generally with names accepted in the nursery trade.

E. Species and Variety: True to name as specified. Plants approved as true to name at time of initial acceptance which, during the warranty period, exhibit characteristics indicating they are not true to name will be replaced at no cost to the Owner.

F. Availability: Before submitting his bid, the Contractor shall have investigated the sources of supply and satisfied himself that he can supply the listed plants in the size, variety and quality listed and specified. Failure to take this precaution will not relieve the Contractor from his responsibility for furnishing and installing all plant materials in strict accordance with the Contract Documents without additional cost to the Owner.

G. Quality:
1. Growth habit typical for species and as indicated on the Plant Schedule.
2. Sound, healthy, vigorous and free from insect pests, plant diseases and injuries.
3. One sided plants or plants taken from tightly planted nursery rows will be rejected.

H. Size and Form:
1. Equal or exceed measurements specified in the Plant Schedule.
2. Measured before pruning with branches in normal position. Height and spread specified refers to main body of plant and not from tip to tip of branches or roots.

3. Caliper of trees four inches (4”) and less- taken six inches (6”) above ground level. Trees over four inches (4”) - measured one foot (12”) above ground level.
4. Specified trunk height can be obtained by pruning lower branches of a plant after the plant has been installed; however, pruning to achieve specified trunk height is to occur after owner's Representative has inspected plant and directed Contractor as to the amount of pruning required.
5. Where specified by caliper, no one stem of a specific multi-stemmed plant shall be smaller than the caliper size specified.

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

J. 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.

K. 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.

2.02 OVERSTORY TREES

A. Overstory 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 by Plant Schedule.
1. Provide balled and burlapped trees.

B. Root-Ball Depth: Furnish trees 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.

2.03 UNDERSTORY TREES

A. Understory 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 by Plant Schedule.
1. Provide balled and burlapped trees.

B. Root-Ball Depth: Furnish trees 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.

2.04 DECIDUOUS SHRUBS

A. Form and Size: Deciduous 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 required by Plant Schedule.

B. Root-Ball Depth: Furnish 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.

2.05 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 Plant Schedule.

2.06 PLANTS

A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

B. Grasses: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

2.07 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 6 to 7, a minimum of 4 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.
1. Topsoil Source: Reuse surface soil stockpiled on-site. Independent soil testing is required to verify suitability of stockpiled surface soil to produce topsoil. Amend soil as recommended by soil testing agency to meet organic content and pH requirements. 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 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 deep; do not obtain from agricultural land, bogs or marshes.
3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
   a. Surface soil may be supplemented with imported 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 deep; do not obtain from agricultural land, bogs or marshes.

2.08 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
   1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
   2. Class: Class O, with a minimum 95 percent passing through No. 8 (2.36-mm) sieve and a minimum 55 percent passing through No. 60 (0.25-mm) sieve.
   3. Provide lime in form of dolomitic limestone.

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

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

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

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

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

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

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

2.09 ORGANIC SOIL AMENDMENTS

A. 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 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.
   2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

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

C. 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.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
   1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cubic foot (cubic meter) of loose sawdust or ground bark.

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.

2.10 FERTILIZER

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

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

C. 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: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. 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.

2.11 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
2. Sive range: 3 inches maximum, ½ inch minimum
3. Color: Natural
4. Walnut products are prohibited.
5. Depth and locations as shown on drawings.
6. Furnish in bags or bulk.
7. Submit sample for approval by Landscape Architect.

2.12 TREE STABILIZATION MATERIALS

A. Stakes and Guys
1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, 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. Wood Deadmen: Timbers measuring 8 inches (200 mm) in diameter and 48 inches (1200 mm) long, treated with specified wood pressure-preservative treatment.
3. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
4. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch (2.7 mm) in diameter.
5. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
6. Guy Cables: Five-strand, 3/16-inch- (4.8-mm-) diameter, galvanized-steel cable, with zinc-coated turn-buckles, a minimum of 3 inches (75 mm) long, with two 3/8-inch (10-mm) galvanized eyebolts.
7. Flags: Standard surveyor's plastic flagging tape, white, 6 inches (150 mm) long.
8. Proprietary Staking-and-Guying Devices: Proprietary stake and adjustable tie systems to secure each new planting by plant stem; sized as indicated and per manufacturer's written recommendations.
9. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Arborbrace; ArborBrace Tree Guying System.
   b. Decorations for Generations, Inc.; Mega Stake System.

2.13 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.

2.14 PLANTING SOIL MIX

A. Planting soil is defined as soil to be used at open planting areas greater than 100 square feet in surface area or above ground raised planters.

B. Furnish planting soil consisting of partially decomposed vegetable matter of natural occurrence; black, clean, low in content of mineral or woody material, mildly acid, fertile and friable. Mix with one (1) part of peat to five (5) parts of soil.

C. Dispose of soil excavated from planting hole that is determined not to be of quality required or is not needed to be used for planting soil.

PART 3 - EXECUTION

3.01 COMMENCEMENT DATE

A. At the earliest possible date site conditions permit.

3.02 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 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. Stake out on the ground the location of all plantings and obtain approval of the Landscape Architect before excavation is begun.

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

E. Relocate incorrectly located plants at no expense to the Owner.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks, 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.

3.04 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 8 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
   1. Apply fertilizer directly to subgrade before loosening.
   2. 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 8 inches 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.
      a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches 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. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.05 TREE AND SHRUB EXCAVATION

A. Pits and Trenches: Excavate the plant pit, centered at the stake locations. 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 a pit at least twice the diameter of the root ball diameter for balled and burlapped or containerized stock.
   2. If drain tile is shown or required under planted areas, excavate to top of porous backfill over tile.

B. Subsoil removed from excavations may be used as backfill.

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

D. Drainage: Notify Landscape 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.

3.06 DRAINAGE TEST

A. Randomly select a representative number of shrub plant pits in each shrub planting area and test for drainage prior to planting.

B. Test all tree plant pits for drainage.

C. Fill each selected plant pit with water and let stand for twenty-four (24) hours.

D. Do not proceed with planting where drainage problems are apparent.

E. Report to the Landscape Architect areas which do not fully drain within twenty-four (24) hours.

3.07 FERTILIZING B&B AND CONTAINER GROWN PLANTS

A. Trees and Shrubs: Mix with backfill.

B. Overstory Trees: Two (2) pounds per inch of caliper.

C. Understory Trees: One (1) pound per inch of caliper.

D. Shrubs: One-quarter (1/4) pound per foot height.

E. Perennials and Grasses: One-eighth (1/8) pound per plant.

3.08 FERTILIZING MACHINE MOVED PLANTS

A. Plants moved with tree spade: Spread ten (10) pounds Milorganite or equal in plant pit prior to planting.

B. Plants moved with tree mover: Spread fifty (50) pounds Milorganite or equal in plant pit priot to planting.

3.09 TREE AND SHRUB PLANTING

A. Set balled and burlapped and container grown stock plumb and in center of pit or trench with top of root ball even with the adjacent finish grades.
   1. Cut cord or wire securing burlap at base of B&B plant and remove burlap from top half of root ball. Remove all excess soil on top of the ball, just exposing the root flare.
   2. Remove container from container grown plant and “butterfly” bottom of root ball to expose healthy white roots.
   3. Make sure the plant is straight before backfilling. Backfill the plant hole with planting soil placed in layers around the root ball.

4. Carefully tamp each layer in place in a manner to avoid injury to roots or ball.
5. When approximately two-thirds (2/3) of the plant hole, has been backfilled, fill the hole with water and allow the soil to settle around the roots.
6. Set top of root ball 1” above the surrounding grade as shown in the Planting Details.
7. Place mulch as indicated in the Landscape Details.

3.10 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs as directed by Landscape Architect.

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

3.11 GUYING AND STAKING

A. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Use the number of stakes 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.

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 turnbuckles for each guy wire and tighten securely.
   2. Attach flags to each guy wire, 30 inches (760 mm) above finish grade.
   3. Paint turnbuckles with luminescent white paint.

3.12 GROUND COVER AND PLANT PLANTING

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

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.

3.13 PLANTING BED MULCHING

A. Mulch backfilled surfaces of planting beds and other areas indicated.
   1. Install at consistent depths as shown on the drawings.
   2. Sub-grade surface of areas to receive mulch shall be sloped to drain, smooth and free of ruts and clods.

3.14 CLEANUP AND PROTECTION

A. During exterior planting, keep adjacent pavings 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 exterior planting.

3.15 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

SECTION 32 9200

SEEDING AND SODDING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section covers the furnishing of all labor, equipment, tools, and materials necessary for the performance of seeding and sodding operations as required by the project plans and specifications.

B. The seeding work shall consist of furnishing and drilling in or sowing seed by an experienced seeding contractor having approved equipment manufactured expressly for the purpose, such as a seed drill, mulch chopper and blower for the application of hay or straw mulch, mulch puncher or straight serrated disc for punching mulch into soil and a cultipacker that may be used for final compaction. The contractor may also use a hydroseeder as an alternative seeding method.

C. Sod shall be required where areas are disturbed by construction within the right-of-way in established yards or as directed by the City Engineer.

D. Sod work shall be performed by a Contractor experienced in placing sod.

1.02 REFERENCE STANDARDS

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

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

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades.

1.04 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.
   1. Certification of each seed mixture for turfgrass sod identifying source, including name and telephone number of supplier.

C. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.

D. Qualification Data: For landscape Installer.

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

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

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

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
   1. Sod work shall be performed by a Contractor experienced in placing sod.

2. 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 lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.06 DELIVERY, STORAGE, AND HANDLING

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

B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

1.07 SCHEDULING

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. Seeding and Fertilizing
   a. Spring Planting: November 15 to June 1
   b. Fall Planting: August 15 to October 15
2. Sodding
   a. Spring Planting: March 15 to June 15
   b. Fall Planting: September 15 to October 15

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.
1. Seeding and fertilizing shall not be done during periods of such severe drought, high winds, or excessive moisture, as determined by the Landscape Architect, that satisfactory results are not likely to be obtained.
2. Sod shall not be placed on frozen ground.

C. Any seeding or sodding to be performed during periods other than those previously designated will require a written request to extend the permissible period for performing such work. The Contractor shall explain the reason for the variance and shall include a guarantee of satisfactory results at the end of the first four (4) weeks of the following growing season as previously defined. The Contractor shall agree to perform any necessary re-seeding or re-sodding at that time. The request shall be initiated by the Contractor and submitted to the City Engineer for consideration for approval.

1.08 LAWN MAINTENANCE

A. All seeded areas shall be protected against damage by vehicle and pedestrian traffic by the use of barriers and appropriate warning signs. If at any time before completion and acceptance of the seeding work any portion of the seeded area becomes eroded or otherwise damaged, such damaged areas shall be repaired by filling with soil to original grade, re-seeding and re-mulching. All costs of repair work shall be borne by the Contractor.

B. 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: Thirty-five (35) days from date of Substantial Completion.
   a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.
   b. Sprinkling of the seeded areas shall be carefully done in such manner as to avoid standing water, surface wash, scour or other erosion.

2. Sodded Lawns: Thirty-five (35) days from date of Substantial Completion.
   a. All sodded areas shall be thoroughly watered twice daily for a period of twenty-one days (21) after placing, except when thoroughly wetted by rain of 1/4-inch (1/4") or more in a 24-hour period.

C. 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.
   1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

D. 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 at a minimum rate of 1 inch (25 mm) per week.

E. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent 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 1-1/2 to 2 inches (38 to 50 mm) high.
   2. Mow grass 2 to 3 inches (50 to 75 mm) high.

F. 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.

PART 2 - PRODUCTS

2.01 SEED

A. Seeds for cover crops shall be the kind and mixture of seeds specified herein. Seeds shall be free of prohibited weed seeds and shall not have more than 1 percent (1%) noxious weed seeds. Seeds shall be delivered to the site in labeled containers bearing the name of the producer. A certificate showing the percentage of the purity and germination of each kind of seed specified shall be submitted to the City Engineer for approval.

B. The following formula shall be used to determine the amount of commercial seed required:
   1. Pounds of Commercial Seed Required = 10,000 x Rate of Pure Live Seeds (lbs/acre)
      Purity % x Germination %

C. Where seeding is required in areas of established yards, shoulders, slopes, (in street right-of-way), median islands, and any other areas where a high-quality seeding is deemed necessary, the seed mixture will be as follows:

KIND OF SEED	MINIMUM PURE LIVE SEED (%)	RATE OF PURE LIVE SEED POUNDS/ACRE
Turf-type Tall Fescue (Rebel II or equivalent)	80%	300
		Total 300 lbs/Acre

D. Where seeding is required in areas off street right-of-way that are not maintained periodically, the seed mixture will be as follows:

	MINIMUM PURE	RATE OF PURE LIVE SEED
KIND OF SEED	LIVE SEED (%)	POUNDS/ACRE
Alta Fescue or Kentucky 31 Fescue (Festuca Elatior) Var. Arundinces)	75%	140 lbs.
		Total 140 lbs./Acre

2.02 TURFGRASS SOD

A. Turfgrass Sod: The sod shall be densely-rooted Turf Type Tall Fescue. Kentucky bluegrass sod may be used if matching sod on a specific property. The sod shall contain a growth of not more than 10 percent (10%) of other grasses and clovers, shall be free from all prohibited and noxious weeds, and shall be three-fourths inch (3/4") to one and one-fourth inch (1-1/4") thick; each strip containing at least one (1) square yard. Sod shall be cut in strips not less than twelve inches (12”) wide. Sod placed in existing yards shall match the type in place.

2.03 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.
   3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
      a. Surface soil may be supplemented with imported 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.

2.04 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
   1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
   2. Provide lime in form of dolomitic limestone.

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

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

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

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

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

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

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

2.05 ORGANIC SOIL AMENDMENTS

A. 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-inch (25-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.
   2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

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

C. 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.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
   1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cubic foot (cubic meter) of loose sawdust or ground bark.

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.

2.06 PLANTING ACCESSORIES

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

2.07 FERTILIZER

A. Commercial fertilizer for seeded or sodded areas shall contain 12 percent (12% by weight) nitrogen, 12 percent (12% by weight) phosphoric acid, and 12 percent (12% by weight) potash. It shall be uniform in composition, free flowing, and delivered to the site in standard size bags, showing weight, analysis, and name of manufacturer. It shall be stored until use in a weatherproof storage place in such a manner that it will be kept dry and its effectiveness will not be impaired

2.08 MULCHES

A. Preferred mulch materials for application to seedbed areas are smooth brome grass hay, Sudan grass hay or prairie hay. Prairie hay shall consist chiefly of bluestem grasses, switchgrass, Indian grass and other desirable native perennial grasses. Mulch shall be free of prohibited and noxious weed seeds. Other mulching materials may be used with the approval of the Landscape Architect.

2.09 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydroseeding overspray.

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.

3.03 SEEDING

A. The area to be seeded shall be thoroughly tilled to a depth of at least three inches (3") by discing, harrowing or other approved methods until the soil is well pulverized. After completion of the tilling operation, the surface shall be cleared of all stones, stumps, or other objects larger than 1-1/2 inches (1-1/2") in diameter, and of roots, wire, grade stakes, and other objects that might be a hindrance to maintenance operations. Areas tilled shall then be brought to the desired line and grade and maintained until seeding and mulching is complete to ensure a smooth area with no gullies or depressions.

B. Any objectionable undulations or irregularities in the surface resulting from tilling or other operations shall be removed before planting operations have begun. Seed bed preparation shall be performed only during periods when satisfactory results are likely to be obtained. When results are not satisfactory because of drought, excessive moisture or other causes, the work shall be stopped until such conditions have been corrected to the satisfaction of the City Engineer.

C. Seeding may be accomplished by means of approved mechanical seed drills followed by packer wheels, or by broadcast-type seeders or hydraulic type seeders in small areas not accessible to machine methods, or as approved by the City Engineer. Seed drills shall have depth bands set to maintain a planting depth of at least one-quarter inch (1/4") but not to exceed one-half inch (1/2"). All seed sown by broadcast-type seeders shall be "raked in" or otherwise covered with soil to a depth of at least one-quarter inch (1/4") and rolled to obtain a firm seed bed. Water shall be applied when necessary.
   1. Do not use wet seed or seed that is moldy or otherwise damaged.

D. Hydraulic seeding equipment shall include a pump capable of being operated at 100 gallons per minute and at 100 pounds per square inch pressure, unless otherwise directed. The equipment shall have an acceptable gauge and a nozzle adaptable to hydraulic seeding requirements. Storage tanks shall have a means of agitation and a means of estimation of the volume used, or remaining in the tank.

E. Seed shall not be drilled or sown during windy weather or when the ground is frozen or otherwise untillable. When a seed drill is used, it shall be set to space the rows not more than 4 inches (4") apart.

F. Sow seed at the rate outlining under the ‘Products’ section of this specification.

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

H. Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh and 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.

I. 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 topsoil with suitable mechanical equipment.
   2. Bond straw mulch by spraying with asphalt emulsion at the rate of 10 to 13 gal./1000 sq. ft. (38 to 49 L/92.9 sq. m). Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

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

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

L. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.04 MULCHING

A. Hay mulch shall be applied uniformly to seeded areas at the rate of not less than two (2) tons per acre. Baled hay shall be broken up and loosened sufficiently before being fed into the blower hopper to avoid the placing of matted or unbroken clumps. The use of wet hay is prohibited.

B. Mulching shall be performed within twenty-four (24) hours after seeding, but not be done during windy or rainy weather or when such weather is imminent. Mulching shall be started at the windward side of relatively flat areas, or at the upper part of steep slopes and shall continue uniformly until each area is covered.

C. The mulching material shall be disced or punched into the soil so that it is partially covered. Several passes may be required, if a straight disc is used, in order to mix the mulching material with the topsoil sufficiently to ensure protection from erosion by either wind or water. The mulch tilling operation shall be performed parallel to the ground contours.

3.05 FERTILIZING

A. Once the seed has been installed, the contractor shall apply fertilizer at ½ lb. to 1 lb of nitrogen per 1000 square feet of area. Do Not incorporate fertilizer into the prepared seed bed.

3.06 SODDING

A. The sod bed shall have a uniform surface free from washes and depressions and shall conform to the finished grade profile or cross section shown on the plans. The soil shall be thoroughly tilled to a depth of two inches (8") with 4” of freshly placed topsoil on top to meet desired finished grade. Soils are to be tested as stated above and amended as necessary to meet recommended levels specified by the testing facility. Areas which have become dry and crusted over, shall be tilled as specified above, prior to placing the sod. The Contractor must have the prepared sod bed inspected and approved by the City Engineer prior to any sod being placed. Any sod placed prior to the sod bed being inspected and approved by the City Engineer is subject to being removed, the deficiencies corrected, and the sod replaced at the Contractor’s expense.

B. The sod beds shall be in a firm but not too compacted condition with relatively fine texture at the time of sodding. Sod shall be moist when it is placed. The use of dry sod will not be permitted. Sod strips shall be laid along contour lines by hand, commencing at the lowest point of the area and working upward. The transverse joints of sod strips shall be staggered and the sod carefully placed to reduce tight joints. The sod shall be firmed immediately after it is placed. The "firming" shall be accomplished by application of a roller weighing not less than sixty (60) nor more than ninety (90) pounds per linear foot of roller. On steep slopes, the sod may be firmed by compacting with hand shovels. The firming process shall pack the sod roots firmly into the prepared soil. Do Not water and then roll the sod or firm the sod.

C. Sod shall be transplanted within twenty-four (24) hours from the time it is harvested. All sod in stacks shall be kept moist and protected from exposure to the sun and from freezing.

D. Do not lay sod if dormant or if ground is frozen or muddy.

E. Sod placed next to existing grassy areas, curbs, sidewalks or like boundaries shall be placed to match existing grades.

F. Anchor sod on slopes exceeding 1:6 with steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage

G. The Contractor shall water installed sod immediately after installing and shall water all sod twice daily for a minimum of twenty-one (21) days from initial placement, except on those days where a minimum of 1/4 inch (1/4") of rain falls in a twenty-four hour period.

3.07 LAWN RENOVATION

H. Renovate existing lawn.

B. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
   1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.

C. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.

D. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

E. Mow, dethatch, core aerate, and rake existing lawn.

F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).

I. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches (100 mm) of existing soil. Provide new planting soil to fill low spots and meet finish grades.

J. Apply sod as required for new lawns.

K. Water newly planted areas and keep moist until new lawn is established.

3.08 SATISFACTORY LAWNS

L. 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 70 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).

B. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.

C. Satisfactory Plugged Lawn: At end of maintenance period, the required number of plugs has been established as well-rooted, viable patches of grass; and areas between plugs are free of weeds and other undesirable vegetation.

D. Satisfactory Sprigged Lawn: At end of maintenance period, the required number of sprigs has been established as well-rooted, viable plants; and areas between sprigs are free of weeds and other undesirable vegetation.

E. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.09 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 barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

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

3.10 GUARANTEE.

A. The Contractor will be required to guarantee all sod installed on this project for twenty-one (21) days from the date of installation. After the twenty-one day period, the City Engineer will inspect all sod. Any sod that is dead at the end of the twenty-one day period shall be replaced by the Contractor at his expense and is subject to an additional twenty-one day warranty period. All healthy sod at the end of the twenty-one day period will be accepted by the City Engineer and turned over to the property owner for maintenance. The

Contractor is not required to guarantee any healthy sod accepted by the City Engineer after the twenty-one day period.

B. Seeded areas will not be accepted until there is a minimum of 70% coverage of healthy grass.

3.11 RECORD KEEPING.

A. The Contractor shall maintain a log of his watering operations and rain events to show compliance with the watering requirements for seeding and sodding. The Contractor shall submit the records to the City Engineer at the end of the required maintenance period. The seeded and/or sodded areas shall not be approved until the submittal has been received and reviewed by the City Engineer.

END OF SECTION

SECTION 015639 - TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades and specifications.

1.03 SUBMITTALS

A. See Section 01 3000 – Administrative Requirements for submittal procedures.

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

C. Tree Pruning Schedule: Written schedule from arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

D. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

E. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.04 QUALITY ASSURANCE

A. Arborist Qualifications: An arborist certified by ISA or licensed in the jurisdiction where Project is located.

B. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."

PART 2 - PRODUCTS

2.01 MATERIALS

A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch (63-mm) sieve and not more than 10 percent passing a 3/4-inch (19-mm) sieve.

B. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch (25 mm) in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
   1. Obtain topsoil only from well-drained sites where topsoil is 4 inches (100 mm) deep or more; do not obtain from bogs or marshes.

C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Chain-Link Fence: Metallic-coated steel chain-link fence fabric of 0.120-inch- (3-mm-) diameter wire; a minimum of 72 inches high and maximum 96 inches high; with 1.9-inch- (48-mm-) diameter line posts; 2-3/8-inch- (60-mm-) diameter terminal and corner posts; 1-5/8-inch- (41-mm-) diameter top rail; and 0.177-inch- (4.5-mm-) diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.

E. Organic Mulch: Shredded hardwood, free from deleterious materials.

PART 3 - EXECUTION

3.01 PREPARATION

A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Tree protection zone to extend to drip line of trees. Maintain temporary fence and remove when construction is complete.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.
   1. Apply 3-inch (75-mm) average thickness of organic mulch. Do not place mulch within 6 inches (150 mm) of tree trunks.

D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

3.02 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

3.03 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.

B. Minor Fill: Where existing grade is 6 inches (150 mm) or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

C. Moderate Fill: Where existing grade is more than 6 inches (150 mm) but less than 12 inches (300 mm) below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
   1. Carefully place drainage fill against tree trunk approximately 2 inches (50 mm) above elevation of finish grade and extend not less than 18 inches (450 mm) from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches (150 mm) below elevation of grade.
   2. Place filter fabric with edges overlapping 6 inches (150 mm) minimum.
   3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.04 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction.

B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.

C. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
   1. Type of Pruning: Cleaning.

D. Cut branches with sharp pruning instruments; do not break or chop.

E. Chip removed tree branches and dispose of off-site.

3.05 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

3.06 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner's property.

END OF SECTION

SECTION 00 0107
SEALS PAGE

DESIGN PROFESSIONALS OF RECORD
PROFESSIONAL LANDSCAPE ARCHITECT:
HANK MOYERS
LICENSE #:

RESPONSIBLE FOR:

SPECIFICATIONS:

01 5639	**TREE PROTECTION AND TRIMMING**
02 4100	**DEMOLITION**
31 0000	**EARTHWORK**
32 1313	**CAST IN PLACE CONCRETE**
32 9000	**EXTERIOR PLANTINGS**
32 9200	**SEEDING AND SODDING**

DRAWINGS PHASE 2:

SP100	**SURVEY**
SP101	**DEMOLITION PLAN**
SP102	**EROSION CONTROL PLAN**
SP200	**LAYOUT PLAN**
SP201	**LAYOUT PLAN ENLARGEMENT**
SP202	**LAYOUT PLAN ENLARGEMENT**
SP203	**LAYOUT PLAN ENLARGEMENT**
SP204	**LAYOUT PLAN ENLARGEMENT**
SP300	**GRADING PLAN**
SP301	**GRADING PLAN ENLARGEMENT**
SP302	**GRADING PLAN ENLARGEMENT**
SP303	**GRADING PLAN ENLARGEMENT**
SP304	**GRADING PLAN ENLARGEMENT**
SP400	**SITE DETAILS**
SP401	**SITE DETAILS**
SP402	**STANDARD DETAILS**
SP403	**STANDARD DETAILS**
L100	**LANDSCAPE PLAN**

L101	**LANDSCAPE PLAN ENLARGEMENT**
L102	**LANDSCAPE PLAN ENLARGEMENT**
L103	**LANDSCAPE PLAN ENLARGEMENT**
L104	**LANDSCAPE PLAN ENLARGEMENT**

END OF SECTION

SECTION 015639 - TREE PROTECTION AND TRIMMING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades and specifications.

1.03 SUBMITTALS

A. See Section 01 3000 – Administrative Requirements for submittal procedures.

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

C. Tree Pruning Schedule: Written schedule from arborist detailing scope and extent of pruning of trees to remain that interfere with or are affected by construction.

D. Certification: From arborist, certifying that trees indicated to remain have been protected during construction according to recognized standards and that trees were promptly and properly treated and repaired when damaged.

E. Maintenance Recommendations: From arborist, for care and protection of trees affected by construction during and after completing the Work.

1.04 QUALITY ASSURANCE

A. Arborist Qualifications: An arborist certified by ISA or licensed in the jurisdiction where Project is located.

B. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."

PART 2 - PRODUCTS

2.01 MATERIALS

A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch (63-mm) sieve and not more than 10 percent passing a 3/4-inch (19-mm) sieve.

B. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 1 inch (25 mm) in diameter; and free of weeds, roots, and toxic and other nonsoil materials.
   1. Obtain topsoil only from well-drained sites where topsoil is 4 inches (100 mm) deep or more; do not obtain from bogs or marshes.

C. Filter Fabric: Manufacturer's standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Chain-Link Fence: Metallic-coated steel chain-link fence fabric of 0.120-inch- (3-mm-) diameter wire; a minimum of 72 inches high and maximum 96 inches high; with 1.9-inch- (48-mm-) diameter line posts; 2-3/8-inch- (60-mm-) diameter terminal and corner posts; 1-5/8-inch- (41-mm-) diameter top rail; and 0.177-inch- (4.5-mm-) diameter bottom tension wire; with tie wires, hog ring ties, and other accessories for a complete fence system.

E. Organic Mulch: Shredded hardwood, free from deleterious materials.

PART 3 - EXECUTION

3.01 PREPARATION

A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Tree protection zone to extend to drip line of trees. Maintain temporary fence and remove when construction is complete.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.
   1. Apply 3-inch (75-mm) average thickness of organic mulch. Do not place mulch within 6 inches (150 mm) of tree trunks.

D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

3.02 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones, unless otherwise indicated.

C. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

1. Root Pruning: Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots with sharp pruning instruments; do not break or chop.

3.03 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.

B. Minor Fill: Where existing grade is 6 inches (150 mm) or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

C. Moderate Fill: Where existing grade is more than 6 inches (150 mm) but less than 12 inches (300 mm) below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
   1. Carefully place drainage fill against tree trunk approximately 2 inches (50 mm) above elevation of finish grade and extend not less than 18 inches (450 mm) from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches (150 mm) below elevation of grade.
   2. Place filter fabric with edges overlapping 6 inches (150 mm) minimum.
   3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.04 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction.

B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.

C. Pruning Standards: Prune trees according to ANSI A300 (Part 1).
   1. Type of Pruning: Cleaning.

D. Cut branches with sharp pruning instruments; do not break or chop.

E. Chip removed tree branches and dispose of off-site.

3.05 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

3.06 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner's property.

END OF SECTION

SECTION 02 2700 - PROTECTION AND EROSION CONTROL

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Silt fences

B. Inlet Filters

1.02 RELATED SECTIONS:

A. Section 329119- Landscape Grading.

1.03 QUALITY ASSURANCE

A. Perform work in accordance with Kansas Department of Transportation standards.

1.04 SUBMITTALS FOR REVIEW

A. Submittals: Procedures for submittals and SWPPP Plan

B. Product Data: Provide data for silt fence fabric and posts.

C. Manufacturer's Installation Instructions: Indicate special procedures, positioning of posts, attachment, and perimeter conditions requiring special attention.

PART 2 - PRODUCTS

2.01 SILT FENCE MATERIALS

A. Manufacturers:
   1. Reference Manufacturer: Mercantile Development, Inc. - Product: Geofab Silt Fence.
   2. Other acceptable Manufacturers:
      a. Amoco Construction Fabrics.
   3. Section 01600 - Materials and Equipment: Product options and substitutions. Substitutions: Permitted.

B. Silt Fence Fabric: 100 percent spunbound nylon reinforced with polyester netting, 4.2 ounces per square yard minimum, 36 inches minimum width; equip with enclosed attachment and support cord.

C. Posts: Steel, 'T' section, 1.3 pounds per foot; equip with anchor plate.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of existing conditions before starting work.

B. Verify that subgrade is ready to receive the work of this section.

3.02 PREPARATION

A. Trench along silt fence line to required elevations.

B. Remove large stones or other hard matter which could damage silt fence or impede consistent backfilling or compaction.

3.03 INSTALLATION - SILT FENCES

A. Install silt fence and posts in accordance with fence manufacturer's instructions.

B. Space posts 8 feet apart to height of 24 inches above subgrade.

C. Secure fabric to posts, drape bottom of fabric into trench, backfill trench.

3.04 CLEANING

A. Remove accumulated sediment and repair silt fence periodically.

B. Remove silt fence, posts, and accumulated sediment prior to landscape grading.

END OF SECTION

SECTION 02 4100
DEMOLITION

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of building elements for alteration purposes.

B. Abandonment in place of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Sequencing and staging requirements.

C. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

D. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

E. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

F. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Site Plan: Showing:
   1. Vegetation to be protected.
   2. Areas for temporary construction and field offices.
   3. Areas for temporary and permanent placement of removed materials.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.01 SCOPE

A. Remove portions of existing buildings as required to maintain facility operations. Contractor shall determine appropriate scheduling and coordinate with Owner with minimum 14 days in advance of demolition activities.

B. Remove paving and curbs as required to accomplish new work.

C. Within area of new construction, remove foundation walls and footings to a minimum of 2 feet (600 mm) below finished grade.

D. Remove concrete slabs on grade as needed to achieve new work or as indicated on drawings.

E. Remove other items indicated, for salvage, relocation, and recycling.

F. Fill excavations, open pits, and holes in ground areas generated as result of removals, using specified fill; compact fill as required so that required rough grade elevations do not subside within one year after completion.

3.02 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with other requirements specified in Section 01 7000.

B. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Use of explosives is not permitted.
   3. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   4. Provide, erect, and maintain temporary barriers and security devices.
   5. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   6. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   7. Do not close or obstruct roadways or sidewalks without permit.
   8. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   9. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

C. Do not begin removal until receipt of notification to proceed from Owner.

D. Do not begin removal until built elements to be salvaged or relocated have been removed.

E. Do not begin removal until vegetation to be relocated has been removed and specified measures have been taken to protect vegetation to remain.

F. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

G. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

H. If hazardous materials are discovered during removal operations, stop work and notify Architect and Owner; hazardous materials include regulated asbestos containing materials, lead, PCB's, and mercury.

I. Perform demolition in a manner that maximizes salvage and recycling of materials.
   1. Dismantle existing construction and separate materials.
   2. Set aside reusable, recyclable, and salvageable materials; store and deliver to collection point or point of reuse.

J. Partial Removal of Paving and Curbs: Neatly saw cut at right angle to surface.

3.03 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Owner.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Owner.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

H. Prepare building demolition areas by disconnecting and capping utilities outside the demolition zone; identify and mark utilities to be subsequently reconnected, in same manner as other utilities to remain.

3.04 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Separate areas in which demolition is being conducted from other areas that are still occupied.
   1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Section 01 5000.

C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

D. Remove existing work as indicated and as required to accomplish new work.
   1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
   2. Remove items indicated on drawings.

E. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

F. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.05 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 31 0000
EARTHWORK

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 01 Specification Sections, apply to work specified in this Section.
B. APWA 2100 Grading and Site Preparation
C. APWA 2400 Seeding, Sodding and Overseeding

1.02 SUMMARY

A. This Section includes all labor, materials, equipment and supervision required to furnish and install the following:

1. Protecting existing vegetation to remain
2. Removing existing vegetation
3. Clearing and grubbing
4. Stripping and stockpiling topsoil
5. Stripping and stockpiling rock
6. Removing above- and below-grade site improvements
7. Temporary erosion control

1.03 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work and pay any fees required for permits.
B. The entire installation shall fully comply with all local and state laws and ordinances, and with all established codes applicable thereto.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and place in designated area with adequate protection.

1.05 COORDINATION

A. Coordinate installation of required devices and other structural components as they are constructed.
B. Coordinate installation of identifying devices after completing covering and painting if devices are applied to surfaces.

1.06 JOB CONDITIONS

A. Existing Utilities:
1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during this work.
2. Underground utilities shown on the drawings have been taken from existing public records, Owner's records available drawings and are correct to the best of our knowledge, provided for information only.
3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities caused by Contractor's negligence to the satisfaction of Utility Owner at no cost to the Project Owner.

4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Landscape Architect and then only after acceptable temporary utility services have been provided.
5. Provide minimum of 48-hour notice to Owner and Landscape Architect and receive written notice to proceed before interrupting any utility.

B. Protection of Persons and Property:
PRODUCT DATA SHEET 1 -

1. Barricade open excavations occurring as part of this work and post with warning lights.
2. Operate warning lights as recommended by authorities having jurisdiction.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by this work.

1.09 INSPECTION AND APPROVAL

A. All materials described and specified herein are subject to inspection and approval by Owner's Representative.
B. Materials may be inspected by the Owner's Representative at source of supply or the Owner's Representative may require the Contractor to submit color photographs which illustrate the specified plant material at the source of supply.
C. This inspection does not waive the right to reject any material after it has been delivered to the site and/or installed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Only soil approved by the County of Johnson County, respective APWA Sections will be allowed.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.
B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protected zones have been identified and enclosed.
C. Protecting existing site improvements to remain from damage during construction.
D. Restore damaged improvements to their original conditions, as accepted to the Owner.

3.02 TEMPORARY EROSION AND SEDIMENT CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.
B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.03 TREE AND PLANT PROTECTION

A. Protect trees and plants remaining on-site according to drawings.

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to drawings.

3.04 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or be relocated.
2. Grind down stumps and remove roots larger than 2 inches (50 mm) in diameter, obstructions, and debris to a depth of 48 inches (1,200 mm) below exposed subgrade.
3. Use only hand methods or air spade for grubbing within protection zones.
4. Chip removed tree branches and stockpile in areas approved by Architect.

B. Fill depressions caused be clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches (200 mm), and compact each layer to a density equal to adjacent original ground.

3.05 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth of 6 inches (150 mm) in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and non-soil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 96 inches (2400 mm).
2. Do not stockpile topsoil within protection zones.
3. Dispose of surplus topsoil. Surplus topsoil is that which exceeds quantity indicated to be stockpiled or reused.
4. Stockpile surplus topsoil to allow for re-spreading deeper topsoil.

3.06 STOCKPILING ROCK

A. Remove from construction area naturally formed rocks that measure more than 1 foot (300 mm) across in least dimension. Do not include excavated or crushed rock.

1. Separate or wash off non-rock materials from rocks, including soil, clay lumps, gravel, and other objects larger than 2 inches (50 mm) in diameter; trash, debris, weeds, roots, and other waste materials.

B. Stockpile rock away from edge of excavations without intermixing with other materials. Cover to prevent windblown debris from accumulating among rocks.

1. Limit height of rock stockpiles to 36 inches (900 mm).
2. Do not stockpile rock within protection zones.
3. Dispose of surplus rock. Surplus rock is that which exceeds quantity indicated to be stockpiled or reused.

3.07 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.08 DISPOSAL OF SURPLUS AND WASTE MATERIAL

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

B. Burning tree, shrub, and other vegetation waste is permitted according to burning requirements and permitting of authorities having jurisdiction. Control such burning to produce the least smoke or air pollutants and minimum annoyance to surrounding properties. Burning of other waste and debris is prohibited.

C. Separate recyclable materials produced during site clearing from other non-recyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

SECTION 321313 - CAST-IN-PLACE CONCRETE

PART 1- GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division I Specification Sections, apply to work specified in this Section.

B. Comply with ACI 301-8 and 318-83 for all work.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades.

1.03 WORK INCLUDED

A. Provide all labor, materials, equipment and supervision required to construct concrete steps, walls, and bollards, etc., including:

1. Concrete.
2. Curing Compounds.
3. Expansion and contraction joints and fillers.
4. Sleeves.

1.04 QUALITY ASSURANCE

A. Owner to provide all testing of on-site concrete. Lab reports shall be simultaneously forwarded to the Owner, Contractor, Architect and Landscape Architect.

B. Testing:

1. Slump to be checked in accordance with ASTM C143. One test minimum per day.
2. Air content measured in accordance with ASTM C231, or C173. One test minimum daily.
3. Strength tests:
   a. Take one (1) cylinder for each fifty (50) cubic yards or part thereof. Minimum one set of One (1) cylinder per each day's pour.
   b. Each cylinder shall be plainly marked showing cylinder designation (1A, 1B, 1C, etc.).
   c. Job cure each cylinder three (3) days.
   d. After three (3) days, Owner will test at ages seven (7) days and set of two at twenty-eight (28) days. Additional Cylinders to remain at the job as a "spare" cured under same conditions as concrete in the area from which it was taken.
   e. The date and location of each sample shall be marked on the Contractor's job set of plans.
   f. Load and core tests shall be required only if cylinder tests indicate concrete does not meet Specifications. Such tests, if deemed advisable by the Landscape Architect, shall be arranged and paid for by the Contractor.

1.05 SUBMITTALS

A. Certification of concrete design mix by a testing laboratory. Submit prior to placement.

B. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

C. Joint Sealer color samples for approval

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing reshoring.

1.06 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work.

B. The entire installation shall fully comply with all state laws and ordinances, and with all established codes applicable thereto.

1.07 SITE DISTURBANCES

A. Take precautions to ensure that equipment and vehicles do not disturb or damage existing site grading, walks, drives, utilities, plants, etc.
B. Verify locations and depths of all underground utilities prior to excavation.
C. Protect adjacent work. Repair and/or return to original condition any damage caused by Contractor's negligence at no cost to Owner.
D. Provide temporary barricades and warning lights as required for protection of project work and public safety.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

A. ASTM C150, type 1 or type 111.

2.02 SAND

A. Clean, hard, washed and well graded. Sand shall conform with ASTM C33. Provide tests providing compliance with this Section.

2.03 COARSE AGGREGATE

A. Aggregate shall conform to ASTM C33. Aggregate for footings and other unexposed concrete may be gravel. Aggregate for exterior concrete and surfaces shall be KCMMB aggregate, max. size 1". No substitutions will be allowed. Evidence of staining due to impurities will be cause for rejection of work.
B. Class: Severe weathering region, but not less than 3S

2.04 MIXING WATER

A. Clean and free from oil, acid and injurious amounts of vegetable matter, alkalies and other impurities. Complying with ASTM C 94.

2.05 ADMIXTURES

A. Air-entraining agents shall conform to ASTM C260. Calcium Chloride is not to be used. No other admixtures shall be used without the expressed, written consent of the Landscape Architect. A water reducing agent may be used as deemed necessary, to be in conformance with the latest ASTM requirements. A maximum of 15% replacement of cement with fly ash will be permitted.

2.06 CURE AND SEAL

A. CS-309 W.R. Meadows, Inc. or equivalent.

PART 3- EXECUTION

3.01 SUBGRADE PREPARATION

A. Excavate, fill, compact, grade and prepare subgrade as specified in Earthwork and Site Grading: Section 31 2200.

3.02 FORMS

A. Use wood or steel forms adequately staked and braced for all exposed slab edges. Construct curve forms with flexible material, adequately braced to provide a smooth continuous curved walk or wall surfaces.
B. Secure forms in place to maintain grade and alignment while concrete is placed and finished.
C. Set base of form at subgrade elevation or below with top of form at pavement surface elevation at edge of slab; set forms on properly compacted materials.
D. Oil forms before concrete is placed.

E. Leave forms in place not less than eight (8) hours after concrete is placed. If removal causes damage to concrete, leave forms on as long as necessary to prevent damage.

F. Remove forms with care to prevent cracking, spalling or overstressing concrete.

3.03 CONCRETE MIX

A. Concrete mix for concrete steps and walls:

1. KCMMB 4K - Minimum of 4,000 psi compressive strength at twenty-eight (28) days.
2. Maximum of five (5) gallons of water per sack of cement (including free moisture in aggregate).
3. Minimum of six (6) sacks of cement per cubic yard.
4. Slump four inch (4") maximum.
5. Air content 5% - 7%.

3.4 MIXING

A. Except as otherwise specified, concrete shall be ready-mixed or job-mixed at the Contractor's option, and in accordance with requirements of ACI 318-77. Ready-mixed concrete shall be mixed and delivered to the project in accordance with ASTM C94. Maximum mixing time is one (1) hour.

3.5 JOINTS

A. Construction Joint - Keyed joints or doweled joints shall be used at ends of all concrete pours. Bars to extend through joints a minimum of twenty-four (24) bar diameters.

B. Tooled expansion joints at exterior concrete slabs shall be installed as shown on the plans.

C. Expansion joints to be placed at all turns horizontally or changes vertically and for every 30’.

D. Tooled contraction joints shall be and one-half (1/2) inch maximum wide and two (2) inches of slab thickness in depth with one-quarter (1/4) inch radius edge.

E. Sidewalk construction joints shall be spaced as shown on Plans.

3.6 PLACING AND PROTECTING CONCRETE

A. No concrete shall be placed until Landscape Architect has inspected and approved forms, placement of reinforcement, pipes, sleeves, conduit and other inserts.

B. Before placing concrete, remove all debris, water and ice from the place to be occupied by the concrete. Wet subgrade and forms immediately prior to placing concrete.

C. Concrete shall be deposited in the forms as nearly as possible to final location. The placing or depositing of all concrete shall be done in accordance with requirements of the ACI 318-77. Brush on neat grout where placing against hardened concrete.

D. Erect windbreaks to prevent strong, hot winds from drying exposed slabs while they are being finished. Keep concrete moist.

E. Use of salt or other chemicals is prohibited. Use of accelerating admixtures will not be permitted.

F. Cold weather concreting shall be done only if Contractor can maintain temperatures of seventy (70) degrees F. or above for three (3) days or fifty (50) degrees F. or above for five (5) days. Do not allow concrete to freeze for next four (4) days. Keep concrete moist. Place no concrete for foundations on backfilled earth, disturbed or frozen earth. During cold weather concreting, prevent freezing of soil beneath footing. All compacted fill to receive concrete floors shall be brought to a temperature of fifty (50) degrees before concrete floor is placed and shall be maintained at this temperature until concrete has taken its final set.

G. Place concrete continuously between construction joints. Deposit in horizontal layers not greater than 24". Consolidate layers while still plastic to prevent cold joints.

H. Place all footings full thickness in one operation, without changing in proportions; screeded to proper elevation; and floated.

I. Consolidate installed concrete using mechanical vibrating equipment supplemented with hand rodding and tamping. Work concrete thoroughly around reinforcement and other embedded items and into all parts of formwork.

3.7 FINISHING

A. Walls

1. Remove bulges, fins, form marks and roughness from exposed surfaces by grinding.
2. Fill honeycombed and other defective area by cutting out to solid concrete (minimum depth = 1") with straight edges and at right angles to the surface. Dampen area to be patched, brush on grout of equivalent parts Portland Cement and sand and follow immediately with patching mortar.
3. Patching mortar to be not richer than one (1) part Portland Cement to three (3) parts sand. Color of patching mortar shall match the adjacent concrete. (Substitute white Portland Cement for part of the grey cement as needed to provide color match).
4. Trowel or burlap rub patched areas to match the surrounding concrete area. Clean all walls upon completion.
5. Exposed concrete wall faces to have a uniform board form concrete finish.
6. Acceptance: The presence of serious honeycomb or excessive misalignment of forms shall be sufficient cause of rejection and replacement of the concrete affected at the Contractor's expense.

3.8 CONCRETE CURING

A. All concrete shall be kept continuously moist for at least five (5) days after placement. If forms are removed prior to five days, apply liquid membrane-forming curing compound complying with ASTM C309.

B. Formed concrete shall be cured in the forms with the exposed surfaces covered by burlap or polyethylene. Stripping of wall and non-structural forms prior to the end of the curing period will not be permitted, unless provisions are made to keep the concrete covered and sealed tight.

3.9 APPLICATION OF SEALER (ALL EXPOSED CONCRETE SLABS)

A. Apply one coat as a cure as soon after final troweling as possible. Coverage and application in accordance with manufacturer's recommendations.

3.10 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from concrete operations.

END OF SECTION 321313

SECTION 32 9000

EXTERIOR PLANTINGS

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division 1 Specification Sections, apply to work specified in this Section.

1.02 SUMMARY

A. This Section includes all labor, materials, equipment and supervision required to furnish and install the following:
   1. Trees
   2. Shrubs.
   3. Ground cover.
   4. Perennials and Grasses.

1.03 WORK SPECIFIED ELSEWHERE

A. Section 31 1000 – 'Clearing and Site Preparation' for site clearing and earth moving.

1.04 DEFINITIONS

A. 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, and rigidly supported, as recommended by ANSI Z60.1. Designated as "B&B".
   1. Balls: Firmly wrapped with burlap or similar biodegradable material and bound with twine, cord or wire mesh.
   2. Broken or loose balls will not be accepted.

B. 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 per Plant Schedule.

C. 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 kind and size of exterior plant required per Plant Schedule.

D. 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 kind, type, and size of exterior plant required per Plant Schedule.

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

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

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

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

I. Plant Schedule: A list of plant materials is scheduled on the Drawing. In the event of any discrepancy between this schedule and the Plan Drawing showing the plants, the Plan Drawing shall govern.

J. PLANET Certification: The Professional Landcare Network (PLANET) is an international association serving lawn care professionals, landscape management, design/build/installation professionals, irrigation & water management and interior plantscapers. The International Certification Council (ICC) is the group that seeks to make that vision a reality by establishing certification programs, administering exams, and enforcing ethical compliance of all certification programs on behalf of PLANET. For more information, visit http://www.landcarenetwork.org.

1.05 SUBMITTALS

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

B. Samples for Verification: For each of the following:
1. 1 quart for each color and texture of wood mulch required, in labeled plastic bags.

C. Product Certificates: For each type of manufactured product, signed by product 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.

D. Qualification Data: For landscape Installer. Submit all applicable corporate certificates and certifications for all technicians and jobsite supervisors.
1. Proof of Contractor PLANET Certification.
a. Proof of certification shall be submitted to Landscape Architect within 21 days following the award of Contract and should be maintained on jobsite at all times.

E. Material Test Reports: For existing surface soil and 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.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified PLANET Landscape Industry Certified Technician (www.landcarenetwork.org) with a minimum of five (5) years experience similar in material, design and extent to that indicated for this project and whose work has resulted in successful establishment of exterior plants.
1. Installer's Field Supervision: Require Installer to maintain an experienced full-time PLANET Landscape Industry Certified supervisor on Project site when exterior 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; 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 and soil amendments to be added to produce a 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." In the event there is a discrepancy between these standards and this Specification, the most restrictive requirement shall govern.

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 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
1. Equal or exceed measurements specified in Plant Schedule.

1.07 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work and pay any fees required for permits.

B. The entire installation shall fully comply with all local and state laws and ordinances, and with all established codes applicable thereto.

1.08 JOB CONDITIONS

A. Existing Utilities:
1. Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during this work.
2. Underground utilities shown on the drawings have been taken from existing public records, Owner's records available drawings and are correct to the best of our knowledge, provided for information only.
3. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult Utility Owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities caused by Contractor's negligence to the satisfaction of Utility Owner at no cost to the Project Owner.
4. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Landscape Architect and then only after acceptable temporary utility services have been provided.
5. Provide minimum of 48-hour notice to Owner and Landscape Architect and receive written notice to proceed before interrupting any utility.

B. Protection of Persons and Property:
1. Barricade open excavations occurring as part of this work and post with warning lights.
2. Operate warning lights as recommended by authorities having jurisdiction.
3. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by this work.

1.09 INSPECTION AND APPROVAL

A. All materials described and specified herein are subject to inspection and approval by Owner's Representative.

B. Materials may be inspected by the Owner's Representative at source of supply or the Owner's Representative may require the Contractor to submit color photographs which illustrate the specified plant material at the source of supply.

C. This inspection does not waive the right to reject any material after it has been delivered to the site and/or installed.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Deliver exterior plants freshly dug.
1. 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 Landscape 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.

C. Lift and handle plants from the bottom of the root ball only.

D. Plants moved with a ball will not be accepted if root ball is cracked, loose or broken before or during planting operations.

E. 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 trees in shade, protect from weather and mechanical damage, and keep roots moist.
1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.
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.

F. Deliver fertilizer to site in original, unopened containers, each bearing manufacturer's guaranteed analysis.

G. Store packaged materials off the ground and protect from moisture.

1.11 COORDINATION

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. Deciduous trees and shrubs: April 1 to June 1 and August 15 to November 15.
2. Evergreen trees and shrubs: April 1 to June 1 and August 15 to October 15

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

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

1.12 WARRANTY

A. General Warranty: The special warranty specified in this Article shall not deprive the Owner of other rights the Owner may have under other provisions of the Contract Documents and shall be in addition to and run concurrent with, other warranties made by the contractor under requirements of the Contract Documents.

B. Special Warranty: Warrant living trees and shrubs for a period of one (1) year after date of Substantial Completion, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, abnormal weather conditions unusual for warranty period, or incidents which are beyond Contractor's control.

C. Plants shall be alive and in good, healthy and flourishing condition of growth at the end of the warranty period.

D. At the end of the guaranty period, final inspection will be made by owner's Representative upon written notice requesting such inspection; submit notice to Owner's Representative at least ten (10) days before the anticipated date of inspection.

E. Any plant, required under this Contract, that is dead or not in a vigorous, thriving condition, as determined by Owner's Representative at the time of Final Inspection, will be removed from the site.

F. Plants that are missing at the time of Final Inspection are to be installed during the specified planting season when weather and site conditions permit.

G. In case of any questions regarding the condition and satisfactory establishment of a rejected plant, the Landscape Contractor may elect to allow such plant to remain through another complete growing season. If at that time the rejected plant is found to be dead, in an unhealthy or badly impaired condition, it shall be replaced.

H. After Substantial Completion, replace plants (once during or at the end of the guaranty period) that are observed to be dead or in a badly impaired condition.

I. One replacement after Substantial Completion shall constitute fulfillment of Contractor's warranty for the particular plant replaced.

J. Replacement Plants: Plants of the same kind and size as specified in the Plant Schedule; furnished and planted as specified herein.

K. Replacement Plants: Guyed or staked, mulched, wrapped, fertilized, pruned and restored to original condition as originally specified at no cost to Owner.

L. Make all necessary repairs to grades, lawns and paving required because of plant replacements, at no cost to the Owner.

M. Plant Replacement Cost: Borne by Contractor except for possible replacements resulting from removal, loss or damage due to occupancy of project in any part, vandalism, civil disobedience, or acts of neglect on the part of others, physical damage by animals, vehicles, fire, etc., or losses due to curtailment of water by local authority, or to "Acts of God". Floods, tornadoes, wind of hurricane force, and hail are not normal and the damage they do cannot be calculated in a bid.

1.13 MAINTENANCE

A. Begin immediately following installation of plants and continue until Substantial Completion.

B. Include watering, weeding, cultivating, mulching, removal of dead material, resetting plants to proper grades or upright position and restoration of the planting saucer, and other necessary operations.

C. If any planting is done after lawn preparation, provide proper protection to lawn areas and repair any damage resulting from planting operation promptly at no cost to the Owner.

D. Maintenance after Final Acceptance of the planting will be performed by the Owner.

E. Furnish detailed written recommended maintenance program to the Owner with a copy to Landscape Architect, prior to Substantial Completion of the various planting areas.

F. Maintenance performed by the Owner in accordance with recommended program will not affect the Landscape Contractor's obligation to guarantee and replace defective plants as herein described.

PART 2 - PRODUCTS

2.01 TREE AND SHRUB MATERIAL

A. 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.

B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.

C. Certification of inspection of plant materials required by Federal, State or other governmental agencies to accompany all shipments to be furnished to the Owner's Representative.

D. Nomenclature: The names of plants required under this Contract conform to those given in the "Standardized Plant Names", 1942 Edition, prepared by the American Joint Committee on Horticultural Nomenclature. Names of varieties not included therein conform generally with names accepted in the nursery trade.

E. Species and Variety: True to name as specified. Plants approved as true to name at time of initial acceptance which, during the warranty period, exhibit characteristics indicating they are not true to name will be replaced at no cost to the Owner.

F. Availability: Before submitting his bid, the Contractor shall have investigated the sources of supply and satisfied himself that he can supply the listed plants in the size, variety and quality listed and specified. Failure to take this precaution will not relieve the Contractor from his responsibility for furnishing and installing all plant materials in strict accordance with the Contract Documents without additional cost to the Owner.

G. Quality:
1. Growth habit typical for species and as indicated on the Plant Schedule.
2. Sound, healthy, vigorous and free from insect pests, plant diseases and injuries.
3. One sided plants or plants taken from tightly planted nursery rows will be rejected.

H. Size and Form:
1. Equal or exceed measurements specified in the Plant Schedule.
2. Measured before pruning with branches in normal position. Height and spread specified refers to main body of plant and not from tip to tip of branches or roots.

3. Caliper of trees four inches (4”) and less- taken six inches (6”) above ground level. Trees over four inches (4”) - measured one foot (12”) above ground level.
4. Specified trunk height can be obtained by pruning lower branches of a plant after the plant has been installed; however, pruning to achieve specified trunk height is to occur after owner's Representative has inspected plant and directed Contractor as to the amount of pruning required.
5. Where specified by caliper, no one stem of a specific multi-stemmed plant shall be smaller than the caliper size specified.

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

J. 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.

K. 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.

2.02 OVERSTORY TREES

A. Overstory 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 by Plant Schedule.
1. Provide balled and burlapped trees.

B. Root-Ball Depth: Furnish trees 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.

2.03 UNDERSTORY TREES

A. Understory 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 by Plant Schedule.
1. Provide balled and burlapped trees.

B. Root-Ball Depth: Furnish trees 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.

2.04 DECIDUOUS SHRUBS

A. Form and Size: Deciduous 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 required by Plant Schedule.

B. Root-Ball Depth: Furnish 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.

2.05 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 Plant Schedule.

2.06 PLANTS

A. Perennials: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

B. Grasses: Provide healthy, field-grown plants from a commercial nursery, of species and variety shown or listed.

2.07 TOPSOIL

A. Topsoil: ASTM D 5268, pH range of 6 to 7, a minimum of 4 percent organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.
1. Topsoil Source: Reuse surface soil stockpiled on-site. Independent soil testing is required to verify suitability of stockpiled surface soil to produce topsoil. Amend soil as recommended by soil testing agency to meet organic content and pH requirements. 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 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 deep; do not obtain from agricultural land, bogs or marshes.
3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
   a. Surface soil may be supplemented with imported 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 deep; do not obtain from agricultural land, bogs or marshes.

2.08 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
   1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
   2. Class: Class O, with a minimum 95 percent passing through No. 8 (2.36-mm) sieve and a minimum 55 percent passing through No. 60 (0.25-mm) sieve.
   3. Provide lime in form of dolomitic limestone.

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

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

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

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

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

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

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

2.09 ORGANIC SOIL AMENDMENTS

A. 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 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.
   2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

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

C. 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.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
   1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cubic foot (cubic meter) of loose sawdust or ground bark.

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.

2.10 FERTILIZER

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

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

C. 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: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. 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.

2.11 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
2. Sive range: 3 inches maximum, ½ inch minimum
3. Color: Natural
4. Walnut products are prohibited.
5. Depth and locations as shown on drawings.
6. Furnish in bags or bulk.
7. Submit sample for approval by Landscape Architect.

2.12 TREE STABILIZATION MATERIALS

A. Stakes and Guys
1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, 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. Wood Deadmen: Timbers measuring 8 inches (200 mm) in diameter and 48 inches (1200 mm) long, treated with specified wood pressure-preservative treatment.
3. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
4. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, two-strand, twisted, 0.106 inch (2.7 mm) in diameter.
5. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
6. Guy Cables: Five-strand, 3/16-inch- (4.8-mm-) diameter, galvanized-steel cable, with zinc-coated turn-buckles, a minimum of 3 inches (75 mm) long, with two 3/8-inch (10-mm) galvanized eyebolts.
7. Flags: Standard surveyor's plastic flagging tape, white, 6 inches (150 mm) long.
8. Proprietary Staking-and-Guying Devices: Proprietary stake and adjustable tie systems to secure each new planting by plant stem; sized as indicated and per manufacturer's written recommendations.
9. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Arborbrace; ArborBrace Tree Guying System.
   b. Decorations for Generations, Inc.; Mega Stake System.

2.13 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.

2.14 PLANTING SOIL MIX

A. Planting soil is defined as soil to be used at open planting areas greater than 100 square feet in surface area or above ground raised planters.

B. Furnish planting soil consisting of partially decomposed vegetable matter of natural occurrence; black, clean, low in content of mineral or woody material, mildly acid, fertile and friable. Mix with one (1) part of peat to five (5) parts of soil.

C. Dispose of soil excavated from planting hole that is determined not to be of quality required or is not needed to be used for planting soil.

PART 3 - EXECUTION

3.01 COMMENCEMENT DATE

A. At the earliest possible date site conditions permit.

3.02 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.03 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. Stake out on the ground the location of all plantings and obtain approval of the Landscape Architect before excavation is begun.

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

E. Relocate incorrectly located plants at no expense to the Owner.

F. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks, 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.

3.04 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 8 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
   1. Apply fertilizer directly to subgrade before loosening.
   2. 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 8 inches 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.
      a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 2 inches 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. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.05 TREE AND SHRUB EXCAVATION

A. Pits and Trenches: Excavate the plant pit, centered at the stake locations. 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 a pit at least twice the diameter of the root ball diameter for balled and burlapped or containerized stock.
   2. If drain tile is shown or required under planted areas, excavate to top of porous backfill over tile.

B. Subsoil removed from excavations may be used as backfill.

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

D. Drainage: Notify Landscape 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.

3.06 DRAINAGE TEST

A. Randomly select a representative number of shrub plant pits in each shrub planting area and test for drainage prior to planting.

B. Test all tree plant pits for drainage.

C. Fill each selected plant pit with water and let stand for twenty-four (24) hours.

D. Do not proceed with planting where drainage problems are apparent.

E. Report to the Landscape Architect areas which do not fully drain within twenty-four (24) hours.

3.07 FERTILIZING B&B AND CONTAINER GROWN PLANTS

A. Trees and Shrubs: Mix with backfill.

B. Overstory Trees: Two (2) pounds per inch of caliper.

C. Understory Trees: One (1) pound per inch of caliper.

D. Shrubs: One-quarter (1/4) pound per foot height.

E. Perennials and Grasses: One-eighth (1/8) pound per plant.

3.08 FERTILIZING MACHINE MOVED PLANTS

A. Plants moved with tree spade: Spread ten (10) pounds Milorganite or equal in plant pit prior to planting.

B. Plants moved with tree mover: Spread fifty (50) pounds Milorganite or equal in plant pit priot to planting.

3.09 TREE AND SHRUB PLANTING

A. Set balled and burlapped and container grown stock plumb and in center of pit or trench with top of root ball even with the adjacent finish grades.
   1. Cut cord or wire securing burlap at base of B&B plant and remove burlap from top half of root ball. Remove all excess soil on top of the ball, just exposing the root flare.
   2. Remove container from container grown plant and “butterfly” bottom of root ball to expose healthy white roots.
   3. Make sure the plant is straight before backfilling. Backfill the plant hole with planting soil placed in layers around the root ball.

4. Carefully tamp each layer in place in a manner to avoid injury to roots or ball.
5. When approximately two-thirds (2/3) of the plant hole, has been backfilled, fill the hole with water and allow the soil to settle around the roots.
6. Set top of root ball 1” above the surrounding grade as shown in the Planting Details.
7. Place mulch as indicated in the Landscape Details.

3.10 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs as directed by Landscape Architect.

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

3.11 GUYING AND STAKING

A. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Use the number of stakes 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.

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 turnbuckles for each guy wire and tighten securely.
   2. Attach flags to each guy wire, 30 inches (760 mm) above finish grade.
   3. Paint turnbuckles with luminescent white paint.

3.12 GROUND COVER AND PLANT PLANTING

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

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.

3.13 PLANTING BED MULCHING

A. Mulch backfilled surfaces of planting beds and other areas indicated.
   1. Install at consistent depths as shown on the drawings.
   2. Sub-grade surface of areas to receive mulch shall be sloped to drain, smooth and free of ruts and clods.

3.14 CLEANUP AND PROTECTION

A. During exterior planting, keep adjacent pavings 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 exterior planting.

3.15 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

SECTION 32 9200

SEEDING AND SODDING

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. This section covers the furnishing of all labor, equipment, tools, and materials necessary for the performance of seeding and sodding operations as required by the project plans and specifications.

B. The seeding work shall consist of furnishing and drilling in or sowing seed by an experienced seeding contractor having approved equipment manufactured expressly for the purpose, such as a seed drill, mulch chopper and blower for the application of hay or straw mulch, mulch puncher or straight serrated disc for punching mulch into soil and a cultipacker that may be used for final compaction. The contractor may also use a hydroseeder as an alternative seeding method.

C. Sod shall be required where areas are disturbed by construction within the right-of-way in established yards or as directed by the City Engineer.

D. Sod work shall be performed by a Contractor experienced in placing sod.

1.02 REFERENCE STANDARDS

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

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

1.03 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades.

1.04 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.
   1. Certification of each seed mixture for turfgrass sod identifying source, including name and telephone number of supplier.

C. Product Certificates: For soil amendments and fertilizers, signed by product manufacturer.

D. Qualification Data: For landscape Installer.

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

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

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

1.05 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
   1. Sod work shall be performed by a Contractor experienced in placing sod.

2. 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 lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

D. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

1.06 DELIVERY, STORAGE, AND HANDLING

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

B. Sod: Harvest, deliver, store, and handle sod according to requirements in TPI's "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in its "Guideline Specifications to Turfgrass Sodding."

1.07 SCHEDULING

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. Seeding and Fertilizing
   a. Spring Planting: November 15 to June 1
   b. Fall Planting: August 15 to October 15
2. Sodding
   a. Spring Planting: March 15 to June 15
   b. Fall Planting: September 15 to October 15

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.
1. Seeding and fertilizing shall not be done during periods of such severe drought, high winds, or excessive moisture, as determined by the Landscape Architect, that satisfactory results are not likely to be obtained.
2. Sod shall not be placed on frozen ground.

C. Any seeding or sodding to be performed during periods other than those previously designated will require a written request to extend the permissible period for performing such work. The Contractor shall explain the reason for the variance and shall include a guarantee of satisfactory results at the end of the first four (4) weeks of the following growing season as previously defined. The Contractor shall agree to perform any necessary re-seeding or re-sodding at that time. The request shall be initiated by the Contractor and submitted to the City Engineer for consideration for approval.

1.08 LAWN MAINTENANCE

A. All seeded areas shall be protected against damage by vehicle and pedestrian traffic by the use of barriers and appropriate warning signs. If at any time before completion and acceptance of the seeding work any portion of the seeded area becomes eroded or otherwise damaged, such damaged areas shall be repaired by filling with soil to original grade, re-seeding and re-mulching. All costs of repair work shall be borne by the Contractor.

B. 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: Thirty-five (35) days from date of Substantial Completion.
   a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.
   b. Sprinkling of the seeded areas shall be carefully done in such manner as to avoid standing water, surface wash, scour or other erosion.

2. Sodded Lawns: Thirty-five (35) days from date of Substantial Completion.
   a. All sodded areas shall be thoroughly watered twice daily for a period of twenty-one days (21) after placing, except when thoroughly wetted by rain of 1/4-inch (1/4") or more in a 24-hour period.

C. 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.
   1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

D. 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 at a minimum rate of 1 inch (25 mm) per week.

E. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent 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 1-1/2 to 2 inches (38 to 50 mm) high.
   2. Mow grass 2 to 3 inches (50 to 75 mm) high.

F. 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.

PART 2 - PRODUCTS

2.01 SEED

A. Seeds for cover crops shall be the kind and mixture of seeds specified herein. Seeds shall be free of prohibited weed seeds and shall not have more than 1 percent (1%) noxious weed seeds. Seeds shall be delivered to the site in labeled containers bearing the name of the producer. A certificate showing the percentage of the purity and germination of each kind of seed specified shall be submitted to the City Engineer for approval.

B. The following formula shall be used to determine the amount of commercial seed required:
   1. Pounds of Commercial Seed Required = 10,000 x Rate of Pure Live Seeds (lbs/acre)
      Purity % x Germination %

C. Where seeding is required in areas of established yards, shoulders, slopes, (in street right-of-way), median islands, and any other areas where a high-quality seeding is deemed necessary, the seed mixture will be as follows:

KIND OF SEED	MINIMUM PURE LIVE SEED (%)	RATE OF PURE LIVE SEED POUNDS/ACRE
Turf-type Tall Fescue (Rebel II or equivalent)	80%	300
		Total 300 lbs/Acre

D. Where seeding is required in areas off street right-of-way that are not maintained periodically, the seed mixture will be as follows:

	MINIMUM PURE	RATE OF PURE LIVE SEED
KIND OF SEED	LIVE SEED (%)	POUNDS/ACRE
Alta Fescue or Kentucky 31 Fescue (Festuca Elatior) Var. Arundinces)	75%	140 lbs.
		Total 140 lbs./Acre

2.02 TURFGRASS SOD

A. Turfgrass Sod: The sod shall be densely-rooted Turf Type Tall Fescue. Kentucky bluegrass sod may be used if matching sod on a specific property. The sod shall contain a growth of not more than 10 percent (10%) of other grasses and clovers, shall be free from all prohibited and noxious weeds, and shall be three-fourths inch (3/4") to one and one-fourth inch (1-1/4") thick; each strip containing at least one (1) square yard. Sod shall be cut in strips not less than twelve inches (12”) wide. Sod placed in existing yards shall match the type in place.

2.03 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.
   3. Topsoil Source: Amend existing in-place surface soil to produce topsoil. Verify suitability of surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
      a. Surface soil may be supplemented with imported 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.

2.04 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:
   1. Class: Class T, with a minimum 99 percent passing through No. 8 (2.36-mm) sieve and a minimum 75 percent passing through No. 60 (0.25-mm) sieve.
   2. Provide lime in form of dolomitic limestone.

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

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

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

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

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

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

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

2.05 ORGANIC SOIL AMENDMENTS

A. 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-inch (25-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.
   2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

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

C. 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.

D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.
   1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb (2.4 kg) of ammonium nitrate or 0.25 lb (4 kg) of ammonium sulfate per cubic foot (cubic meter) of loose sawdust or ground bark.

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.

2.06 PLANTING ACCESSORIES

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

2.07 FERTILIZER

A. Commercial fertilizer for seeded or sodded areas shall contain 12 percent (12% by weight) nitrogen, 12 percent (12% by weight) phosphoric acid, and 12 percent (12% by weight) potash. It shall be uniform in composition, free flowing, and delivered to the site in standard size bags, showing weight, analysis, and name of manufacturer. It shall be stored until use in a weatherproof storage place in such a manner that it will be kept dry and its effectiveness will not be impaired

2.08 MULCHES

A. Preferred mulch materials for application to seedbed areas are smooth brome grass hay, Sudan grass hay or prairie hay. Prairie hay shall consist chiefly of bluestem grasses, switchgrass, Indian grass and other desirable native perennial grasses. Mulch shall be free of prohibited and noxious weed seeds. Other mulching materials may be used with the approval of the Landscape Architect.

2.09 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

B. Erosion-Control Fiber Mesh: Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 lb/sq. yd. (0.5 kg/sq. m), with 50 to 65 percent open area. Include manufacturer's recommended steel wire staples, 6 inches (150 mm) long.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydroseeding overspray.

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.

3.03 SEEDING

A. The area to be seeded shall be thoroughly tilled to a depth of at least three inches (3") by discing, harrowing or other approved methods until the soil is well pulverized. After completion of the tilling operation, the surface shall be cleared of all stones, stumps, or other objects larger than 1-1/2 inches (1-1/2") in diameter, and of roots, wire, grade stakes, and other objects that might be a hindrance to maintenance operations. Areas tilled shall then be brought to the desired line and grade and maintained until seeding and mulching is complete to ensure a smooth area with no gullies or depressions.

B. Any objectionable undulations or irregularities in the surface resulting from tilling or other operations shall be removed before planting operations have begun. Seed bed preparation shall be performed only during periods when satisfactory results are likely to be obtained. When results are not satisfactory because of drought, excessive moisture or other causes, the work shall be stopped until such conditions have been corrected to the satisfaction of the City Engineer.

C. Seeding may be accomplished by means of approved mechanical seed drills followed by packer wheels, or by broadcast-type seeders or hydraulic type seeders in small areas not accessible to machine methods, or as approved by the City Engineer. Seed drills shall have depth bands set to maintain a planting depth of at least one-quarter inch (1/4") but not to exceed one-half inch (1/2"). All seed sown by broadcast-type seeders shall be "raked in" or otherwise covered with soil to a depth of at least one-quarter inch (1/4") and rolled to obtain a firm seed bed. Water shall be applied when necessary.
   1. Do not use wet seed or seed that is moldy or otherwise damaged.

D. Hydraulic seeding equipment shall include a pump capable of being operated at 100 gallons per minute and at 100 pounds per square inch pressure, unless otherwise directed. The equipment shall have an acceptable gauge and a nozzle adaptable to hydraulic seeding requirements. Storage tanks shall have a means of agitation and a means of estimation of the volume used, or remaining in the tank.

E. Seed shall not be drilled or sown during windy weather or when the ground is frozen or otherwise untillable. When a seed drill is used, it shall be set to space the rows not more than 4 inches (4") apart.

F. Sow seed at the rate outlining under the ‘Products’ section of this specification.

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

H. Protect seeded areas with slopes exceeding 1:6 with erosion-control fiber mesh and 1:4 with erosion-control blankets installed and stapled according to manufacturer's written instructions.

I. 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 topsoil with suitable mechanical equipment.
   2. Bond straw mulch by spraying with asphalt emulsion at the rate of 10 to 13 gal./1000 sq. ft. (38 to 49 L/92.9 sq. m). Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.

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

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

L. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.04 MULCHING

A. Hay mulch shall be applied uniformly to seeded areas at the rate of not less than two (2) tons per acre. Baled hay shall be broken up and loosened sufficiently before being fed into the blower hopper to avoid the placing of matted or unbroken clumps. The use of wet hay is prohibited.

B. Mulching shall be performed within twenty-four (24) hours after seeding, but not be done during windy or rainy weather or when such weather is imminent. Mulching shall be started at the windward side of relatively flat areas, or at the upper part of steep slopes and shall continue uniformly until each area is covered.

C. The mulching material shall be disced or punched into the soil so that it is partially covered. Several passes may be required, if a straight disc is used, in order to mix the mulching material with the topsoil sufficiently to ensure protection from erosion by either wind or water. The mulch tilling operation shall be performed parallel to the ground contours.

3.05 FERTILIZING

A. Once the seed has been installed, the contractor shall apply fertilizer at ½ lb. to 1 lb of nitrogen per 1000 square feet of area. Do Not incorporate fertilizer into the prepared seed bed.

3.06 SODDING

A. The sod bed shall have a uniform surface free from washes and depressions and shall conform to the finished grade profile or cross section shown on the plans. The soil shall be thoroughly tilled to a depth of two inches (8") with 4” of freshly placed topsoil on top to meet desired finished grade. Soils are to be tested as stated above and amended as necessary to meet recommended levels specified by the testing facility. Areas which have become dry and crusted over, shall be tilled as specified above, prior to placing the sod. The Contractor must have the prepared sod bed inspected and approved by the City Engineer prior to any sod being placed. Any sod placed prior to the sod bed being inspected and approved by the City Engineer is subject to being removed, the deficiencies corrected, and the sod replaced at the Contractor’s expense.

B. The sod beds shall be in a firm but not too compacted condition with relatively fine texture at the time of sodding. Sod shall be moist when it is placed. The use of dry sod will not be permitted. Sod strips shall be laid along contour lines by hand, commencing at the lowest point of the area and working upward. The transverse joints of sod strips shall be staggered and the sod carefully placed to reduce tight joints. The sod shall be firmed immediately after it is placed. The "firming" shall be accomplished by application of a roller weighing not less than sixty (60) nor more than ninety (90) pounds per linear foot of roller. On steep slopes, the sod may be firmed by compacting with hand shovels. The firming process shall pack the sod roots firmly into the prepared soil. Do Not water and then roll the sod or firm the sod.

C. Sod shall be transplanted within twenty-four (24) hours from the time it is harvested. All sod in stacks shall be kept moist and protected from exposure to the sun and from freezing.

D. Do not lay sod if dormant or if ground is frozen or muddy.

E. Sod placed next to existing grassy areas, curbs, sidewalks or like boundaries shall be placed to match existing grades.

F. Anchor sod on slopes exceeding 1:6 with steel staples spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage

G. The Contractor shall water installed sod immediately after installing and shall water all sod twice daily for a minimum of twenty-one (21) days from initial placement, except on those days where a minimum of 1/4 inch (1/4") of rain falls in a twenty-four hour period.

3.07 LAWN RENOVATION

H. Renovate existing lawn.

B. Renovate existing lawn damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
   1. Reestablish lawn where settlement or washouts occur or where minor regrading is required.

C. Remove sod and vegetation from diseased or unsatisfactory lawn areas; do not bury in soil.

D. Remove topsoil containing foreign materials resulting from Contractor's operations, including oil drippings, fuel spills, stone, gravel, and other construction materials, and replace with new topsoil.

E. Mow, dethatch, core aerate, and rake existing lawn.

F. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.

G. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.

H. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches (150 mm).

I. Apply soil amendments and initial fertilizers required for establishing new lawns and mix thoroughly into top 4 inches (100 mm) of existing soil. Provide new planting soil to fill low spots and meet finish grades.

J. Apply sod as required for new lawns.

K. Water newly planted areas and keep moist until new lawn is established.

3.08 SATISFACTORY LAWNS

L. 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 70 percent over any 10 sq. ft. (0.92 sq. m) and bare spots not exceeding 5 by 5 inches (125 by 125 mm).

B. Satisfactory Sodded Lawn: At end of maintenance period, a healthy, well-rooted, even-colored, viable lawn has been established, free of weeds, open joints, bare areas, and surface irregularities.

C. Satisfactory Plugged Lawn: At end of maintenance period, the required number of plugs has been established as well-rooted, viable patches of grass; and areas between plugs are free of weeds and other undesirable vegetation.

D. Satisfactory Sprigged Lawn: At end of maintenance period, the required number of sprigs has been established as well-rooted, viable plants; and areas between sprigs are free of weeds and other undesirable vegetation.

E. Reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.09 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 barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

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

3.10 GUARANTEE.

A. The Contractor will be required to guarantee all sod installed on this project for twenty-one (21) days from the date of installation. After the twenty-one day period, the City Engineer will inspect all sod. Any sod that is dead at the end of the twenty-one day period shall be replaced by the Contractor at his expense and is subject to an additional twenty-one day warranty period. All healthy sod at the end of the twenty-one day period will be accepted by the City Engineer and turned over to the property owner for maintenance. The

Contractor is not required to guarantee any healthy sod accepted by the City Engineer after the twenty-one day period.

B. Seeded areas will not be accepted until there is a minimum of 70% coverage of healthy grass.

3.11 RECORD KEEPING.

A. The Contractor shall maintain a log of his watering operations and rain events to show compliance with the watering requirements for seeding and sodding. The Contractor shall submit the records to the City Engineer at the end of the required maintenance period. The seeded and/or sodded areas shall not be approved until the submittal has been received and reviewed by the City Engineer.

END OF SECTION

SECTION 321313 - CAST-IN-PLACE CONCRETE

PART 1- GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and General Provisions of Contract, including Bidding Requirements, General and Supplementary Conditions and Division I Specification Sections, apply to work specified in this Section.

B. Comply with ACI 301-8 and 318-83 for all work.

1.02 ADMINISTRATIVE REQUIREMENTS

A. Coordination: Coordinate installation with work of other trades.

1.03 WORK INCLUDED

A. Provide all labor, materials, equipment and supervision required to construct concrete steps, walls, and bollards, etc., including:

1. Concrete.
2. Curing Compounds.
3. Expansion and contraction joints and fillers.
4. Sleeves.

1.04 QUALITY ASSURANCE

A. Owner to provide all testing of on-site concrete. Lab reports shall be simultaneously forwarded to the Owner, Contractor, Architect and Landscape Architect.

B. Testing:

1. Slump to be checked in accordance with ASTM C143. One test minimum per day.
2. Air content measured in accordance with ASTM C231, or C173. One test minimum daily.
3. Strength tests:
   a. Take one (1) cylinder for each fifty (50) cubic yards or part thereof. Minimum one set of One (1) cylinder per each day's pour.
   b. Each cylinder shall be plainly marked showing cylinder designation (1A, 1B, 1C, etc.).
   c. Job cure each cylinder three (3) days.
   d. After three (3) days, Owner will test at ages seven (7) days and set of two at twenty-eight (28) days. Additional Cylinders to remain at the job as a "spare" cured under same conditions as concrete in the area from which it was taken.
   e. The date and location of each sample shall be marked on the Contractor's job set of plans.
   f. Load and core tests shall be required only if cylinder tests indicate concrete does not meet Specifications. Such tests, if deemed advisable by the Landscape Architect, shall be arranged and paid for by the Contractor.

1.05 SUBMITTALS

A. Certification of concrete design mix by a testing laboratory. Submit prior to placement.

B. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

C. Joint Sealer color samples for approval

D. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer detailing fabrication, assembly, and support of formwork.

1. Shoring and Reshoring: Indicate proposed schedule and sequence of stripping formwork, shoring removal, and installing and removing reshoring.

1.06 CODES, PERMITS AND FEES

A. Obtain any necessary permits for this Section of Work.

B. The entire installation shall fully comply with all state laws and ordinances, and with all established codes applicable thereto.

1.07 SITE DISTURBANCES

A. Take precautions to ensure that equipment and vehicles do not disturb or damage existing site grading, walks, drives, utilities, plants, etc.
B. Verify locations and depths of all underground utilities prior to excavation.
C. Protect adjacent work. Repair and/or return to original condition any damage caused by Contractor's negligence at no cost to Owner.
D. Provide temporary barricades and warning lights as required for protection of project work and public safety.

PART 2 - PRODUCTS

2.01 PORTLAND CEMENT

A. ASTM C150, type 1 or type 111.

2.02 SAND

A. Clean, hard, washed and well graded. Sand shall conform with ASTM C33. Provide tests providing compliance with this Section.

2.03 COARSE AGGREGATE

A. Aggregate shall conform to ASTM C33. Aggregate for footings and other unexposed concrete may be gravel. Aggregate for exterior concrete and surfaces shall be KCMMB aggregate, max. size 1". No substitutions will be allowed. Evidence of staining due to impurities will be cause for rejection of work.
B. Class: Severe weathering region, but not less than 3S

2.04 MIXING WATER

A. Clean and free from oil, acid and injurious amounts of vegetable matter, alkalies and other impurities. Complying with ASTM C 94.

2.05 ADMIXTURES

A. Air-entraining agents shall conform to ASTM C260. Calcium Chloride is not to be used. No other admixtures shall be used without the expressed, written consent of the Landscape Architect. A water reducing agent may be used as deemed necessary, to be in conformance with the latest ASTM requirements. A maximum of 15% replacement of cement with fly ash will be permitted.

2.06 CURE AND SEAL

A. CS-309 W.R. Meadows, Inc. or equivalent.

PART 3- EXECUTION

3.01 SUBGRADE PREPARATION

A. Excavate, fill, compact, grade and prepare subgrade as specified in Earthwork and Site Grading: Section 31 2200.

3.02 FORMS

A. Use wood or steel forms adequately staked and braced for all exposed slab edges. Construct curve forms with flexible material, adequately braced to provide a smooth continuous curved walk or wall surfaces.
B. Secure forms in place to maintain grade and alignment while concrete is placed and finished.
C. Set base of form at subgrade elevation or below with top of form at pavement surface elevation at edge of slab; set forms on properly compacted materials.
D. Oil forms before concrete is placed.

E. Leave forms in place not less than eight (8) hours after concrete is placed. If removal causes damage to concrete, leave forms on as long as necessary to prevent damage.

F. Remove forms with care to prevent cracking, spalling or overstressing concrete.

3.03 CONCRETE MIX

A. Concrete mix for concrete steps and walls:

1. KCMMB 4K - Minimum of 4,000 psi compressive strength at twenty-eight (28) days.
2. Maximum of five (5) gallons of water per sack of cement (including free moisture in aggregate).
3. Minimum of six (6) sacks of cement per cubic yard.
4. Slump four inch (4") maximum.
5. Air content 5% - 7%.

3.4 MIXING

A. Except as otherwise specified, concrete shall be ready-mixed or job-mixed at the Contractor's option, and in accordance with requirements of ACI 318-77. Ready-mixed concrete shall be mixed and delivered to the project in accordance with ASTM C94. Maximum mixing time is one (1) hour.

3.5 JOINTS

A. Construction Joint - Keyed joints or doweled joints shall be used at ends of all concrete pours. Bars to extend through joints a minimum of twenty-four (24) bar diameters.

B. Tooled expansion joints at exterior concrete slabs shall be installed as shown on the plans.

C. Expansion joints to be placed at all turns horizontally or changes vertically and for every 30’.

D. Tooled contraction joints shall be and one-half (1/2) inch maximum wide and two (2) inches of slab thickness in depth with one-quarter (1/4) inch radius edge.

E. Sidewalk construction joints shall be spaced as shown on Plans.

3.6 PLACING AND PROTECTING CONCRETE

A. No concrete shall be placed until Landscape Architect has inspected and approved forms, placement of reinforcement, pipes, sleeves, conduit and other inserts.

B. Before placing concrete, remove all debris, water and ice from the place to be occupied by the concrete. Wet subgrade and forms immediately prior to placing concrete.

C. Concrete shall be deposited in the forms as nearly as possible to final location. The placing or depositing of all concrete shall be done in accordance with requirements of the ACI 318-77. Brush on neat grout where placing against hardened concrete.

D. Erect windbreaks to prevent strong, hot winds from drying exposed slabs while they are being finished. Keep concrete moist.

E. Use of salt or other chemicals is prohibited. Use of accelerating admixtures will not be permitted.

F. Cold weather concreting shall be done only if Contractor can maintain temperatures of seventy (70) degrees F. or above for three (3) days or fifty (50) degrees F. or above for five (5) days. Do not allow concrete to freeze for next four (4) days. Keep concrete moist. Place no concrete for foundations on backfilled earth, disturbed or frozen earth. During cold weather concreting, prevent freezing of soil beneath footing. All compacted fill to receive concrete floors shall be brought to a temperature of fifty (50) degrees before concrete floor is placed and shall be maintained at this temperature until concrete has taken its final set.

G. Place concrete continuously between construction joints. Deposit in horizontal layers not greater than 24". Consolidate layers while still plastic to prevent cold joints.

H. Place all footings full thickness in one operation, without changing in proportions; screeded to proper elevation; and floated.

I. Consolidate installed concrete using mechanical vibrating equipment supplemented with hand rodding and tamping. Work concrete thoroughly around reinforcement and other embedded items and into all parts of formwork.

3.7 FINISHING

A. Walls

1. Remove bulges, fins, form marks and roughness from exposed surfaces by grinding.
2. Fill honeycombed and other defective area by cutting out to solid concrete (minimum depth = 1") with straight edges and at right angles to the surface. Dampen area to be patched, brush on grout of equivalent parts Portland Cement and sand and follow immediately with patching mortar.
3. Patching mortar to be not richer than one (1) part Portland Cement to three (3) parts sand. Color of patching mortar shall match the adjacent concrete. (Substitute white Portland Cement for part of the grey cement as needed to provide color match).
4. Trowel or burlap rub patched areas to match the surrounding concrete area. Clean all walls upon completion.
5. Exposed concrete wall faces to have a uniform board form concrete finish.
6. Acceptance: The presence of serious honeycomb or excessive misalignment of forms shall be sufficient cause of rejection and replacement of the concrete affected at the Contractor's expense.

3.8 CONCRETE CURING

A. All concrete shall be kept continuously moist for at least five (5) days after placement. If forms are removed prior to five days, apply liquid membrane-forming curing compound complying with ASTM C309.

B. Formed concrete shall be cured in the forms with the exposed surfaces covered by burlap or polyethylene. Stripping of wall and non-structural forms prior to the end of the curing period will not be permitted, unless provisions are made to keep the concrete covered and sealed tight.

3.9 APPLICATION OF SEALER (ALL EXPOSED CONCRETE SLABS)

A. Apply one coat as a cure as soon after final troweling as possible. Coverage and application in accordance with manufacturer's recommendations.

3.10 CLEANING

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, debris, and equipment. Repair damage resulting from concrete operations.

END OF SECTION 321313