VILLAGE DENTAL

ARCHITECT

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CIVIL

GUTOSKEY & ASSOCIATES
10185 GOTTSCHALK PARKWAY#4,
CHAGRIN FALLS, OHIO
P: 440.543.6900

CONTACT: JOE GUTOSKEY

BUILDER

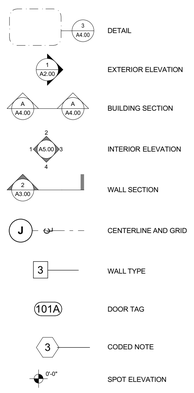
MEP CONSULTANTS

STRUCTURAL

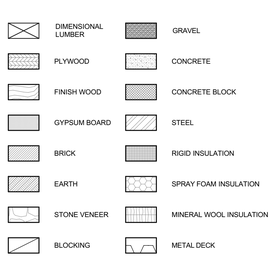
ABBREVIATIONS

ABV	ABOVE
A/C	AIR CONDITIONING
AFF	ABOVE FINISHED FLOOR
ALT	ALTERNATE
AHJ	AUTHORITY HAVING JURISDICTION
ALUM	ALUMINUM
APPROX.	APPROXIMATELY
ARCH	ARCHITECTURAL
ASPH	ASPHALT
BD	BOARD
BLDG	BUILDING
BRG	BEARING
BOTT	BOTTOM
BTW	BETWEEN
CF	CUBIC FEET
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CONC	CONCRETE
CO	CLEAN OUT
CONT	CONTINUOUS
DBL	DOUBLE
DEPT	DEPARTMENT
DIA	DIAMETER
DIM	DIMENSION
DN	DOWN
DR	DOOR
DS	DOWNSPOUT
DTL	DETAIL
DWG	DRAWING
EA	EACH
ELEC	ELECTRICAL
EQ	EQUAL
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPOSED
EXT	EXTERIOR
FD	FLOOR DRAIN
FDN	FOUNDATION
FIN.	FINISHED
FLR	FLOOR
FT	FOOT
FTG	FOOTING
FUR	FURRING
GALV	GALVANIZED
GA	GAUGE
GC	GENERAL CONTRACTOR
GYP. BD.	GYPSUM BOARD
GYP	GYPSUM
HC	HOLLOW CORE
HDWR.	HARDWARE
HM	HOLLOW METAL
HVAC	HEATING, VENTILATION, AND AIR COND.
HT	HEIGHT
INSUL	INSULATION
JST	JOIST
LAM	LAMINATED
LF	LINEAR FOOT
MAS	MASONRY
MATL	MATERIAL
MAX.	MAXIMUM
MECH	MECHANICAL
MFG.	MANUFACTURER
MIN.	MINIMUM
MISC	MISCELLANEOUS
MO	MASONRY OPENING
MTD	MOUNTED
MTL	METAL
NOM	NOMINAL
NTS	NOT TO SCALE
O/	OVER
O.C.	ON CENTER
OPN	OPENING
PREFAB	PREFABRICATED
PLYWD	PLYWOOD
P.LAM	PLASTIC LAMINATE
PR	PAIR
PSI	POUNDS PER SQUARE INCH
REF	REFERENCE
RM	ROOM
RO	ROUGH OPENING
REQ	REQUIRED
SC	SOLID CORE
SECT	SECTION
SIM.	SIMILAR
STRUC	STRUCTURAL
TYP	TYPICAL
UNO	UNLESS NOTED OTHERWISE
W/	WITH
WWF	WELDED WIRE FABRIC

SYMBOLS



MATERIALS LEGEND



PROJECT GENERAL NOTES

CONTRACTOR SHALL PROVIDE ALL MATERIALS AND WORKMANSHIP FOR ALL CONSTRUCTION REQUIRED HEREIN AND SHALL BE IN ACCORDANCE WITH THE:

COMMERCIAL BUILDING CODE: 2024 OF OHIO (IBC 2021 + AMENDMENTS)
EXISTING BUILDING CODE: 2024 OF OHIO (IEBC 2021 + AMENDMENTS)
RESIDENTIAL BUILDING CODE: 2019 OF OHIO (IRC 2018 + AMENDMENTS)
MECHANICAL CODE: 2024 OF OHIO (IMC 2021 + AMENDMENTS)
ELECTRICAL CODE: 2023 OF OHIO (NFPA 70, 2023 + AMENDMENTS)
PLUMBING CODE: 2024 OF OHIO (IPC 2021 + AMENDMENTS)
ENERGY CONSERVATION CODE: 2021 OF OHIO (IECC 2021 + AMENDMENTS)
ACCESSIBILITY CODE: 2017 OF OHIO (A117.1 2017 + AMENDMENTS)
FUEL AND GAS CODE: 2021 OF OHIO (IFGC 2021 + AMENDMENTS)
FIRE CODE: 2017 OF OHIO

THE CONTRACTOR WILL FURNISH ALL LABOR, MATERIAL, EQUIPMENT, PERMITS, TAXES, AND INSURANCE NECESSARY TO COMPLETE THE WORK INDICATED AND/ OR IMPLIED IN THE CONSTRUCTION DOCUMENTS UNLESS NOTED OTHERWISE AND WILL COORDINATE THE WORK RESPONSIBILITIES OF ALL SUBCONTRACTORS. ALL LABOR AND MATERIALS TO CARRY OUT FULLY THE INTENTIONS OF THE PLANS AND SPECIFICATIONS ARE PART OF THE CONTRACT, WHETHER OR NOT SPECIFICALLY DOCUMENTED.

ALL WORK WILL CONFORM TO THE CURRENT OHIO BUILDING, MECHANICAL & PLUMBING CODES, AS WELL AS THE CURRENT NATIONAL BOARD OF FIRE UNDERWRITERS AND ALL OTHER APPLICABLE CITY CODES, LOCAL LAWS, AND AUTHORITIES HAVING JURISDICTION. CODE STANDARDS AND PUBLICATIONS OF PRIVATE AND PUBLIC BODIES MENTIONED WITHIN THE SPECIFICATIONS OR ON THE DRAWINGS, WILL BE CONSIDERED TO BE THOSE IN FORCE AT THE TIME OF THE CONTRACT AWARD.

THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL CONTROLLED INSPECTIONS AND ANY TECHNICAL TESTING REQUIRED FOR CONTROLLED INSPECTIONS AS STIPULATED BY ALL APPLICABLE CODES.

ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT WILL BE NEW AND FREE OF DEFECTS AND WILL BE SUPPLIED, INSTALLED, CONNECTED, ERECTED, USED, CLEANED, AND CONDITIONED AS DIRECTED BY THE RESPECTIVE MANUFACTURERS, UNLESS SPECIFIED OTHERWISE.

THE CONTRACTOR WILL NOTIFY THE ARCHITECT OF ANY ERRORS, OMISSIONS, CONFLICTS, OR AMBIGUITIES IN AND BETWEEN THE DRAWINGS AND THE SPECIFICATIONS PRIOR TO PROCEEDING WITH THE WORK. IF SUCH NOTICE IS NOT FURNISHED TO THE ARCHITECT, THE CONTRACTOR WILL BE DEEMED TO HAVE INSPECTED THE DRAWINGS AND SPECIFICATIONS AND TO HAVE FOUND THEM IN PROPER FORM FOR EXECUTION.

THE CONTRACTOR REPRESENTS THAT HE HAS HAD ADEQUATE ACCESS TO THE JOB SITE AND BUILDING AREA IN WHICH THE WORK IS TO BE PERFORMED, THAT HE HAS SATISFIED HIMSELF AT TO THE NATURE AND LOCATION OF WORK, INCLUDING ANY OBSTRUCTIONS, SCOPE OF WORK, ACTUAL LEVELS, THE EQUIPMENT AND FACILITIES NEEDED PRELIMINARY TO AND DURING THE EXECUTION OF THE WORK AND ALL OTHER MATTERS, WHICH CAN IN ANY WAY AFFECT THE WORK OR THE COST THEREOF UNDER THIS CONTRACT, AND THAT HE HAS STUDIED THE CONTRACT DOCUMENTS AND ALL OTHER DOCUMENTS PERTAINING TO THE INSTALLATION OF OTHER TRADES WHICH MAY INFLUENCE HIS WORK.

THE CONTRACTOR WILL ASSUME FULL RESPONSIBILITY, INCLUDING RESPONSIBILITY FOR ALL RELATED COSTS FOR ANY AND ALL WORK DONE WITHOUT THE APPROVAL OF THE ARCHITECT IF SUCH WORK IS IN CONFLICT WITH THE CONTRACT, DRAWINGS, OR SPECIFICATIONS.

THE CONTRACTOR WILL BE RESPONSIBLE FOR THE SAFE WORKING CONDITIONS AT THE SITE. THE ARCHITECT AND OWNER WILL NOT BE DEEMED TO HAVE ANY RESPONSIBILITY OR LIABILITY IN CONNECTION HEREWITH.

CONSTRUCTION OPERATIONS WILL NOT INVOLVE INTERRUPTION OF HEATING, WATER, ELECTRICAL, OR OTHER SERVICES TO ANY PORTION OF THE BUILDING OUTSIDE THE LIMITS OF THE CONSTRUCTION SITE.

THE CONTRACTOR WILL BE RESPONSIBLE FOR CORRECTING ANY DEFICIENCIES CUASED BY DEFECTIVE OR ILL TIMED WORK AT NO ADDITIONAL COST TO THE OWNER.

NO SUBSTITUTIONS ARE PERMITTED EXCEPT WHERE THE TERM "APPROVED EQUAL" APPEARS. ALL SUBSTITUTIONS MUST BE APPROVED IN WRITING BY THE ARCHITECT. THE CONTRACTOR IS TO SUBMIT SAMPLES OR CATALOG CUTS OF ALL VISIBLE MATERIALS AND EQUIPMENT FOR THE ARCHITECT'S APPROVAL PRIOR TO INSTALLATION.

CONTRACTOR TO MAINTAIN FULL SET OF PLANS AND INSTALLATION INSTRUCTIONS ON SITE.

PERFORM VISUAL INSPECTION OF ENVELOPE AND INSULATION TO MEET 2021 IECC, 402.5.1.5 "BUILDING ENVELOPE PERFORMANCE VERIFICATION" ITEM 2

PROJECT INFORMATION

TWO STORY COMMERCIAL ADDITION TO AN EXISTING HISTORIC STRUCTURE.

KNOWN AS PART OF GREAT LOT NO. 56 OF HUDSON TOWNSHIP AND PART OF BLOCK NO. 3 IN SAID VILLAGE; BEGINNING AT THE INTERSECTION OF THE SOUTH LINE OF DIVISION STREET WITH THE EAST LINE OF EAST MAIN STREET WHICH POINT IS THE NORTHWEST CORNER OF SAID BLOCK; THENCE WITH THE SOUTH LINE OF SAID DIVISION STREET, S 89° 47' 00" E, 147.96 FEET TO AN IRON PIPE;
THENCE WITH THE WEST LINE OF PREMISES SOLD TO L. LAUDENSLAGER S. 0° 28' 00" W. 30 FEET TO A POINT IN SAID LINE;
THENCE WESTERLY ALONG A LINE DRAWN APPROXIMATELY PARALLEL TO THE SOUTH LINE OF DIVISION STREET TO A POINT IN THE EAST LINE OF EAST MAIN STREET, SAID BEING 30 FEET FROM THE POINT OF INTERSECTION OF THE SOUTH LINE OF DIVISION STREET WITH THE EAST LINE OF EAST MAIN STREET;
THENCE WITH THE EAST LINE OF EAST MAIN STREET N. 0° 13' 00" E 30 FEET TO THE PLACE OF BEGINNING.

CITY:	HUDSON
COUNTY:	SUMMIT
PARCEL #:	3200737
ACRES:	0.1019
DISTRICT:	5 - VILLAGE CORE DISTRICT HISTORIC DISTRICT

SETBACKS:

FRONT YARD:	A MIN. OF 75% OF THE FRONT WALL SHALL BE BUILT TO THE EDGE OF THE FRONT SIDEWALK.
REAR YARD:	10', EXCEPT WHEN ABUTTING A RESIDENTIAL USE THEN IT'S 20'
SIDE YARD:	0', EXCEPT WHEN ABUTTING A RESIDENTAL USE THEN IT'S 15'.
MAX HEIGHT:	45'
ACTUAL HEIGHT:	23'-11"
USE:	BUSINESS
CONSTRUCTION TYPE:	V-B

PARKING:
OFFICE = 1 SPACE / 400 SF, AND 1 SPACE FOR EACH 250 SF AS MAX. PERMITTED PARKING

REQUIRED = 2 SPACES

GROSS ADDITION BUILDING AREAS:

SQUARE FOOTAGE	
FLOOR	AREA
FIRST FLOOR	572
SECOND FLOOR	525
	1,097 ft²

ALLOWABLE BUILDING AREA:
B: 9,000 SF, NOT SPRINKLED

OCCUPANCY:
B: BUSINESS/OFFICE AREA = 150 GROSS
FIRST FLOOR: 572 / 150 = 4 OCCUPANTS
SECOND FLOOR: 525 / 150 = 4 OCCUPANTS
TOTAL = **8 OCCUPANTS**

SECTION 1017.2: EXIT ACCESS TRAVEL DISTANCE FOR OCCUPANCY, NOT SUPRESSED IS 200'

DRAWING INDEX

** DENOTES SHEETS PRINTED IN COLOR*

Peninsula
www.pa-architects.com
1775 Main Street
Peninsula, Ohio 44264
T 330.657.2800

PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:
PENINSULA ARCHITECTS

CIVIL ENGINEER:
GUTOSKEY AND ASSOCIATES
P 406.543.6900

STRUCTURAL ENGINEER:
ORAVEC DESIGN BUILD
P 330.552.8211

MEP ENGINEER:
DENK ASSOCIATES
P 216.531.8880

VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501

ISSUE:
AHBR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION09-15-2025

COVER SHEET

***G1.00**

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Plotted: Thursday, October 30, 2025

STATE OF OHIO
KELLY D. DUNFORD
8182
REGISTERED SURVEYOR
7/09/25

DATE OF SURVEY: JULY 2025
REVISIONS:
1.)

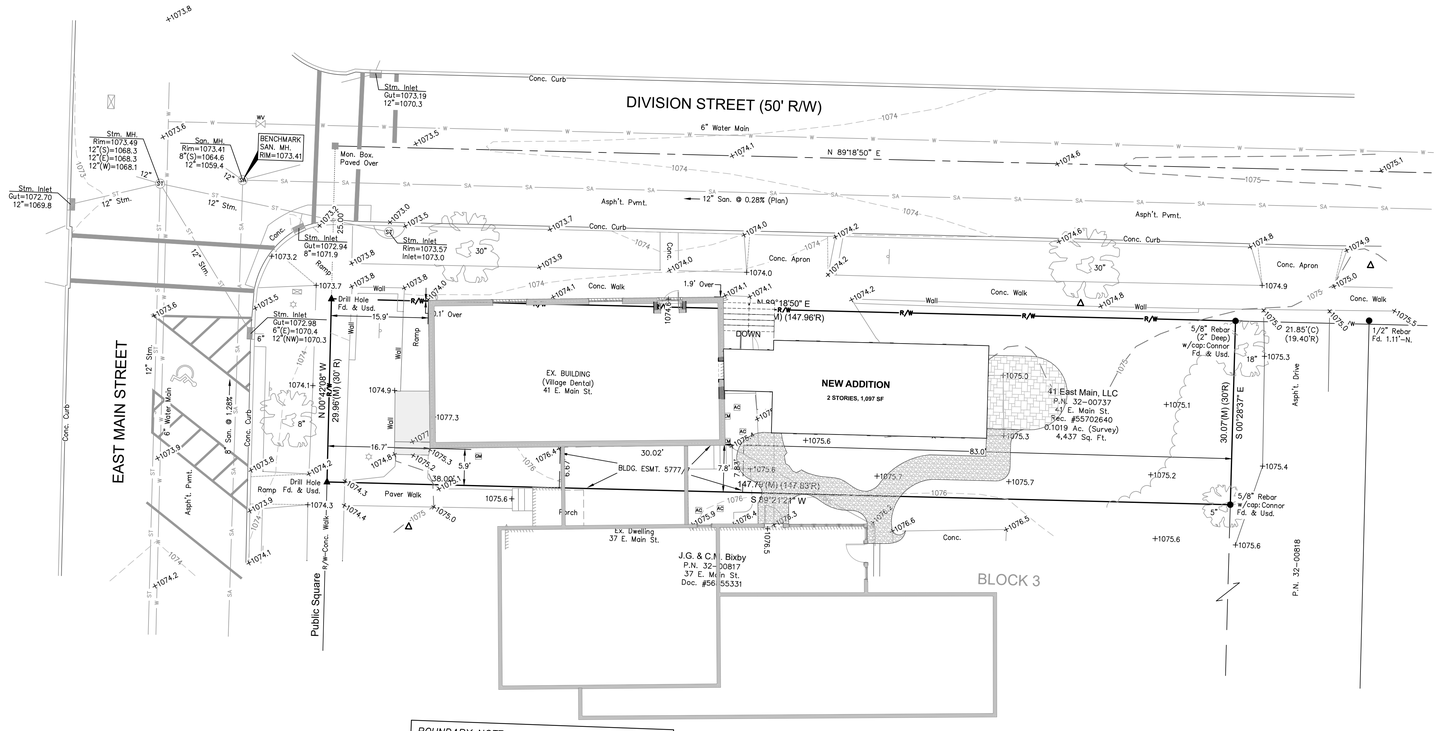
0 5 10 20
SCALE: 1" = 10'

TOPOGRAPHIC SURVEY

FOR:
~ VILLAGE DENTAL HUDSON ~
41. E. MAIN ST.
HUDSON, OH 44236
SITUATED IN:
CITY OF HUDSON
SUMMIT COUNTY, OHIO:
BEING PART OF BLOCK 3, IN
FORMER VILLAGE, OF PART OF
ORIGINAL HUDSON TWP. LOT 56.

LEGEND OF SYMBOLS & ABBREVIATIONS

- 5/8"x30" Rebar Set w/cap:Dunford 8182
- Nail, Drill Hole or Spike Set
- Rebar or Iron Rod/Pin Found and Described
- Iron Pipe Found and Described
- Monument Box Found and Described
- Nail, Drill Hole or Spike Found & Described
- (ST) - Existing Storm Manhole
- Existing Roof Drain
- Existing Sanitary Cleanout
- (MH) - Existing Unidentified Manhole
- (WV) - Existing Water Valve
- (GV) - Existing Gas Valve
- Ex. Elec. Transformer
- Existing Utility Pole
- Existing Guy Wire
- Existing Signal Pole
- Existing Handhole
- (EM) - Existing Electric Meter
- (AC) - Existing Air Conditioner
- (WM) - Existing Water Manhole
- Existing Deciduous Tree
- Existing Catch Basin
- Existing Inlet Basin
- (SA) - Existing Sanitary Manhole
- Existing Hydrant/Auto Sprinkler
- (G) - Existing Gasline Marker
- Existing Ground Light
- (T) (DR) - Ex. Pedestal
- Existing Lightpole
- (MB) - Existing Mailbox
- Existing Flag Pole
- Existing Bollard
- (GM) - Existing Gas Meter
- (TM) - Existing Telephone Manhole
- (EM) - Existing Electric Manhole
- Existing Conifer Tree
- 998 - Ex. Contour
- SA - Existing Tree Line
- ST - Existing Sanitary Sewer
- W - Existing Storm Sewer
- G - Existing Waterline
- OHL - Existing Underground Gas Line
- Existing Overhead Utility Line



MISCELLANEOUS NOTES:

1.) The "BASIS OF BEARINGS" for this survey is GRID NORTH of the Ohio State Plane, North Zone as observed by GPS via the ODOT VRS network, based on the NAD83 (2011) reference frame; 2010.0 epoch. ALL DISTANCES SHOWN HEREON INDICATE GROUND DISTANCES IN US SURVEY FEET.

2.) The vertical datum for this survey is NAVD88 (Geoid18), as observed by GPS via the ODOT VRS network and referenced by benchmarks shown hereon.

3.) The location of utilities shown hereon are based on observed evidence of above ground appurtenances used along with plan information and markings provided to the surveyor. The location of these utilities may vary and are subject to field verification prior to construction. Additional utilities may be encountered.

4.) There was no search for easements of record, right-of-ways, restrictive covenants, encumbrances, ownership title evidence, or any other facts that a title search may disclose.

BOUNDARY NOTE:
SEE BOUNDARY SURVEY PROVIDED TO PROPERTY OWNER IN JANUARY OF 2025 FOR FURTHER BOUNDARY RESOLUTION DETAILS.

811 Know what's below. Call before you dig.

SURVEYED BY:
APEX LAND SURVEYING
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www.apexlandsurveying.com

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PROJ: 2024093

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:
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VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501
ISSUE:
AHBR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION09-15-2025

SITE PLAN

C1.00

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Plotted: Thursday, October 30, 2025

GUTOSKEY & ASSOCIATES INC.
Civil Engineers, Surveyors, and Land Planners
10135 GOTTSCHALK PKWY, SUITE 4 · CHAGRIN FALLS, OHIO 44023 · Tel (440) 543-6900 · Fax (440) 543-7176

JOB: VILLAGE DENTAL
SHEET NO. 1 OF 1
CALCULATED BY: JG DATE: 10/25
CHECKED BY: DATE:
SCALE:

Critical storm

$CS = \frac{542-515}{515}(100) = 5\%$ <u>2 yr stm.</u>

Storage requirement 2 year storm

Post − Pre = Storage
542 ft³ − 515 ft³ = 27 ft³

Lot Area = 0.10 Ac.

Pre-development Impervious = 2173 ft²

Post-development Impervious = 2264 ft²

Apron removal in right-of-way = 97 ft²
= 6 sq ft reduction from pre-development

U.S. Department of Agriculture
Natural Resources Conservation Service
FL-ENG-21A
06/04

TR 55 Worksheet 2: Runoff Curve Number and Runoff

Project: Village Dental Designed By: JG Date: 9/15/25
Location: Hudson Checked: Date:

Check one: ☑ Present ☐ Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (Appendix A)	Cover description (Cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1/] Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area ☒ acres ☐ mi^2 ☐ %	Product of CN x area
Mahoning D	Pervious	80			0.1	4.0
Mahoning D	Impervious	98			0.1	4.9
				Totals =	0.1	8.9

[1/] Use only one CN source per line.

CN (weighted) = total product / total area = 8.9 / 0.1 = 89 Use CN = 89

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency ..... years			
Rainfall, P (24 hour) ..... in.			
Runoff, Q ..... in.			

(Use P and CN with Table 2-1, Figure 2-1, or equations 2-3 and 2-4.)

U.S. Department of Agriculture
Natural Resources Conservation Service
FL-ENG-21A

TR 55 Worksheet 2: Runoff Curve Number and Runoff

Project: Village Dental Designed By: JG Date: 10/27/25
Location: Hudson Checked: Date:

one: ☐ Present ☒ Developed

1. Runoff curve number (CN)

Soil name and hydrologic group (Appendix A)	Cover description (Cover type, treatment, and hydrologic condition; percent impervious; unconnected/connected impervious area ratio)	CN [1/] Table 2-2	CN Fig. 2-3	CN Fig. 2-4	Area ☒ acres ☐ mi^2 ☐ %	Product of CN x area
Mahoning D	Pervious	80			0.0433	3.464
Mahoning D	Impervious	98			0.0520	5.096
Mahoning D	Gravel	91			0.0066	0.601
				Totals =	0.1019	9.161

[1/] Use only one CN source per line.

CN (weighted) = total product / total area = 9.161/0.102 = 89.9 Use CN = 90

2. Runoff

	Storm #1	Storm #2	Storm #3
Frequency			
Rainfall, P (24 hour) ..... in.			
Runoff, Q ..... in.			

(Use P and CN with Table 2-1, Figure 2-1, or equations 2-3 and 2-4.)

1

Hydrograph Return Period Recap

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs) 1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	Hydrograph Description
1	SCS Runoff	------	0.134	0.183	-------	0.250	0.305	0.393	0.473	0.560	Pre
2	SCS Runoff	------	0.142	0.193	-------	0.259	0.315	0.403	0.483	0.569	Post

Proj. file: 25-4226.gpw Monday, 10 / 27 / 2025

2

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.134	2	722	376	------	------	------	Pre
2	SCS Runoff	0.142	2	722	399	------	------	------	Post

25-4226.gpw Return Period: 1 Year Monday, 10 / 27 / 2025

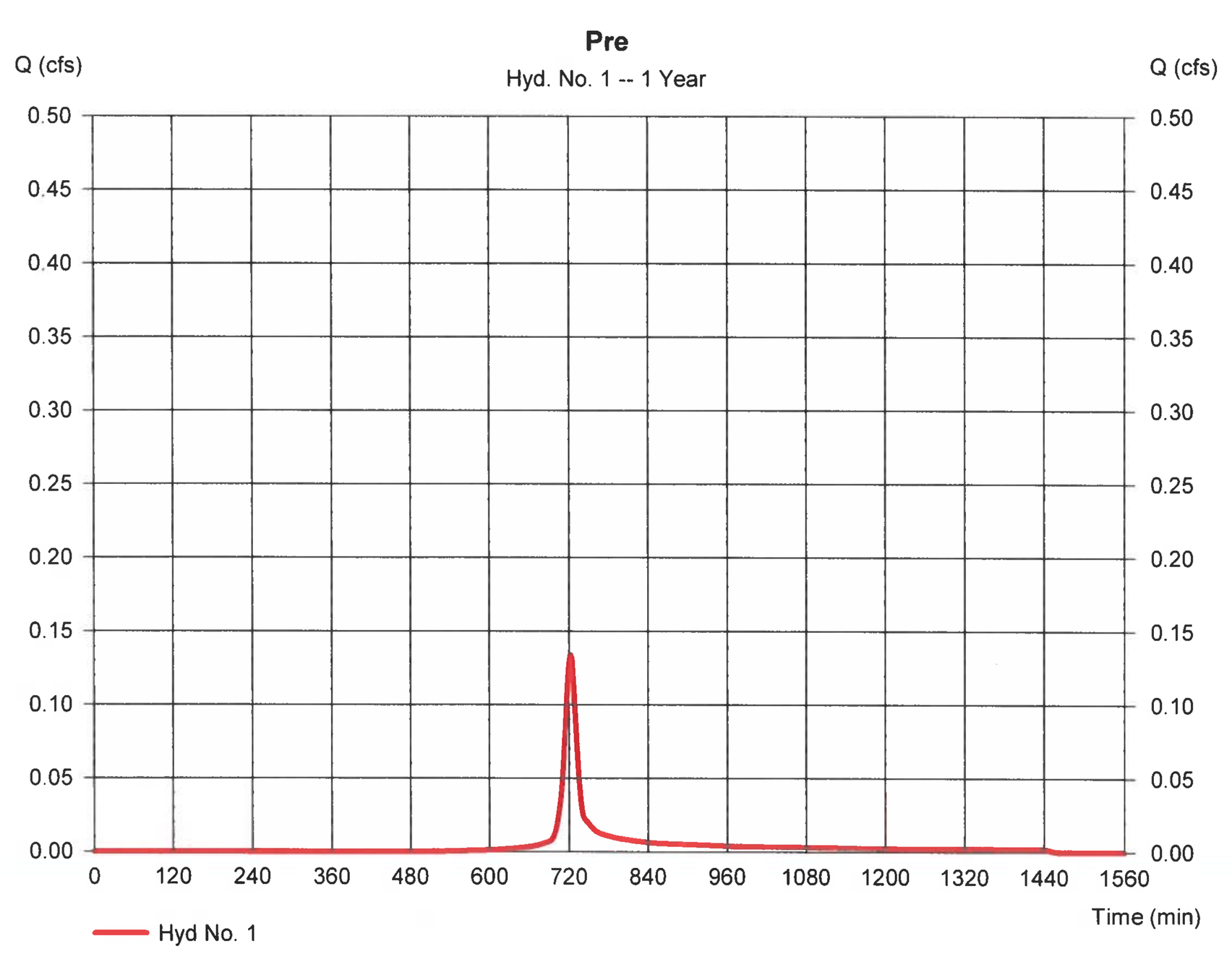
3

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 Monday, 10 / 27 / 2025

Hyd. No. 1
Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.134 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 376 cuft
Drainage area	= 0.100 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.04 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



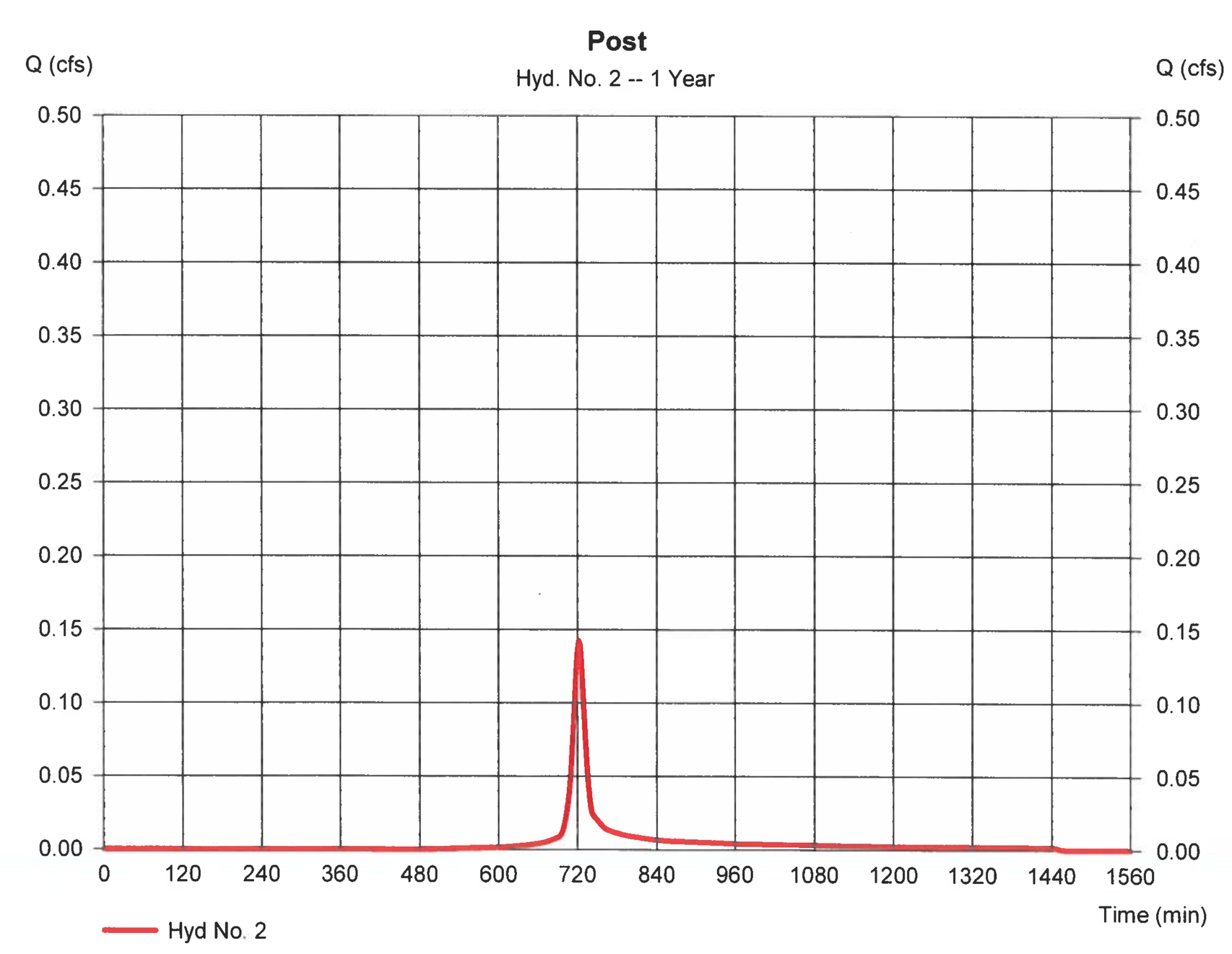
4

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 Monday, 10 / 27 / 2025

Hyd. No. 2
Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.142 cfs
Storm frequency	= 1 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 399 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.04 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



5

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.183	2	722	515	------	------	------	Pre
2	SCS Runoff	0.193	2	722	542	------	------	------	Post

25-4226.gpw Return Period: 2 Year Monday, 10 / 27 / 2025

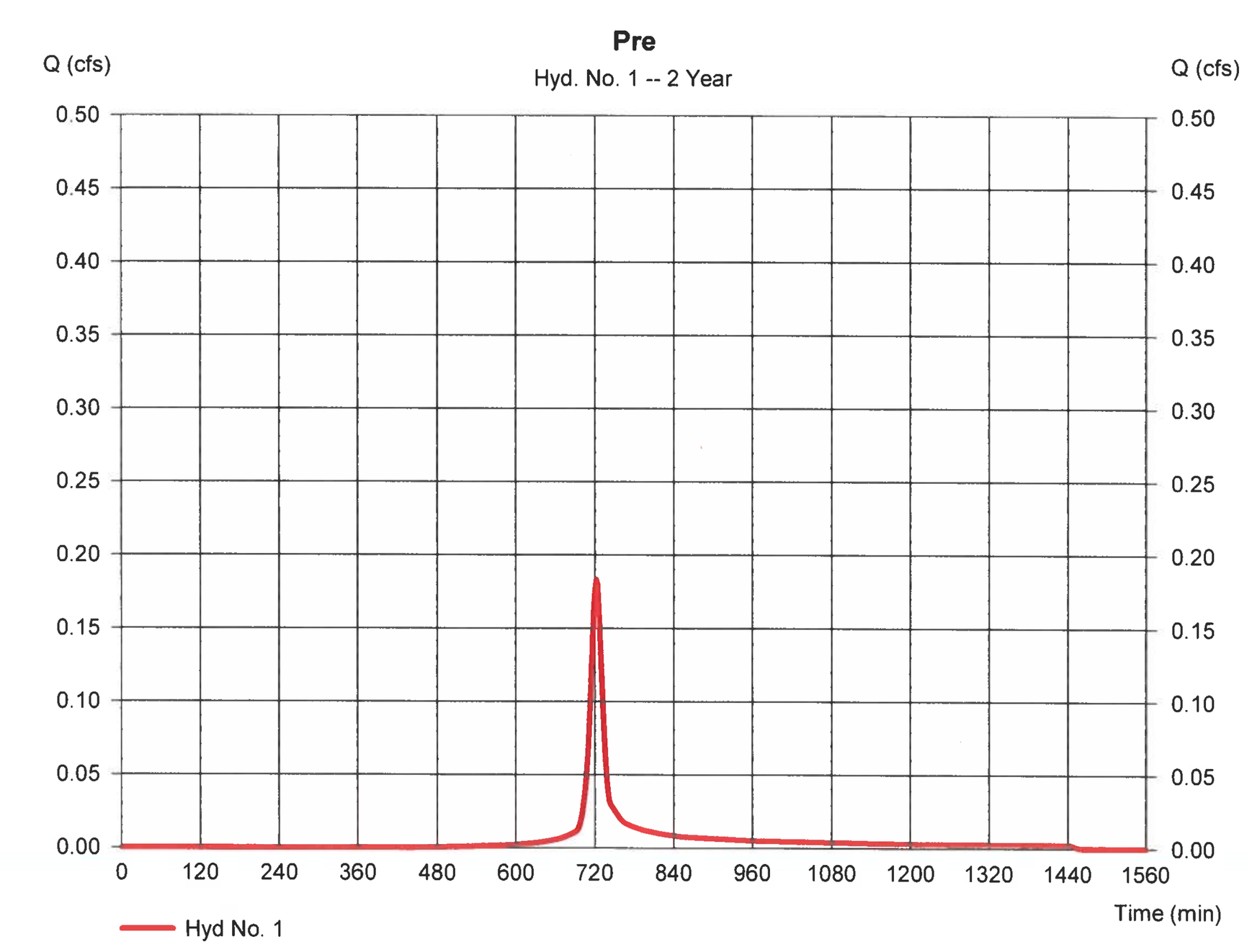
6

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 Monday, 10 / 27 / 2025

Hyd. No. 1
Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.183 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 515 cuft
Drainage area	= 0.100 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



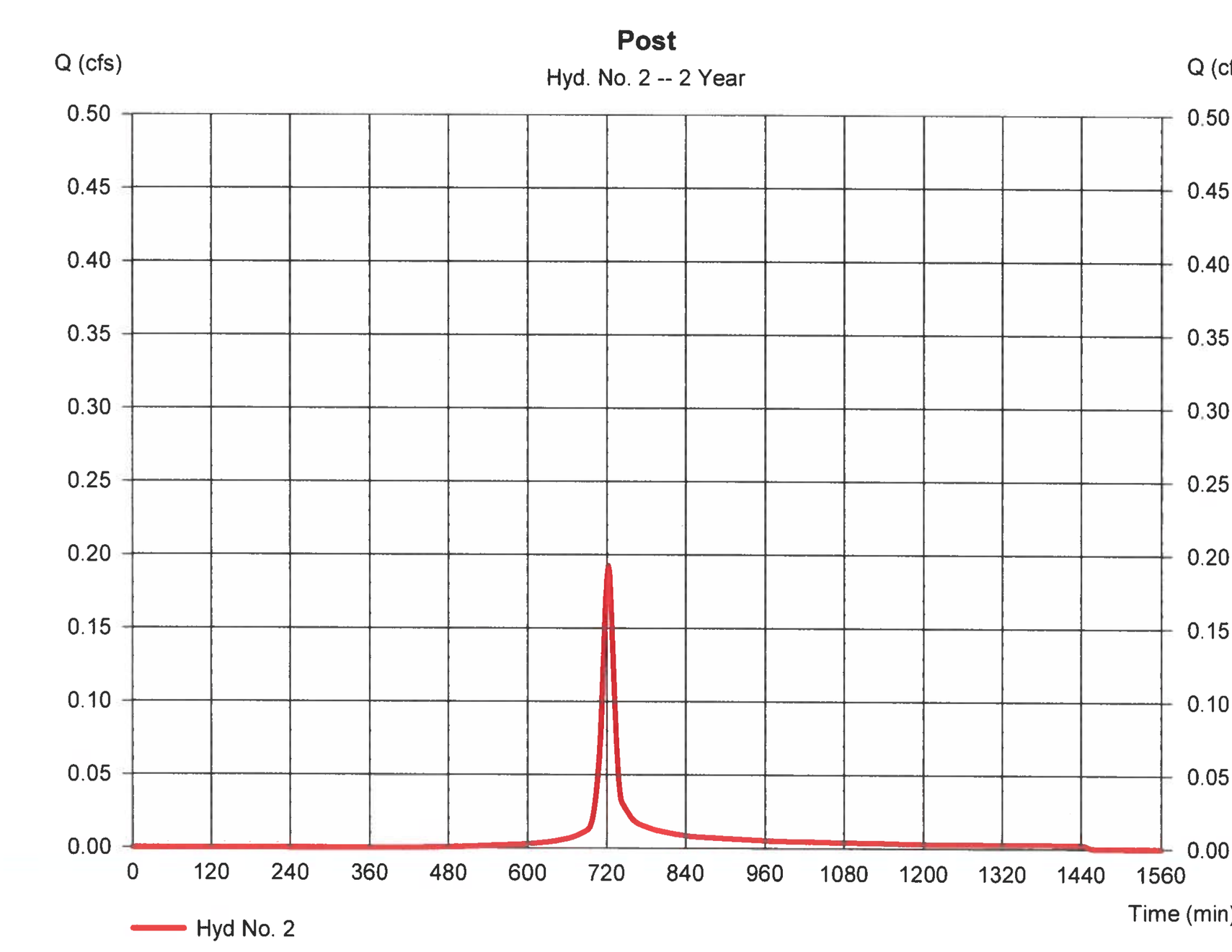
7

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 Monday, 10 / 27 / 2025

Hyd. No. 2
Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.193 cfs
Storm frequency	= 2 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 542 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



8

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.250	2	722	704	------	------	------	Pre
2	SCS Runoff	0.259	2	722	735	------	------	------	Post

25-4226.gpw Return Period: 5 Year Monday, 10 / 27 / 2025

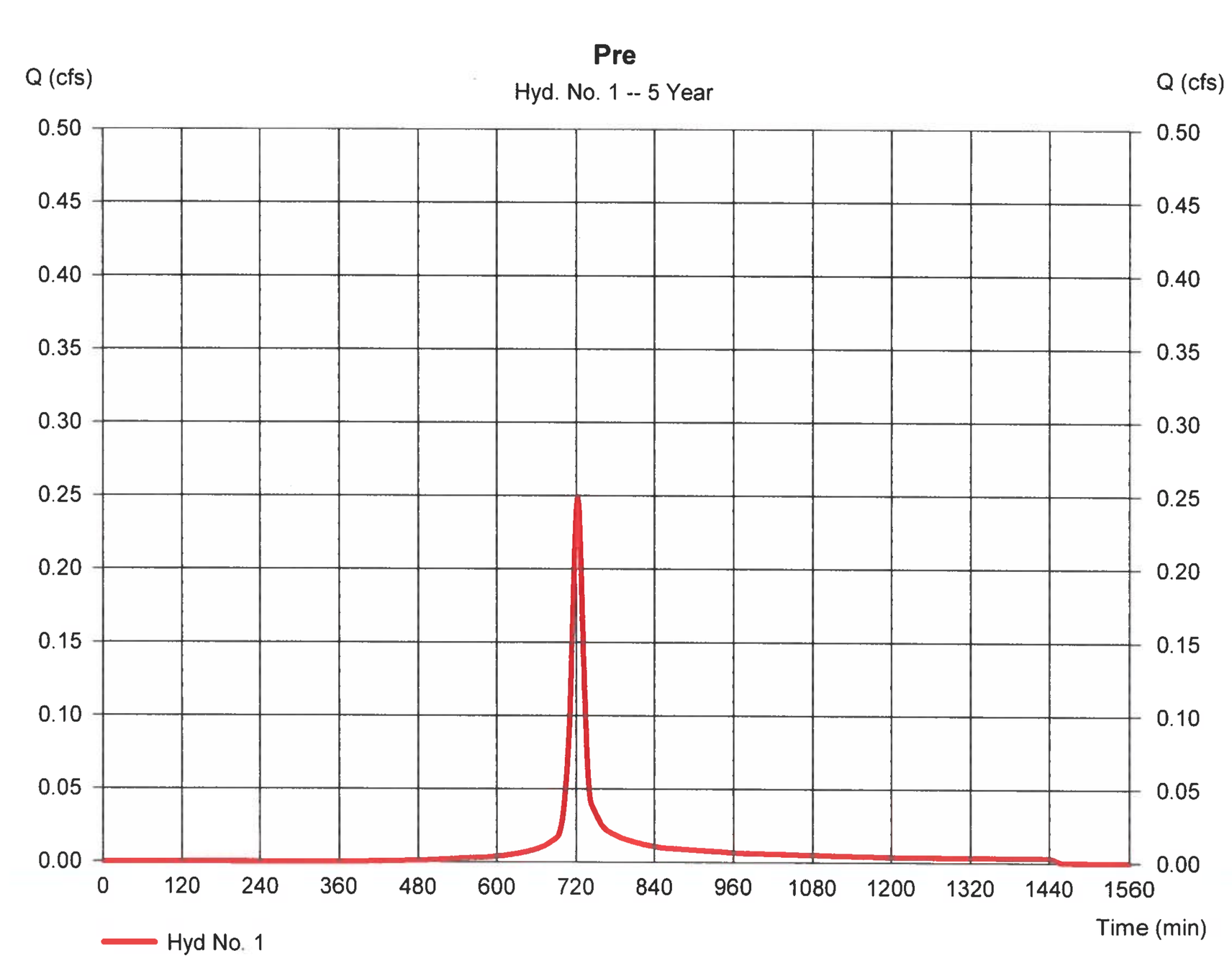
9

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 Monday, 10 / 27 / 2025

Hyd. No. 1
Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.250 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 704 cuft
Drainage area	= 0.100 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



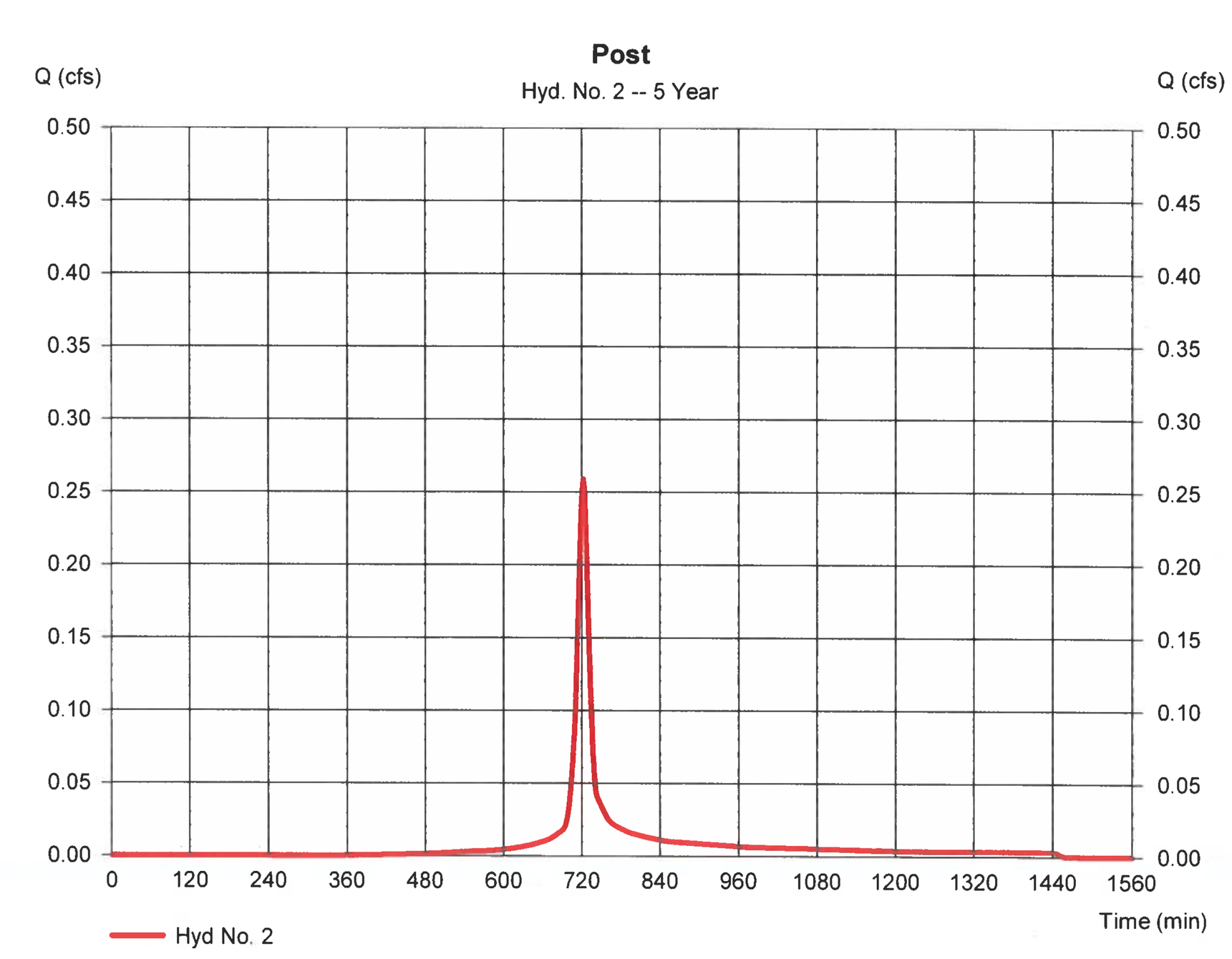
10

Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 Monday, 10 / 27 / 2025

Hyd. No. 2
Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.259 cfs
Storm frequency	= 5 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 735 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



11

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.305	2	722	867	------	------	------	Pre
2	SCS Runoff	0.315	2	722	900	------	------	------	Post

25-4226.gpw Return Period: 10 Year Monday, 10 / 27 / 2025

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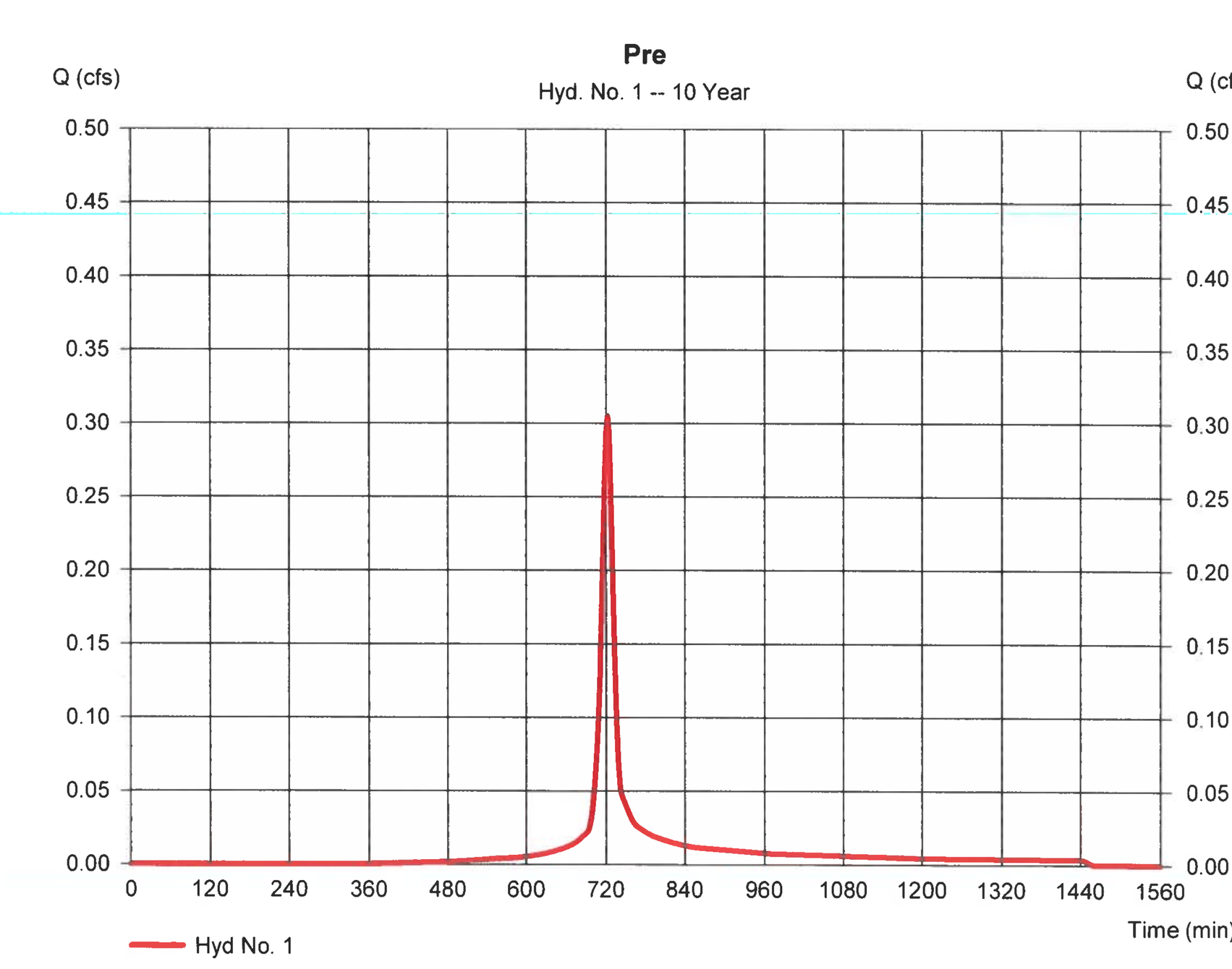
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 Monday, 10 / 27 / 2025

Hyd. No. 1
Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.305 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 867 cuft
Drainage area	= 0.100 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:
PENINSULA ARCHITECTS

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MEP ENGINEER:
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VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501

ISSUE:

AHBR REVIEW	04-01-2025
VARIANCE SET	04-17-2025
PLANNING COMMISSION	09-15-2025

CALCULATIONS

C1.01

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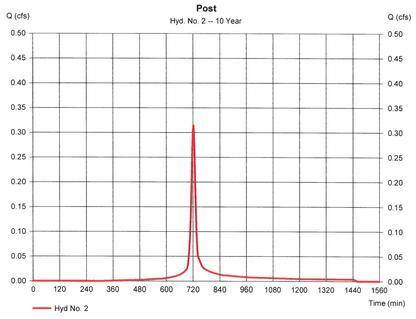
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Hyd. No. 2

Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.315 cfs
Storm frequency	= 10 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 900 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.60 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.393	2	722	1,129	------	------	------	Pre
2	SCS Runoff	0.403	2	722	1,165	------	------	------	Post

25-4226.gpw — Return Period: 25 Year — Monday, 10 / 27 / 2025

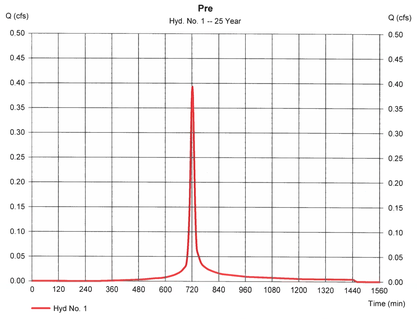
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Hyd. No. 1

Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.393 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,129 cuft
Drainage area	= 0.100 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 4.39 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



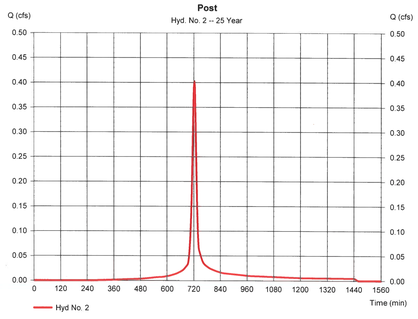
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Hyd. No. 2

Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.403 cfs
Storm frequency	= 25 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,165 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 4.39 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.473	2	722	1,372	------	------	------	Pre
2	SCS Runoff	0.483	2	722	1,409	------	------	------	Post

25-4226.gpw — Return Period: 50 Year — Monday, 10 / 27 / 2025

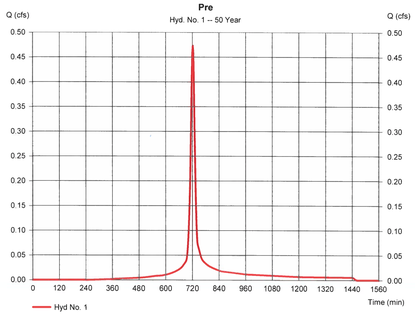
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Hyd. No. 1

Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.473 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,372 cuft
Drainage area	= 0.100 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.11 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



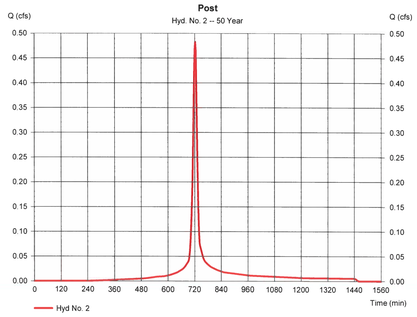
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Hyd. No. 2

Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.483 cfs
Storm frequency	= 50 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,409 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.11 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	0.560	2	722	1,638	------	------	------	Pre
2	SCS Runoff	0.569	2	722	1,677	------	------	------	Post

25-4226.gpw — Return Period: 100 Year — Monday, 10 / 27 / 2025

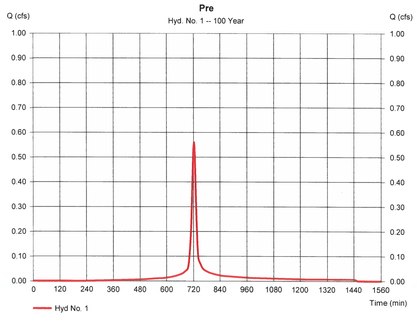
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Hyd. No. 1

Pre

Hydrograph type	= SCS Runoff	Peak discharge	= 0.560 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,638 cuft
Drainage area	= 0.100 ac	Curve number	= 89
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.89 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



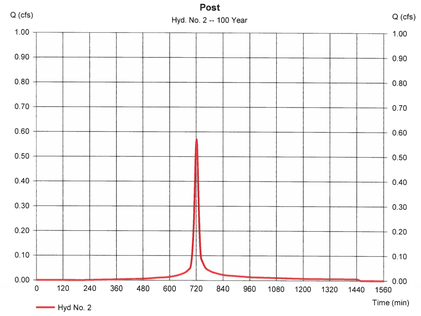
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Hyd. No. 2

Post

Hydrograph type	= SCS Runoff	Peak discharge	= 0.569 cfs
Storm frequency	= 100 yrs	Time to peak	= 722 min
Time interval	= 2 min	Hyd. volume	= 1,677 cuft
Drainage area	= 0.100 ac	Curve number	= 90
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 5.89 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484



Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2026 — Monday, 10 / 27 / 2025

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Precip. file name: Sample.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	2.04	2.50	0.00	3.10	3.60	4.39	5.11	5.89
SCS 6-Hr	0.00	1.80	0.00	0.00	2.60	0.00	0.00	4.00
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Printed Thursday, October 30, 2025

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

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VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501

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AHBR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION09-15-2025

CALCULATIONS

C1.02

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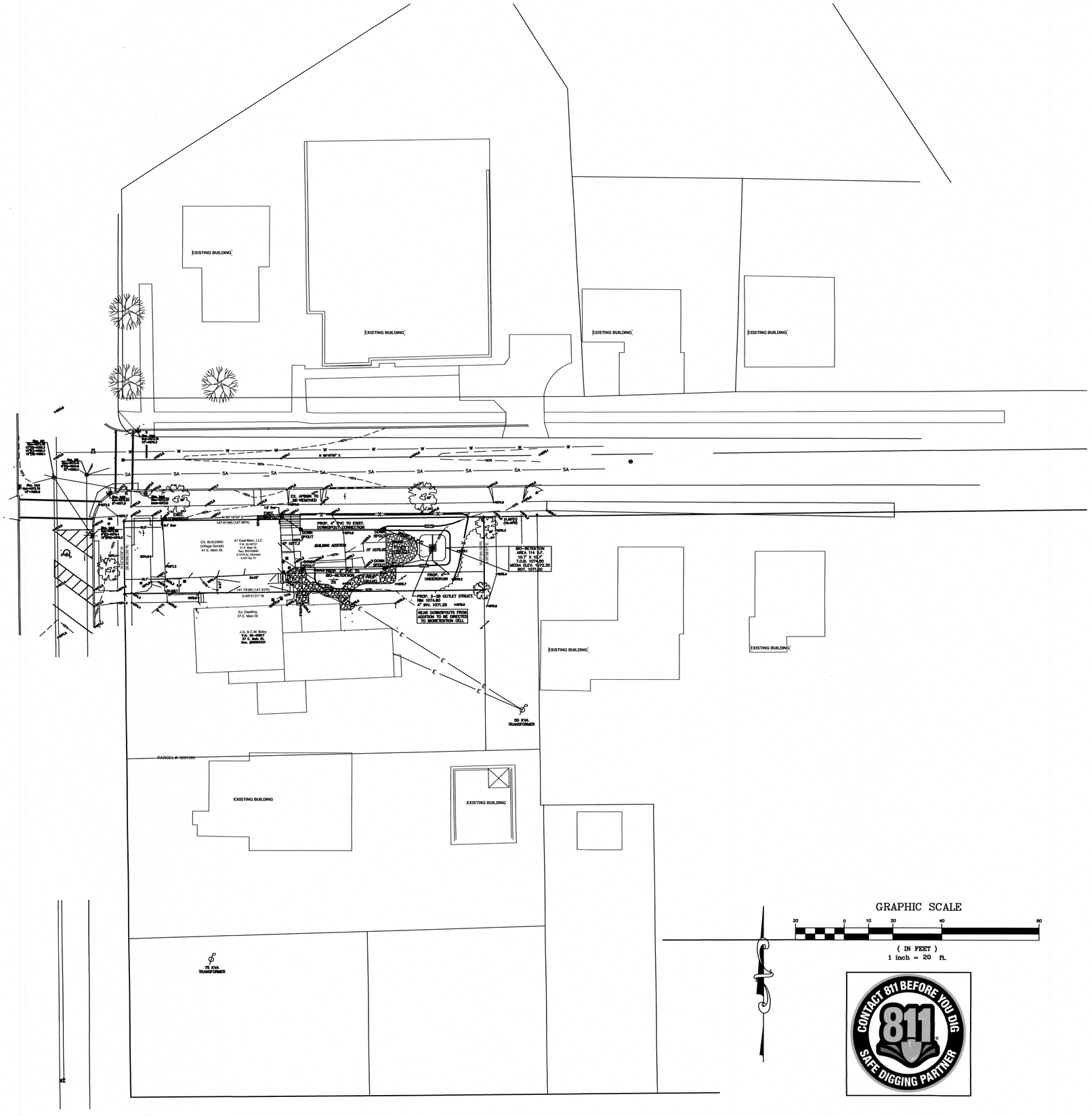


Revisions:

1	NEW SHEET 10/27/25
2	
3	
4	
5	
6	
7	

VILLAGE DENTAL
P.P.N.32-00737
41 EAST MAIN ST.

HUDSON - SUMMIT COUNTY - OHIO

GUTOSKEY & ASSOCIATES INC.
Civil Engineers, Surveyors and Land Planners
10135 GOTTSCHALK PKWY, SUITE 4 Tel (440) 543-6900
CHAGRIN FALLS, OHIO 44023 JOE@GUTOSKEY.COM

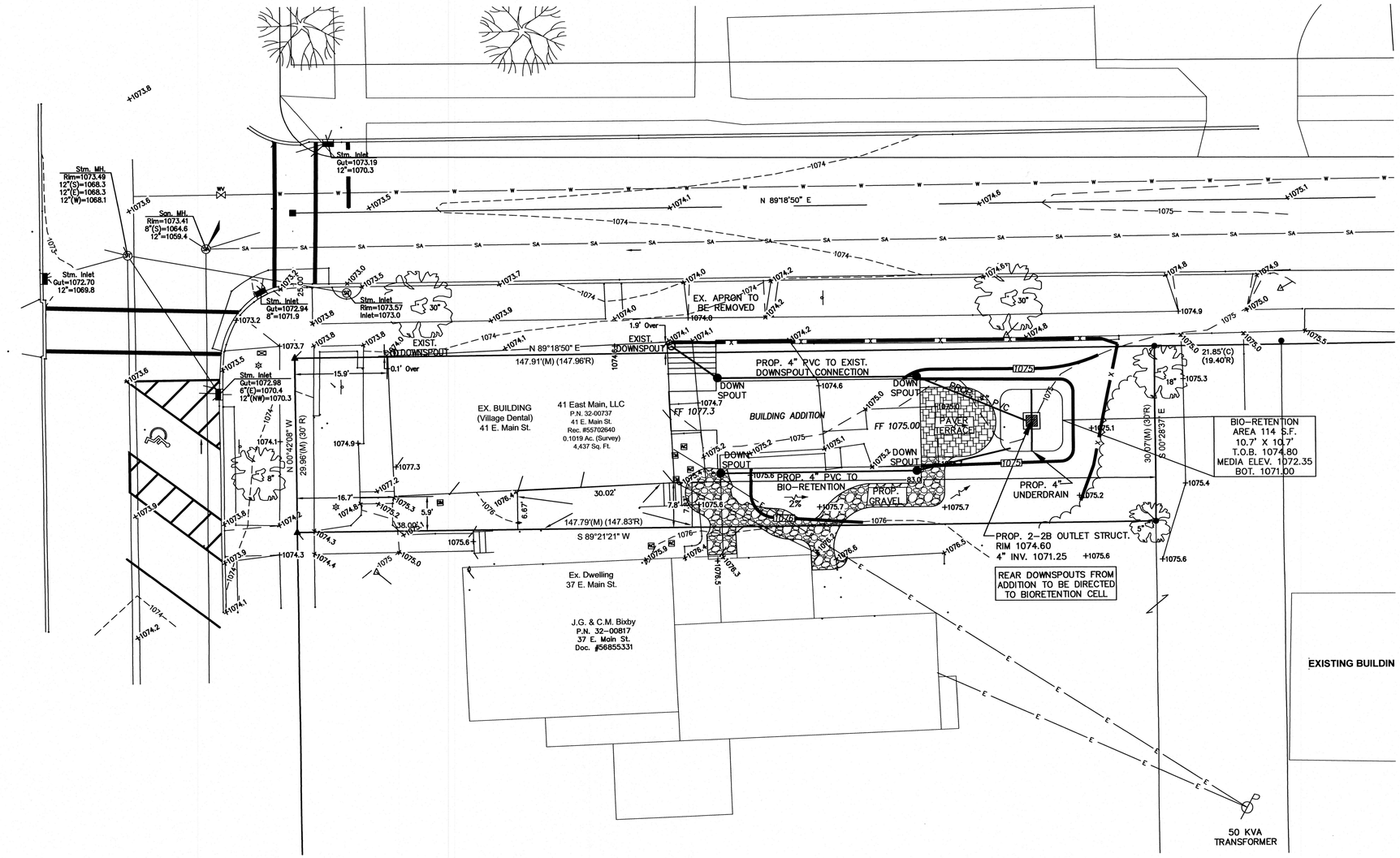
OVERALL PLAN

STATE OF OHIO
JOSEPH GUTOSKEY
51851
REGISTERED PROFESSIONAL ENGINEER

Date: 10/27/25
Scale: Hor. 1" = 20'
Vert.
Filename:
Checked By:
F.B. No.:

Sheet
C-1.1

CONTRACT No.
25-4246



LEGEND

LIMITS OF DISTURBANCE

SILT CONTROL FENCE/SOCK (SF) x—x—x—x—x

INLET PROTECTION (IP) IP

NOTE: EROSION MEASURES ARE NOT SHOWN TO SCALE

TEMPORARY SEEDING & MULCHING (SEED MIX NO. 1):

TEMPORARY SEEDING SHALL BE APPLIED WITHIN SEVEN (7) DAYS ON ALL BARE AREAS THAT WILL NOT BE DISTURBED FOR 14 DAYS.
–PERRENIAL RYE GRASS 2 LBS./1000 S.F.
–COMMERCIAL FERTILIZER SHALL BE (12–12–12) AND CONFORM TO ORLD 10 LBS./1000 S.F.
–MULCH & STRAW 2 TONS/ACRE

ALL TEMPORARY SEEDING ITEMS & PROCEDURES SHALL CONFORM TO ORLD UNLESS OTHERWISE DIRECTED BY CITY ENGINEER.

TEMPORARY STABLIZATION

AREA REQUIRING TEMPORARY STABILIZATION	TIME FRAME TO APPLY EROSION CONTROLS
ANY DISTURBED AREA WITHIN 50 FEET OF A WATERCOURSE AND NOT AT FINAL GRADE.	WITHIN 2 DAYS OF THE MOST RECENT DISTURBANCE, IF THAT AREA WILL REMAIN IDLE FOR MORE THAN 14 DAYS.
FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREA, INCLUDING SOIL STOCKPILES, THAT WILL BE DORMANT FOR MORE THAN 14 DAYS BUT LESS THAN ONE YEAR, AND NOT WITHIN 50 FEET OF A WATERCOURSE.	WITHIN 7 DAYS OF OF THE MOST RECENT DISTURBANCE WITHIN THAT AREA.
DISTURBED AREAS THAT WILL BE IDLE OVER THE WINTER.	PRIOR TO NOVEMBER 1.
NOTE: WHERE VEGATATIVE STABILIZATION TECHNIQUES MAY CAUSE STRUCTURAL INSTABILITY OR OTHERWISE UNOBTAINABLE, ALTERNATIVE STABILIZATION TECHNIQUES MUST BE EMPLOYED. THESE TECHNIQUES MAY INCLUDE MULCHING, EROSION MATTING, OR PLACEMENT OF STONE.	

PERMANENT SEEDING AND MULCHING (SEED MIX NO. 2):

SEDIMENT CONTROL SHALL BE ACCOMPLISHED BY SEEDING AND MULCHING IMMEDIATELY UPON COMPLETION OF EXCAVATION OR FILL AND FINISHED GRADING IN ACCORDANCE WITH ORLD OR AS DIRECTED BY THE CITY ENGINEER. THE FOLLOWING MIXTURES SHALL BE USED FOR SEEDING IN ACCORDANCE WITH ORLD:

KENTUCKY BLUEGRASS–40%
CREEPING RED FESCUE–40% 3LBS./1000 S.F.
PERENNIAL RYEGRASS–20%
FERTILIZER 12 LBS./1000 S.F. (12–12–12)
MULCH/STRAW 2 TONS/ACRE

RESTORATION OF ALL DISTURBED AREAS SHALL IMMEDIATELY FOLLOW EXCAVATION AND GRADING OPERATIONS. DELAY IN RESTORATION SHALL NECESSITATE TEMPORARY EROSION CONTROL MEASURES APPROVED BY THE ENGINEER AND AT THE CONTRACTOR'S COST.

PERMANENT STABLIZATION

AREA REQUIRING PERMANENT STABILIZATION	TIME FRAME TO APPLY EROSION CONTROLS
ANY AREA THAT WILL LIE DORMANT FOR ONE YEAR OR MORE.	WITHIN 7 DAYS OF OF THE MOST RECENT DISTURBANCE WITHIN THAT AREA.
ANY AREA WITHIN 50 FEET OF A WATERCOURSE AND AT FINAL GRADE.	WITHIN 2 DAYS OF REACHING FINAL GRADE.
ANY AREA AT FINAL GRADE.	WITHIN 7 DAYS OF REACHING FINAL GRADE WITHIN THAT AREA.

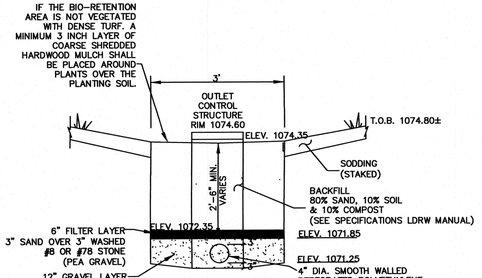
GRAPHIC SCALE

10 0 5 10 20 40

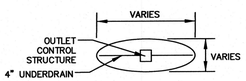
(IN FEET)
1 inch = 10 ft.

CONTACT 811 BEFORE YOU DIG
811
SAFE DIGGING PARTNER

IF THE BIO–RETENTION AREA IS NOT VEGETATED WITH DENSE TURF, A MINIMUM 3 INCH LAYER OF COARSE SHREDDED HARDWOOD MULCH SHALL BE PLACED AROUND PLANTS OVER THE PLANTING SOIL.



BIO–RETENTION CELL
N.T.S.



BIO–RETENTION CELL
N.T.S.

NOTE:
SOIL MIXTURE ANALYSIS TO BE SENT TO CITY ENGINEER BEFORE INSTALLATION

EXISTING SOIL IS MAHONING HYDROLOGIC GROUP D

UNDER DRAIN CONFIGURATION TYPE "C" WAS CHOSEN DUE TO SOIL CONSTRAINTS.

NOTES:
SEE ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.

TOPOGRAPHIC & EXISTING CONDITIONS SURVEY PROVIDED BY CLIENT.

THERE SHALL BE NO STAGING OF EQUIPMENT, MATERIALS, OR EMPLOYEE VEHICLES IN THE RIGHT OF WAY.

CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES WITHIN THE PROJECT AREA.

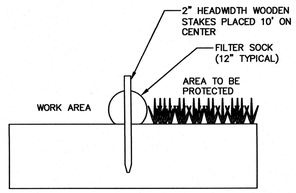
THIS PLAN MEETS THE REQUIREMENTS OF THE OHIO EPA GENERAL PERMIT AUTHORIZATION FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY OH000006.

BIO–RETENTION CELL CALCULATION

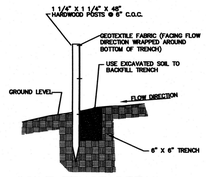
TOTAL AREA = 0.10 AC.

AREA FILTER= 0.05(IMPERVIOUS AREA) =BIO–RET. S.F.
0.05(2264)= 113.2 S.F. USE 114 S.F.

114 S.F. X 0.25' DEPTH = 28.5 C.F.



SILT SOCK DETAIL
(TYPICAL CROSS SECTION)



SILT FENCE DETAIL
(TYPICAL CROSS SECTION)

Street Sweeping & Vacuuming

Practices to remove tracked sediment to prevent the sediment from entering a storm drain or watercourse.

These practices are implemented anywhere sediment is tracked from the project site onto public or private paved roadways, typically at points of ingress/egress.

* Inspect potential sediment tracking locations daily.

*Visible sediment tracking shall be swept and/or vacuumed daily.

*If not mixed with debris or trash, consider incorporating the removed sediment bank into the project.

*Use caution to not sweep up any unknown substance or any object that may be potentially hazardous.

*Adjust brooms frequently: maximize efficiency of sweeping operations.

*After sweeping is finished, properly dispose of sweeper wastes at an approved dumpsite.

CITY NOTES:

A $2,000 INSPECTION ESCROW WILL BE NEEDED AT THE FINAL APPROVAL OF THE PLANS, PRIOR TO A PRE–CONSTRUCTION MEETING.

A PERFORMANCE BOND IN THE AMOUNT OF 110% OF THE ITEMS OUTSIDE OF THE RIGHT–OFWAY AND ALL STORM SEWER WORK. THAT NUMBER SHALL BE TAKEN FROM AN ENGINEERS ESTIMATED CONSTRUCTION COST STAMPED AND SIGNED BY THE ENGINEER.

A PRE–CONSTRUCTION MEETING SHALL BE HELD WITH THE CITY OF HUDSON PRIOR TO ANY WORK BEGINNING.

THERE SHALL BE NO STAGING OF EQUIPMENT, MATERIALS, OR EMPLOYEE VEHICLES IN THE R/W.

NO ROAD CLOSURES WILL BE PERMITTED WITHOUT A WRITTEN APPROVAL FROM THE CITY MANAGER.

Revisions:
1 9/15/25
2 10/27/25
3
4
5
6
7

VILLAGE DENTAL
P.P.N.32–00737
41 EAST MAIN ST.
HUDSON – SUMMIT COUNTY – OHIO

GUTOSKEY & ASSOCIATES INC.
Civil Engineers, Surveyors and Land Planners
10135 GOTTSCHALK PKWY, SUITE 4 Tel (440) 543–6900
CHAGRIN FALLS, OHIO 44023 JOE@GUTOSKEY@GUTOSKEY.COM

SWM PLAN

STATE OF OHIO
JOSEPH GUTOSKEY
51851
REGISTERED PROFESSIONAL ENGINEER

Date: 8/8/25
Scale: Hor. 1" = 10'
Vert:
Filename:
Checked By:
F.B. No.:

Sheet
C–1.2

CONTRACT No.
25–4246

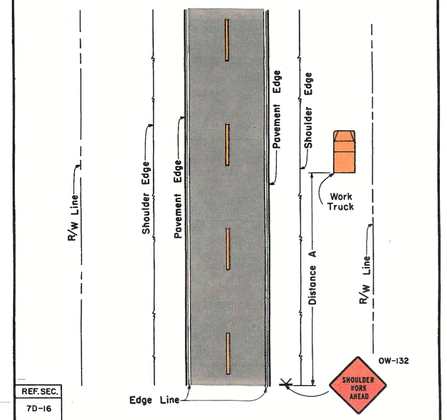
EXHIBIT A
GENERAL CONSTRUCTION NOTES

1. CONSTRUCTION OF THE SITE WORK AND UTILITIES SHALL BE GOVERNED BY THE CITY OF HUDSON'S "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS REQUIRED FOR THE PROJECT.
3. THE CONTRACTOR MUST ALERT THE OHIO UTILITY PROTECTION SERVICES AT 1-800-362-2764 AT LEAST 48 HOURS BEFORE ANY EXCAVATION IS TO BEGIN.
4. ALL EXISTING APPURTENANCES (UTILITY POLES, VALVES, HYDRANTS, MANHOLES, ETC.) ARE TO BE MAINTAINED BY THE CONTRACTOR UNLESS OTHERWISE SHOWN ON THE PLANS.
5. THE DESIGN ENGINEER CERTIFIES THAT ALL UTILITIES ARE SHOWN AS THEY APPEAR ON EXISTING RECORDS OR FIELD LOCATED.
6. ALL KNOWN ABOVE AND UNDERGROUND SERVICES HAVE BEEN NOTED ON THE DRAWINGS. THE CONTRACTOR ACCEPTS FULL RESPONSIBILITY FOR ANY SERVICES DAMAGED DURING THE CONSTRUCTION OF THE PROJECT WHETHER SHOWN OR NOT ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING THE SERVICE AS SOON AS POSSIBLE AT THE CONTRACTOR'S OWN EXPENSE.
7. VIDEO TAPING OF PROJECT SHALL BE DELIVERED AND ACCEPTED BY THE CITY OF HUDSON ENGINEERING DEPARTMENT A MINIMUM OF 14 CALENDAR DAYS PRIOR TO START OF CONSTRUCTION ACTIVITIES.
8. NOTIFY THE CITY OF HUDSON ENGINEERING DEPARTMENT A MINIMUM OF FORTY-EIGHT HOURS (2 WORKING DAYS) PRIOR TO THE START OF CONSTRUCTION.
9. A PRECONSTRUCTION MEETING SHALL BE SCHEDULED A MINIMUM OF 48 HOURS (2 WORKING DAYS) AFTER SUBMISSION OF A MINIMUM OF 6 APPROVED SETS OF PLANS AND ALL SHOP DRAWINGS APPLICABLE TO THE PROPOSED IMPROVEMENTS. A PRECONSTRUCTION MEETING MUST BE HELD PRIOR TO START OF ANY CONSTRUCTION.
10. THE LIMITS OF CLEARING AND GRADING SHALL BE FIELD STAKED AND LINED WITH ORANGE CONSTRUCTION FENCING 48 HOURS (2 WORKING DAYS) PRIOR TO THE PRECONSTRUCTION MEETING. AREAS BEYOND THE LIMITS OF CLEARING AND GRADING SHALL NOT BE DISTURBED INCLUDING THE STOCKPILE OF ANY MATERIALS OR CONSTRUCTION TRAFFIC.
11. ALL ROAD SURFACES, EASEMENTS, OR RIGHT-OF-WAY DISTURBED BY THE CONSTRUCTION OF ANY PART OF THESE IMPROVEMENTS ARE TO BE RESTORED ACCORDING TO THE CITY OF HUDSON "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION" AS DIRECTED BY THE CITY OF HUDSON AND/OR ITS ENGINEER.
12. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE CITY OF HUDSON OR ITS REPRESENTATIVE IF SUSPECTED HAZARDOUS MATERIAL OR ANY OTHER MATERIAL THAT MAY CREATE A HEALTH RISK IS DISCOVERED ON SITE.
13. ALL DISTURBED STORM SEWERS AND/OR APPURTENANCES, SIGNS, GUARD RAILING, MAIL AND/OR PAPER BOXES, DRIVE CULVERTS, FENCES, TREES, LANDSCAPING, OR OTHER ITEMS DISTURBED BY THE CONSTRUCTION SHALL BE RESTORED OR REPAIRED TO AT LEAST THE BEFORE-CONSTRUCTION CONDITION.
14. ANY DEFECTS DISCOVERED IN NEW CONSTRUCTION, WORKMANSHIP, EQUIPMENT OR MATERIALS SHALL BE REPAIRED, OR CORRECTED BY APPROVED METHODS AS DIRECTED BY THE CITY OF HUDSON.
15. NUCLEAR COMPACTION TESTING SHALL BE REQUIRED FOR ALL FILL AREAS OVER TWO FEET (2') IN DEPTH, AT 6" LIFTS PER ASTM A-1557, 95% MODIFIED.
16. APPROVAL BY THE CITY OF HUDSON ENGINEER CONSTITUTES NEITHER EXPRESSED NOR IMPLIED WARRANTIES AS TO THE FITNESS, ACCURACY, OR SUFFICIENCY OF PLANS, DESIGNS OR SPECIFICATIONS.
17. DURING TAPPING OF EXISTING UTILITIES, ANY TRAFFIC CONTROL REQUESTED OR REQUIRED BY THE CITY OF HUDSON WILL BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE CITY.
18. COMPLIANCE WITH THE OCCUPATIONAL AND SAFETY ACT OF 1970 IS REQUIRED BY ALL CONTRACTORS ON THIS PROJECT.
19. ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
20. ALL DISTURBED AREAS SHALL RECEIVE 4" OF TOPSOIL AND BE SEEDED AND MULCHED AS PER SECTION 9 - LANDSCAPING AND STREET TREES OF THE CITY'S "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION.
21. IF MUD, SOIL, OR OTHER DEBRIS IS DEPOSITED ON ADJACENT STREETS, ROADS, OR OTHER PROPERTY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF SUCH AS DIRECTED BY THE CITY OF HUDSON OR ITS ENGINEER AT THE END OF EACH WORK DAY, OR AS REQUIRED DURING THE WORK DAY.
22. ALL PROPOSED SLOPES 3:1 OR STEEPER AND ALL EARTHEN DRAINAGE WAYS SHALL RECEIVE JUTE OR EXCELSIOR MATTING AS PER ODOT 667 OR 668.
23. ALL STORM SEWERS WITHIN PUBLIC RIGHTS-OF-WAY AND CITY OF HUDSON EASEMENTS SHALL BE PER SECTION 4 - STORM COLLECTION OF THE CITY'S "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION.
24. ALL PIPES SHALL BE PLACED OVER 4" OF BEDDING. BEDDING MATERIAL SHALL BE AS SPECIFIED IN CITY'S "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION, FOR THE TYPE OF PIPE.
25. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AND PROTECTING THE FLOW OF VEHICULAR AND PEDESTRIAN TRAFFIC AROUND THE JOB SITE. TRAFFIC CONTROL SHALL BE COORDINATED WITH THE CITY OF HUDSON POLICE DEPARTMENT.
26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING PLANT TICKETS FOR ALL MATERIALS DELIVERED TO THE SITE. PLANT TICKETS MUST SHOW NET QUANTITY OF DELIVERED MATERIAL. MATERIAL DELIVERED OR PLACED WITHOUT PLANT TICKETS SHALL BE REMOVED AND PROPERLY DISPOSED AT THE EXPENSE OF THE CONTRACTOR.
27. ALL DELIVERED MATERIALS SHALL MEET THE STANDARDS AND SPECIFICATIONS OF THE CITY OF HUDSON OR OTHER APPLICABLE AGENCIES. THE CITY OF HUDSON, OR ITS REPRESENTATIVE, RESERVES THE RIGHT TO REJECT ANY DELIVERED MATERIAL WHICH DOES NOT CONFORM TO THE APPLICABLE STANDARDS AND SPECIFICATIONS.
28. THE CITY OF HUDSON OR ITS REPRESENTATIVE, RESERVES, THE RIGHT TO HALT ALL CONSTRUCTION ACTIVITY FOR NONCONFORMANCE OF PLANS, SPECIFICATIONS AND OTHER APPLICABLE STANDARDS OR REGULATIONS.
29. ALL CHANGES TO APPROVED DRAWINGS AND/OR SPECIFICATIONS MUST BE REAPPROVED BY THE CITY OF HUDSON PRIOR TO CONSTRUCTION.
30. ALL PAVING MATERIAL MUST BE PROVIDED BY ODOT CERTIFIED SUPPLIER. WRITTEN PROOF SHALL BE REQUIRED UPON DELIVERY OF MATERIALS. THE CERTIFIED MIX DESIGN MUST BE SUBMITTED TO, AND APPROVED BY, THE CITY OF HUDSON PRIOR TO SCHEDULING A PRECONSTRUCTION MEETING.
31. CONTRACTOR/DEVELOPER SHALL PROVIDE ALL REQUIRED ROADWAY SIGNAGE AS PER ODOT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES INCLUDING STREET IDENTIFICATION SIGNAGE PER CITY STANDARDS FOR ALL ASPECTS OF THE IMPROVEMENT.
32. ALL BONDS OR LETTERS OF CREDIT SHALL NOT BE RELEASED OR REDUCED AND NO WATER OR SANITARY SEWER CUSTOMERS CAN BE CONNECTED UNTIL ALL RECORD DRAWINGS HAVE BEEN SUBMITTED, REVIEWED AND APPROVED BY THE CITY OF HUDSON.
33. ALL WORK AS PART OF THESE PLANS SHALL BE COMPLETED, INCLUDING ALL PUNCH LIST AND DEFICIENCY WORK WITHIN 1 YEAR OF THE START OF CONSTRUCTION.
34. FAILURE TO COMPLETE THE PROJECT IN ITS ENTIRETY AS APPROVED BY THE PLANNING COMMISSION, INCLUDING PUNCH LIST ITEMS, WILL RESULT IN THE CITY OF HUDSON HOLDING ALL FUTURE ZONING CERTIFICATES UNTIL ALL WORK HAS BEEN COMPLETED AND APPROVED.
35. MANUFACTURERS OR SUPPLIERS AFFIDAVIT FOR ALL CONSTRUCTION MATERIALS SHALL BE PROVIDED AS PER THE CITY'S "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION PRIOR TO THE START OF CONSTRUCTION.
36. THE CONSTRUCTION OF SANITARY SEWERS, WATER MAINS, LIFT STATIONS AND APPURTENANCES IS PROHIBITED UNTIL ALL PLANS HAVE BEEN APPROVED BY THE OHIO ENVIRONMENTAL PROTECTION AGENCY.
37. ALL SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HUDSON "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION.
38. ALL SANITARY SEWERS CONSTRUCTED IN SUMMIT COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES (SC-DOES) SERVICE DISTRICTS AND SERVED BY SC-DOES SHALL COMPLY WITH SC-DOES REQUIREMENTS.

7-46

TYPICAL APPLICATIONS OF TRAFFIC CONTROL DEVICES FOR

OPERATIONS BEYOND THE SHOULDER



REF.SEC. 7D-16

NOTES:
1. Erect signs only on that side of the road where work is being done.
2. Erect signs facing both directions for work in the median area.

TYPE OF ROADWAY	DISTANCE A-ft.
Urban	200
Standard	500
Expressway	1500

C-11

Revisions:
1 NEW SHEET 10/27/25
2
3
4
5
6
7

VILLAGE DENTAL
P.P.N.32-00737
41 EAST MAIN ST.
HUDSON - SUMMIT COUNTY - OHIO

GUTOSKEY & ASSOCIATES INC.
Civil Engineers, Surveyors and Land Planners
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CHAGRIN FALLS, OHIO 44023 JOE@GUTOSKEY.COM

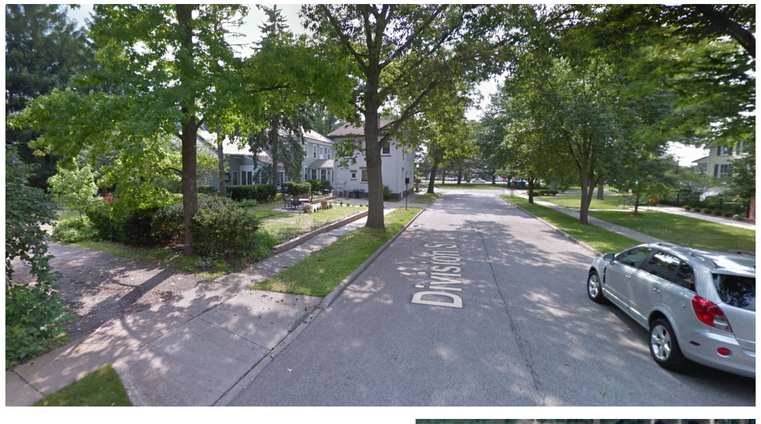
GENERAL NOTES

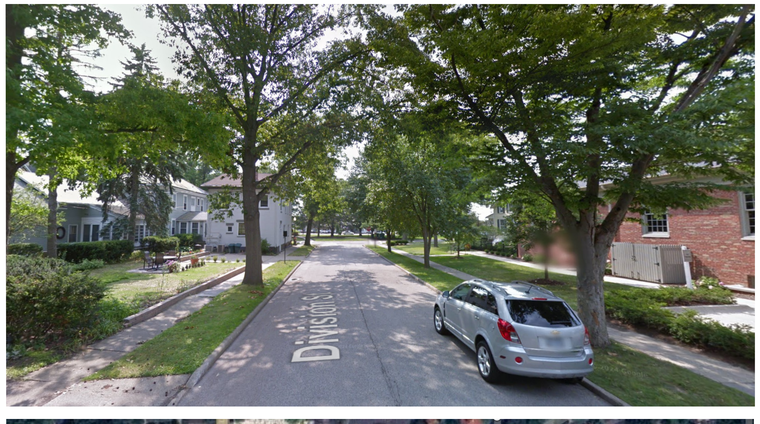
STATE OF OHIO
JOSEPH GUTOSKEY
51851
REGISTERED PROFESSIONAL ENGINEER

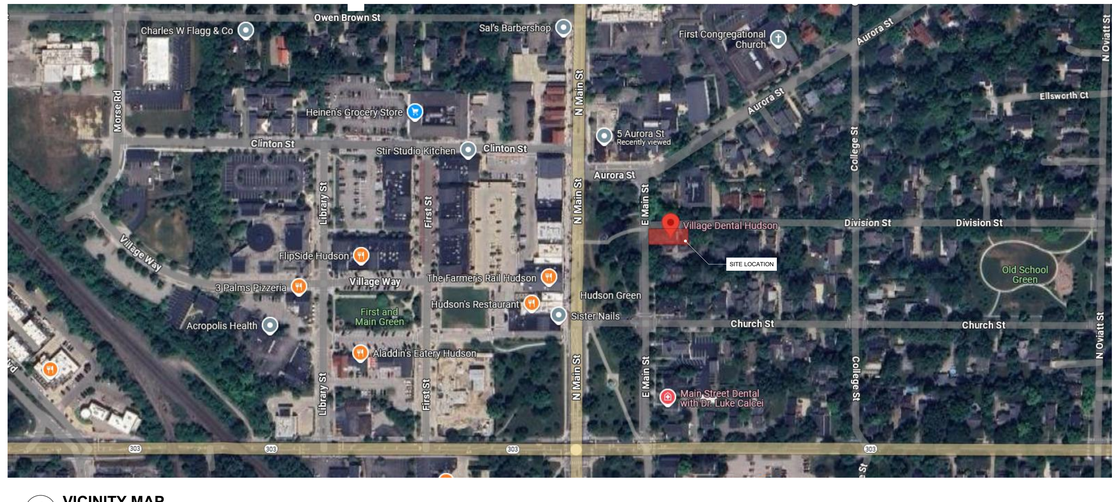
Date: 10/27/25
Scale: Hor. 1" = 20'
Vert.
Filename:
Checked By:
F.B. No.:

Sheet
C-1.3

CONTRACT No.
25-4246







1 **VICINITY MAP**
NOT TO SCALE

0 1/2" 1" 2"

Peninsula
www.pa-architects.com
1775 Main Street
Peninsula, Ohio 44264
T 330.657.2800

PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:

PENINSULA ARCHITECTS

CIVIL ENGINEER:
GUTOSKEY AND ASSOCIATES
P 406.543.6900

STRUCTURAL ENGINEER:
ORAVEC DESIGN BUILD
P 330.552.8211

MEP ENGINEER:
DENK ASSOCIATES
P 216.531.8880

VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501

ISSUE:
AHBR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION09-15-2025

SITE PHOTOS

AS1.00

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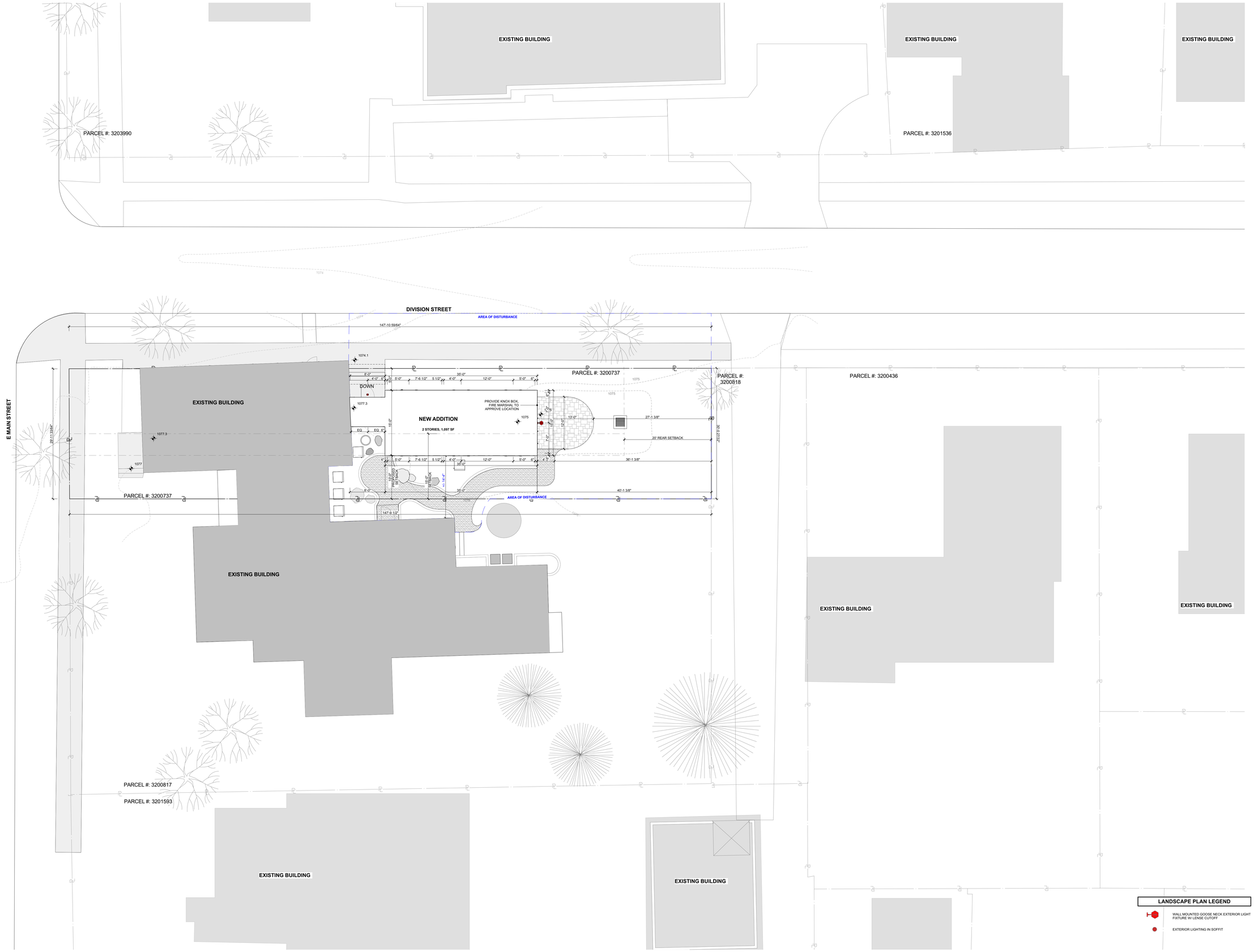
Printed: Thursday, October 30, 2025



1 **SITE PLAN**
SCALE: 1/8" = 1'-0"

0 4' 8' 16'

Printed Thursday, October 30, 2025

Peninsula
www.pa-architects.com
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Peninsula, Ohio 44264
T 330.657.2800

PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:
PENINSULA ARCHITECTS

CIVIL ENGINEER:
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VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

N

PROJECT #: 2501

ISSUE:
AHBR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION09-15-2025

ARCHITECTURAL SITE PLAN

AS1.01

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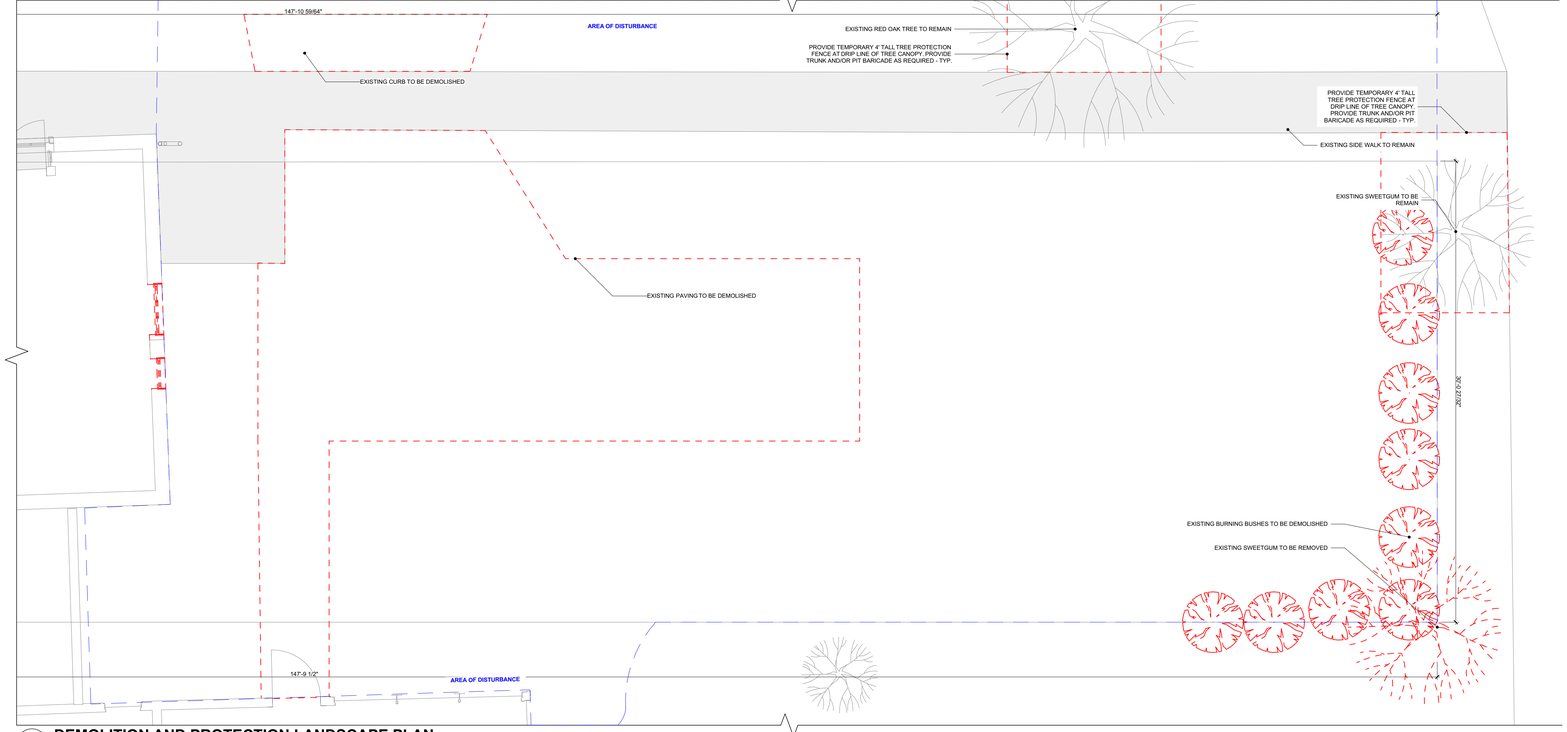
PLANTING SCHEDULE						
CODE	LATIN NAME	COMMON NAME	SIZE	TREE CALIPER	SPACING	QTY.
A-1	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	20' H X 20' W	4"	-	3
B-1	CORNUS FLORIDA	FLOWERING DOGWOOD	30' H X 25' W	5"	-	2
C-1	BUXUS SEMPERVIRENS	ENGLISH BOXWOOD	4' H X 4' W		2'	35
D-1	AMERICAN HOLLY	ILEX	6' H X 4' W		4'	6
E-1	RHODODENDRON 'P.J.M.'	P.J.M. RHODODENDRON	3' H X 3' W		4'	11
F-1	ITEA VIRGINICA	LITTLE HENRY SWEETSPIRE	3' H X 3' W		3'	4
G-1	ACER PALMATUM	'HANA MATOI' JAPANESE MAPLE	4' H X 4' W	2"	-	2

LANDSCAPE PLAN LEGEND

- WALL MOUNTED GOOSE NECK EXTERIOR LIGHT FIXTURE W/ LENSE CUTOFF
- EXTERIOR LIGHTING IN SOFFIT
- AC — AIR CONDITIONING CONDENSER UNIT

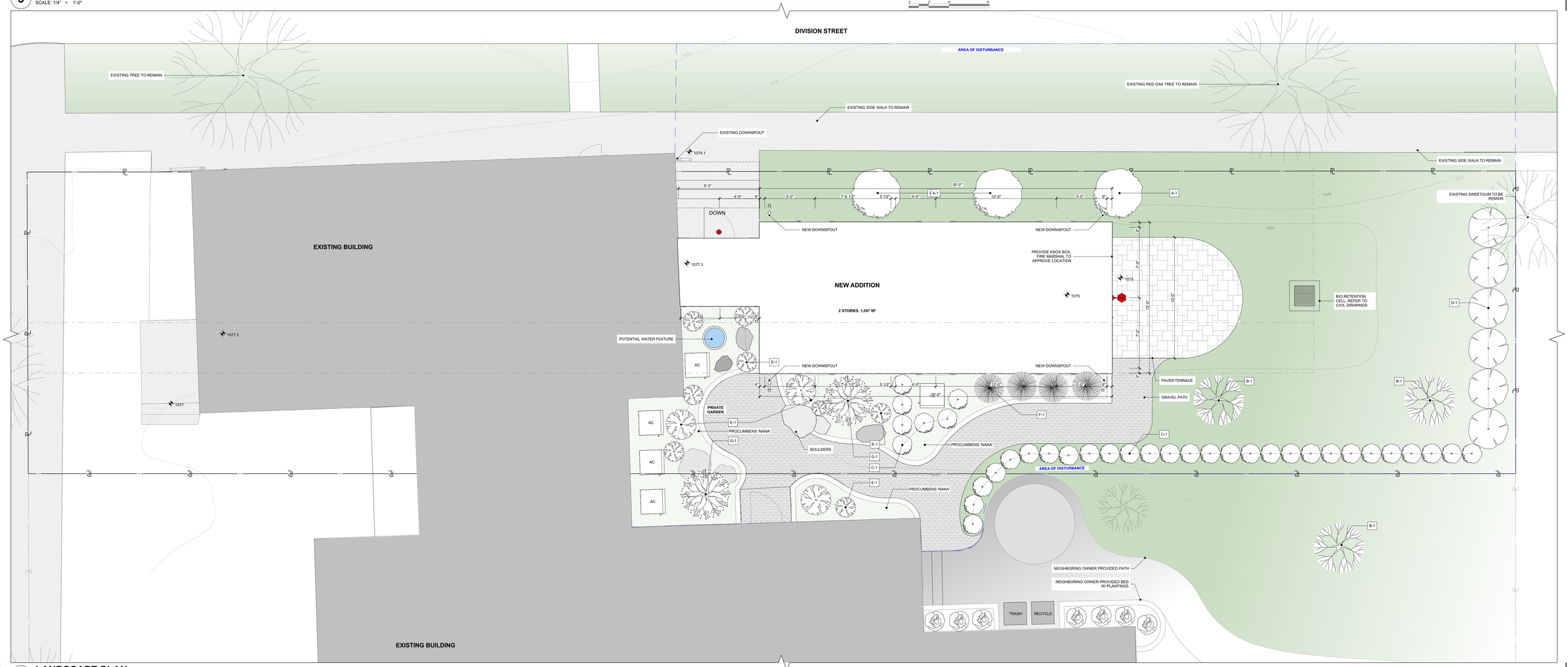
LANDSCAPE NOTES

1. GARBAGE CANS ARE TO BE STORED INSIDE ADDITION.



3 DEMOLITION AND PROTECTION LANDSCAPE PLAN

SCALE: 1/4" = 1'-0"



1 LANDSCAPE PLAN

SCALE: 1/4" = 1'-0"

Peninsula

www.pa-architects.com

1775 Main Street
Peninsula, Ohio 44264
T 330.657.2800

PROGRESS NOT FOR CONSTRUCTION

10/30/2025

PROJECT TEAM:

PENINSULA ARCHITECTS

CIVIL ENGINEER:
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STRUCTURAL ENGINEER:
ORAVEC DESIGN BUILD
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MEP ENGINEER:
DENK ASSOCIATES
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VILLAGE DENTAL

41 E. MAIN STREET, HUDSON, OH 44236

N

PROJECT #: 2501

ISSUE:

NHBR REVIEW	04-01-2025
VARIANCE SET	04-17-2025
PLANNING COMMISSION	09-15-2025

LANDSCAPE PLAN

L0.01

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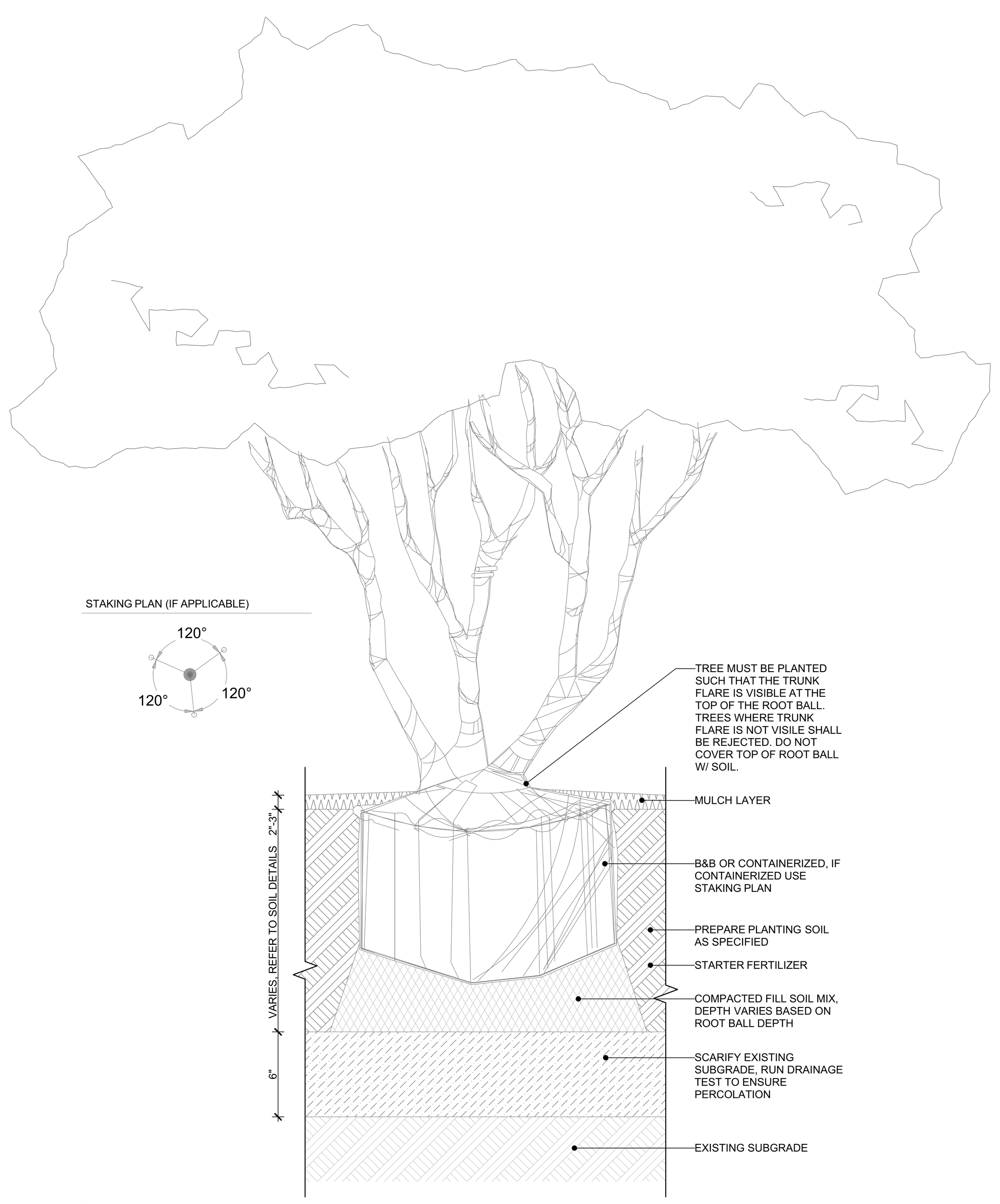
Printed: Thursday, October

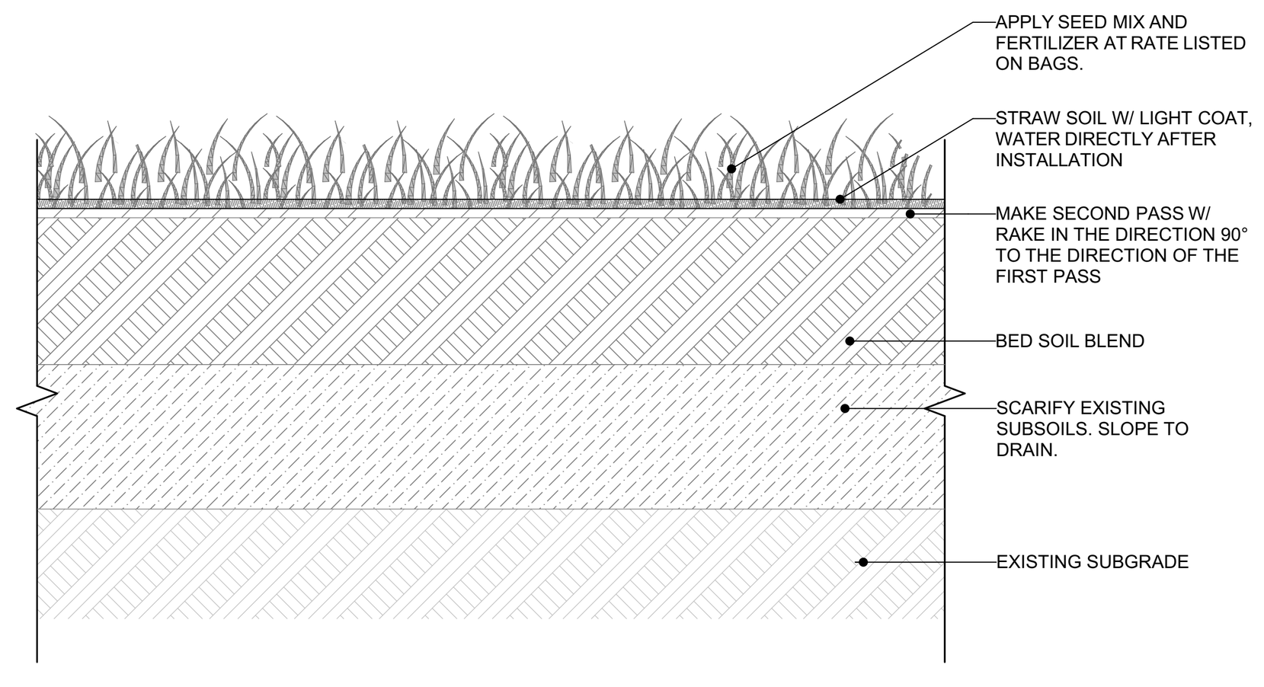
NOTES:

1. CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.
2. DO NOT HEAVILY PRUNE TREES AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINAT LEADERS, AND BROKEN OR DEAD BRANCES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
3. MARK THE NORTH SIDE OF THE TREE IN THE NURSERY, AND ROTATE TREE TO FACE NORTH AT SITE WHEN POSSIBLE.



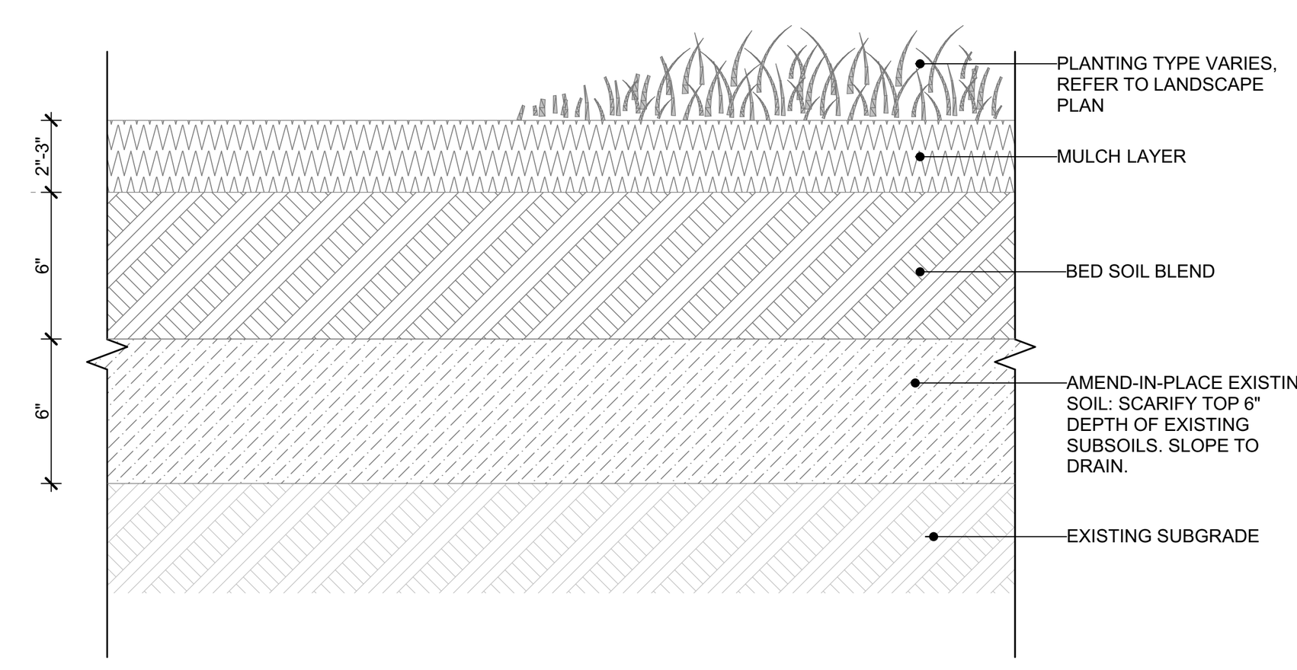
1 TYPICAL SECTION - MULTI-TRUNK ORNAMENTAL TREE DETAIL

NOT TO SCALE



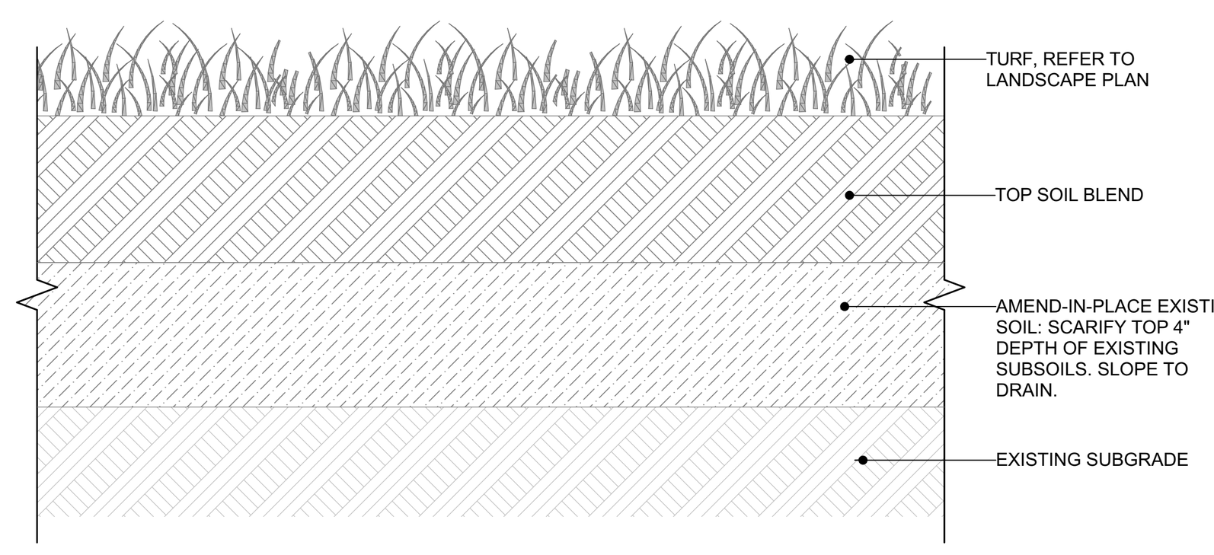
2 TYPICAL SECTION - SEEDING LAWN DETAIL

NOT TO SCALE



3 TYPICAL SECTION - TYPE '2' - PLANTING BED DETAIL

NOT TO SCALE

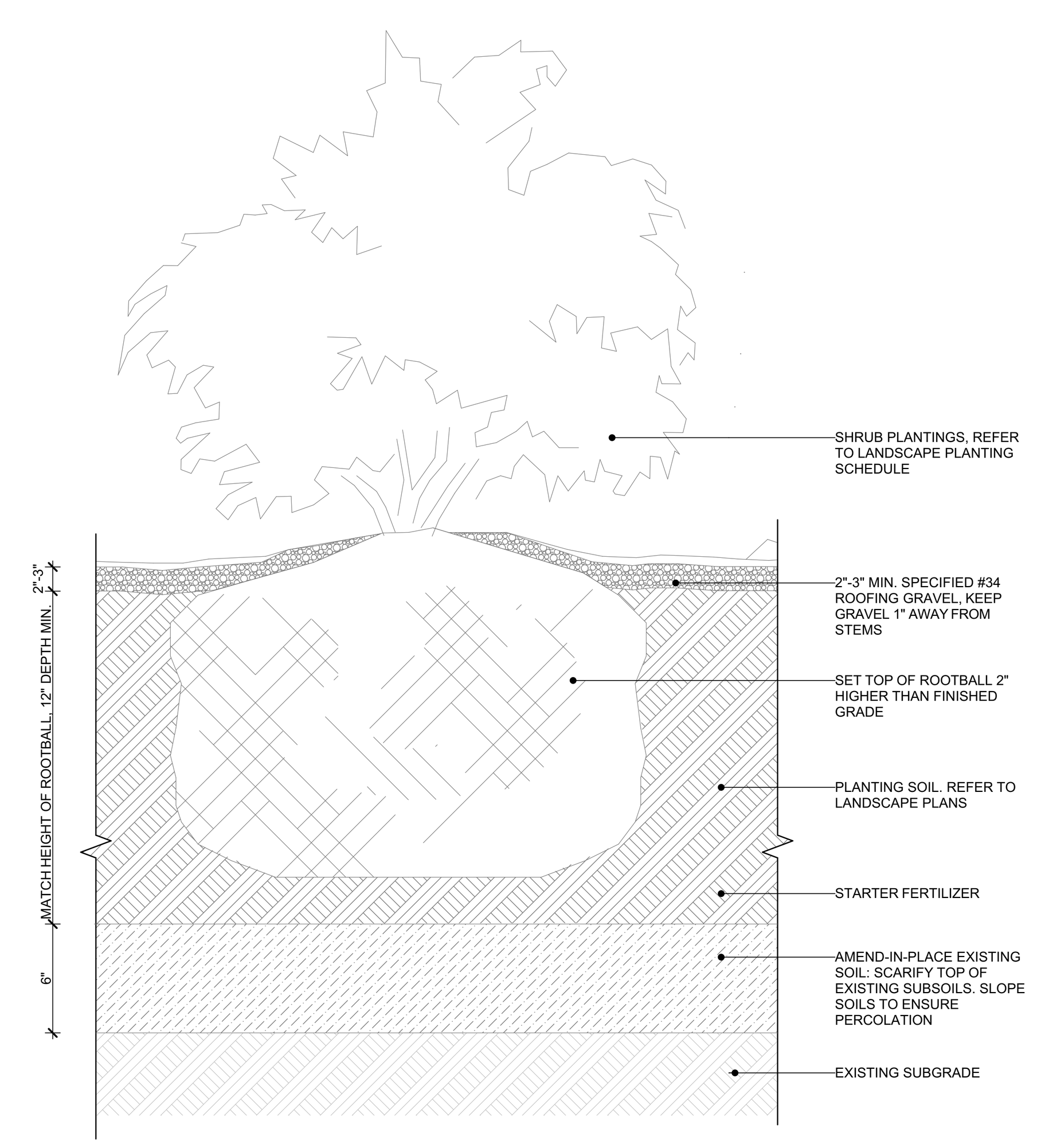


4 TYPICAL SECTION - TYPE '3' - TURF PLANTING DETAIL

NOT TO SCALE

NOTES:

1. CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS/BED PRIOR TO INSTALLATION.
2. IF PLANT IS SHIPPED W/ A WIRE BASKET AROUND THE ROOTBALL, CUT THE WIRE BASKET IN FOUR PLACES AND FOLD DOWN (1/3 OR ROOTBALL HEIGHT) INTO PLANTING HOLE.
3. THE AMOUNT OF PRUNING SHALL BE LIMITED TO 1/3 OF THE BRANCHES TO COMPENSATE FOR LOSS OF ROOTS FROM TRANSPLANTING. REMOVE DEAD AND INJURED LIMBS. REMOVE BURLAP AND WIRE OR TWINE FROM TOP AND SIDES OF BALL. CENTER SHRUB IN HOLE. SET TOP OF BALL 1'-3" ABOVE FINISH GRADE.

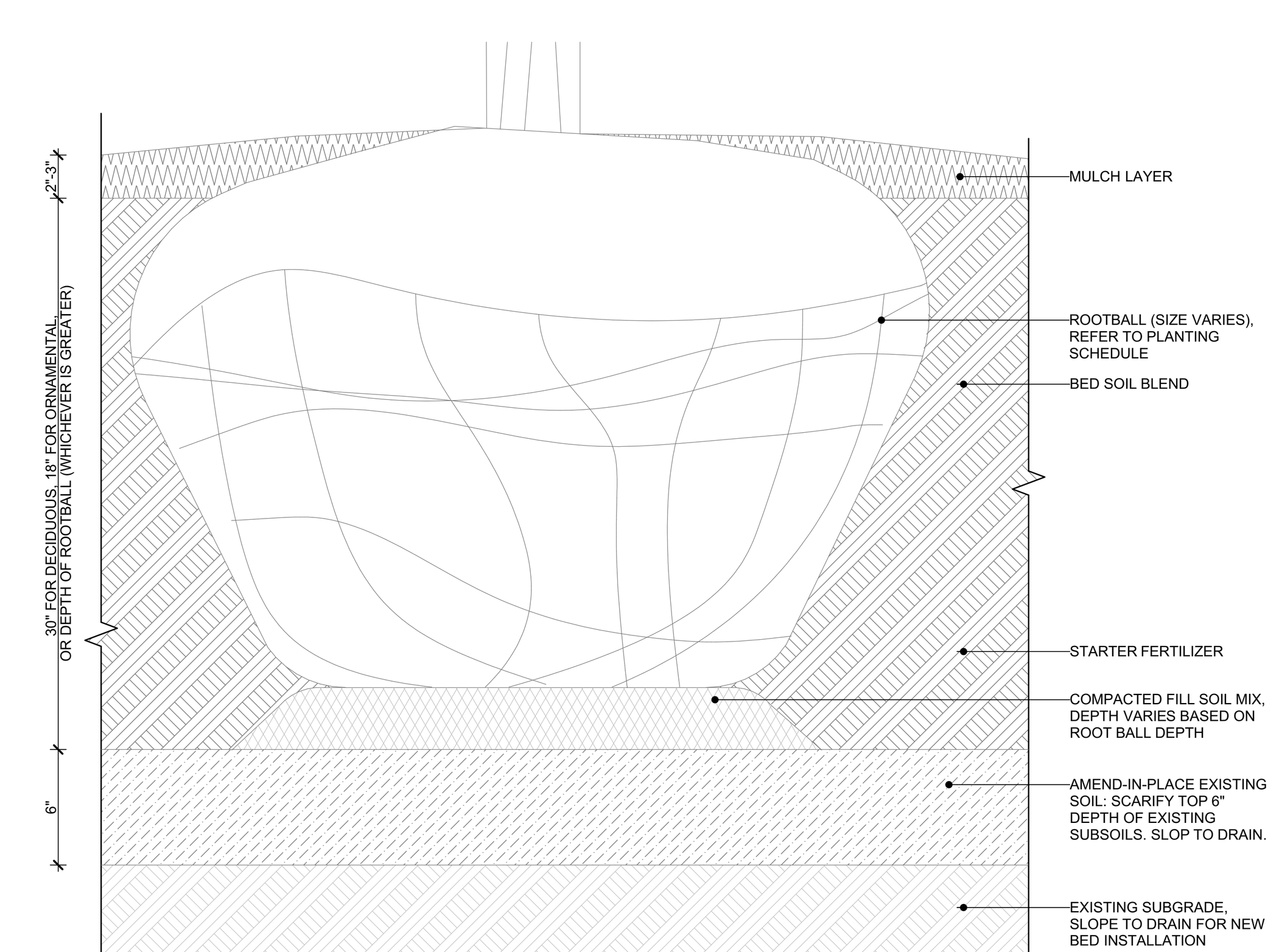


5 TYPICAL SECTION - SHRUB PLANTING DETAIL

NOT TO SCALE

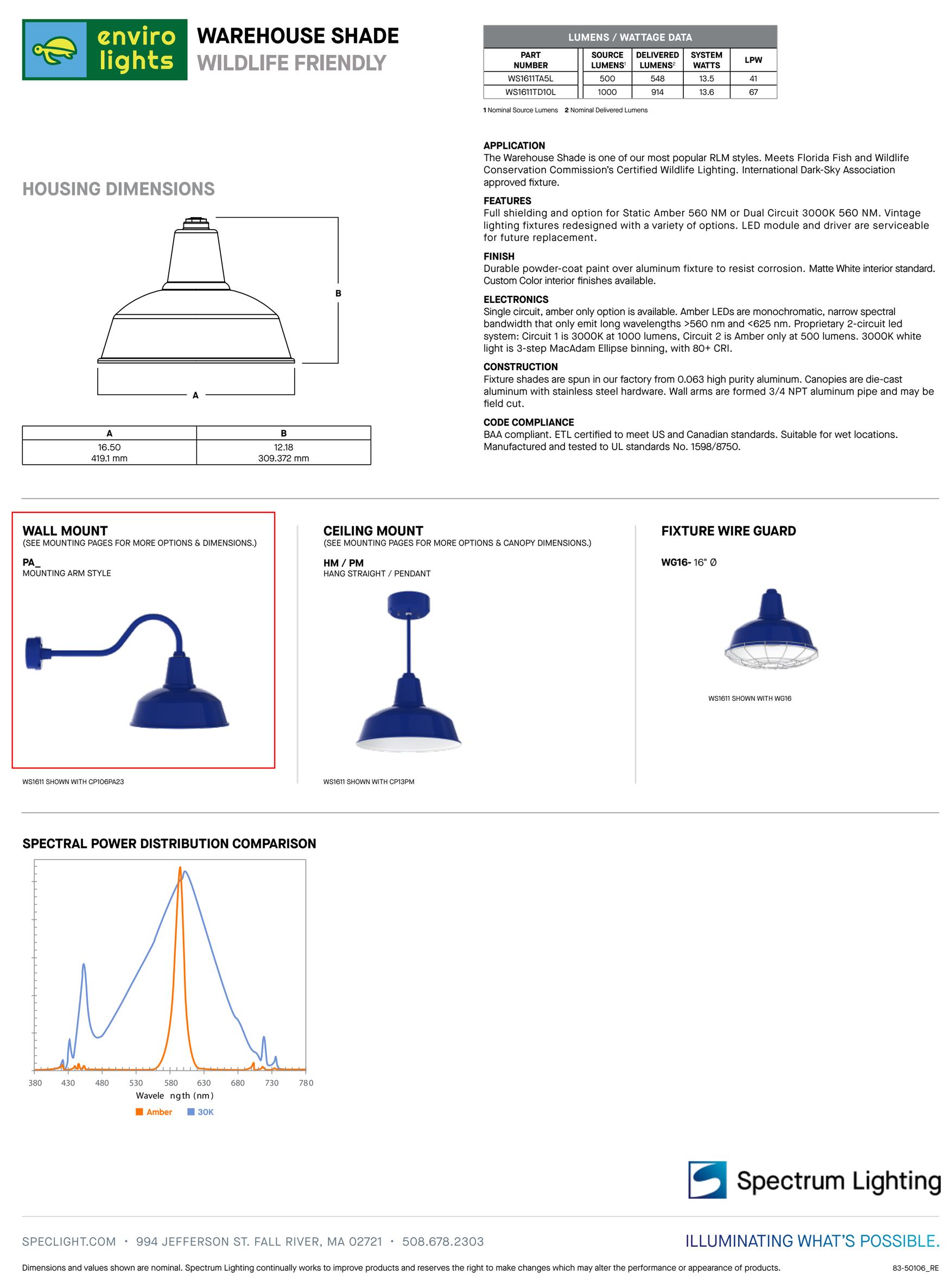
NOTES:

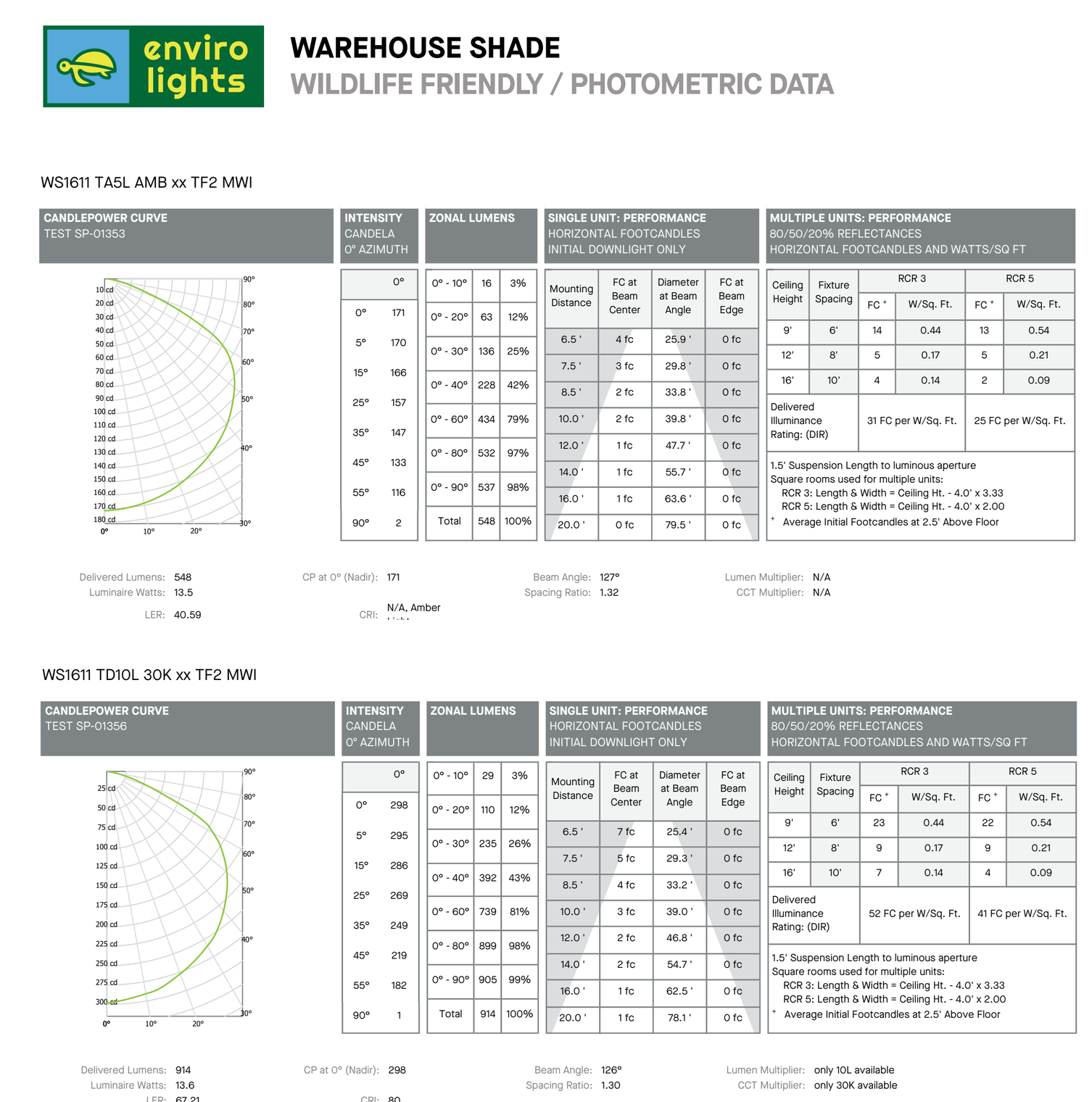
1. CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.
2. FINAL TREE STAKING PLACEMENT TO BE APPROVED BY OWNER.
3. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEDN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED, HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
4. MARK THE NORTH SIDE OF THE TREE IN THE NURSERY, AND ROTATE THE TREE TO FACE NORTH AT THE SITE WHENEVER POSSIBLE.
5. IF PLANT IS SHIPPED W/ A WIRE BASKET AROUND THE ROOT BALL, CUT THE WIRE BASKET IN FOUR PLACES AND FOLD FOWN (8") INTO THE PLANTING HOLE.
6. REMOVE ALL TWINE, ROPE, WIRE, AND BURLAP FROM THE TOP HALF OF THE ROOTBALL.
7. SET TREE PLUMB IN PLANTING PIT.
8. EACH TREE MUST BE PLANTED SUCH THAT THE TRUNK FLARE IS VISIBLE AT THE TOP OF THE ROOT BALL.TREES WHERE THE TRUNK FLARE IS NOT VISIBLE SHALL BE REJECTED. DO NOT COVER THE TOP OF THE ROOT BALL WITH SOIL.

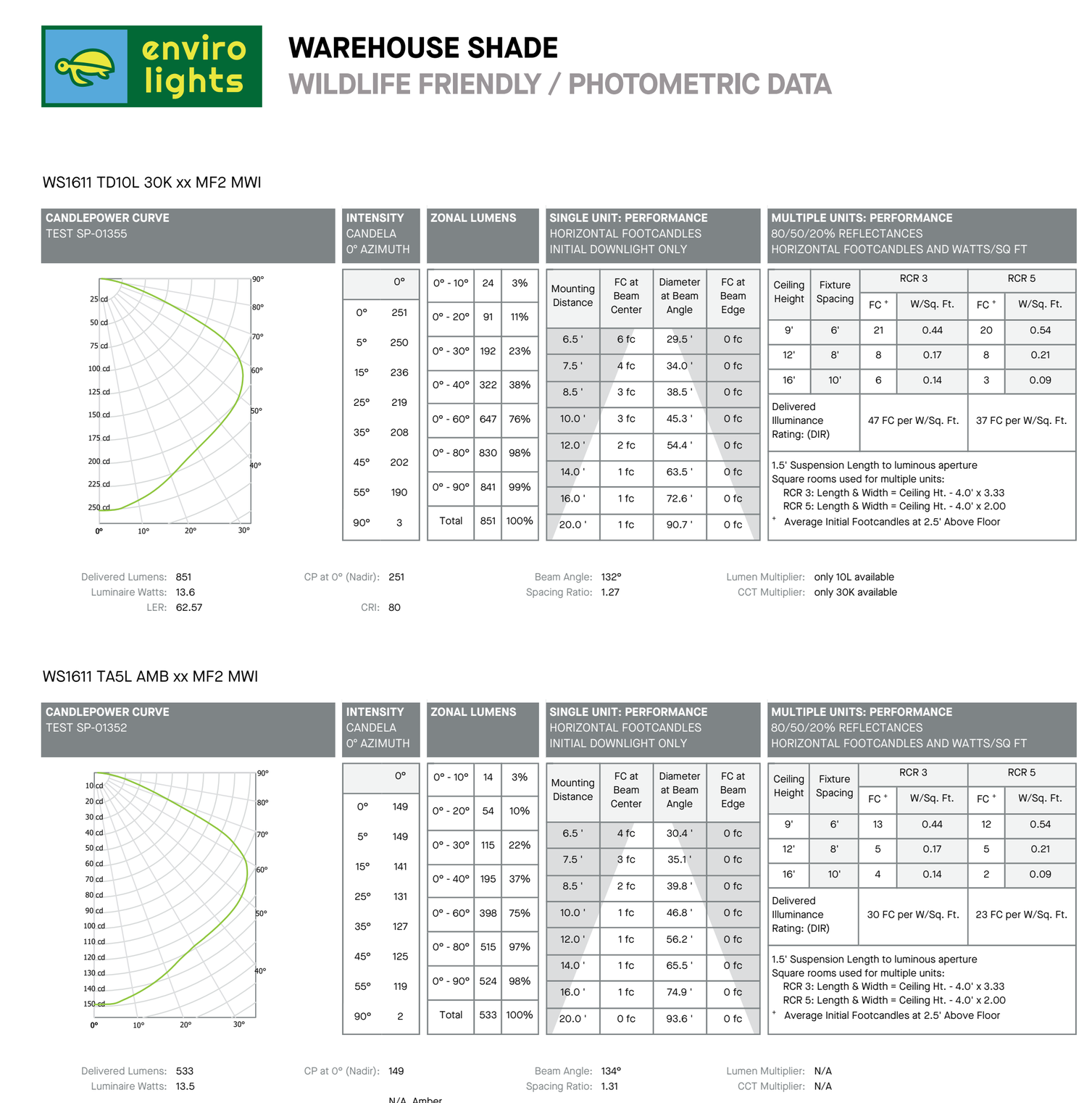


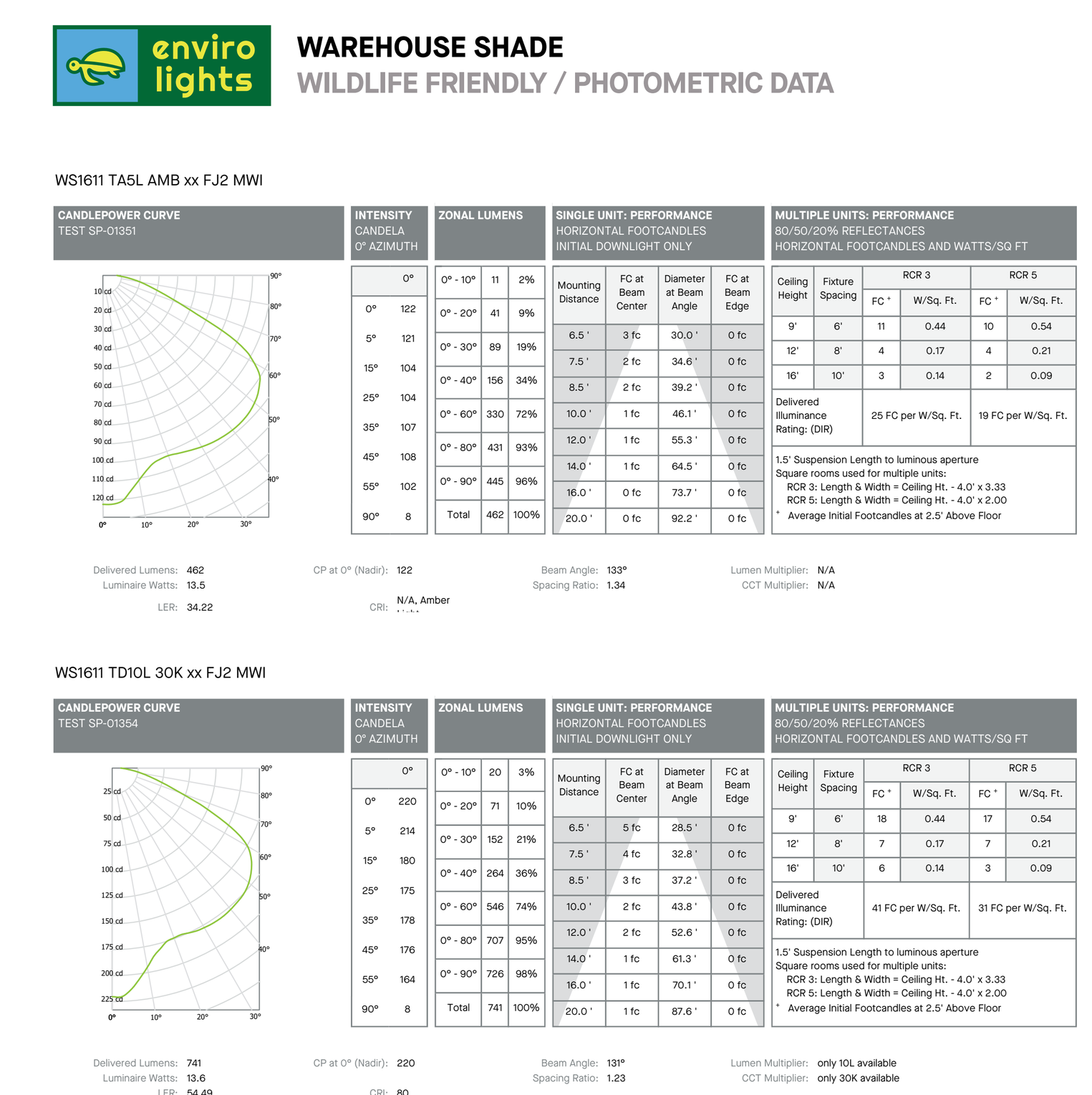
6 TYPICAL SECTION - SOIL TYPE '1' - TREE PLANTING DETAIL

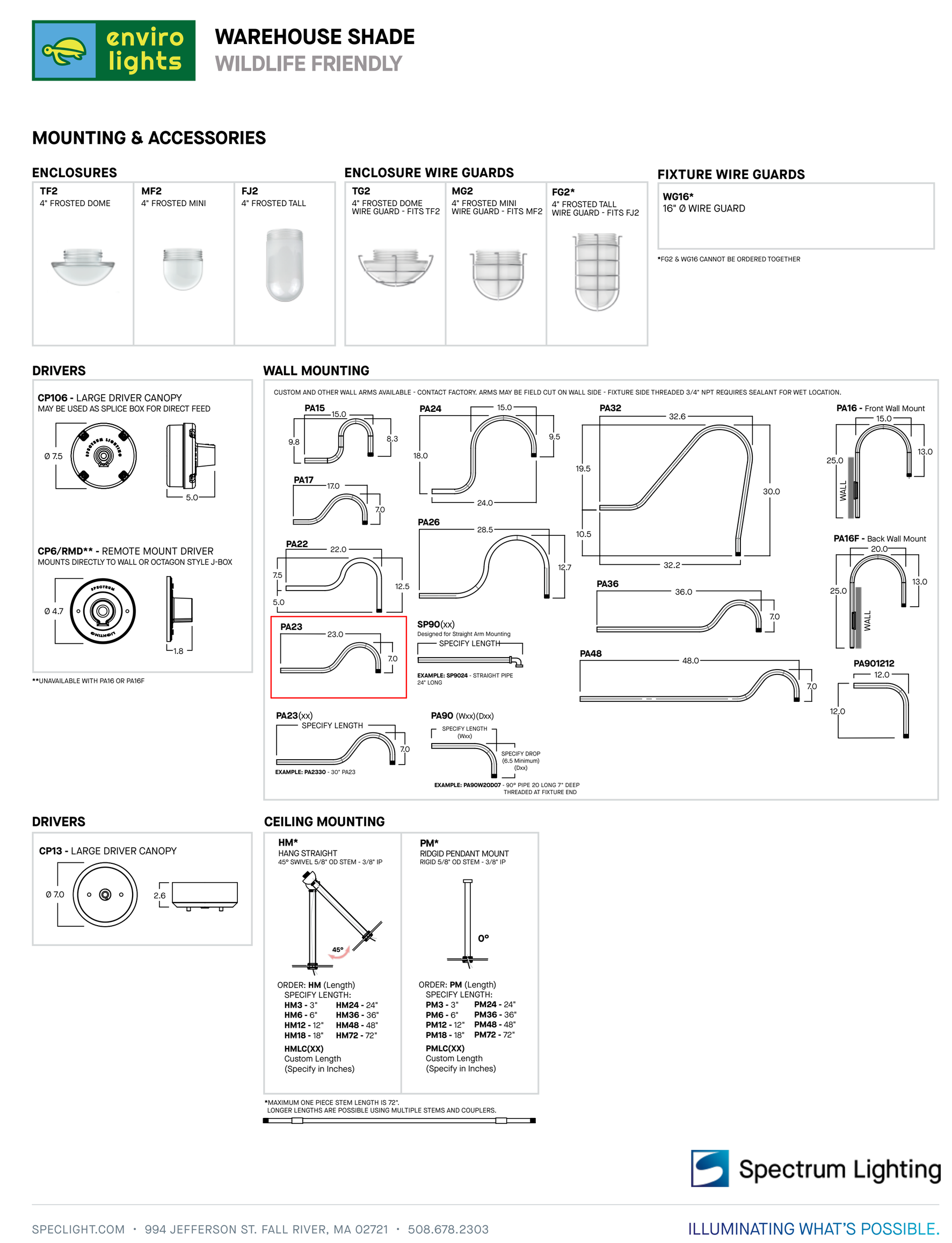
NOT TO SCALE











enviro lights

WILDLIFE FRIENDLY LUMINAIRES

The invention of artificial lighting introduced endless possibilities for the future of our planet. The issue with artificial lighting, however is that in some cases it can have a big environmental impact on the natural world and the environment. Many animals are disoriented or unnecessarily drawn to artificial light, even plants and insects can be negatively affected. Light pollution is also caused by excessive or inefficient artificial light. Our new wildlife and dark sky friendly Envirolights product group was designed to help resolve these issues.

One specific case is sea turtle hatchlings. Sea turtle eggs are laid in the summer on warm sandy beaches. When the eggs hatch, the baby sea turtles all rise from the sand during a very specific time frame between 9pm and 5am. The reason sea turtles hatch at night is to not only avoid predators but so they can use the moons reflections in the water to guide them to the sea where they will spend the rest of their lives. Using artificial light near these nesting areas causes these hatchlings to get confused about whether to follow the artificial light or the moon light causing some to be led away from the ocean possibly causing them to die.

Another similar case is that of birds that hunt or migrate at night and use the moon and stars to navigate. Artificial light can cause disorientation leading birds off course and possibly cause early or late migrations disrupting nesting and foraging. Consistently every year, many birds also die simply by crashing into buildings or structures that are unnecessarily lit or overly lit.

For this reason we at Spectrum Lighting are proud to present our all new Envirolights product group. Our team has worked hard over the last few years to provide lighting solutions to aid places around the country like Florida and its significant marine turtle conservation effort or places like Grand Canyon National Park which was officially certified as an International Dark Sky Park in 2019.

DOWNLIGHTS | CYLINDERS | RLM CLASSICS

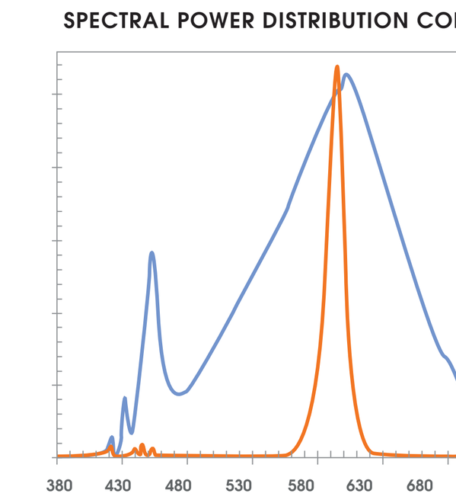
ENVIROLIGHTS CAN BE USED AT STATE PARKS, NATIONAL PARKS OR AREAS WHERE NOCTURNAL WILDLIFE OR DARK SKY ISSUES ARE OF CONCERN.

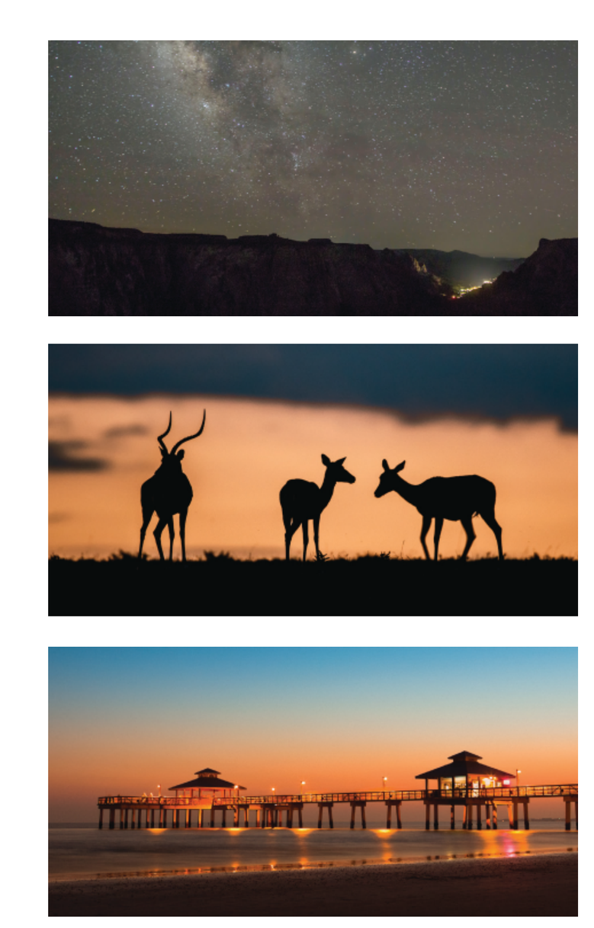
These products comply with the Florida Fish and Wildlife Conservation Commission guidelines and feature Amber LEDS, which are monochromatic with a narrow spectral bandwidth that only emits wavelengths between 560 and 625 nanometers. These products also comply with IDA Dark Sky approved criteria with employing warm tones and full shielding. They feature a static amber illumination or an optional 2-circuit led system. Circuit 1 produces 3000 Kelvin at 1000 lumens using white light 3-step MacAdam ellipse binning with 80+ cri and the second circuit is amber only at 500 lumens.

2020 IES PROGRESS Report SELECTION

We are also proud to announce that these versatile and environmentally conscious products were an official selection for the 2020 IES progress report.

SPECTRAL POWER DISTRIBUTION COMPARISON





PROPRIETARY 2-CIRCUIT LED SYSTEM

The use of a dual circuit system allows for optional use of the amber light. For example with sea turtle nesting areas, amber light is not necessary for the entire year and can be switched from white light to amber light during nesting season for deep night illumination.

1 Circuit - Static
The base products are offered with a static (590 nm) (17K) LED system for constant amber illumination. This looks like classic high pressure sodium but with a more consistent amber.

2 Circuit - Dynamic/Switchable
The second and more advanced option has a dual circuit where circuit 1 is 30K white light and circuit 2 is amber. Switching can be done via manual switch, electronic time clock, Bluetooth switch or other easily programmable control systems.

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

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PROJECT #: 2501

ISSUE:

AHBR REVIEW	04-01-2025
VARIANCE SET	04-17-2025
PLANNING COMMISSION	09-15-2025

LANDSCAPE PLANTING DETAILS

L0.02

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SECTION 31 22 19 - FINISH GRADING

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. This Section applies to the final subgrade preparation, placement of Soil Mixes and amending of in-place (In-Situ) soil or on-site stockpiled soils. Sections 32 91 00 – 32 91 50 (Topsoil – Planting Mixes) for testing, soil mix components and preparation, amendments, and hauling apply.

1.02 SUMMARY

A. This Section includes the following:

1. Preparation of subgrade soils in planting areas for each specified soil mix and type.
   a. Includes ripping of subgrade and in situ soils, and debris removal.
2. Placement of Soil Mix('s) and Amendments.
3. Fine Grading of Turfgrass and Planting Area Soil Surfaces.

1.03 REFERENCES

A. ASTM- ASTM International: D 1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

B. EPA – Environmental Protection Agency:

1. Method 8015.
2. Method 8020.

C. SSSA – Soil Science Society of America, Inc.

1. Methods of Soil Analysis Part 1 – Physical and Mineralogical Methods, 1986.
2. Methods of Soil Analysis Part 3 – Chemical Methods, 1996.

D. USDA – United States Department of Agriculture:

1. Texture Triangle Classification.
2. Handbook No. 60.

1.04 DEFINITIONS

A. Acceptance, Acceptable, or Accepted: Acceptance by the Architect in writing.

B. Aesthetic Acceptance of Grades: Acceptance by the Architect in writing of the aesthetic correctness of the contours. Aesthetic acceptance does not address whether areas drain properly, are at the correct elevations, or whether the soil has been compacted properly.

C. Backfill: Soil material or controlled low-strength material used to fill an excavation.

D. Debris or Deleterious Materials: Elements including, but not limited to, concrete, concrete masonry, wood, excavated rock and rock fragments, rubble, overburden soils, abandoned utility structures, trash, refuse, and litter.

E. Excessive Compaction: Planting area soil or soil compaction greater than 75 percent maximum dry density as determined by ASTM D 1557.

F. Finished Grades: The required final soil surface elevations and contours indicated on the Drawings.

G. Planting Soil Mix: A specified profile of soil system components, such as, soil, sand and compost homogeneously blended to produce a specified planting soil mix.

H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or soil materials.

J. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically soil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

K. Transition Layer: The specified planting soil mix for a planting area is homogeneously blended into the existing (ripped) native soil substrate to create a "transition" layer between the subgrade and specified planting soil mix. Transition layers vary pending specified soil mix for each planting area.

L. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.05 SUBMITTALS

A. Equipment Data: Submit descriptive information with ground pressure load data for each proposed item of equipment to be used. Equipment data will be evaluated for compost mix compaction potential. All equipment used in placing the compost shall have a ground pressure level of 4.5 psi or lower.

1. Large earth moving equipment (D4, D6 dozers) must have rubberized base tracks with low ground pressure.
2. Equipment with metal cleats will not be permitted.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. Installation and mixing foreman on the job shall be competent English-speaking supervisor(s), experienced in planting soil preparation for lawn and planting installations. Supervisor shall remain on the site during the entire installation process.
2. Perform work with personnel totally familiar with planting and lawn soil preparation and planting installations under the supervision of a foreman experienced with landscape work.
3. Testing Laboratory: Experienced person(s) employed by public or private testing laboratory, qualified and capable of performing tests, making soil recommendations, and issuing reports as specified. The Testing Laboratory shall submit a Statement of Qualifications regarding the specified testing. The Testing Laboratory shall be as approved by the Architect.
4. It shall be the responsibility of the Contractor to see that the specifications are being adhered to. Failure of the Architect to immediately reject unsatisfactory workmanship or to notify the Contractor of his/her deviation from the specifications shall not relieve the Contractor of his/her responsibility to repair and/or replace unsatisfactory work.

B. Pre-Installation Conferences: Person(s) responsible for soil preparation and mixes of this Section shall attend Pre-Installation Conference(s) to coordinate with work of other sections.

C. Testing and Inspection Service: A qualified independent geotechnical testing and inspection laboratory shall perform soil testing and inspection services under the supervision of a registered professional engineer during earthwork and finish grading operations.

D. Finished Grading Smoothness Mock-Up:

1. Prepare a 20-foot by 20-foot area of finished graded soil representing the finished graded surface of the planting areas.
2. Locate mockup on site in an area easily referenced during fine grading operations.

3. Protect accepted mockup from physical damage and erosion until date of Final Completion.
4. The accepted mockup shall be the standard by which finish grading will be judged.

E. The Architect reserves the right to inspect and test grading operations at any time and as deemed necessary for verification of conformance to specification requirements. Any subsurface or grading conditions not meeting the requirements of the Specifications to be corrected by the Contractor before continuing with any further operation of the project and at no cost to the project.

1.07 PROJECT CONDITIONS

A. Examination: Promptly notify Construction Manager and Architect of unexpected subsurface conditions. Discontinue work until notification to resume work is provided by the Construction Manager.

B. Environmental Requirements:

1. Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will form in the air or that clouds will not break readily.
2. Apply water, if necessary, to bring soil to optimum moisture content for fine grading operations.
3. Do not perform fine grading work when subgrade and/or soils are muddy or frozen.

C. Existing Conditions:

1. Locate existing underground utilities in areas of work. If utilities are indicated to remain in place, provide adequate means of support and protection during fine grading operations.
2. If uncharted, or incorrectly charted, piping, or other utilities are encountered during the Work, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.
3. Do not interrupt existing utilities serving facilities occupied by Owner or others, during occupied hours, except when permitted in writing by Construction Manager and then only after acceptable temporary utility services have been provided.
4. Provide minimum 48-hour notice to Construction Manager and receive written notice to proceed before interrupting any utility.
5. Contact the Local Utilities Protection Service before commencement.

1.08 SEQUENCING

A. Soil Placement: To prevent excessive soil compaction, avoid placing soil in areas subject to construction vehicle and equipment traffic. Coordinate work of this section with other project work as contained in all other Sections of the project specifications.

PART 2 - PRODUCTS

2.01 SOILS

A. Refer to Sections 32 91 00 through 32 91 50 for Soil Mixes.

PART 3 - EXECUTION

3.01 FIELD ENGINEERING

A. General:

1. Provide all layout work required. Establish extent of fine grading by area and elevation; designate and identify datum elevation and project engineering reference points. Set required lines, levels, and elevations.
2. Provide as many grade stakes and string lines as required to achieve smooth finish grades acceptable to the Architect. Mark each stake to indicate design finished grade indicated.

B. Swale Flow Lines, Bottom of Slopes, Top of slopes and Grade breaks: Install grade stakes at maximum 20 feet on center.

C. High Points and Low Points: Install grade stakes at high points and low points including top of berms, catch basins and area drain rims.

3.02 EXAMINATION

A. Examine areas and conditions under which work is to be performed. Obtain and examine the records and drawings of adjacent work and of existing utilities and their connections for conditions which may affect the work under this Section.

B. Verify all work requiring access through or adjacent to areas where each planting soil mix is to be placed has been completed and no further access will be required. If access will be required, this must be coordinated with the Contractor.

C. Confirm subgrade is clear of all construction debris, trash, rubble, and any foreign material. If fuels, oils, concrete washout silts or other material harmful to plants have been spilled into the subgrade material, excavate the soil sufficiently to remove the harmful material. Fill any over excavation with approved fill and compact to the required subgrade compaction.

D. Confirm subgrade is at the proper elevation, parallel to the finished grade and compacted as shown on the drawings.

E. Verify that conditions are suitable to receive Work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.

F. Excessive Compaction: Verify subgrade in planting area is not excessively compacted.

G. Soil Preparation: Verify off-site soil preparation is complete and ready for transporting to site.

H. Notify Architect of any unacceptable sub-grade conditions. Do not start the installation of the soil mix until sub-grade conditions have been corrected.

3.03 PREPARATION

A. Review soil analysis testing results and requirements needed for each specified soil mix and amendment. Testing Agency recommendations may vary and require contractor to provide additional testing or preparations prior to placement of soils.

B. Protection of Existing Conditions:

1. Protect structures, utilities, sidewalks, pavements, irrigation systems, paving, plant materials, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by fine grading operations.
2. Provide barricades, fences, or other barriers to protect existing conditions to remain from damage during construction.
3. Use every possible precaution to prevent excessive compaction of planting area soil within or adjacent to the areas of Work.
4. Do not store material or equipment, permit burning, or operate or park equipment under the branches of existing trees to remain.
5. Submit written notification of conditions damaged during construction immediately to the Owner.

C. Assure all grass and weed growth has been extinguished prior to placing the specified soil mix as indicated on the drawings. Respray areas still exhibiting grass, weed, or other plant growth. Follow manufacturer's recommendation for allowing grass and weed control to properly kill vegetation prior to amending soils.

D. De-compact sub-grade soils and in situ soils by soil ripping.

1. Prior to placing each specified soil mix or, rip areas to receive the specified soil on the same day soil mix is placed.
2. Rip subgrade to a depth of 6 inches. Place ripping tines at 18 inches on center.
3. Make second ripping pass in the direction 90 degrees to the direction of the first ripping pass.
4. Do not rip closer than 24 inches to installed underground utility lines and structures.
5. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so soil material will bond with existing material.
6. Once the subgrade is ripped, only equipment with a ground pressure not to exceed 4.5 p.s.i. shall be used, ex. padded, wide-tracked LGP rated dozers and/or excavators, small to medium tractors with turf tires, etc.

E. Transition Layer:

1. Uniformly place 3 inches or as designated by the drawings, the specified soil over the ripped areas. Using mechanical equipment, blend the specified soil into the ripped subgrade approx. 2-4 inches in depth or as designated on the drawings.
   a. For 32 91 30 - HSCS Soil Mix, uniformly place 3 inches (or as designated by the drawings) HSCS Base Mix soil over the ripped areas. Using mechanical equipment, blend the Base Mix soil into the ripped subgrade approx. 2-4 inches in depth or as designated on the drawings.
2. Do not place final lifts of specified soil until the Transition Layer has been blended.
3. Remove any debris (see Definitions) greater than 1 inch in diameter or 2 inches in length that has been worked to the surface of the transition zone.
4. Tree Root Protection
   a. All work infringing on root systems of existing plant material shall be reviewed and approved by the Architect prior to beginning work.
   b. Protect tree root systems from damage adjacent to soil work where ripping is required.
   c. Soil ripping may not be conducted when existing roots are in the immediate vicinity. All work infringing on root systems of existing plant material shall be reviewed and approved by the Architect prior to beginning work.
   d. Where tree roots are present within the designated soils zone, carefully blend native soils with the Compost using hand tools.

F. Uniformly moisten or aerate Transition Layer before compaction to within 2 percent of optimum moisture content.

3.04 PLACEMENT OF SOIL MIXES

A. Verify proper placement and blending of Transitions Layer has been completed.

B. Lightly scarify Transition Layer prior to placing the specified soil mix.

C. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.

D. Remove and replace or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

E. Verify placement locations and depths for each specified soil mix and type.

F. Place the specified planting soil or mix in 6-inch lifts over the Transition Layer to the depths specified on the drawings.

G. Carefully settle soils to eliminate air pockets and to minimize future settling. Lightly scarify previously placed lift surfaces prior to placing subsequent lifts.

H. Compact each lift by applying enough water to achieve optimum moisture allowing consolidation and locking of soil particles.

1. A vibratory plate compactor, or other suitable method, shall be used to achieve greater than 80 to 85 percent maximum dry density as determined by the Standard Proctor Test ASTM D698-12. Moisture content and compaction shall be verified using ASTM D6938-15.
2. After any additional settlement has occurred, restore areas to finished grade prior to additional work within the area commencing.

I. For Lawn Areas, roll the whole surface of lawn bed with a hand roller weighing approximately one hundred pounds (100 lb.) per foot (12") of roller width. Fill all depressions caused by compaction operations with additional soil and re-grade. Lightly roll and rake until the surface presents a smooth, even, uniform in finish and to grade.

J. Backfill for Trees: Unless noted otherwise or approved in writing by Architect, the excavated tree pit soil **is not** acceptable backfill material for trees. Remove excavated soil from site and use specified soil mix in this section. Install as specified in Section 32 93 00 "Plants" and per drawing details. Placing, shoring, or anchoring is the responsibility of the Contractor as shown on the drawings.

K. Protect areas where soil has been placed and prepared against construction activity with site protection fence. See Section 32 92 00 Turf Grass and Sod for additional protection.

3.05 FINISH GRADING

A. Perform grading within contract limits, including adjacent transition areas, to new elevations, levels, profiles, and contours indicated. Provide subgrade surfaces parallel to finished surface grades. Provide uniform levels and slopes between new elevations and existing grades.

B. General:

1. Uniformly grade areas to a smooth uniform surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
2. Provide a smooth transition between adjacent existing grades and new grades.
3. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
4. Slope finish grades to drain surface water away from buildings, walks, paving, and other structures unless indicated otherwise.
5. Slope finish grades to drain surface water to drainage swales, catch basins, area drains, or trench drains as shown on the Drawings.
6. Grade soil surface smooth to be free of high and low areas which will inhibit surface drainage.
7. Grade the soil surface at the edges of lawn areas, along paving areas, and curbs to an elevation 1 inch below the finished surface of adjacent paving and curbs, unless indicated otherwise.
8. Hand-rake soil surface using screed boards, string lines, and laser levels to achieve smooth surfaces acceptable to the Architect.

C. Equipment: Use equipment and hand tools of appropriate size and type to achieve the profiles, and a smooth soil surface free of high areas, depressions, equipment tracks, and excessive compaction.

D. Depressions and Loose Material: Fill any depressions and remove loose material to finish surface true to line and grade, presenting a smooth and unyielding surface.

E. Excessive Compaction:

1. Take precautions to prevent finished graded surfaces from becoming excessively compacted.
2. Protect finished graded surfaces from excessive compaction from vehicular, equipment, and foot traffic by laying down planks, plywood, or other accepted protective devices.
3. Do not store or stockpile materials on finished graded surfaces.
4. Mechanically loosen excessively compacted soil areas to full depth.

3.06 TOLERANCES

A. Planting Areas:

1. Grade soil surface to within 0.05-foot of grades indicated on the Drawings, except bring soil surface grades along paving, curbs, and other structures to within 0.01-foot of grades indicated on the Drawings.
2. Transition soil surface grades along paving, curbs, and other structures to areas of less strict tolerance over a 5-foot distance.

B. Allowances: Make proper allowances for settlement.

3.07 ADJUSTING

A. Soil Finished Grade:

1. Provide allowance for 32 hours of adjustment grading work with a 4-person hand-grading crew to smooth and shape the soil surfaces using hand rakes, shovels, and other hand tools.
2. After the soil surface elevations have been graded to be within the specified tolerances, perform adjustment grading Work under the direction of the Architect in the field.
3. Do not rely on adjustment grading to bring finished grade elevations to within specified tolerances.

3.08 FIELD QUALITY CONTROL

A. Aesthetic Acceptance of Grades:

1. Upon completion of finish grading Work, schedule a review by the Architect to obtain aesthetic acceptance.
2. Provide 3 days advance written notification.
3. Do not commence seeding, sodding, or other planting Work until receiving aesthetic acceptance in writing.

B. Test for Excessive Compaction:

1. Where excessive compaction is suspected by Architect, have a Geotechnical Engineer perform nuclear density field tests.
2. Correct excessively compacted soil areas to the depth of the excessive compaction by means and methods acceptable to the Architect prior to installing plant material.

3.09 PROTECTION

A. Protecting Fine Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where, completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

C. Scarify or remove and replace soil material to depth as directed by Soils Engineer; reshape and recompact.

D. Repair erosion that occurs before and during plant or lawn installation.

E. During construction, maintain temporary soil erosion and sedimentation control measures in place. Inspect, repair, and replace damaged or missing items as work progresses.

3.10 DISPOSAL AND CLEAN UP

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

B. Legally dispose of off-site all refuse and debris from these operations. Do not dump or burn materials on site.

C. Maintain the site in an orderly condition during the progress of the Work. Continuously and promptly remove excess waste materials; keep lawn areas, walks, and roads clear. Store materials and equipment where directed. Promptly remove equipment, surplus materials, and debris and trash resulting from operations under this Contract upon completion and prior to initial acceptance or Work. Leave the site in a neat, order condition "broom clean".

END OF SECTION 31 22 19

SECTION 31 37 19 – LANDSCAPE STONEWORK

PART 1 - GENERAL

1.01 SUMMARY

A. The work shall consist of furnishing and installing natural landscape stone, such as ledge rock and/or boulders, constructed and in conformance with the details shown on the contract drawings, and/or as directed by the Architect.

B. Stonework shall consist of the following:

1. Dry – Stacked Sandstone Free Standing Wall
2. Dry – Stacked Sandstone Retaining Wall

1.02 REFERENCES

A. The following is a list of standards which may be referenced in this section:

1. ASTM International (ASTM):
   a. D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3)).

1.03 DEFINITIONS

A. Terms "boulders," and "rock", may be used interchangeably in this section.

B. Boulders: Shall be granite, limestone, sandstone (as indicated on the drawings), of an approved size, shape, and type. Boulder dimensions shall be as shown on the contract drawings.

C. Ledge Rock: Irregular naturally flat pieces of limestone or sandstone protruding to form a ledge. Typically used along stream beds, irregular wall structures and steps.

D. Flagstone: Irregular naturally flat pieces of limestone or sandstone used for walkways, patios, and flooring. Dimensions vary with each piece approximately 4 sq. ft or larger.

1.04 SUBMITTALS

A. Contractor shall cooperate with Architect in obtaining and providing samples of all specified materials.

B. Contractor shall submit certified laboratory test certificates for all items required in this section.

1.05 QUALITY ASSURANCE

A. Mock-up:

1. Prior to the construction of the dry stacked stonework, Contractor shall show Architect an example of similar rock features equal to or better that they had constructed previously.
2. After acceptance of this previous work, Contractor shall construct approximately 3 full step risers as shown on the drawings and 3 courses of stone wall by 6 ft length (of each wall type) for approval by Architect.
3. If the construction is approved, Contractor shall construct the rest of the steps. If the construction is not approved, Contractor shall make any changes required by Owner and Architect to obtain approval and construct the remainder of the steps as approved.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain each type of paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.02 NATIVE STONE WALLS – BARN STONE

A. Native sandstone by:

1. Basis of Design Manufacturer:

   The Briar Hill Stone Company
   12470 State Rt. 520
   P.O. Box 457
   Glenmont, OH 44628
   Ph. No. 330 – 377-5110
   www.briarhillstone.com

2. Wall Type 2a and 2b:
   a. Match stone type and finish as per Architecture (Ph. No. 440-543-8300)
   b. Size: 8" x 8" x 30"

2.03 SUB-BASE AND SUB-SLABS

A. Compacted Aggregate Base Course (without concrete sub-slabs): Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve unless noted otherwise drawings.

2.04 GEOTEXTILES

A. Separation Geotextile: Woven geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:

1. Survivability: Class 2; AASHTO M 288.
2. Survivability: As follows:
   a. Grab Tensile Strength: 247 lbf; ASTM D 4632.
   b. Sewn Seam Strength: 222 lbf; ASTM D 4632.
   c. Tear Strength: 90 lbf; ASTM D 4533.
   d. Puncture Strength: 90 lbf; ASTM D 4833.
3. Apparent Opening Size: No. 60sieve, maximum; ASTM D 4751.
4. Permittivity: 0.02 per second, minimum; ASTM D 4491.
5. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
6. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
   a. Mirafi 140N nonwoven drainage fabric manufactured by Mirafi, Inc., Charlotte, NC 28224.

2.05 SAND JOINT FILLERS

A. Stabilized Sand for Joints: Gator Supersand Bond by Alliance Designer Products Inc., 225 Boulevard Bellerose West, Laval Quebec H7L 6A1.

1. Color: To be selected from manufacturer's full range.

B. Herbicide: Commercial chemical for weed control, registered with the EPA. Provide in granular, liquid, or wettable powder form.

PART 3 - EXECUTION

3.01 GENERAL EXCAVATION AND EMBANKMENT

A. Excavate to the line and grade specified in the contract documents. Minimize over-excavation.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:

1. Under structures, building slabs, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 98 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 98 percent.

D. Subbase: Install aggregate subbase to a compacted depth of 8 to 12-inches minimum. Install the subbase in multiple 3 to 4-inch lifts, and compact to a minimum 95% Standard Proctor Density (ASTM D698).

3.02 STONE RETAINING AND FREE-STANDING WALLS

A. Stone walls shall be placed at locations as shown on the drawings and installed with the following requirements:

1. Stone "retaining" stacked walls shall be constructed to the dimensions shown on the drawings and shall be constructed with a vertical batter on the front and back face as shown on the drawings.
2. Stone "Freestanding" walls to be vertical with no batter unless noted on drawings.
3. All walls to be dry laid.
4. The stone of the wall shall be laid to form substantial masonry presenting a neat, finished appearance.
5. Face Stones:
   a. Face stones shall be laid to break joints.
      1) Minimum overlap: 12-inches unless noted on drawings.
      2) Freestanding wall to overlap 50/50 with joints in middle to adjacent stone course.
   b. Rock shall be hand finished as needed to keep regular face profiles and batter.
   c. All face stones shall be pitched to a string line on straight walls or laid to batter stakes. Where batter is required, batter to be consistent with respect to all parts of the wall and shall meet the minimum requirements set forth in the detail.
   d. The degree of roughness on the exposed face shall be measured with a six-foot (6') straightedge supported between adjacent projections and stone face.

e. Variations more than 1/2 inch in 10 feet measured from the straight edge to the extreme depression in the stone, will not be permitted.
f. Rear faces shall present approximately plane surfaces and shall in general conform to the detail.
g. Clean and wash face and top of walls such that the visual surfaces of the rocks are free of soil and staining to provide a clean natural appearance. If washing does not clean off unwanted residue, then Contractor shall wash off residue with muriatic acid and water, using a brush to scrub off the residue.

6. Backfill retaining wall as detailed. Fill each course as wall is assembled to maintain structural stability and batter.

END OF SECTION 31 37 19

SECTION 32 13 13 - CONCRETE PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes exterior cement concrete pavement for the following:

1. Pedestrian Concrete Pavement.
2. Curbs and Gutters.
3. Steps and Ramps
4. Sub-base Slabs-on-Grade for Unit Pavements.
5. Job-Built Concrete Edge Restraints.
6. Curing and/or Sealing.

1.02 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

B. Construction Joint: Joint produced when one pour is placed up against an existing one (cold joint)

C. Contraction Joint: Joint produced that isolates the crack (control joint).

D. Isolation Joint: Joint containing expansion material and/or caulking material to allow the joint to "flex" based on air temperature (expansion joint). Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

E. W/C Ratio: The ratio by weight of water to cementitious materials.

1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to concrete paving, including but not limited to, the following:
   a. Concrete mixture design
   b. Quality control of concrete materials and concrete paving construction practices.
   c. Finishes
2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:
   a. Contractor's superintendent.
   b. Independent testing agency responsible for concrete design mixtures.
   c. Ready-mix concrete manufacturer.
   d. Concrete paving Subcontractor.
   e. Manufacturer's representative of stamped concrete paving system used for stamped detectable warnings.

1.04 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Jointing Plan: Shop drawings indicating locations for all Construction, Contraction, and Isolation/Expansion joints.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer, ready-mix concrete manufacturer and testing agency.

B. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Admixtures.
4. Curing and Sealing compounds.
5. Bonding agent or epoxy adhesive.
6. Joint fillers.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated, based on comprehensive testing of current materials:

1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

D. Field quality-control reports.

E. Minutes of Preinstallation conference.

1.06 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

B. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field-Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

C. Installer Qualifications:

1. Minimum of five (5) years' experience installing finished concrete paving in climates that experience seasonal freeze-thaw cycles.
2. Installer shall demonstrate minimum of five (5) years successful experience installing exposed/seeded aggregate special finish concrete paving and cite five (5) successful installations in climates within the same climate region as the project. At least one project shall be 3,000 sf minimum. For each project, include the following information:
   a. Project description
   b. Project location
   c. Date of installation
   d. Completed project photos

D. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

E. Mockups: Build mockups to verify selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Build mockups of full-thickness sections of concrete paving to demonstrate typical joints; surface finish, texture, and color; curing; and standard of workmanship and as indicated in the pre-construction meeting.
2. Where concrete is called to be sealed, seal one half of the mockup area for color and finish review by Architect.
3. Notify Architect as soon as possible in advance of dates and times when mockups will be constructed.
4. Obtain Architect's approval of mockups before starting construction.
5. Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
6. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
7. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.08 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:
PENINSULA ARCHITECTS

CIVIL ENGINEER:
GUTOSKEY AND ASSOCIATES
P 406.543.6900

STRUCTURAL ENGINEER:
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PROJECT #: 2501
ISSUE:
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VARIANCE SET 04-17-2025
PLANNING COMMISSION09-15-2025

LANDSCAPE SPECIFICATIONS

L0.03

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PART 2 - PRODUCTS

2.01 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.02 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.03 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615, Grade 60; deformed.

B. Steel Bar Mats: ASTM A184; with ASTM A615, Grade 60 deformed bars; assembled with clips.

C. Joint Dowel Bars: ASTM A615, Grade 60 plain-steel bars. Cut bars true to length with ends square and free of burrs.

1. Sleeves for Round Dowels: "Speed Dowel", size to fit dowel, as available from Greenstreak, Inc., St. Louis, MO (800-8325-9504), www.greenstreak.com; or equal.

D. Tie Bars: ASTM A615, Grade 60; deformed.

E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.04 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C150, Gray Portland cement Type II Type I/II.
   a. Type III - High early strength may be used with written approval and at the contractor's expense.
2. Fly Ash: ASTM C618, Class C or Class F.
3. Slag Cement: ASTM C989, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C33, Class 4S, uniformly graded. Provide aggregates from a single source throughout entire project. Provide aggregates free of iron pyrite.

1. Maximum Coarse-Aggregate Size: 3/4-inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: ASTM C260.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C494, Type A.

2. Retarding Admixture: ASTM C494, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017, Type II.

E. Water: Potable and complying with ASTM C94.

2.05 CURING MATERIALS

A. Moisture-Retaining Cover: ASTM C171, polyethylene film or white burlap-polyethylene sheet.

B. Water: Potable.

C. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C309, Type 1, Class B, dissipating. (Standard Broom Finishes)

1. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, the following:
   a. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
   b. Euclid Chemical Company (The); Kurez DR VOX.
   c. L&M Construction Chemicals, Inc.; L&M Cure R.
   d. Meadows, W. R., Inc.; Series 1100.
2. The curing compound shall not be used as the final sealer for the concrete.
3. For concrete indicated to be sealed, curing compound shall be compatible with sealer.

2.06 RELATED MATERIALS

A. Expansion and Isolation-Joint-Filler Strips: ASTM D 1752, Provide with joint caps.

1. Basis of design: Products by WR Meadows.
   a. Cork: ASTM-D1752 Type II.
   b. Typical Thickness: 1/4 inch.
   c. Joint Cap: Two-piece device with upper portion removable after curing period; width corresponding to joint filler.
2. Plastic strips with a removable top for placing caulking or sealant that is designed specifically for expansion between concrete pours.

B. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:

1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

C. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

2.07 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.

2. When automatic machine placement is used, determine design mixtures, and obtain laboratory test results that comply with or exceed requirements.

B. Cementitious Materials: Use fly ash, pozzolan, slag cement, and silica fume as needed to reduce the total amount of portland cement, which would otherwise be used, by not less than 40 percent.

1. Fly Ash or Pozzolan: 25 percent.
   a. Slag Cement: 50 percent.
   b. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6 percent plus or minus 1-1/2 percent for 3/4-inch nominal maximum aggregate size.

D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.

E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

F. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 4500 psi.
   a. Job-Built Edge Restraints: 3000 psi Compressive Strength (28 days).
2. Maximum W/C Ratio at Point of Placement: 0.45.

2.08 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C94. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

1. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons
3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements in Section 31 20 00 "Earth Moving."

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

D. Paving thickness varies. See plans and details for each specific condition. Any concrete paving thickness not shown in plan shall be 4-inch minimum thickness.

3.02 PREPARATION

A. Remove loose material from compacted subbase surface immediately before placing concrete.

3.03 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.04 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

3.05 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints (Cold Joints): Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
2. Provide tie bars at sides of paving strips where indicated.
3. Butt Joints: Use bonding agent at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
4. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints (Expansion Joints): Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals as shown, unless otherwise indicated.

2. Extend joint fillers full width and depth of joint.
3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints (Control Joints): Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
   a. Curbs and Gutters: Provide saw cut joints at 10 ft on-center unless noted otherwise. Through-cut top 6 inches of straight curb.
   b. Walks, Walls, and Concrete Paved Surfaces: Refer to drawings for details and general layout.
   c. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
2. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Do not re-tool edges after applying surface finishes. Eliminate tool marks on concrete surfaces. "Picture Framing" tooling anywhere is not to be done, unless noted.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in. Notify other trades to permit installation of their work.

B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

G. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only

square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement dowels and joint devices.

H. Screed paving surface with a straightedge and strike off.

I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

J. Curbs, Gutters, and Edge Restraints: If automatic machine placement is used for curb, gutter, and edge restraint placement, submit revised mix design and laboratory test results that meet or exceed requirements. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing as specified for formed concrete. If results are not approved, remove, and replace with formed concrete.

K. When adjoining pavements are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength. Do not drive vehicles on pavement until the full 28-day strength is attained.

L. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.07 SUB-BASE SLABS FOR UNIT PAVING

A. General: Comply with ACI 301 for formwork, placement, and screeding of concrete.

B. Deposit and consolidate concrete for sub-base slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Consolidate concrete during placement and screed slab surfaces with a straightedge and strike off to correct elevations.
2. Slope surfaces uniformly to drains where required.

C. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane before excess bleed water appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

1. Class B Finish: Finished concrete surface for subbases shall be wood floated to a slightly rough surface. Surface shall not deviate more than 1/4 in. in 10 ft.

3.08 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Curbs and Edge Restraints: Provide monolithic finish by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

3.09 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Bull Float Finish: After striking off initial pour of concrete, begin the second floating operation when bleed water sheen has disappeared, and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

3.10 BROOM FINISH

A. Monolithic Broom Finish: After bull floating concrete surface and prior to applying curing compound or curing and sealing compounds, provide a monolithic broom finished concrete surface as specified below.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.11 CONCRETE PROTECTION, CURING AND SEALING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: For standard concrete work and "Float" and "Broom Finished" concrete surfaces, cure concrete by moisture-retaining-cover curing, curing compound or a combination of these as follows:

1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12-inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.
2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.12 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 1/4 inch.
2. Thickness: Plus 3/8-inch, minus 1/4 inch.
3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/4 inch.
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
5. Lateral Alignment and Spacing of Dowels: 1 inch.
6. Vertical Alignment of Dowels: 1/4 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

B. Testing Services: Testing and inspecting of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:

1. Testing Frequency: Obtain at least one composite sample for each 100-cu. yd. or fraction thereof of each concrete mixture placed each day.
   a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
5. Compression Test Specimens: ASTM C 31; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
6. Compressive-Strength Tests: ASTM C 39; test one specimen at seven days and two specimens at 28 days.
   a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Concrete paving will be considered defective if it does not pass tests and inspections. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

3.14 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.

B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION 32 13 13

SECTION 32 13 73 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Cold-applied joint sealants.
2. Joint-sealant backer materials.
3. Primers.

1.02 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site with Architect to review methods and procedures related to joint sealants, including but not limited to, the following:

   a. Quality control of application and construction practices.
   b. Mockup requirements.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch-wide joints formed between two 6-inch-long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

C. Paving-Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.04 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of joint sealant and accessory.

B. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for sealants.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. Product Testing: Test joint sealants using a qualified testing agency.

C. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.

1. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

D. Mock-ups: See Sections 32 13 13 "Concrete Paving" and 03 30 00 "Concrete Paving – Site" for mock-up requirements. Provide for each type of pavement finish a minimum 4 ft continuous run of specified expansion material, full depth and color unless otherwise directed by Architect.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.

B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.07 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable manufacturers include but are not limited to the following:

1. Dow Chemical.
2. WR Meadows.
3. Mameco International.
4. Sika.
5. Sonneborn.

2.02 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.03 COLD-APPLIED JOINT SEALANTS

A. Multicomponent, non-sag, polyurethane elastomeric sealant for Concrete: Pourable, chemically curing elastomeric formulation complying with the following requirements for formulation and with ASTM C 920 for type, grade, class, and uses indicated:

1. Urethane Formulation: Type M; Grade NS; Class 25; Uses T, NT M, and, as applicable to joint substrates indicated, O.

a. Available Products:
   1) Sika Corporation; Sikaflex – 2c NS.
   2) "DynaTred" by Pecora, Harleysville, PA; (800) 523-6688, (215) 723-6051; www.pecora.com.
b. Color: To be selected by Architect from manufacturer's "Color Pack" system.

2.04 JOINT-SEALANT BACKER MATERIALS

A. Joint-Sealant Backer Materials: Nonstaining; compatible with joint substrates, sealants, primers, and other joint fillers; and approved for applications indicated by joint-sealant manufacturer, based on field experience and laboratory testing.

B. Round Backer Rods for Cold- and Hot-Applied Joint Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

C. Round Backer Rods for Cold-Applied Joint Sealants: ASTM D 5249, Type 3, of diameter and density required to control joint-sealant depth and prevent bottom-side adhesion of sealant.

D. Backer Strips for Cold- and Hot-Applied Joint Sealants: ASTM D 5249; Type 2; of thickness and width required to control joint-sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.

2.05 PRIMERS

A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine joints to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

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

3.02 PREPARATION

A. Surface Cleaning of Joints: Before installing joint sealants, clean out joints immediately to comply with joint-sealant manufacturer's written instructions.

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.03 INSTALLATION OF JOINT SEALANTS

A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions.

C. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of joint-sealant backings.
2. Do not stretch, twist, puncture, or tear joint-sealant backings.
3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:

1. Place joint sealants so they fully contact joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:

1. Remove excess joint sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

G. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

3.04 CLEANING AND PROTECTION

A. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.

B. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

3.05 PAVING-JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Joints within concrete paving.

1. Joint Location:
   a. Expansion and isolation joints in concrete paving.
   b. Contraction joints in concrete paving.
   c. Other joints as indicated.
2. Joint Sealant: Multicomponent, nonsag, urethane, elastomeric joint sealant.
3. Joint-Sealant Color: Manufacturer's standard.

B. Joint-Sealant Application: Joints within concrete paving and between concrete and asphalt paving.

1. Joint Location:
   a. Joints between concrete and asphalt paving.
   b. Joints between concrete curbs and asphalt paving.
   c. Other joints as indicated.
2. Joint Sealant: Refer to Civil Asphalt Work specifications.

3.06 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion.

B. Cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

END OF SECTION 32 13 73

SECTION 32 14 00 - UNIT PAVING

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes all labor, materials, equipment, and testing requirements necessary to complete the installation of unit pavers as specified on the drawings:

1. Clay Brick Pavers on concrete subbase slab with sand setting bed.
2. Steel edge restraints for retaining paver systems.

1.02 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.03 REFERENCES AND STANDARDS

A. Federal, State, and local laws and regulations governing this Work are hereby incorporated into and made part of this Section. When this Section calls for certain materials, workmanship, or a level of construction that exceeds the level of Federal, State, or local requirements, provisions of this Section take precedence.

B. The following references are used herein and shall mean:

1. ASTM: American Society of Testing Materials
   a. ASTM C-33 Standard Specification for Concrete Aggregates.
   b. ASTM C-136 Standard Method for Sieve Analysis for Fine and Coarse Aggregates
2. BIA: The Brick Institute of America

C. American Disabilities Act, Part 36, Appendix A- Standards for Accessible Design.

1.04 ACTION SUBMITTALS

A. Product Data: For materials other than water and aggregates.

B. Product Data: For the following:

1. All paver types.
2. Setting bed materials
3. Joint materials.
4. Edge restraints.
5. Joint Sand

C. Sieve Analyses: For aggregate setting-bed materials, according to ASTM C136.

D. Samples for Initial Selection: For the following:

1. Each type of unit paver indicated.
2. Joint materials involving color selection.
3. Exposed edge restraints involving color selection.

E. Samples for Verification:

1. Full-size units of each type of unit paver indicated. Assemble not less than five Samples of each type of unit on suitable backing and grout joints.
2. Joint Sand Materials.

a. Provide three representative 1/4-pound samples in containers of Joint Sand materials.

3. Exposed edge restraints.

F. Shop Drawings:

1. Plans: Show location, laying patterns, and sizes of each type of unit paving.
2. Plans: Concrete subbase slab expansion and contraction joints.
3. Details for edge restraint connection methods, including welding and anchor bolt locations.
4. Details: Show detail of each type of setting assembly and interface between each type of adjoining paving.

1.05 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Adhesion and Compatibility Test Reports: From latex-additive manufacturer for mortar and grout containing latex additives.

C. Material Certificates: For unit pavers. Include statements of material properties indicating compliance with requirements, including compliance with standards. Provide for each type and size of unit.

D. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for unit pavers, indicating compliance with requirements.

1. For solid interlocking paving units, include test data for freezing and thawing according to ASTM C 67.

E. Cleaning and Maintenance Instructions:

1. Brick Pavers
2. Joints

1.06 QUALITY ASSURANCE

A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from one source with resources to provide materials and products of consistent quality in appearance and physical properties.

B. Certificates: Provide certificates as required by law for transportation and inspections of materials. Inspection and/or approval by governmental agencies does not preclude rejection of materials at project site.

C. Paver Manufacturer's Qualifications:

1. The manufacturer shall demonstrate a minimum of 5 years successful experience in the manufacture of interlocking pavers or clay pavers respectfully.
2. The manufacturer shall have sufficient production capacity and established quality control procedures to produce, transport, and deliver the required number of pavers with the quality specified, without causing a delay to the work.
3. The manufacturer shall have suitably experienced personnel and a management capability sufficient to produce the number of quality pavers as depicted on the contract drawings and as specified herein.

D. Installer Qualifications:

1. A qualified unit paving installer. Installer's field supervisor shall have Concrete Paver Installer Certification from the Interlocking Concrete Pavement Institute (ICPI) with the following designations:
   a. Commercial Paver Technician Designation.

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

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PROJECT #: 2501

ISSUE:

AHBR REVIEW	04-01-2025
VARIANCE SET	04-17-2025
PLANNING COMMISSION	09-15-2025

LANDSCAPE SPECIFICATIONS

L0.04

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2. Time: Not less than 5 years successful experience with installation of work of the type required by this project.
3. Projects: Successfully completed a minimum of five projects of not less than the size required by the Work of this Section. The project sizes must represent not less than the minimum amount of unit paving types required for this project.
4. Workmanship: Use an adequate number of skilled personnel who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the Work of this Section.
5. Installer's foreman shall have at least 5-years of experience and be always on site while this Section is being performed. Foreman shall not be changed during work unless approved in writing by Architect.

E. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Construction of Mock-ups
   a. Construct one 10-foot by 10-foot area of unit paving for each material type.
      1) Sample to include compacted aggregate/bituminous setting bed, pavers representing pattern as per drawings, edge restraint and filled joints with specified setting bed material.
   b. Coordinate locations of in-place mock-ups at Pre-construction conference.
      1) Identify quantity of key areas each mock-up is to represent. Submit drawing for Architects approval.
      2) Construct mockup in a location where mockup can be referenced.
      3) Construct as many mockups as necessary to achieve an acceptable mockup to Owner and Architect.
      4) Remove all rejected mockups immediately after "approval" of mockups samples have been officially accepted by the Architect.
2. Approval:
   a. Demonstrate the proposed range of aesthetic effects and workmanship.
   b. Obtain Owner's Representative approval of mockups before starting unit paver installation.
   c. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
   d. Demolish and remove mockups when directed.
   e. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.07 PRECONSTRUCTION TESTING

A. Preconstruction Adhesion and Compatibility Testing: Submit to latex-additive manufacturer, for testing as indicated below, Samples of flooring materials that will contact or affect mortar and grout that contain latex additives.

1. Use manufacturer's standard test methods to determine whether mortar and grout materials will obtain optimal adhesion with, and will be nonstaining to, installed brick and other materials constituting brick flooring installation.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Store pavers on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied.
B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
C. Store aggregates where grading and other required characteristics can be maintained, and contamination avoided.
D. Store liquids in tightly closed containers protected from freezing.

1.09 FIELD CONDITIONS

A. Cold-Weather Protection: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen subgrade or setting beds. Remove and replace unit paver work damaged by frost or freezing.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Source Limitations: Obtain each type of unit paver, joint material, and setting material from single source with resources to provide materials and products of consistent quality in appearance and physical properties.

2.02 BRICK PAVERS

A. Clay Brick Pavers: Reclaimed bricks. If not available, Basis of Design Manufacturer:

   Pine Hall Brick Company
   Ph. No.: (800) 952-7425
   www.pinehallbrick.com.

1. Paver Type: P3a – Pedestrian:
   a. Brick Pavers Light-traffic paving brick; ASTM C 902, Class SX Type R, Application PX, and ASTM C67 for Freeze/Thaw. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.
   b. Thickness: 2-1/4 inches
   c. Face Size: 4 x 8
   d. Edge: Square (no frogs)
   e. Color: Pathway Full Range
   f. Pattern: Running Bond
2. Paver Type P3b – Heavy Duty
   a. Heavy Duty traffic paving brick; ASTM C 1272, Class SX Type F, Application PX, and ASTM C67 for Freeze/Thaw. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.
   b. Thickness: 2-3/4 inches.
   c. Face Size: 4 x 8
   d. Color: Rumbled Full Range
   e. Pattern: Herringbone
3. Paver Type P3d – Heavy Duty
   a. Heavy Duty traffic paving brick; ASTM C 1272, Class SX Type F, Application PX, and ASTM C67 for Freeze/Thaw. Provide brick without frogs or cores in surfaces exposed to view in the completed Work.
   b. Thickness: 2-3/4 inches.
   c. Face Size: 4 x 8
   d. Color: Rumbled Full Range
   e. Pattern: Herringbone

B. Chippage Limits of Installed Pavers: In addition to the requirements of ASTM C902 the following shall apply at final completion:

1. Chipping: No more than 5% of all installed pavers shall be chipped on their exposed edges.
2. Individual Edges: No more than 20% of the length of any exposed edge shall be chipped.
3. Size of Chips: No individual chip shall be more than 1/2 inch long as measured along the edge of the paver. No chip extending more than 1/8 inch from the edge of the paver shall be more than 1/8 inch deep.
4. No chip shall expose underlying material of a different color to the face of the paver.
5. Stacked Bond Pattern Requirements: The overall measurement for outside face to outside face of 24 pavers, when laid in contact in a straight line shall not vary by more than 3-1/2 inches for end to end and 1-1/2 inches for sided to side width.

C. Efflorescence: Brick shall be rated "not effloresced" when tested according to ASTM C67.

D. Temporary Protective Coating: Precoat exposed surfaces of brick pavers with a continuous film of a temporary protective coating that is compatible with brick, mortar, and grout products and can be removed without damaging grout or brick. Do not coat unexposed brick surfaces; handle brick to prevent coated surfaces from contacting backs or edges of other units. If, despite these precautions, coating does contact bonding surfaces of brick, remove coating from bonding surfaces before setting brick.

2.03 EDGE RESTRAINTS, CURBS AND GRATES

A. Steel Edge Restraints (Pedestrian): Manufacturer's standard weathered steel edging 3/16 inch thick by 3 inches high by 3 inch wide. Color: Weathered.

1. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
   a. A.P.E.3" - Border Concepts, Inc.
   b. Ryerson
   c. Other

B. Heavy Duty (Vehicular) Steel Paving Retention Angles: Borcon TM - Weathered Steel angle.

1. Manufacturer: Border Concepts, Inc.
   a. A.P.E. Paver Edge Restraint: 1/4" x 4" x 4"
      1) Color: Borcon (Untreated)
   b. Threaded rods for anchorage of steel plates and angles: ASTM A 193, Type 304 Stainless Steel, with 70,000-psi minimum tensile strength.
   c. Hex Nuts and coupling nuts for stainless steel threaded rod and stainless-steel bolts: ASTM A 194, Type 304, stainless.
      1) Flat Washers: Type 304 stainless steel 1/8" thick.

2.04 SAND SETTING-BED MATERIALS

A. Sand for Leveling Course: Sound, sharp, washed, natural sand or crushed stone complying with gradation requirements in ASTM C 33 for fine aggregate, except that no more than 3 percent passing the No. 200 sieve.

2.05 AGGREGATE SETTING-BED MATERIALS

A. Aggregate for Leveling or Bedding Course:

1. Crushed #9 limestone grits—ASTM D 448 for size

2.06 SUB-BASE AND SUB-SLABS

A. Compacted Aggregate Base Course: Section 31 20 00 Earth Moving specifications apply.
B. Concrete Sub-slabs: Section 32 13 13 Concrete Paving specifications apply.
C. Geotextile Sub-Surface Drainage and Structural Fabrics: Refer to Section 31 20 00 Earth Moving.

2.07 ACCESSORIES

A. Cork Joint Filler: Preformed strips complying with ASTM D 1752, Type II.
B. Compressible Foam Filler: Preformed strips complying with ASTM D 1056, Grade 2A1.
C. Geotextile Fabric for Sand Stops: Soil separator shall be 12-inch square Mirafi 140N nonwoven drainage fabric manufactured by Mirafi, Inc., Charlotte, NC 28224.

2.08 SAND JOINT FILLERS

A. Stabilized Sand for Joints: Gator Supersand Bond by Alliance Designer Products Inc., 225 Boulevard Bellerose West, Laval Quebec H7L 6A1.

1. Color: To be selected from manufacturer's full range.

B. Herbicide: Commercial chemical for weed control, registered with the EPA. Provide in granular, liquid, or wettable powder form.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine surfaces indicated to receive unit paving, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance or cause latent defects in workmanship or function.
B. Where unit paving is to be installed over waterproofing, examine waterproofing installation, with waterproofing Installer present, for protection from paving operations, including areas where waterproofing system is turned up or flashed against vertical surfaces.
C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Remove substances from concrete substrates that could impair mortar bond, including curing and sealing compounds, form oil, and laitance.
B. Clean concrete substrates to remove dirt, dust, debris, and loose particles.
C. Proof-roll prepared subgrade according to requirements in Section 31 20 00 "Earth Moving" to identify soft pockets and areas of excess yielding. Proceed with unit paver installation only after deficient subgrades have been corrected and are ready to receive subbase and base course for unit pavers.

3.03 INSTALLATION, GENERAL

B. Protect completed paving against damage during subsequent construction activities until date of Final Completion.
C. Cover openings of structures in paving until permanent coverings are placed.

3.09 FINAL ACCEPTANCE

A. Review Date: Submit a written request for review for Final Acceptance at least five (5) working days in advance
B. Completion: Work will be accepted upon satisfactory completion of all unit paving work.

END OF SECTION 32 14 00

A. Manufacturer's Requirements:

1. Meet requirements of paver manufacturers' current printed instructions, except requirements that conflict with the Contract Documents.

B. Concrete Subbase: For system requiring concrete subbases, refer to Section 32 13 13 "Concrete Paving" for finish specifications. Confirm finish and grade tolerances prior to paver installation.
C. Prior to installation, notify Architect in writing of any conflicts.
D. Provide edge restraints as indicated. Install edge restraints before placing unit pavers.

1. Install edge restraints to comply with manufacturer's written instructions. Unless noted on drawings or details, install anchors at intervals required to hold edge restraints in place during and after unit paver installation.

E. Temporary Edge Restraints: Install temporary edge restraints at transitions between project phases or as needed to maintain traffic. Provide edge restraints suitable for the support of vehicular traffic or as approved by the Engineer.
F. Do not use unit pavers with chips, cracks, voids, discolorations, and other defects that might be visible in finished work.
G. Cut unit pavers with motor-driven masonry saw equipment to provide clean, sharp, unchipped edges. Use a wet saw if possible. Cut units to provide pattern indicated and to fit adjoining work neatly. Use full units without cutting where possible. Hammer cutting is not acceptable.
H. Locate wet saws in an area which debris from the sawing operation cannot stain, contaminate, or otherwise soil surfaces of completed Work, either from the settling of dust or from the runoff of the dust onto finish Work.
I. Exercise care in handling coated brick pavers to prevent coated surfaces from contacting backs or edges of other units. Remove coating from bonding surfaces before setting brick.

3.04 SAND OR AGGREGATE SETTING-BED APPLICATIONS (Over Concrete Base)

A. Drill weep holes as indicated on drawings into concrete sub-base. Pre-drill prior to leveling course being installed and through entire thickness of concrete sub-base.
B. Fill holes with specified aggregate.
C. Place Geotextile fabric over weep holes. Tack in place so not to be displaced during leveling sand installation. DO NOT COVER WEEP HOLE with tape.
D. Place leveling course and screed to a thickness of 1 to 1-1/2 inches, ensuring that moisture content remains constant, and density is loose and constant until pavers are set and compacted.

1. The bedding material shall be spread over the areas to be constructed to create an uncompacted loose surface onto which the pavers shall be placed. The laying course shall be such that after compaction it forms a uniform layer nominally one inch thick. Upon completion of the works the final surface of the pavers shall be 1/8 in. to 1/4 in. above adjacent finishes.
2. It shall be laid to a tolerance of plus or minus 3/16 in. allowing for the correct surcharge. Where distances between screed rails exceed 12 ft. intervals an intermediate rail shall be set to line and level. Screed rails shall be used at 4 ft. centers where grade changes occur.
3. The screeded bedding sand shall not be subjected to any traffic by either mechanical or pedestrian use.
4. Sufficient material shall be placed to ensure that no delay occurs to paver laying. Bedding aggregate that has been screeded but not covered with pavers at the end of each day's work shall be taken up and re-screeded prior to re-commencement of work.
5. The voids left after the removal of screed rails shall be filled with loose bedding material as the laying of pavers proceeds.

6. Spreading of the bedding course material shall stop when weather conditions are unsuitable. If inclement weather causes deterioration of the laying coarse sand, it shall be lifted and stored to one side to drain before its reuse.

3.05 INSTALLING PAVERS:

A. Mix pavers from several pallets or cubes, as they are placed, to produce uniform blend of colors and textures as recommended by the manufacturer.
B. Laying Paver Units:

1. Place pavers away from an edge restraint or the existing laying face in such a manner as to ensure squareness of pattern. Cut header course pavers to accommodate alignment tolerances of the restraints. Full pavers shall be laid first.
2. Place pavers so that joints are aligned and installed in the pattern as shown on the Drawings.
   a. Paver joint size: As noted on details and drawings.
3. Use string lines to hold pattern lines and elevations true.
4. All radial units are to be uniformly tapered with minimum 1/16" width and maximum 3/16" joints.
5. Lay rows of full units first.
6. Cut off and fit closure units subsequently.
7. Cut paver units with power diamond blade masonry saw where partial pavers abut straight surfaces.
8. Cut paver units such that paver edges are parallel with adjacent surface.
9. Cut radial paver edges with a diamond-blade masonry saw by kerfing and grinding, or other accepted method, where pavers abut round elements such as manholes, tree grates, cleanouts, and bollards to achieve smoothly curved edges parallel with the abutting surfaces with maximum 1/8" wide joints.
10. Do not allow other construction traffic on pavement during the paver installation until pavers have been compacted and joints have been filled with sand.

C. Rolling: Machine roll units to plane surface. Use neoprene coated rollers or operate rollers on plywood to avoid causing damage to the pavers.
D. Joint Pattern: As indicated on the drawings.

1. Where pattern is on a radius or curve, saw cut pavers both sides to maintain radii as follows:
   a. Radii up to 5 ft. cut every paver,
   b. Radii 5 to 10 ft. cut every second paver,
   c. Radii 10 to 15 ft. cut every third paver,
   d. Radii 15 to 25 ft. cut every fifth paver,
   e. Radii over 25 ft. no cutting required

E. Modify paver pattern and /or provide additional cuts to adjacent pavers as necessary when the cutting of a paver will result in less than one third of a full paver. Pavers sliced longitudinally, except when being placed around utility manholes will not be accepted. All cut paver faces to be vertical, top edges shall be free from chips and pattern modification/additional cuts shall be as acceptable to the Architect.
F. Tolerances:

1. Unit to Unit - Joint Width: 1/8" joints minimum, +1/16". Do not lay hand tight unless noted on drawings or tabs are present on pavers.

2. Maximum Variation of Finished Paving Surface from 10 Foot Straight Edge: 1/8-inch.
3. Maximum Lippage Between Paver Units: 1/32-inch.
4. No "birdbaths" or other surface irregularities will be permitted.
5. Correct all irregularities to the satisfaction of the Architect.

G. At the end of the laying period, the pavers shall be adjusted to form straight pattern lines and uniform joints.
H. Protect newly laid pavers with plywood panels on which workers can stand. Advance protective panels as work progresses maintaining protection in areas subject to continued movement of materials and equipment to avoid creating depressions or disrupting alignment of pavers. If additional leveling of paving is required, and before treating joints, roll paving with power roller.
I. If weather conditions are such that the performance of the pavement may be compromised, laying operations shall be discontinued and all laid pavers shall be aligned and compacted prior to suspension of the works.
J. On re-commencement of laying operations, the edge two courses of existing paving shall be lifted and the setting bed rescreeded before further pavers are laid.
K. At the end of each day, after the pavers have been aligned, and cut pavers incorporated at edge restraints and between lanes, the pavers shall be compacted.
L. Joint Sand Stabilizer: Install joint sand stabilizer per manufacturer's current written instructions.

3.06 REPAIRING, POINTING, AND CLEANING

A. Remove and replace unit pavers that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Provide new units to match adjoining units and install in same manner as original units, with same joint treatment and with no evidence of replacement.
B. Pointing: During tooling of joints, enlarge voids or holes and completely fill with grout. Point up joints at sealant joints to provide a neat, uniform appearance, properly prepared for sealant application.
C. Cleaning: Remove excess grout from exposed paver surfaces; wash and scrub clean.

1. Remove temporary protective coating from brick pavers as recommended by protective coating manufacturer and as acceptable to unit paver and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

3.07 MAINTENANCE

A. Inspection: Undertake an inspection of the paver surface with the installer, the construction manager and Architect and rectify all noted defects prior to handover.
B. Repairs: Repair or replace any damaged Work to original specified condition prior to handover.
C. Maintenance:

1. The Contractor shall arrange for the installer to return to the site, as directed by the Owner's Representative, to rectify any problems in the Work caused by his failure to adequately align or bond the pavers, compact the bedding material, or fill the joints.
2. Where lateral displacement of the sand set pavers has occurred adjacent to edge restraints the cut pavers shall be replaced with new pavers of the correct size to comply with the specified joint widths and the joint sand shall be re-sanded and additional joint sand stabilizer applied.

3.08 PROTECTION

A. Provide barricades and warning devices as required to protect pavement and the public.

SECTION 32 15 43 - STABILIZED AGGREGATE SURFACING (STABILIZED SOLUTIONS)

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes material and labor requirements for construction with decomposed granite or crushed 3/8" or 1/4" minus aggregate pathway with Stabilizer® binder additive for the following items:

1. Stabilized aggregate surfaces for pedestrian pathways and surfaces.
2. Subgrade compaction.
3. Subbase aggregate installation and compaction.
4. Steel edging restraint on concrete footing.

1.02 PERFORMANCE REQUIREMENTS

A. Perform gradation of decomposed granite material or 3/8" or 1/4" minus crushed aggregate in accordance with ASTM C 136 – Method for Sieve Analysis for Fine and Coarse Aggregates.

1.03 SUBMITTALS

A. Manufacturer's Product Data: For each product specified. Submit a 2 lb. sample and sieve analysis for grading of decomposed granite or crushed 3/8" or 1/4" minus aggregate to be sent to Stabilizer Solutions, Inc. prior to any construction. Must be approved by Architect and Owner.
B. Shop Drawings: Show details of installation, including plans and sections.
C. Maintenance Instructions: Submit copy(ies) of manufacture's written maintenance instructions.

1.04 PROJECT/SITE CONDITIONS

A. Field Measurements: Each bidder is encouraged to visit the site of the Work to verify the existing conditions. No adjustments will be made to the Contract Sum for variations in the existing conditions.

1. Where surfacing is indicated to fit with other construction, verify dimensions of other construction by field measurements before proceeding with the work.

B. Environmental Limitations: Do not install stabilized aggregate paving during rainy conditions or below 40 degrees Fahrenheit and falling.

1.05 QUALITY ASSURANCE

A. Installer Qualifications: Installer to provide evidence to indicate successful experience in providing stabilized aggregate paving containing Stabilizer binder additive.
B. Mock-ups: Install 4 ft. wide x 10 ft. long mock-up of stabilized crushed aggregate paving with Stabilizer additive at location as directed by owner's representative.
C. Compaction testing to be provided by contractor, one test per 2,000 square feet of base course.
D. Manufacturer's technical representative shall visit the site at the start of an installation to ensure the installer understands the correct installation methods to use.

1.06 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: Submit a written warranty executed by the installer agreeing to repair or replace components of stabilized surfacing that fail in materials or workmanship within the specified warranty period. Failures include, but are not limited to, the following:

1. Premature wear and tear, provide the material is maintained in accordance with manufacturer's written maintenance instructions.
2. Failure of system to meet performance requirements.

C. Warranty Period: Contractor shall provide warranty for performance of product. Contractor shall warranty installation of product for the time of one year from time when Architect has signed and authorized Substantial Completion.
D. Contractor shall provide, for a period of sixty days, unconditional maintenance and repairs as required.

PART 2 - PRODUCTS

2.01 STABILIZER

A. Stabilizer® for Stabilized Aggregate surfaces provided by the following manufacturer:

   Stabilizer Solutions, Inc.
   33 South 28th St.,
   Phoenix, AZ 85034
   Ph. 602-225-5900
   Website: stabilizersolutions.com

1. Stabilizer® Binder
   a. Patented, non-toxic, organic binder that is colorless and odorless concentrated powder that binds decomposed granite or crushed 3/8 inch or 1/4 inch minus aggregate
   b. Product shall have 25 years' experience at same formulation.

2.02 AGGREGATE MATERIALS

A. Decomposed Granite or Stone Screenings as follows:

   Kafka Granite, LLC,
   550 East Hwy 153
   Mosinee, WI 54455
   Ph. (800) 852-7415
   Website: www.kafkagranite.com.

1. Material: Provide pre-blended "Stabilized Pathway Mix" decomposed granite surfacing system.
2. Color: To be selected by Architect.
3. No substitutions.

B. Base aggregate: Compacted crushed #304 limestone.

2.03 EXCESS MATERIALS

A. Provide owner's authorized rep. with the following excess materials for use in future Stabilized Aggregate repair: 40 to 50 lb. Bags of the Stabilized Aggregate blended with proper amount of Stabilizer®.

2.04 EDGE RETRAINTS

A. Steel: Standard commercial-steel edging, fabricated in sections of standard lengths, welded to face of sections to receive anchoring bolts.

B. Manufacturer: Subject to compliance with requirements, provide products by one of the following:

1. Basis of Design Product:

   Border Concepts, Inc.
   7621 Little Ave., Suite 426
   Charlotte, NC 28226
   Ph. (800) 845-3343

2. Other Qualified Suppliers
   a. Equal substitutions will be accepted.

C. STE-1: "Border Guard" - Landscape Steel Edging

1. Edging Size: 3/16 inch thick by 4 inches deep x 4 inches L.
2. Corners: Preformed 90 degree unless noted on drawings.
3. Accessories: Standard tapered ends, and splicers.
4. Finish: Natural Weathered
5. Anchoring System:
   a. Threaded rods for anchorage of stainless-steel plates and angles: ASTM A 193, Type 304Stainless Steel, with 70,000-psi minimum tensile strength.
   b. Hex Nuts and coupling nuts for stainless steel threaded rod and stainless-steel bolts: ASTM A 194, Type 304, stainless.
      1) Flat Washers: Type 304 stainless steel 1/8" thick.

PART 3 - EXECUTION

3.01 SUBBASE PREP

A. Verify that subgrade has been excavated to the proper depth and general layout, and area has been compacted to min. 95% proctor.
B. Place and spread aggregate subbase material as per drawings. Verify elevations are as per drawings and make necessary corrections prior to the installation of Stabilized Aggregate.
C. Pre-soak base material with water and compact to 95% determined by Test Method ASTM D 1557 prior to installing Stabilized Aggregate. Compaction testing to be provided by project owner, one test per 2,000 square feet of base.
D. Install permanent edge restraints in conjunction with other work. Secure in place ensuring displacement does not take place when Stabilized aggregate is placed and compacted.
E. Ensure proper drainage of aggregate base and ensure no standing water is on or adjacent to Stabilized Aggregate surface area.
F. Before proceeding with installation, notify Owner's Representative in writing of unsuitable site/base conditions.

3.02 BLENDING STABILIZER

A. Stabilizer® shall be thoroughly pre-mixed with aggregate at the rate of 15-lbs of Stabilizer® per 1-ton of aggregate. Verify with manufacturer correct Stabilizer rate for your project and climate.
B. Drop spreading of Stabilizer® over pre-placed aggregate or mixing by rototilling is not acceptable. Stabilize shall be mechanically pre-mixed per manufacturer's recommendations using an approved mechanical blending unit to adequately blend Stabilizer® with aggregate (Bucket Blending is not an approved blending apparatus).

1. Always blend Stabilizer® and aggregate DRY.

3.03 PLACEMENT

A. After pre-blending, place Stabilized Aggregate directly on prepared subbase. Level to desired grade and cross section. Depth of pathways shall be 3 inches for heavy foot traffic and light vehicles. Do not place on filter fabric. Contact Stabilizer Solutions, Inc. for installation on slopes greater than 8%.
B. If permanent edge restraints are installed, strike off Stabilized Aggregate and compact using hand tamp ensuring not to strike or displace steel edging. Repeat process until Stabilized aggregate is compacted to specifications and level with the steel edging.

3.04 WATERING

A. Water heavily for full-depth moisture penetration of profile. Water activates Stabilizer®. Apply 25 to 45-gallons of water per 1-ton to achieve saturation. Randomly test for depth using a probing device, which reaches full depth.
B. Contractor shall wait a minimum of 6 to 72 hours or until such time that the Stabilized Aggregate is able to accept compaction from a 1 to 5-ton roller without separation, plowing or any other physical compromise of the aggregate.
C. If surface aggregate dries significantly quicker than subsurface material, lightly mist surface before compaction.

3.05 COMPACTION

A. Compact Stabilized Aggregate to 85% relative compaction by equipment such as: a 2 to 5-ton double drum roller making 3 to 4 passes. Do not begin compaction for 6 hours after placement and up to 72 hours. DO NOT use a vibratory plate compactor or vibration feature on roller, as vibration separates large aggregate particles. If pumping of pancaking of surface occurs, surface is still to wet to roll.
B. Take care in compacting surface when adjacent to planting and irrigation systems, use 8 inch or 10-inch hand tamp. Installation of Stabilized Aggregate more than 3 inches thick shall be installed in lifts. If 4 inch thick compacted (2) 2-inch lifts. If 5 inch thick, compact (2) 2.5-inch lifts. If Stabilized Aggregate is pre-moistened before installation entire 4 inch or 5-inch lift may be installed.
C. Lightly spray surface area following compaction. Do not disturb aggregate surface with spray action.

3.06 INSPECTION

A. Finished surface of pathway shall be smooth, uniform, and solid with no evidence of chipping or cracking. Cured and compacted pathway shall be firm throughout profile with no spongy areas.
B. Loose material shall not be present on the surface after installation but may appear after use and according to environmental conditions. Pathway shall remain stable underneath loose granite on top with a "natural' look.
C. Any significant irregularities in path surface shall be repaired to the uniformity of entire installation.

3.07 MAINTENANCE

A. Remove debris, such as paper, grass clippings, leaves or other organic material by mechanically blowing or hand raking the surface as needed. Any plowing program required during winter months shall involve the use of a rubber baffle on the plow blade or wheels on the plow that lifts the blade 1/4" off the paving surface.
B. During the first year, a minor amount of loose aggregate will appear on the paving surface (1/16 inch to 1/4 inch). If this material exceeds a 1/4 inch, redistribute the material over the entire surface. Water thoroughly to the depth of 1". Compact with power roller of no less than 1000 pounds. This process should be repeated as needed.

C. If cracking occurs, simply sweep fines into the cracks, water thoroughly and hand tamp with an 8 inch – 10-inch hand tamp plate.

3.08 REPAIRS

A. Excavate damaged area to the depth of the Stabilized aggregate and square off sidewalls.
B. If area is dry, moisten damaged portion lightly.
C. Pre-bend the dry required amount of Stabilizer® powder with the proper amount of aggregate in a concrete mixer.
D. Add water to the pre-blended aggregate and Stabilizer®. Thoroughly moisten mix with 25 to 45 gallons per 1-ton of pre-blended material or to approximately 10% moisture content.
E. Apply moistened pre-blended aggregate to excavated area to finish grade.
F. Compact with an 8 inch to 10-inch hand tamp or 250-to-300-pound roller. Keep traffic off areas for 12 to 48 hours after repair has been completed.

END OF SECTION 32 15 43

SECTION 32 91 20 – ORGANIC PLANTING SOIL

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Manufactured soil mix in this section shall hereafter be referred to as Organic Planting Soil or OPS Mix.
B. This Section applies only to the manufacturing and delivery of the planting soil mix to the site. Refer to Section 32 20 19 – Finish Grading for subgrade preparation, placement, and final grading.

1.02 SUMMARY

A. Section Includes:

1. All labor, materials, equipment, and testing requirements necessary to provide and mix soil components, and deliver to site as specified herein, including but not necessarily limited to the following:
   a. Construct the specified Organic Planting Soil profile using the specified materials and techniques as contained herein, on the drawings.
      1) Imported or 'Off the shelf' products from authorized soil manufacturing facilities or suppliers.
   b. Test existing, in-place soils for requirements contained herein.
2. Test, furnish and deliver all soil materials, including off-site borrow soils and soil amendment materials, such as composted materials, used in the OPS or per detail sections shown on the drawings.

1.03 REFERENCES AND STANDARDS

A. The following references are used herein and shall mean:

1. ASTM: American Society of Testing Materials
2. NCR221: RecommSended Soil Testing Procedures for the North Central Region
3. SSSA: Soil Science of America, Methods of Soil Analysis, Part 1 & Part 3
4. TMECC: Test Methods for the Examination of Composting and Compost
5. USDA: United States Department of Agriculture
6. USEPA: United States Environmental Protection Agency

B. Standard Specifications: Regional, State or Municipal Standard Specification Documentations for the location of proposed usage.

1.04 DEFINITIONS

A. Compost: An organic material that has been aerobically composted and stabilized from feedstocks such a green waste (yard debris), biosolids or other suitable organic materials.
B. Debris or Deleterious Materials: Elements including, but not limited to, concrete, concrete masonry, wood, excavated rock and rock fragments, rubble, overburden soils, abandoned utility structures, trash, refuse and litter.
C. Finish Grade: Elevation of finished surface of a Soil System after specified compaction and natural settling.

D. Soil: A mineral soil from the A Horizon or B Horizon of a well-drained site and having a USDA soil texture classification of a Clay or Clay Loam and an organic matter content of not greater than 3% by weight as specified below.
E. Soil System: Exclusive to this technical specification section, a profile consisting of the native topsoil blended with an approved composted material.

1.05 SUBMITTALS

A. Refer to and comply with specifications for submittal procedures and criteria.
B. Product Data: Submit technical descriptive data for each manufactured or packaged product of this Section. Include manufacturer's product testing and analysis and installation instructions for manufactured or processed items and materials.

1. Locations: Submit locations of material sources and suppliers.

C. Soil System Components and Soil Mix Suppliers

1. Architect shall have the right to reject any soil supplier.
2. Soil mix suppliers shall have a minimum of 5-years of experience at supplying "Manufactured" type soils.
3. Submit supplier name, address, email, telephone, and fax numbers and contact name.
4. Submit certification that accepted supplier can provide enough materials and mixes for the entire project and within the limitations of the Project Schedule.

D. Certificates: Submit certified analysis for each chemical soil amendment and fertilizer material specified (specimen label) and as used (product label). Including guaranteed analysis and weight for packaged materials.
E. Soil System Testing Submittals: Engage an independent testing agency to qualify the Organic Planting Soil (OPS) components and specified final planting mixes. The Contractor shall submit representative samples of all component materials which are intended to be used to make mixes and all final mixes to an agricultural soil testing laboratory acceptable to the Architect.

1. All soil tests shall be performed in accordance with the current methods provided by ASTM, SSSA or USEPA, unless otherwise noted. All reports prepared by the testing laboratory shall be sent to the Architect for approval. Samples of all soil materials to be brought to the site must be approved before delivery.
2. After reviewing the Testing Agency report and as directed by the Architect, deficiencies in the sand, organic materials, mix components or final soil mix are to be corrected by the Contractor.
3. Soil Component Submittals shall include the following:
   a. Date issued.
   b. Project Title and names of Contractor and supplier.
   c. Testing laboratory name, address and telephone number, and name(s), as applicable, of each field inspector or laboratory contact.
   d. Date, place, and time of sampling or test, with record of temperature and weather conditions.
   e. Location of material source.
   f. Type of test.
   g. Results of tests including identification of deviations from acceptable ranges.
   h. Soil pH and Buffer pH Test.

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:

PENINSULA ARCHITECTS

CIVIL ENGINEER:
GUTOSKEY AND ASSOCIATES
P 406.543.6900

STRUCTURAL ENGINEER:
ORAVEC DESIGN BUILD
P 330.552.8211

MEP ENGINEER:
DENK ASSOCIATES
P 216.531.8880

VILLAGE DENTAL

41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501

ISSUE:

AHBR REVIEW	04-01-2025
VARIANCE SET	04-17-2025
PLANNING COMMISSION	09-15-2025

LANDSCAPE SPECIFICATIONS

L0.05

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i. Analysis for levels of heavy metals to include arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc. Test results shall be cited in milligrams per kilogram dry weight with comparisons to USEPA 40 CFR Table 3 of 503.13 Pollutant Concentrations.

j. Particle size analysis shall be performed and compared to the USDA Soil Classification System per ASTM D422 (hydrometer test). The USDA sand and gravel classifications shall be determined on material retained on the #270 sieve following a wet washing procedure.

k. Deleterious materials shall be determined by ASTM D 5286.

l. Percent of organic matter by weight shall be determined by ASTM D 2974 Method C, loss on ignition at 440ºC.

m. Saturated hydraulic conductivity shall be determined by ASTM F1815.

n. Analysis for nutrient levels in parts per millions or pound per acre including Nitrate Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Iron, Manganese, Zinc, Copper, Boron, and Sodium as Exchangeable Sodium Percentage (ESP) per NCR221.

o. Soluble salts shall be determined by electrical conductivity of a 1:2 soil/water slurry reported in millimhos per cm.

p. Cation Exchange Capacity (CEC) per NCR221 using the ammonium acetate method.

q. Soil analysis reports shall also show recommendations for soil additives, including organic and inorganic soil amendments, necessary to accomplish particular mix objectives noted.

4. Compost Component Testing Submittals

a. Report (s) of analyses from producers of composted organic materials are required. The compost shall be analyzed using the USCC STA test methods and reporting format, unless otherwise noted. Submit USCC STA Compost Technical Data Sheet for the delivered compost and dated within 9 months of delivery

1) Contact the testing laboratory to review testing and sampling requirements before sending samples.

b. Composted organic amendments shall be sampled according to the Ohio EPA State Law / Legislation Code: OAC Chapter 3745-24-46.

c. Maintain clear and concise records of testing and sampling procedures.

F. Testing Agencies: The following firms are acceptable testing agencies for the various components.

1. Soils and mixes shall be determined by an A2LA Accredited Lab, such as Turf Diagnostics and Design, 613 E. 1st Street, Linwood, KS, 66052, tel. 855-769-4231, www.turfdiag.com or other qualified soil physical testing laboratory approved by the Architect.

a. Certified Local Agencies may be used pending approval by Architect.

2. Although the report(s) may contain the laboratory's comments or recommendations to the Architect regarding amendment requirements or procedures, the report shall not be interpreted as prescribing or dictating procedures or indicating quantities of soil materials for the work of this Contract.

3. Changing testing laboratories during the mix development phase or for quality assurance testing must be authorized by the Architect.

G. Statement(s) of Qualifications: Submit within 45 days of notice to proceed to confirm qualifications of the selected testing agencies.

H. Submit samples of all listed materials to the Architect for approval:

1. Topsoil, each source, 5 lb. packaged.

2. Compost, each source, 5 lb. packaged.

3. Organic Planting Soil (final mix), 5 lb. packaged.

I. Submit for approval at least two weeks prior to installation a written plan for mixing, transporting, and storing materials.

1.06 QUALITY ASSURANCE

A. The OPS mix is comprised of approved topsoil, additional organic amendment, and possibly other soil amendment materials, as determined by the testing laboratory. Each component of the OPS mix must meet the specification and be verified by testing as specified herein, prior to delivery to the site.

B. Soil System Components of the OPS mix will not be accepted unless they meet all submittal, testing and certification requirements including the testing and certification reports in the format specified herein.

C. Inspections and Testing

1. Soil, compost, and other material testing as well as "Soil System Mix" testing required in this Section or additionally required by the Architect shall be furnished and paid for by Contractor.

2. The Architect reserves the right to take and analyze at any time such additional samples of materials as deemed necessary for verification of conformance to specification requirements. Contractor shall furnish samples for this purpose upon request and shall perform testing as requested.

3. Samples of individual components to the OPS mix shall be submitted by the Contractor for testing and analysis to the approved testing laboratory.

a. OPS soil components shall not be used until test reports from the approved testing laboratory have been received and approved by the Architect.

4. OPS Mix Components and Soil System Mix samples that do not meet the Specifications will require the Contractor to re-submit additional samples for testing. Costs for re-testing will be the responsibility of the Contractor.

a. When OPS mix samples do not meet specification, make the needed adjustments to the mix per the test result recommendations. Retest new OPS mix sample and resubmit tests reports indicating amendment changes until approved.

5. Observations and periodic testing will be made by the Owner or its designated representative as materials delivered to the site. OPS mix not meeting the requirements of the Specifications shall be removed or amended by the Contractor at no cost to the project.

D. Qualifications:

1. Testing Laboratory: Experienced person (s) employed by public or private testing laboratory, qualified and capable of performing tests, making soil recommendations, and issuing reports as specified. The Testing Laboratory shall submit a Statement of Qualifications regarding the specified testing. The Testing Laboratory shall be as approved by the Architect.

2. It shall be the responsibility of the Contractor to see that the specifications are being adhered to. Failure of the Architect to immediately reject unsatisfactory workmanship or to notify the Contractor of his/her deviation from the specifications shall not relieve the Contractor of his/her responsibility to repair and/or replace unsatisfactory work.

E. Pre-Installation Conferences: Person(s) responsible for soil preparation and mixes of this Section shall attend Pre-Installation Conference(s) to coordinate with work of other sections.

1.07 PROJECT CONDITIONS

A. Investigate the conditions of site and public thoroughfares and roads as to availability, clearances, loads, limits, restrictions, and other limitations affecting transportation to, ingress and egress of this work site. Conform to all governmental regulations regarding the transportation of materials to, from, and at the job site, and secure in advance such permits as may be necessary.

B. Environmental Requirements for Soils, Soil System Components and Soil System Mixes:

1. Perform both off-site mixing and on-site soil work only during suitable weather conditions. Do not work or place soil when frozen, excessively wet, or dry, or in otherwise unsatisfactory condition.

2. HSCS mixes shall not be handled or hauled during rain or wet weather or when near or above the point where maximum compaction will occur.

3. When stockpiling is permitted, the Contractor shall install silt fence around the perimeter of the stockpile area and maintain the silt fence until the stockpile is removed. Soil Mix shall be kept in neat and separate piles from other excavated material.

C. Sequencing and Scheduling: Adjust, relate together and otherwise coordinate work of this Section with other Project work as contained in all other Sections of the Project Specifications.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Packaged Materials: Deliver packaged materials to the location where soils are to be mixed, in unopened bags or containers, each bearing the name, guarantee, and trademark or the producer, material composition, manufacturer's certified analysis, and the weight or the material. Retain packages for the Architect.

B. Store and handle packaged materials in strict compliance with manufacturer's instructions and recommendations. Protect all materials from weather, damage, and theft.

C. HSCS mixes or amendment materials stored on site temporarily in stockpiles prior to placement shall be protected from intrusion of contaminants and erosion. All temporary storage means, and methods shall be approved by the Architect.

D. After mixing, HSCS shall be covered with a tarpaulin until time of actual use and protected from contamination, excessive rainfall, excess water entering the site or erosion.

E. Stockpiling

1. On-site and Certified Mixing Facility stockpiles should be restricted to no more than the needs of what can be used in a 72-hr. period. Under no circumstances shall on-site or off-site stored material exceed 1000 cubic yards.

2. Stockpiles should be no more than 6 feet in height to prevent anaerobic conditions within the pile. Stockpiled composts should be turned every other week (unless otherwise instructed by the Architect) to prevent anaerobic conditions, excessive water absorption and anaerobic conditions. Storage areas for topsoil shall be constructed on well drained land, away from the stream.

PART 2 - PRODUCTS

2.01 GENERAL

A. All Organic Planting Soil components shall fulfill the requirements as specified.

B. Site salvaged topsoil will not be permitted for use as an OPS "Soil System Mix" component.

C. For the purposes of this specification, all OPS mix is mixed off site, tested, approved, and imported from a certified facility.

2.02 SOIL SYSTEM MIX – COMPONENT MATERIALS

A. Soil Component

1. A clean, loamy, friable mineral soil free from heavy or stiff clay lumps (3/4'' max dia.), stones, cinders, concrete, brick, roots, sticks brush, litter, plastics, metals, refuse or other deleterious materials in accordance with ASTM D 5286-92.

2. The soil shall be free of herbicides, petroleum-based materials, manures, or other substances of a hazardous or toxic nature which may inhibit plant growth.

3. The soil shall be free of noxious weeds, seeds or vegetative parts of weedy plants that cannot be selectively controlled in the planting.

4. The soil shall be taken from the A Horizon or B Horizon of a well-drained site and have a USDA soil texture classification of a Clay Loam or Loam. The soil shall have the following particle size distribution:

U.S.D.A. Particle Name	Size (mm)	Allowable Limit
Gravel	2.00 – 4.75	Less than 10%
Sand	0.05 – 2.00	25 – 40 %
Silt	0.002 – 0.05	10 – 45 %
Clay	minus 0.002	30 – 50 %

5. Perform the following tests and submit test reports showing the following criteria are met:

a. The particle size analysis as defined above.

b. The pH shall be approx. 5.5 to 7.8 (NCR 221)

c. The soluble salts shall be less than 1.5 mmoh/cm (NCR 221)

d. The organic matter content shall be 3.0 to 6.0% (ASTM D 2974 Method C)

e. Certified test results of bulk topsoil stored by certified suppliers must be within the last 12 months from the date of bid opening.

6. Provide certification from the supplier that the topsoil does not contain any toxic substances harmful to plant growth.

B. Composted Organic Mix Component

1. Organic Component – Non-proprietary Requirements:

a. The organic amendment shall be stable, mature aerobically composted yard debris (green waste) compost. Leaf humus compost, manure composts, biosolids compost, peat, peat-humus, and mushroom compost products are not acceptable.

b. Compost Component Testing submittal results, per the Quality Assurance requirements shall meet the following characteristics:

1) The compost shall be a homogeneous material essentially free of soil clods, lumps, roots, and stones.

2) The compost shall have a man-made foreign material (hard plastics, metal, glass, etc.) content less than 1.5% as material retained on a U.S. Std.No.5 (4 mm) sieve (TMECC 03.06)

3) The compost shall be screened such that a minimum of 90% passes a U.S. Std. 3/4'' sieve and that no more than 10% passes a U.S. Std. No.10 sieve on a dry weight basis.

4) The compost shall have a pH of 7.2 to 8.0.

5) The compost shall have a soluble salts content less than 6.0 millimhos per cm. when determined on a 1:5 compost/water slurry.

6) The compost shall have an organic matter content of not less than 35% by weight determined by ASTM D2974-87 Method C on material passing a U.S. Std.1/4'' sieve.

7) The compost shall have a carbon to nitrogen (C:N) ratio less than 36:1.

8) The compost shall have a Solvita® Maturity Index between 6 and 7.

9) The compost shall have a moisture content of 35% to 65%.

10) The compost shall have a dry bulk density of 0.17 to 0.35 grams per cubic centimeter (g/cc).

11) The compost shall be tested for nitrate nitrogen, phosphorus, potassium, calcium, magnesium, iron, manganese, zinc, copper, boron, and sodium using the SME-DTPA extraction method (NCR-221)

12) The heavy metal content as determined by TMECC 04.06 shall not exceed the following limits:

Element	Concentration Limits (mg/Kg d.w.)
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Molybdenum	50
Nickel	420
Selenium	36
Zinc	2800

13) The compost shall meet all applicable state regulations based on the feedstock type.

14) All compost testing shall be done in conformance with the U.S. Compost Council's publication Test Methods for the Examination of Composting and Compost (TMECC) unless otherwise specified above.

2.03 ORGANIC PLANTING SOIL MIX (OPS):

A. OPS "Soil System" Mix – Non-proprietary Requirements:

1. For the purpose of bidding, the OPS Mix shall substantially conform to a mix of 4 parts of the approved Soil and 1 part (vol./vol.) of the approved Compost. The actual Soil: Compost ratio will be determined by the soil physical testing laboratory to meet the required performance specification:

a. Organic Matter Content: 5 to 8 percent

b. pH Level: 5.5 to 7.8 percent

2. The controlling factor will be the percent (%) organic matter by weight specified for OPS mix. Note that the intended volume ratios of the Organic Amendment (compost) components will be, in large part, determined by the organic matter content of the compost.

B. Uniformly mix components using a mechanical soil blender designed for such purpose.

1. Perform initial tests to confirm compliance with the OPS mixes organic matter content specifications.

2. Follow the OPS System Mix recommendations provided by the soil testing laboratory to achieve the target organic matter content for OPS soil. These test results, when approved, will establish the standard to which all other test results must conform.

3. Provide one sample test from each 1000 cu. yds. of manufactured material using the testing as noted above.

C. Adequate quantities of OPS mix shall be provided to attain all design finish grades after compaction at greater than between 80 to 85 percent Proctor. Verify quantities for placement as specified to suit site conditions.

D. Mixing of soil and compost: Add compost as recommended by the testing laboratory to achieve the specified organic matter content for the OPS mix. Other amendments shall not be added to OPS mix unless approved by the Architect and additional tests have been conducted to verify type and quantity of amendment.

E. After OPS mix has been placed and where organic levels need to be higher for key areas, add and blend in 3 inches of approved composted organic material for every 2 percent increase to the "in-place" OPS mix.

PART 3 - EXECUTION

3.01 GENERAL

A. Section 31 22 19 – Finish Grading applies.

END OF SECTION 32 91 20

SECTION 32 91 30 – HIGH SAND CONTENT LAWN AND PLANTING SOIL

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. The Specified Soil Mix in this section shall be manufactured off-site and hereafter be referred to as High Sand Content Soil mix or HSCS. HSCS may be blended with two different levels of Organic materials specific to Planting (P) areas.

1. Plans will identify areas as: HSCS – P.

B. This Section applies only to the manufacturing and delivery of the planting soil mix to the site. Refer to Section 32 20 19 – Finish Grading for subgrade preparation, placement, and final grading.

1.02 SUMMARY

A. Section Includes:

1. All labor, materials, equipment, and testing requirements necessary to complete soil system component selection, soil preparation, mixing and placement as shown on the drawings and specified herein, including but not necessarily limited to the following:

a. Construct the specified HSCS profile('s) using the specified materials and techniques as contained herein, on the drawings.

1) Imported or 'Off the shelf' products from authorized soil manufacturing facilities or suppliers.

2. Test, furnish and deliver all soil materials, including off-site borrow soils and soil amendment materials, such as composted materials, used in the OPS or per detail sections shown on the drawings.

1.03 REFERENCES AND STANDARDS

A. The following references are used herein and shall mean:

1. ASTM: American Society of Testing Materials

2. NCR221: Recommended Soil Testing Procedures for the North Central Region

3. SSSA: Soil Science of America, Methods of Soil Analysis, Part 1 & Part 3

4. TMECC: Test Methods for the Examination of Composting and Compost

5. USDA: United States Department of Agriculture

6. USEPA: United States Environmental Protection Agency

1.04 DEFINITIONS

A. Compost: An organic material that has been aerobically composted and stabilized from feedstocks such a green waste (yard debris), biosolids or other suitable organic materials.

B. Debris or Deleterious Materials: Elements including, but not limited to, concrete, concrete masonry, wood, excavated rock and rock fragments, rubble, overburden soils, abandoned utility structures, trash, refuse, and litter.

C. Finish Grade: Elevation of finished surface of a Soil System after specified compaction and natural settling.

D. High-Sand Content Soils: Homogenously blended mix of the specified sand, topsoil, and organic amendment.

E. Sand: A naturally occurring mineral that has been processed to remove coarse gravel, silt and clay and sized to meet the specifications.

F. Soil: A mineral soil from the A Horizon or B Horizon of a well-drained site and having a USDA soil texture classification of a Clay or Clay Loam and an organic matter content of not greater than 3% by weight as specified below.

G. Soil System: Exclusive to this technical specification section, a profile consisting of native soil blended with the specified sand and organic (Compost) to approved and specified levels.

H. Subgrade: Surface or elevation of subsoil remaining after completing excavation or backfill of soils or other materials immediately beneath a planting mix or other soil mix.

I. Transition Layer: The specified soil mix (in this case = HSCS "Lawn or Plant") is homogeneously blended into the existing native soil substrate to create a conversion layer between the native and specified soil mix (HSCS). Transition mixes and depths vary pending specified soil mix and plantings. Refer to drawings for depths.

1.05 SUBMITTALS

A. Refer to and comply with specifications for submittal procedures and criteria.

B. Product Data: Submit technical descriptive data for each manufactured or packaged product of this Section. Include manufacturer's product testing and analysis and installation instructions for manufactured or processed items and materials.

1. Locations: Submit locations of material sources and suppliers.

C. Soil System Components and Soil Mix Suppliers.

1. Architect shall have the right to reject any soil supplier.

2. Soil mix suppliers shall have a minimum of 5-years of experience at supplying custom mixes.

3. Submit supplier name, address, email, telephone, and fax numbers and contact name.

4. Submit certification that accepted supplier can provide enough materials and mixes for the entire project and within the limitations of the Project Schedule.

D. Certificates: Submit certified analysis for each chemical soil amendment and fertilizer material specified (specimen label) and as used (product label). Including guaranteed analysis and weight for packaged materials.

E. Soil System Testing Submittals: Engage an independent testing agency to qualify HSCS components and specified soil mix types. The Contractor shall submit representative samples of all component materials which are intended to be used to make mixes and all final mixes to an agricultural soil testing laboratory acceptable to the Architect.

1. All tests shall be performed in accordance with the current methods provided by ASTM, SSSA or USEPA, unless otherwise noted. All reports prepared by the testing laboratory shall be sent to the Architect for approval.

2. After reviewing the Testing Agency report and as directed by the Architect, deficiencies in the sand, organic materials, mix components or final soil mix are to be corrected by the Contractor.

3. Sand and Soil Component Test reports shall include the following:

a. Date issued.

b. Project Title and names of Contractor and supplier.

c. Testing laboratory name, address and telephone number, and name(s), as applicable, of each field inspector or laboratory contact.

d. Date, place, and time of sampling or test, with record of temperature and weather conditions.

2. Soils shall be clean, loamy, friable mineral soil essentially free from heavy or stiff clay lumps (3/4'' max dia.). Once qualified for HSCS use, soil shall be processed and screened to meet this requirement.

3. Soils shall be essentially free of stones, cinders, concrete, brick, roots, sticks brush, litter, plastics, metals, refuse or other deleterious materials in accordance with ASTM D 5286-92. The soil shall be free of herbicides, petroleum-based materials, manures, or other substances of a hazardous or toxic nature which may inhibit plant growth.

4. The soil shall be free of noxious weeds, seeds or vegetative parts of weedy plants that cannot be selectively controlled in the planting.

5. The soil shall be taken from the A Horizon or B Horizon of a well-drained site and have a USDA soil texture classification of a Clay or Clay Loam. The soil shall have the following particle size distribution:

U.S.D.A. Particle Name	Size (mm)	Allowable Limit
Gravel	2.00 – 4.75	Less than 10%
Sand	0.05 – 2.00	25 – 40 %
Silt	0.002 – 0.05	25 – 45 %
Clay	minus 0.002	30 – 50 %

6. Perform the following tests and submit test reports showing the following criteria are met:

a. The particle size analysis as defined above.

b. The pH shall be approx. 5.5 to 7.5 (NCR 221)

c. The soluble salts shall be less than 1.5 mmoh/cm (NCR 221)

d. The organic matter content shall be 4.0% (ASTM D 2974 Method C)

e. Certified test results of bulk soils stored by certified suppliers must be within the last 12 months from the date of bid opening.

7. Representative samples shall be taken for each 500 cu. yds. of stockpiled soil and submitted to the soil physical testing laboratory for qualification to the specification above.

8. Provide certification from the supplier that the soil does not contain any toxic substances harmful to plant growth.

C. Base Mix Preparation

1. For bidding, the Base Mix shall substantially conform to a mix of 4 parts approved Sand and 1 part (vol./vol.) approved Soil. The actual Sand to Soil ratio will be determined by the soil physical testing laboratory to meet the required performance specification shown below.

2. At least six weeks prior to mixing at a certified mixing facility, submit to the physical soil testing laboratory a 4-gallon volume (minimum) of the approved Sand and a 3-gallon volume (minimum) of the approved processed and screened Soil.

3. Instruct the laboratory to develop a Sand to Soil mix ratio that results in a saturated hydraulic conductivity (ASTM F 1815) of 6 to 12 inches per hour at approximately 85% Proctor.

4. Manufacture 10 to 20 cu. yds. of Base Mix using the Sand to Soil ratio specified by the laboratory using a mechanical soil blender designed for such purpose. Submit a representative sample, of not less than 5 pounds, to the soil physical testing laboratory for comparison to the test mix prepared by the soil physical testing laboratory.

a. Soil physical testing laboratory to verify its USDA Soil Texture Analysis with Gravel/Sand Classifications using the same particle size classifications shown for the Sand component in Part 2.02, A.

5. If the manufactured Base Mix results do not substantially match the laboratory test mix, manufacture another 10 to 20 cu. yds. following the new recommendations provided by the

soil physical testing laboratory. Repeat as necessary until the test results substantially match.

a. These test results and criteria, when approved by the Architect, shall establish the standard to which all subsequent HSCS Base Mix tests must conform.

6. The Base Mix shall have one sample tested from each 500 cu. yds. of manufactured material using the testing methods specified.

7. Handling of Base Mix - Before the Base Mix is mixed with the Organic Amendment, handle and pile the Base Mix in the following manner:

a. Homogenize to make a uniform mix, free of soil lenses and other irregularities.

b. Aerate the Base Mix to make a friable planting medium.

c. Separate out and remove all clay lumps, stones, roots, and other debris.

8. Restrict stockpiling of Base Mix on-site, off-site, and at the source to no more than the needs of what can be used in a 72-hr. period.

2.03 HSCS LAWN AND PLANTING MIXES: SOIL SYSTEM COMPONENT MATERIALS

A. Base Mix Component – Use HSCS Base Mix as described above in "Base Mix – Preparation".

B. Compost Component

1. Organic Component – Non-proprietary Requirements:

a. The organic amendment shall be stable, mature aerobically composted yard debris (green waste) compost. Leaf humus compost, manure composts, biosolids compost, peat, peat-humus, and mushroom compost products are not acceptable.

b. Compost Component Testing submittal results, per the Quality Assurance requirements shall meet the following characteristics:

1) The compost shall be a homogeneous material essentially free of soil clods, lumps, roots, and stones.

2) The compost shall have a man-made foreign material (hard plastics, metal, glass, etc.) content less than 1.5% as material retained on a U.S. Std.No.5 (4 mm) sieve (TMECC 03.06)

3) The compost shall be screened such that a minimum of 90% passes a U.S.Std. 3/4'' sieve and that no more than 10% passes a U.S. Std. No.10 sieve on a dry weight basis.

4) The compost shall have a pH of 7.2 to 8.0.

5) The compost shall have a soluble salts content less than 6.0 millimhos per cm. when determined on a 1:5 compost/water slurry

6) The compost shall have an organic matter content of not less than 35% by weight determined by ASTM D2974-87 Method C on material passing a U.S. Std.1/4'' sieve.

7) The compost shall have a carbon to nitrogen (C:N) ratio less than 36:1.

8) The compost shall have a Solvita® Maturity Index between 6 and 7.

9) The compost shall have a moisture content of 35% to 65%.

10) The compost shall have a dry bulk density of 0.17 to 0.35 grams per cubic centimeter (g/cc).

11) The compost shall be tested for nitrate nitrogen, phosphorus, potassium, calcium, magnesium, iron, manganese, zinc, copper, boron, and sodium using the SME-DTPA extraction method (NCR-221)

12) The heavy metal content as determined by TMECC 04.06 shall not exceed the following limits:

Element	Concentration Limits (mg/Kg d.w.)
Arsenic	41
Cadmium	39
Chromium	1200
Copper	1500
Lead	300
Mercury	17
Molybdenum	50
Nickel	420
Selenium	36
Zinc	2800

13) The compost shall meet all applicable state regulations based on the feedstock type.

14) All compost testing shall be done in conformance with the U.S. Compost Council's publication Test Methods for the Examination of Composting and Compost (TMECC) unless otherwise specified above.

2.04 HSCS PLANTING MIX (HSCS-P)

A. For bidding, the Planting Mix shall substantially conform to a mix of 3 parts approved Base Mix and 1 part (vol./vol.) approved Compost. The actual Base Mix to Compost ratio will be determined by the soil mix type specified and the physical testing laboratory to meet the required performance specifications shown below.

B. At least six weeks prior to mixing at a certified mixing facility, submit to the physical soil testing laboratory a 4-gallon volume (minimum) of the approved Base Mix and a 4-gallon volume (minimum) of the approved Compost.

C. Instruct the laboratory to determine the Base Mix to Compost ratio that results in an organic matter content to the following percentages on material passing a U.S. Std. 1/4-inch sieve using ASTM 2974 Method C.

1. Planting Installations – Soil Mix Type HSCS-P: Organic content level of 5 to 8%.

a. 7.5 to 8.0 pH.

D. Manufacture 10 to 20 cu. yds of the of each specified Planting Mix Type using the Base Mix and the Compost in the ratio specified by the laboratory using a mechanical soil blender designed for such purpose. Submit a representative sample, of not less than 5 pounds, to the soil physical testing laboratory for comparison to the test mix prepared by the soil physical testing laboratory.

1. The manufactured Planting Mix shall have a granular consistency essentially free of soil lumps larger than 1 inch.

E. If the manufactured Planting Mix results do not substantially match the laboratory test mix, manufacture another 10 to 20 cu. yds. following the new recommendations provided by the soil physical testing laboratory. Repeat as necessary until the test results substantially match.

1. The final test results and criteria, when approved by the Architect, shall establish the standard for each Soil Mix Type to which all subsequent HSCS Planting Mix tests must conform.

F. For each Planting Mix Type, have one sample tested from each 1000 cu. yds. of manufactured material using the testing as noted above.

1. Base Mix: Sand and Soil.

2. "P" Planting Mixes (Plantings): Base Mix plus Compost.

B. Soil components for HSCS Base Mix must be off-site, processed soil, (no exceptions).

2.02 BASE MIX – SOIL SYSTEM COMPONENT MATERIALS

A. Base Mix: Sand Component

1. The sand shall be a clean, sharp, natural silica sand that has been suitably washed and classified (sieved). Suitable sands may be referred to in commerce as a uniform, ASTM-33 concrete sand (preferred) or a coarse mason's sand. The selected sand must meet the following U.S.D.A. particle size distribution as well as the other gradation characteristics listed in Part 3 when tested in accordance with the ASTM D-422 using U.S.D.A. particle size classifications.

2. The allowable particle size distribution is as follows:

U.S.D.A. Particle	Percent Class Size (mm)	Retained
Gravel	> 4.75	0
Gravel	3.34 – 4.75	0 - 3
Fine Gravel	2.00 - 3.34	0 - 10
		Not more than 12% combined Gravel + Fine Gravel
Very Coarse Sand	1.00 - 2.00	10 - 25
Coarse Sand	0.50 - 1.00	20 - 40
Medium Sand	0.25 - 0.50	20 -40
Fine Sand	0.10 - 0.25	0 - 10
Very Fine Sand	0.05 - 0.10	0 - 10
Silt + Clay	> 0.05	0 - 10 (Combined Silt+Clay)

3. Other Gradation Characteristics must fall within the limits specified below:

a. Fineness Modulus (FM) - 2.5 to 3.2

b. Coefficient of Uniformity - 2.5 to 3.8

4. The sand shall meet the following specifications. Perform the following tests and submit test reports showing the following criteria are met:

a. The particle size analysis/distribution as defined above

b. The pH shall be 5.5 to 8.2

c. The soluble salts shall be less than 0.5 mmoh/cm (NCR 221)

d. The organic matter content shall be less than 1.0% (ASTM D 2974 Method C)

e. The material drainage rate shall be greater than 20 inches per hour and the total porosity shall be greater than 40% when compacted and tested at 85% Proctor.

5. Provide certification from the supplier that the sand does not contain any toxic substances harmful to plant growth.

B. Base Mix: Soil Component

1. Off-site (borrow) soils meeting the specifications below may be used as the soil component for the HSCS Base Mix. The source or location of the soil used shall be communicated to the Owner's Representative.

e. Location of material source.

f. Type of test.

g. Results of tests including identification of deviations from acceptable ranges.

h. Soil pH and Buffer pH Test.

i. Analysis for levels of heavy metals to include arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc. Test results shall be cited in milligrams per kilogram dry weight with comparisons to USEPA 40 CFR Table 3 of 503.13 Pollutant Concentrations.

j. Particle size analysis shall be performed and compared to the USDA Soil Classification System per ASTM D422 (hydrometer test). The USDA sand and gravel classifications shall be determined on material retained on the #270 sieve following a wet washing procedure.

k. Deleterious materials shall be determined by ASTM D 5286.

l. Percent of organic matter by weight shall be determined by ASTM D 2974 Method C, loss on ignition at 440ºC.

m. Saturated hydraulic conductivity shall be determined by ASTM F1815.

n. Analysis for nutrient levels in parts per millions or pound per acre including Nitrate Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Iron, Manganese, Zinc, Copper, Boron and Sodium as Exchangeable Sodium Percentage (ESP) per NCR221.

o. Soluble salts shall be determined by electrical conductivity of a 1:2 soil/water slurry reported in millimhos per cm.

p. Cation Exchange Capacity (CEC) per NCR221 using the ammonium acetate method.

q. Soil analysis reports shall also show recommendations for soil additives, including organic and inorganic soil amendments, necessary to accomplish mix objectives noted.

4. Compost Component Submittals

a. Report(s) of analyses from producers of composted organic materials are required. The compost shall be analyzed using the USCC STA test methods and reporting format, unless otherwise noted. Submit USCC STA Compost Technical Data Sheet for the delivered compost and dated within 9 months of delivery.

1) Contact the testing laboratory to review testing and sampling requirements before sending samples.

b. Composted organic amendments shall be sampled according to the Ohio EPA State Law / Legislation Code: OAC Chapter 3745-24-46.

c. Maintain clear and concise records of testing and sampling procedures.

F. Testing Agencies: The following firms are acceptable testing agencies for the various components.

1. HSCS physical analysis on all components and mixes including particle size analysis shall be determined by an A2LA Accredited Lab, such as Turf Diagnostics and Design, 613 E. 1st Street, Linwood, KS, 66052, tel. 855-769-4231, www.turfdiag.com or other qualified soil physical testing laboratory approved by the Owner's Representative.

a. Spectrum Analytic, 1087 Jamison Rd. NW, Washington Court House, OH 43160-8748, tel. 800-321-1562 740-335-1562, www.spectrumanalytic.com.

2. Certified Local Agencies may be used pending approval by Owner's Representative.

3. Although the report(s) may contain the laboratory's comments or recommendations to the Owner's Representative regarding amendment requirements or procedures, the report shall not be interpreted as prescribing or dictating procedures or indicating quantities of soil materials for the work of this Contract.

4. Changing testing laboratories during the mix development phase or for quality assurance testing must be authorized by the Architect.

G. Statement(s) of Qualifications: Submit within 45 days of notice to proceed to confirm qualifications of the selected testing agencies.

H. Submit samples of all listed materials to the Architect for approval:

1. Sand, each source, 2-4 lb. packaged.

2. Native Soil, each source, 2-4 lb. packaged.

3. Compost, each source, 2-4 lb. packaged.

4. HSCS Base Mix, 2-4 lb., packaged.

5. HSCS Planting Mix, 2-4 lb., packaged.

I. Submit for approval at least two weeks prior to installation a written plan for mixing, transporting, storing, placing, and settling installed materials.

1.06 QUALITY ASSURANCE

A. Prior to manufacturing the specified soil mix, each Soil System Component of the HSCS as defined, must meet the specification, and be verified by testing as specified herein.

B. Submit testing and certification reports in the format specified.

C. Inspections and Testing

1. Testing required in this Section or required by the Architect for the Soil System Components such as, sands, soils, composts, and HSCS Mix Types for Lawn and Planting mixes, shall be furnished and paid for by Contractor.

2. The Architect reserves the right to take and analyze at any time such additional samples of materials as deemed necessary for verification of conformance to specification requirements. Contractor shall furnish samples for this purpose upon request and shall perform testing as requested.

3. Samples of individual components for the HSCS Mixes shall be submitted by the Contractor for testing and analysis to the approved testing laboratory.

a. HSCS Soil System Components shall not be used until test reports from the approved testing laboratory have been received and approved by the Architect.

b. HSCS Soil System Components or HSCS Mix samples that do not meet the Specifications will require the Contractor to re-submit additional samples for testing. Costs for re-testing will be the responsibility of the Contractor.

c. When HSCS Mixes do not meet specification, make the needed adjustments per the test results recommendations, mix new batch and retest. Retest, amend and test amended mix until mix meets specifications. Submit final results.

4. Observations and periodic testing will be made by the Owner or its designated representative on materials delivered to the site. HSCS Mix not meeting the requirements of the Specifications shall be removed by the Contractor at no cost to the project.

D. Qualifications:

1. Testing Laboratory: Experienced person (s) employed by public or private testing laboratory, qualified and capable of performing tests, making soil recommendations, and issuing reports as specified. The Testing Laboratory shall submit a Statement of Qualifications regarding the specified testing. The Testing Laboratory shall be as approved by the Architect.

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:

PENINSULA ARCHITECTS

CIVIL ENGINEER:
GUTOSKEY AND ASSOCIATES
P 406.543.6900

STRUCTURAL ENGINEER:
ORAVEC DESIGN BUILD
P 330.552.8211

MEP ENGINEER:
DENK ASSOCIATES
P 216.531.8880

VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501
ISSUE:
AHBR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION 09-15-2025

LANDSCAPE SPECIFICATIONS

L0.06

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G. Adequate quantities of Planting Mix materials shall be provided to attain, after compaction and natural settlement, all design finish grades. Verify quantities for placement as specified to suit site conditions.

2.05 FERTILIZERS AND OTHER SOIL AMENDMENT MATERIALS

A. Fertilizers and other soil amendment materials will only be used based on results of analysis and the recommendations of a qualified landscape Agronomist.

1. All fertilizers used shall be labeled showing the brand name, minimum guaranteed analysis, nutrients derived from statement, package weight and manufacturer’s name and address.
2. Limestone: Ground Agricultural Limestone with a minimum of 88 percent of calcium and magnesium carbonates. Ground limestone material shall have total 100 percent passing the 10-mesh sieve, minimum of 90 percent passing the 20 mesh sieve and a minimum of 60 percent passing the 100 mesh sieve as packaged or prior to pelletizing.
3. Sulfur: Granular, Biodegradable with a minimum 99 percent passing through No. 6 sieve and a maximum 10 percent passing through No. 40 sieve.
4. Agricultural Gypsum: Finely ground product containing a minimum of 90 percent calcium sulfate.

PART 3 - EXECUTION

3.01 GENERAL

A. Section 31 22 19 – Finish Grading applies.

END OF SECTION 32 91 30

SECTION 32 92 00 - TURF GRASS AND SOD

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Sodding.
2. Turf renovation.
3. Erosion-control material(s).
4. Maintenance

1.02 DEFINITIONS

A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

B. Base Mix: Homogenously blended mix of the specified topsoil and the specified sand which is then used for mixing with the specified organic amendment to create various Planting Mixes.

C. Compost: An organic material that has been aerobically composted and stabilized from feedstocks such as a green waste (yard debris) or other suitable organic materials

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

E. Manufactured Planting Soil Mix: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce a planting soil mix.

F. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

G. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

H. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. Soil preparations vary. See Sections 329100 through 329140 – Planting Prep and Soils for soil preparation and drawing designations for planting soils.

I. Sand: a naturally occurring material that has been processed to remove coarse gravel, silt and clay and sized to meet the specifications.

J. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

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

L. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.03 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site prior to beginning seedbed preparations. Construction Manager, Owner and Architect should be notified at least one week prior to the intended meeting date.

1.04 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer.

1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
2. Experience: Five years' experience in turf installation.
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
4. Personnel Certifications: Installer's personnel assigned to the Work shall have certification in one of the following categories from the Professional Landcare Network:
   a. Certified Landscape Technician - Exterior, with installation or maintenance

B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, 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. Include identification of source and name and telephone number of supplier.

C. Product Certificates: For fertilizers, from manufacturer.

D. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project. Only use when necessary.

1.05 CLOSEOUT SUBMITTALS

A. Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

1.06 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf establishment.

1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals, the Ohio Nursery and Landscape Association or the American Nursery and Landscape Association.
2. Experience: Five years' experience in turf installation.
3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
4. Personnel Certifications: Installer's field supervisor shall have certification in one of the following categories from the National Association of Landscape Professionals:
   a. Landscape Industry Certified Technician - Exterior.
   b. Landscape Industry Certified Lawn Care Manager.
   c. Landscape Industry Certified Lawn Care Technician.
5. Pesticide Applicator: State licensed, commercial.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation"

sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways, and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.08 FIELD CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion Insert starting time.

1. Spring Planting: April 1 to June 1.
2. Fall Planting: August 15 to October 1.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

C. Work notification: Notify the Architect at least seven working days before installation of lawn materials.

D. Verify location and extent of underground utilities. Protect existing utilities, irrigation, paving and other facilities from damage caused by lawn work operations.

E. Perform lawn work only after planting and other work affecting ground surface has been completed.

F. Restrict traffic from lawn areas until grass is established. Erect temporary signs and barriers as required by the Architect.

G. Locate, protect, and maintain newly installed irrigation system during lawn work operations. Repair irrigation system components, damaged during lawn work operations, at Contractor’s expense.

H. Provide necessary hose and watering equipment as required for lawn maintenance.

1.09 WARRANTY

A. Warranty Period: Warrant, that grasses shall be in a healthy and flourishing condition of active growth at the end of the growing season after the date of Final Acceptance.

B. Conditions: Established turf that is free of dead or dying patches and shows vigorous growth of foliage of normal density, size, and color.

C. Delays: Delays in completion of planting operations which extend the planting and/or acceptance of Substantial Completion into the next planting season shall extend the Warranty period accordingly.

PART 2 - PRODUCTS

2.01 TURFGRASS SOD

A. Turfgrass Species: Sod of grass species as follows, with not less than 85 percent germination, not less than 95 percent pure seed, and not more than 0.5 percent weed seed:

1. Sun and Partial Shade: Turf-type tall fescue (90%) and Hybrid bluegrass - CV Thermal Blue Grass (10%) by:
   a. Medina Turf Farms meeting a mean quality ratio of 6.3 or higher according to the National Turfgrass Evaluation Program’s latest trials: http://www.ntep.org/data/tf12/tf12_16-5/tf1216t09.txt.
   b. Or local equal.

B. Sod Stakes

1. Basis of Design by:

GreenStakes
www.Greenstake.com

   a. Biodegradable Stakes: ASTM D6400 (in USA) & EN13432 (Europe & International) Biodegradable Standard.

2.02 FERTILIZERS

A. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.03 PESTICIDES

A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.04 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 long.

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

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
3. Uniformly moisten excessively dry soil that is not workable, or which is dusty.

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

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.02 PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

1. Protect grade stakes set by others until directed to remove them.

B. Install 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 TURF AREA PREPARATION

A. General: Prepare planting area for soil placement, mix planting soil and finish grades according to Sections 32 91 00 – through 32 91 50 Planting Preparation specifications.

B. Placing Planting Soil: Place and prepare soil mix per Specifications 31 22 19 - Finish Grading.

1. Reduce elevation of planting soil to allow for soil thickness of sod.

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

D. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.04 APPLICATION OF FERTILIZER

A. Fertilizers and conditioners shall be applied at the following rates:

1. Fertilizer – Apply at rates according to soil analysis testing reports.

B. Mixing with planting soil:

1. Fertilizer and conditioners shall be spread over the entire lawn areas at the application rates indicated above.
2. Materials shall be uniformly and thoroughly mixed into the top 4” of topsoil by discing, rototilling, or other approved method.

3.05 PREPARATION FOR EROSION-CONTROL MATERIALS

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

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

3.06 SODDING

A. Harvest, deliver, store, and lay sod within 12 hours of harvesting unless a suitable preservation method is accepted by Architect prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.

B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across slopes exceeding 1:3.

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

C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.

D. No heavy equipment to be allowed on the amended soil during installation of sod. All equipment for sodding and maintenance should be either track type or utilize high flotation turf type tires.

3.07 TURF RENOVATION

A. Renovate existing turf where indicated.

B. Renovate turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.

1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
2. Install new planting soil as required.

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

D. Remove topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.

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

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.

I. Apply soil amendments and initial fertilizer required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.

1. Soil Amendment(s): Amend soil as per soil test results for specified turf grass soils. See applicable Sections 32 91 00 through 32 91 40 - Planting Prep and Soils for specified soil mix, testing, installation, and preparation.
2. Initial Fertilizer: Slow-release fertilizer applied according to manufacturer's recommendations.

J. Water newly planted areas and keep moist until new turf is established.

3.08 TURF MAINTENANCE

A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:

1. Sodded Turf: 30 days from date of Substantial Completion.

B. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
2. Apply treatments as required to keep turf and soil free of pests and pathogens or disease.

Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

3. Treat infestation of weeds or crabgrass by hand weeding or herbicidal control. Furnish and install weed chemical control as recommended by manufacturer. Herbicidal controls, including renovation before sodding operations, shall be acceptable to the Architect.

C. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.

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 turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

D. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowing’s. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowing’s to maintain the following grass height:

1. Mow turf-type tall fescue to a height of 2 to 3 inches.

E. Turf Post-fertilization: Apply slow-release fertilizer after initial mowing and when grass is dry.

1. Use fertilizer that provides actual nitrogen of at least 1 lb./1000 sq. ft. to turf area.

3.09 SATISFACTORY TURF

A. Turf installations shall meet the following criteria as determined by Architect:

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

B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.10 OBSERVATION AND ACCEPTANCE

A. Beneficial Occupancy: the acknowledgement by the Owner and Architect that the landscape work defined by plans and specifications is substantially complete. The Architect shall provide the Contractor with a written punch list indicating items to be corrected or completed by the contractor within a two-week period from notification:

1. Site review to be requested by the Contractor when the landscape installation meets all the requirements of the plans and specifications.

B. Final Acceptance: the date of final acceptance shall be when the Architect verifies that all the items on the punch list have been completed and / or corrected by the Contractor

1. Warranty does not commence until acceptance by the Owner

3.11 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.12 CLEANUP AND PROTECTION

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

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

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

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

3.13 MAINTENANCE SERVICE

A. Verify with Owner that maintenance service is required for Project. Consider deleting this article for small-scale residential projects. Generally, a maintenance period should be long enough to ascertain the initial establishment of healthy turf.

B. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:

1. Sodded Turf: 30 days from date of Substantial Completion of Sod Installation operations.

END OF SECTION 32 92 00

SECTION 32 93 00 – PLANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. Plants including trees, shrubs, groundcovers, bi-annuals, annuals and bulbs.
2. Tree stabilization.
3. Tree-watering devices.
4. Landscape edgings.
5. Maintenance of all specified plants until the beginning of the warranty period.
6. Plant Warranty

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM).

1. ASTM D 1557- Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort.

B. American Nursery & Landscape Association (ANLA).

C. American National Standards Institute (ANSI)

1. ANSI Z60.1 – American Standards for Nursery Stock.
2. ANSI A300 Part 6 – Standard Practices for Tree, Shrub and other Woody Plant Management

1.03 DEFINITIONS

A. Acceptance, Acceptable, or Accepted: Acceptance by the Architect in writing.

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

C. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than sizes indicated; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the trunk flare / root crown visible at the surface of the ball as recommended by ANSI Z60.1.

D. Balled and Potted Stock: 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 sizes indicated.

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

F. Debris or Deleterious Materials: Elements including, but not limited to, concrete, concrete masonry, wood, excavated rock and rock fragments, rubble, overburden soils, abandoned utility structures, trash, refuse, and litter.

G. End of Warranty Final Acceptance: The date when the Architect accepts that the plants and work in this section meet all the requirements of the warranty. It is intended that the materials and workmanship warranty for Planting, Planting Soil, and Irrigation work run concurrent with each other.

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

I. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and

molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.

J. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

K. Planting Area: Areas to be planted.

L. Plant Spread: Measurement of main body diameter, not measurement from branch tip to branch tip.

M. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth. Soil preparations vary. See Sections 32 91 00 through 32 91 40 – Planting Prep and Soils for soil preparation and drawing designations for planting soils.

1. Planting Soil Mix: A sand/soil/compost material produced off-site by homogeneously blending topsoil and sand with compost to produce the specified planting mix type.
2. “Planting Soil Mix” and “Planting Soil” are interchangeable terms used throughout this specification.

N. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, bulbs, corms, tubers, or herbaceous vegetation.

O. Root Flare (root collar, trunk flare, root crown): The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots, the area of transition between the root system and the stem or trunk.

P. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

Q. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

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

S. Substantial Completion Acceptance: The date at the end of the Planting, Planting Soil, and Irrigation installation where the Architect accepts that all work in these sections is complete, and the Warranty period (aka “Contractor’s Warranty Period”) is to begin. This date may be different than the date of substantial completion for the other sections of the project.

T. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.04 COORDINATION

A. Coordination with Turf Areas (Lawns): Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.05 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
2. Plant Photographs: Include color photographs, (2) minimum per species, in digital format of each required species and size of plant material as it will be furnished to Project. Take photographs from an angle depicting true size and condition of the typical plant to be furnished. Include a scale rod or other measuring device in each photograph. For species where more than 20 plants are required, include a minimum of three photographs showing the average plant, the best quality plant, and the worst quality plant to be furnished. Identify

each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

3. Tree Selection Approvals:
   a. Acceptable trees will meet the following health and structure requirements: single dominate leader, branching and root structure appropriate for species, caliper size or height per plans, pest, and disease free, damage free and other ANSI requirements. Acceptable trees will also meet the following aesthetic requirements straight trunk, symmetry, uniformity and fullness of branching, general form, and overall uniformity of all trees of a species. No trees shall be delivered to the site without documentation.

B. Samples for Verification: For each of the following:

1. Organic Mulch: 1-pint volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
2. Weed Control Barrier: 12 by 12 inches.
3. Proprietary Root-Ball-Stabilization Device: One unit.
4. Slow-Release, Tree-Watering Device: One unit of each size required.
5. Edging Materials and Accessories: Manufacturer's standard size, to verify color selected.

1.06 INFORMATIONAL SUBMITTALS

A. Qualification Data: For landscape Installer. Include a list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.

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

1. Manufacturer's certified analysis of standard products.

C. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

D. Close out submittals: Submit to the Architect for approval.

1. Plant maintenance data, requirements and recommended maintenance schedules and procedures for Owner to establish during the Warranty Period.

E. Warranty period site visit record: If the client assumes maintenance responsibilities during the warranty period per the specifications, the Contractor is to submit a written record to the Architect of his/her observations visits, citing any problems, potential problems, and any recommended corrective actions needed by the client. Refer to Part 3 for Maintenance responsibilities.

1.07 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of plants.

1. Professional Membership: Installer shall be a member in good standing of either the National Association of Landscape Professionals or the American Nursery and Landscape Association.
2. Experience: Five years' experience in landscape installation.
3. Submit reference list of at least five completed representative projects indicating project name, address, telephone number, contract amount, Architect’s, and Facilities Manager's name.
4. Landscape Contractors submitting bids shall be pre-qualified before award of contract. Each reference shall be contacted to verify workmanship and general business practices.

5. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
6. Personnel Certifications: Installer's field supervisor shall have certification in the following categories from the National Association of Landscape Professionals:
   a. Landscape Industry Certified Exterior Technician
   b. Landscape Industry Certified Horticulture Technician
   c. Landscape Industry Certified Lawn Care Technician
7. Pesticide Applicator: State licensed, commercial.

B. Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

1. Selection of plants purchased under allowances is made by Architect, who tags plants at their place of growth before they are prepared for transplanting.

C. Measurements: Measure according to ANSI Z60.1. Do not prune to obtain required sizes.

1. Trees and Shrubs: Measure with branches and trunks or canes in their normal position. Take height measurements from or near the top of the root flare for field-grown stock and container-grown stock. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip to tip. Take caliper measurements 6 inches above the root flare for trees up to 4-inch caliper size, and 12 inches above the root flare for larger sizes.
2. Other Plants: Measure with stems, petioles, and foliage in their normal position.

D. Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Architect of sources of planting materials seven days in advance of delivery to site.

E. Plant Quantity Verification: All scaled dimensions on the drawings are approximate. Before proceeding with any work, the Contractor shall carefully check and verify all dimensions and quantities and shall immediately inform the Architect of any discrepancies between the information on the drawings and the actual conditions, refraining from doing any work in said areas until given approval to do so by the Architect.

1. In the case of a discrepancy in the plant quantities between the plan drawings and the plant call outs, list or plant schedule, the number of plants or square footage of the planting bed drawn on the plan drawings shall be deemed correct and prevail.

F. Preinstallation Conference: Conduct conference at Project.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws if applicable.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

C. Do not prune trees and shrubs before delivery. Protect bark, branches, and root systems from sun scald, drying, wind burn, 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 plants during shipping and delivery. Do not drop plants during delivery and handling.

D. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

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

F. Handling Plants:

1. Handle ball and burlap plants by root ball.
2. Pad trunk and branches where hoisting cables or straps contact.
3. Handle container plants by containers, not by tops, stems or trunks.
4. Do not bind or handle plants with wire or rope.

G. Deliver plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

1. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
2. Do not remove container-grown stock from containers before time of planting.
3. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

1.09 FIELD CONDITIONS

A. Work notification: Notify the Architect at least seven working days before installation of plant material.

B. All trees must be evaluated and approved by the Architect prior to planting.

C. Verify location and extent of underground utilities. Protect existing utilities, paving and other facilities from damage caused by landscaping operations.

D. Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

E. Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by the Owner or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:

1. Do not proceed with interruption of services or utilities without Architect’s written permission.

F. Install plant materials during time periods indicated. Planting operations conducted at other times only at option and full responsibility of Contractor and without additional compensation, except as otherwise acceptable to the Architect. Do not plant in frozen ground.

G. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

1. Spring Planting: March 1 to June 1.

2. Fall Planting: September 1 to Nov. 15.

H. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

I. Coordination with Turf Areas: Plant trees, shrubs, and other plants after finish grades are established and before planting turf areas unless otherwise indicated.

1. When planting trees, shrubs, and other plants after planting turf areas, protect turf areas, and promptly repair damage caused by planting operations.

1.10 ACCEPTANCE FOR SUBSTANTIAL COMPLETION

A. Substantial Completion Acceptance - Acceptance of the work prior to the start of the warranty period:

1. Once the Contractor completes the installation of all items in this section, the Architect will observe all work for Substantial Completion Acceptance upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date of the observation.
2. Substantial Completion Acceptance by the Architect shall be for general conformance to specified size, character and quality and not relieve the Contractor of responsibility for full conformance to the contract documents, including correct species.
3. Any plants that are deemed defective as defined under the provisions below shall not be accepted.

B. The Architect will provide the Contractor with written acknowledgment of the date of Substantial Completion Acceptance and the beginning of the warranty period and plant maintenance period (if plant maintenance is included).

C. Acceptance in Part:

1. The work may be accepted in parts when it is deemed to be in the Owner's best interest to do so, and when permission is given to the Contractor in writing to complete the work in parts.
2. Acceptance and use of such areas by the Owner shall not waive any other provisions of this Contract.

1.11 WARRANTY

A. Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

1. Failures include, but are not limited to, the following:
   a. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by Owner.
      1) Inspection Reports and Maintenance Logs per “Closeout Submittals” apply.
   b. Structural failures including plantings falling or blowing over.
   c. Faulty performance of tree stabilization and edgings.
   d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Periods: From date of Substantial Completion unless noted otherwise.
   a. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
   b. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
   c. Annuals: Three months.

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

PROJECT TEAM:
PENINSULA ARCHITECTS
CIVIL ENGINEER: GUTOSKEY AND ASSOCIATES P 406.543.6900
STRUCTURAL ENGINEER: ORAVEC DESIGN BUILD P 330.552.8211
MEP ENGINEER: DENK ASSOCIATES P 216.531.8880

VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

PROJECT #: 2501

ISSUE:

AHBR REVIEW	04-01-2025
VARIANCE SET	04-17-2025
PLANNING COMMISSION	09-15-2025

LANDSCAPE SPECIFICATIONS

L0.07

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3. When the work is accepted in parts, the warranty periods shall extend from each of the partial Substantial Completion Acceptances to the terminal date of the last warranty period. Thus, all warranty periods for each class of plant warranty, shall terminate at one time.
4. Include the following remedial actions as a minimum:
   a. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
   b. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
   c. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
   d. Provide extended warranty for period equal to original warranty period, for replaced plant material.

B. End of Warranty Final Acceptance - Acceptance of plants at the end of the warranty period.
1. At the end of the warranty period, the Architect shall observe all warranted work, upon written request of the Contractor. The request shall be received at least ten calendar days before the anticipated date for final observation.
2. End of Warranty Final Acceptance will be given only when all the requirements of the work under this specification and in specification sections Planting Soil and Irrigation have been met.

PART 2 - PRODUCTS

2.01 PLANT MATERIAL

A. General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, sizes, grades, and ball or container sizes and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.
1. Growing Practices: Nursery grown in accordance with best horticultural industry practices.
2. Nomenclature: Plant nomenclature shall meet requirements of ICBN and ICNCP.
3. Climatic Growing Conditions: Grown under climatic conditions (same USDA hardiness zone) of the like those of the project and within 150 miles of the project site for at least two years unless otherwise accepted by Architect.
4. Container Growth Limitations: Container stock shall have been grown in the containers in which delivered for at least six months, but not over two years.
5. Specimen Quality: Structurally strong, able to stand upright without stakes or guys, exceptionally heavy, symmetrical, tightly knit, so trained, or favored in development and appearance as to be superior in form, number or branches, compactness, and symmetry.
6. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots will be rejected.
7. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.
8. Pruning: Do not prune, thin, or shape plants before delivery without acceptance by the Architect.

B. Substitutions: Accepted substitute plants shall be true to species and variety and shall meet requirements of this Section except those plants larger than specified may be used, if accepted in

writing by the Architect. Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to Architect, with a proportionate increase in size of roots or balls.
1. Substitutions will only be accepted up to 60 days post bid submittal. Contractor is responsible to identify availability of materials and inform Architect of any stock shortages prior to the 60 day post bid submittal.

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

D. Labeling: Label each plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant.

E. If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

F. No tree wrap is to be used.

2.02 SHADE AND FLOWERING TREES

A. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.
1. Provide balled and burlapped or container-grown trees.
2. Branching Height: One-third to one-half of tree height.
3. Street Trees: Street trees must be limbed to 8 feet minimum.
4. Forked Trunks on trees are not acceptable; each tree must have one string central leader.

B. Small Upright and Spreading Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:
1. Stem Form: Single stem.
2. Multi-Stem: Unless noted otherwise, tree shall have 3 -5 trunks forked at or above root flair collar. Overall height determines size of tree.
3. Provide balled and burlapped trees.
4. Forked Trunks on trees are not acceptable; each tree must have one string central leader.

2.03 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.
1. Provide balled and burlapped or container-grown shrubs.

2.04 GROUND COVER / PERENNIAL / ANNUAL PLANTS

A. Ground Covers / Perennials: Provide ground cover of species indicated, established, and well rooted in pots or similar containers and complying with ANSI Z60.1. Sections 1 and 13 apply.

B. Annuals and Biennials: Provide healthy, disease-free plants of species and variety shown or listed, with well-established root systems reaching to sides of the container to maintain a firm ball, but not with excessive root growth encircling the container. Provide only plants that are acclimated to outdoor conditions before delivery, and that are in bud but not yet in bloom.

2.05 FERTILIZERS

A. Refer to Soil Mix specifications test results and Final Grading for soil amendments.

B. Bonemeal: Commercial, raw, or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

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

D. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended by manufacturer's written instructions.

E. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
1. Composition: (high phosphorus, low nitrogen ratio)

2.06 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. Size Range: 3 inches maximum, 1/2 inch minimum.
3. Color: Natural.

2.07 WEED-CONTROL BARRIERS

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

2.08 PESTICIDES

A. General: Pesticide registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.09 TREE-STABILIZATION MATERIALS

1. Upright and Guy Stakes: Rough-sawn, sound, new [hardwood] [softwood with specified wood pressure-preservative treatment], free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal by length indicated, pointed at one end.
2. Guying Material
   a. Arborbe – as manufactured by DeepRoot Green Infrastucture LLC.
      1) Or approved Equal.
   b. Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
3. Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.

B. Below Grade - Root-Ball Stabilization Materials:
1. Proprietary at or below-grade stabilization systems to secure each new planting by root ball and that do not encircle the trunk; sized according to manufacturer's written recommendations unless otherwise indicated.
   a. Tree Anchor System: Model 68RBL Duckbill Earth Anchors by
      1) Manufacturer:

Maclean PowerSystems
481 Muhn St. – Suite 300
Fort Mill, SC 29715.

   b. Arbor Stake System: 99.9% biodegradable wooden stake with lock caps.
      1) Manufacturer:
         Arbor Stakes LLC
         www.arborstakes.com
         (214) 810-6678.

2.10 LANDSCAPE EDGE RESTRAINTS

A. Steel Edging: Standard commercial-steel edging, fabricated in sections of standard lengths, with loops stamped from or welded to face of sections to receive stakes.
1. Basis of Design: Border Guard
2. Manufacturer:
   Border Concepts, Inc.
   7621 Little Avenue
   Suite 426
   Charlotte, NC 28226
   Ph. No.: 800-845-3343
3. Edging Size: 3/16 inch thick by 4 inches deep.
4. Stakes: Tapered steel, a minimum of 24" long (Super Stakes)
5. Accessories: Standard tapered ends, pre-formed corners, and splicers.
6. Finish: Unfinished.

2.11 TREE-WATERING DEVICES

A. Slow-Release Watering Device: Standard product manufactured for drip irrigation of plants and emptying its water contents over an extended time period; manufactured from UV-light-stabilized nylon-reinforced polyethylene sheet, PVC, or HDPE plastic.
1. Color: As selected by Architect from manufacturer's full range.

2.12 MISCELLANEOUS PRODUCTS

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

B. Planter Drainage Gravel: Washed, sound crushed stone or gravel complying with ASTM D 448 for Size No. 8.

C. Planter Filter Fabric: Nonwoven geotextile manufactured for separation applications and made of polypropylene, polyolefin, or polyester fibers or combination of them.

D. Mycorrhizal Fungi: Dry, granular inoculant containing at least 5300 spores per lb. of vesicular-arbuscular mycorrhizal fungi and 95 million spores per lb. of ectomycorrhizal fungi, 33 percent hydrogel, and a maximum of 5.5 percent inert material.

2.13 SOURCE QUALITY CONTROL

A. Advanced Tree Procurement:
1. Within 60 days of award of contract, notify Architect in writing of the availability or lack thereof the specified plant material.
2. Procure trees and arrange for contract growing as required to ensure that plant material is available in the quantities, sizes, and quality specified at the time of installation.

3. Verify plant branching requirements with Architect prior to contract growing.
4. Architect will review advance-procured trees prior to initial purchase at the place of growth.
5. Coordinate and schedule a review by the Architect of advanced procured plant material at the place of growth prior to delivery to the project site.
6. Review and acceptance of the advance-procured plant material at the place of growth does not preclude rejection at the project site if damage or unacceptable conditions are found that were not detected at the place of growth.
7. Before changes or substitutions can be considered due to unavailability of plant material, the contractor shall submit written evidence that he has advertised for at least a one-month period in a trade journal such as the "Landscape Materials Information Service", with no response, or has undertaken other methods of locating plant material acceptable to the Architect.

B. Plant Material Review and Tagging:
1. Trees will be reviewed, photographed, and tagged using irremovable tags by the Architect at the place of growth prior to delivery to the project site.
2. At the Architect's discretion, shrubs may or may not be reviewed, photographed, and tagged at the place of growth.
3. Tagging of plant material at the place of growth does not preclude rejection of at the project site if damage or unacceptable conditions are found that were not detected at the place of growth or in submitted photographs.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
2. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
3. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
4. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
5. Uniformly moisten excessively dry soil that is not workable, or which is dusty.

B. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

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

3.02 PREPARATION

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

B. Use every possible precaution to prevent excessive compaction of planting area soil within or adjacent to the areas of Work.

C. Do not store materials or equipment or operate or park vehicles under the drip line of existing or newly planted trees. Install 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.

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

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

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

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

3.03 PLANTING AREA ESTABLISHMENT

A. General: Prepare planting area for soil placement and mix planting soil according to the requirements of Planting Soil Mixes, Sections 32 91 00 through 32 91 40.

B. Placing Planting Soil: Place and mix planting soil in-place over exposed subgrade.

C. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

D. Application of Mycorrhizal Fungi: At time directed by Architect, broadcast dry product uniformly over prepared soil at application rate according to manufacturer's written recommendations.

3.04 EXCAVATION FOR TREES AND SHRUBS

A. Planting Pits and Trenches: Excavate circular planting pits.
1. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
2. Excavate approximately three times as wide as ball diameter for balled and burlapped and potted stock.
3. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
4. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
5. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
6. Maintain angles of repose of adjacent materials to ensure stability. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
7. Maintain supervision of excavations during working hours.
8. Keep excavations covered or otherwise protected when unattended by Installer's personnel.
9. If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.

B. Backfill Soil: Subsoil and topsoil removed from excavations may not be used as backfill soil unless otherwise indicated.

C. Obstructions: Notify 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. Test fill each tree and planting pit with water, prior to planting to assure proper soil percolation. Pits which do not adequately drain shall be further scarified along outer edges and sides of pit. Do not disturb area supporting tree ball. Repeat test.
1. Notify Architect and Owner should 2nd fill test fail for additional input and corrective action.
2. No allowances shall be made for plant material loss due to improper drainage or if contractor fails to perform fill test. Contractor shall replace lost plant material with same size and species at no additional cost to the owner.

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

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

3.05 TREE, SHRUB, AND VINE PLANTING

A. General: Install plant material in accordance with detailed drawings and recommendations of ANLA.

B. Inspection: At time of planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

C. Root Pruning:
1. If stem girdling roots are encountered at root ball sides, notify the Architect for field review.
2. Upon Architect's acceptance, remove stem girdling roots and kinked roots by cutting cleanly; do not break. Cut roots on 4 sides of root ball 90 degrees to root ball.

D. Root Ball Scarification:
1. After removing plant from container, scarify side of root ball to prevent root-bound condition.
2. Loosen root ball soil surface to depth of 1/8 inch to 1/4 inch without damaging roots or breaking root ball.

E. Balled and Burlapped Stock: Set each plant plumb and in center of planting bed or trench with root flare 2 inches above adjacent finish grades.
1. Backfill: Planting soil mix as specified on drawings.
2. After placing some backfill around root ball to stabilize plant, carefully cut and remove upper 1/3 burlap (ANSI A300 – Part 6), rope, and wire baskets from tops of root balls and from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.
3. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
4. Continue backfilling process. Water again after placing and tamping final layer of soil.

F. Container-Grown Stock and Perennials in Containers: Set each plant plumb and in center of planting bed or trench.
1. Container Stock greater than 1 gallon container, place root flare 1 to 2 inches above finish grade.
2. Perennials or plant stock in 1 gallon and less containers, place top of root ball 1 inch above finish grade.
3. Backfill: Planting soil mix as specified on drawings.
4. Carefully remove root ball from container without damaging root ball or plant.

5. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
6. Continue backfilling process. Water again after placing and tamping final layer of soil.

G. Slopes: When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

3.06 TREE, SHRUB, AND VINE PRUNING

A. Remove only dead, dying, or broken branches. Do not prune for shape.

B. Prune, thin, and shape trees, shrubs, and vines as directed by Architect.

C. Prune, thin, and shape trees, shrubs, and vines according to standard professional horticultural and arboricultural practices. Unless otherwise indicated by Architect, do not cut tree leaders; remove only injured, dying, or dead branches from trees and shrubs; and prune to retain natural character.

D. Do not apply pruning paint to wounds.

3.07 TREE STABILIZATION

A. Upright Staking Method: Stake trees of 2-inch through 3 1/2-inch caliper. Install trunk stabilization as follows unless otherwise indicated:
1. Install wood stake vertically as per detail driving stake minimum of 18 inches into subgrade.
2. Provide two stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper.
   a. Provide three stakes for trees greater than 12 feet high and up to 4 inches in caliper. Space stakes equally around trees.
   b. Trees less than 2-1/2 inch do not require staking unless noted otherwise,
3. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Refer to Manufacturer's specifications for band height and general installation specifications.

B. Trunk Stabilization Method by Guying: Install trunk stabilization as follows unless otherwise indicated on Drawings. Guy trees more than 14 feet in height and more than 4 inches in caliper unless otherwise indicated.
1. Site-Fabricated, Guying Method: Install minimum of three stakes and guys spaced equally around tree.
   a. Install wooden stakes as per detail driving stake minimum 18 inches into subgrade. Adjust spacing to avoid penetrating root balls or root masses. Leave 18 inches of wood stake exposed above finish grade.
   b. Support trees with bands of flexible ties providing loop around trunk of tree as recommended by manufacturers specifications. Refer to Manufacturer's specifications for band height and general installation specifications.
   c. Attach flags to each flexible tie, 30 inches above finish grade.

C. Proprietary Root-ball Stabilization: Install stabilization system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.
1. Proprietary Root-Ball Stabilization Device: Install root-ball stabilization system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.

3.08 PLACING SOIL IN PLANTERS

A. Place a layer of drainage gravel at least 4 inches thick in bottom of planter. Cover bottom with filter fabric and wrap filter fabric 4 inches up on all sides. Duct tape along the entire top edge of the filter fabric, to secure the filter fabric against the sides during the soil-filling process.

B. Fill planter with planting soil mix as per drawings. Place soil in lightly compacted layers to an elevation of 1-1/2 inches below top of planter, allowing natural settlement.

3.09 GROUND COVER AND PLANT PLANTING

A. Set out and space ground cover and plants other than trees, shrubs, and vines as indicated on Drawings in even rows with triangular spacing.

B. Use planting soil mix as per drawings for backfill.

C. Dig holes large enough to allow spreading of roots.

D. For rooted cutting plants supplied in flats, plant each in a manner that minimally disturbs the root system but to a depth not less than two nodes.

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

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

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

3.10 PLANTING AREA MULCHING

A. Mulch backfilled surfaces of planting areas and other areas indicated.
1. Trees and Treelike Shrubs in Turf Areas: Apply organic mulch ring of 3-inch average thickness, with 24-inch radius around trunks or stems. Do not place mulch within 3 inches of trunks or stems.
2. Organic Mulch in Planting Areas: Apply 3-inch average thickness of organic mulch extending 12 inches beyond edge of individual planting pit or trench and over whole surface of planting area, and finish level with adjacent finish grades. Do not place mulch within 3 inches of trunks or stems.

3.11 EDGING INSTALLATION

A. Steel Edging: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced approximately 30 inches apart, driven below top elevation of edging.
1. Install corners using bent edging at 1/4" or less inside radius allowing 12" minimum lengths to connection end. No cut corners will be accepted.

3.12 INSTALLING SLOW-RELEASE WATERING DEVICE

A. Provide one device for each tree.

B. Place device on top of the mulch at base of tree stem and fill with water according to manufacturer's written instructions.

3.13 PLANT MAINTENANCE

A. Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting, and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings.

B. Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

C. Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices, when possible, to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

3.14 PESTICIDE APPLICATION

A. Apply pesticides and other chemical products and biological control agents according to authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas according to manufacturer's written recommendations. Do not apply to seeded areas.

C. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.15 REPAIR AND REPLACEMENT

A. General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.
1. Submit details of proposed pruning and repairs.
2. Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
3. Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.

B. Remove and replace trees that are more than 25 percent dead or in an unhealthy condition before the end of the corrections period (Substantial Completion) or are damaged during construction operations that Architect determines are incapable of restoring to normal growth pattern.
1. Provide new trees of same size as those being replaced for each tree of 4 inches or smaller in caliper size.
2. Species of Replacement Trees: Species selected by Architect.

3.16 CLEANING AND PROTECTION

A. During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

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

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

D. After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

E. At time of Substantial Completion, verify that tree-watering devices are in good working order and leave them in place. Replace improperly functioning devices.

3.17 PLANT MAINTENANCE PRIOR TO SUBSTANTIAL COMPLETION ACCEPTANCE

A. During the project work period and prior to Substantial Completion Acceptance, the Contractor shall maintain all plants.

B. Maintenance during the period prior to Substantial Completion Acceptance shall consist of pruning, watering, cultivating, weeding, mulching, removal of dead material, repairing and replacing of tree stakes, tightening and repairing of guys, repairing and replacing of damaged tree

wrap material, resetting plants to proper grades and upright position, and furnishing and applying such sprays as are necessary to keep plantings reasonably free of damaging insects and disease, and in healthy condition. The threshold for applying insecticides and herbicide shall follow established Integrated Pest Management (IPM) procedures. Mulch areas shall be kept reasonably free of weeds, grass.

3.18 SUBSTANTIAL COMPLETION ACCEPTANCE

A. Upon written notice from the Contractor, the Owners Representative shall review the work and decide if the work is substantially complete.
1. Notification shall be at least 7 days prior to the date the contractor is requesting the review.

B. The date of substantial completion of the planting shall be the date when the Architect accepts that all work in Planting, Planting Soil, and Irrigation installation sections is complete.

C. The Plant Warranty period begins at date of written notification of substantial completion from the Architect. The date of substantial completion may be different than the date of substantial completion for the other sections of the project.

3.19 MAINTENANCE DURING THE WARRANTY PERIOD (by Client / Others)

A. After Substantial Completion Acceptance, the Contractor shall make sufficient site visits to observe the Owner's maintenance and become aware of problems with the maintenance in time to request changes, until the date of End of Warranty Final Acceptance.
1. Notify the Architect in writing if maintenance, including watering, is not sufficient to maintain plants in a healthy condition. Such notification must be made in a timely period so that the Architect may take corrective action.
   a. Notification must define the maintenance needs and describe any corrective action required.
2. If the Contractor fails to visit the site and or notify, in writing, the Architect of maintenance needs, lack of maintenance shall not be used as grounds for voiding or modifying the provisions of the warranty.

3.20 END OF WARRANTY FINAL ACCEPTANCE / MAINTENANCE OBSERVATION

A. At the end of the Warranty and Maintenance period the Architect shall observe the work and establish that all provisions of the contract are complete, and the work is satisfactory.
1. If the work is satisfactory, the maintenance period will end on the date of the final observation.
2. If the work is deemed unsatisfactory, the maintenance period will continue at no additional expense to the Owner until the work has been completed, observed, and approved by the Architect.

B. FAILURE TO PASS OBSERVATION: If the work fails to pass final observation, any subsequent observations must be rescheduled as per above. The cost to the Owner for additional observations will be charged to the Contractor at the prevailing hourly rate of the Owners Representative.

END OF SECTION 32 93 00

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PROGRESS NOT FOR CONSTRUCTION
10/30/2025

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GUTOSKEY AND ASSOCIATES
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STRUCTURAL ENGINEER:
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MEP ENGINEER:
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VILLAGE DENTAL
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PROJECT #: 2501

ISSUE:
AHBR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION 09-15-2025

LANDSCAPE SPECIFICATIONS

L0.08

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