

VILLAGE DENTAL



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STRUCTURAL

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PROGRESS
NOT FOR
CONSTRUCTION

10/06/2025

PROJECT TEAM:



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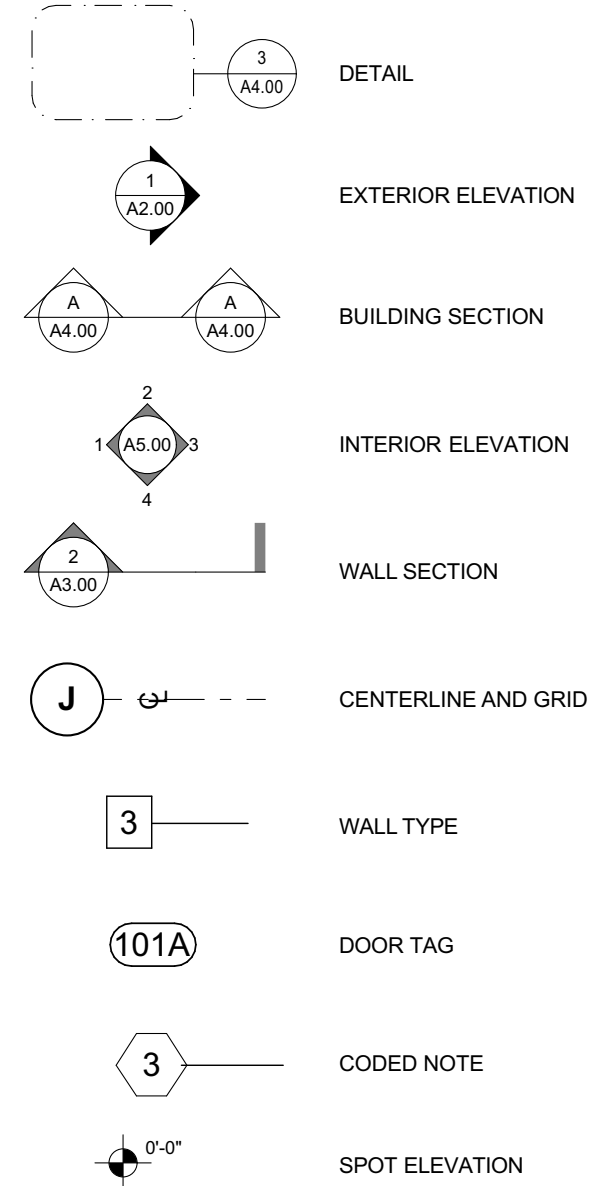
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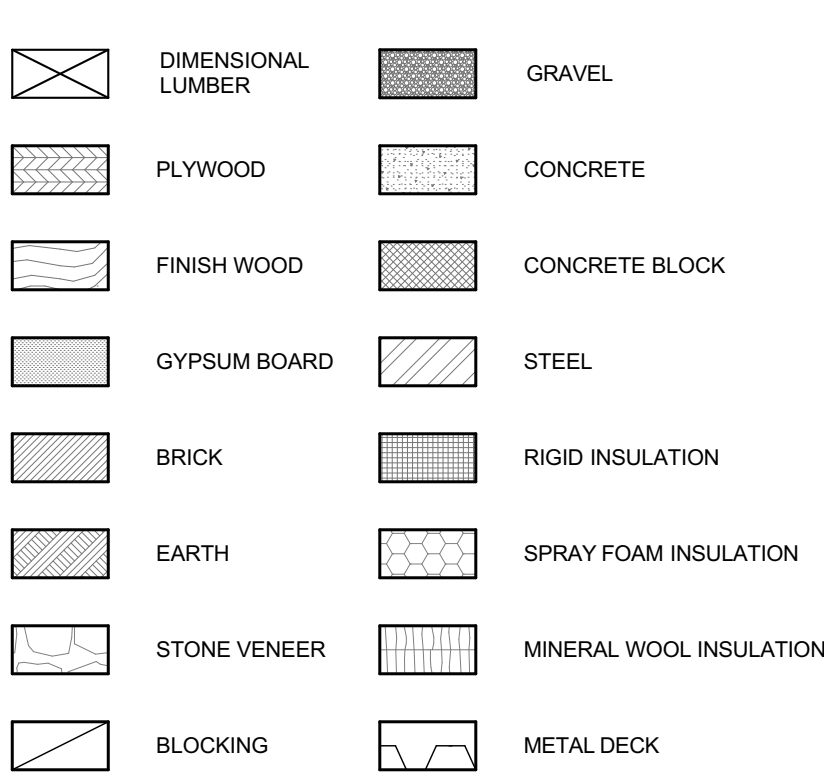
ABBREVIATIONS

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

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 (IBC 2021 + AMENDMENTS)
RESIDENTIAL BUILDING CODE: 2019 OF OHIO (IRC 2018 + AMENDMENTS)
MECHANICAL CODE: 2024 OF OHIO (MCC 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 AS 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 WHOSE WORK 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 CAUSED 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 RESIDENTIAL USE THEN IT'S 15'.

MAX HEIGHT: 45'
ACTUAL HEIGHT: 25'-11"

USE: BUSINESS
CONSTRUCTION TYPE: V-8

PARKING: OFFICE = 1 SPACE / 400 SF AND 1 SPACE FOR EACH 200 SF AS MAX. PERMITTED PARKING
REQUIRED = 2 SPACES

GROSS ADDITION BUILDING AREAS:

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

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 SUPPRESSED IS 200'

DRAWING INDEX

* DENOTES SHEETS PRINTED IN COLOR

*G1.00	COVER SHEET
C1.00	SITE PLAN
C1.01	CALCULATIONS
C1.02	CALCULATIONS
C-1.1	OVERALL PLAN
C-1.2	SWM PLAN
C-1.3	GENERAL NOTES
AS1.00	SITE PHOTOS
AS1.01	ARCHITECTURAL SITE PLAN
L0.01	LANDSCAPE PLAN
L0.02	LANDSCAPE PLANTING DETAILS
L0.03	LANDSCAPE SPECIFICATIONS
L0.04	LANDSCAPE SPECIFICATIONS
L0.05	LANDSCAPE SPECIFICATIONS
L0.06	LANDSCAPE SPECIFICATIONS
L0.07	LANDSCAPE SPECIFICATIONS
L0.08	LANDSCAPE SPECIFICATIONS
A1.01	FLOOR PLANS
A3.00	EXTERIOR ELEVATIONS
A4.00	BUILDING SECTIONS
A4.01	BUILDING SECTIONS
A5.00	SPECIFICATIONS
A5.01	SPECIFICATIONS

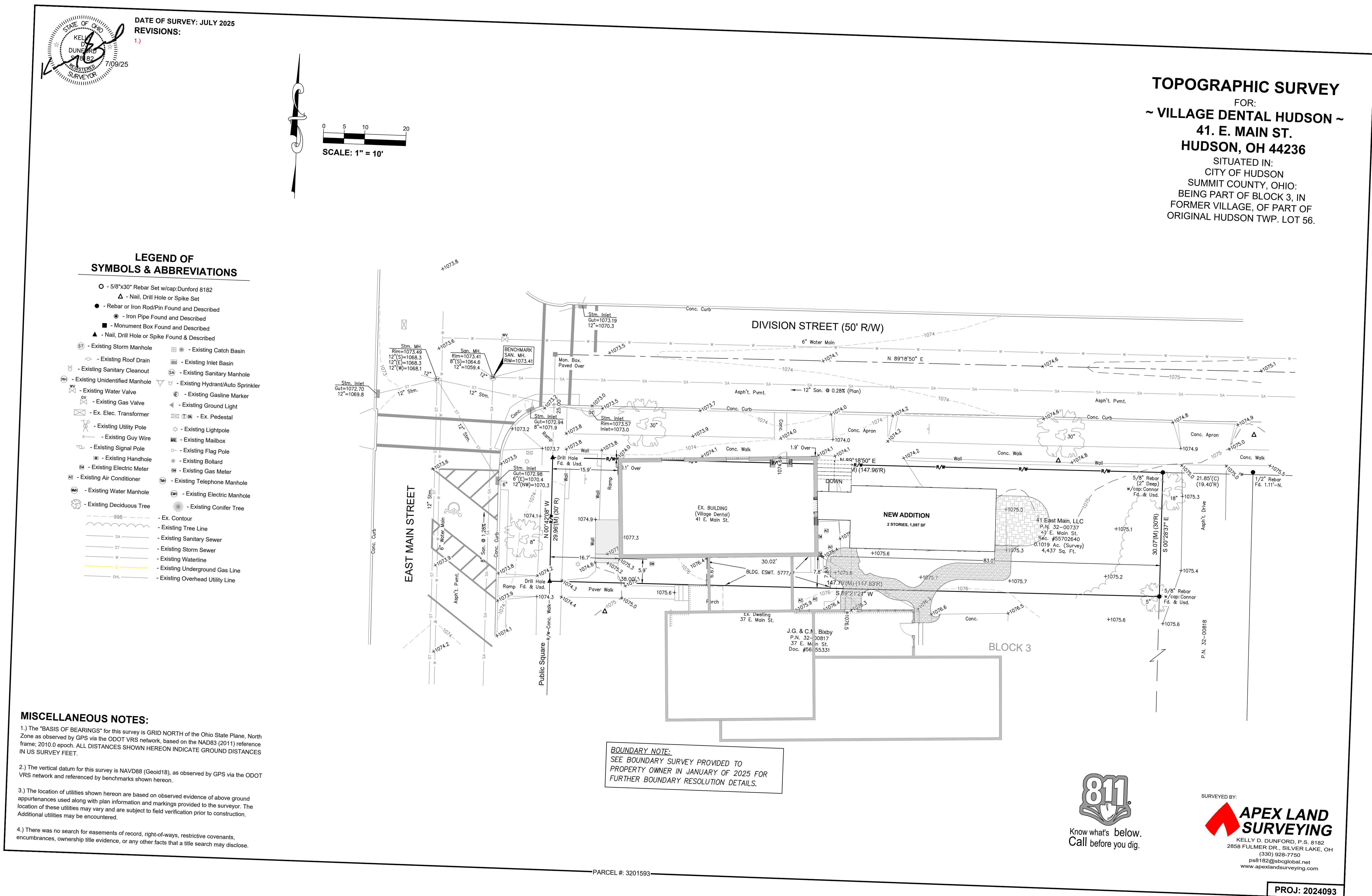
VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

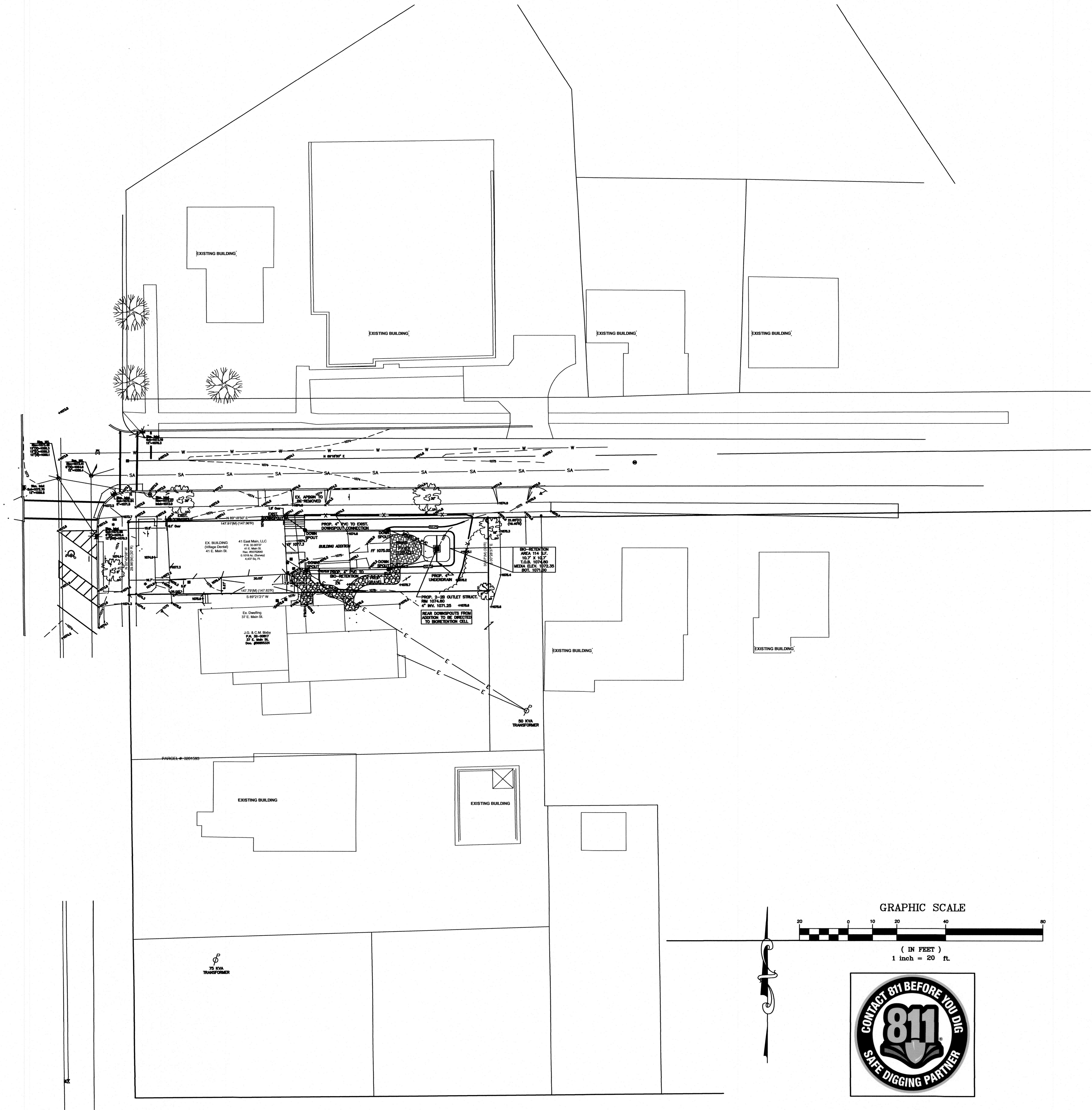
PROJECT #: 2501
ISSUE:
AHRB REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION 09-15-2025

COVER SHEET

*G1.00

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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

10155 GOTTSCHALK PKWY, SUITE 4 TEL (440) 543-8900

CHAGRIN FALLS, OHIO 44023 JOEGUTOSKEY@GUTOSKEY.COM

JOSEPH GUTOSKEY

51851

REGISTERED PROFESSIONAL ENGINEER

Date: 10/27/25

Scale: Hor. 1" = 20'

Vert. _____

Filename: _____

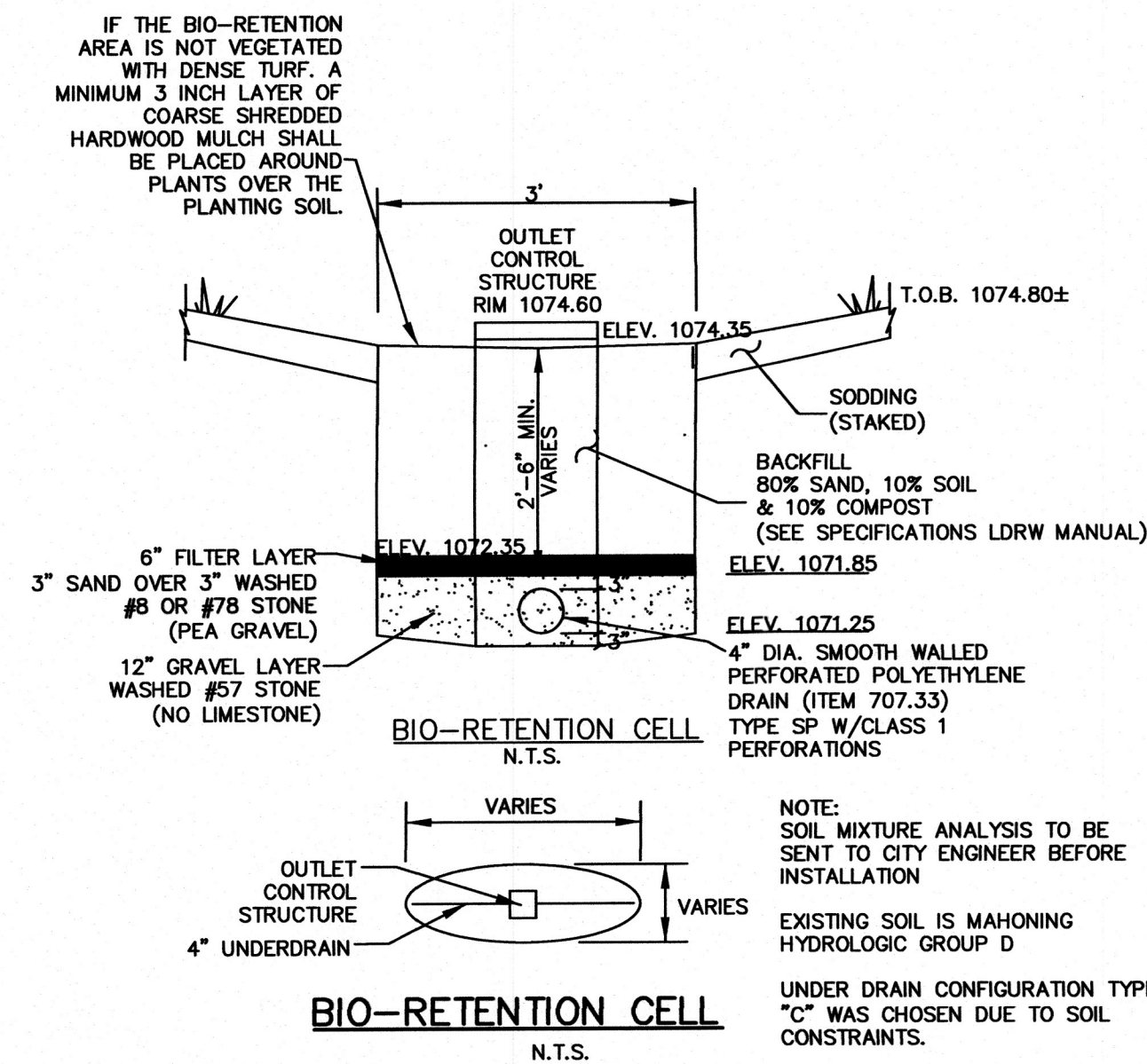
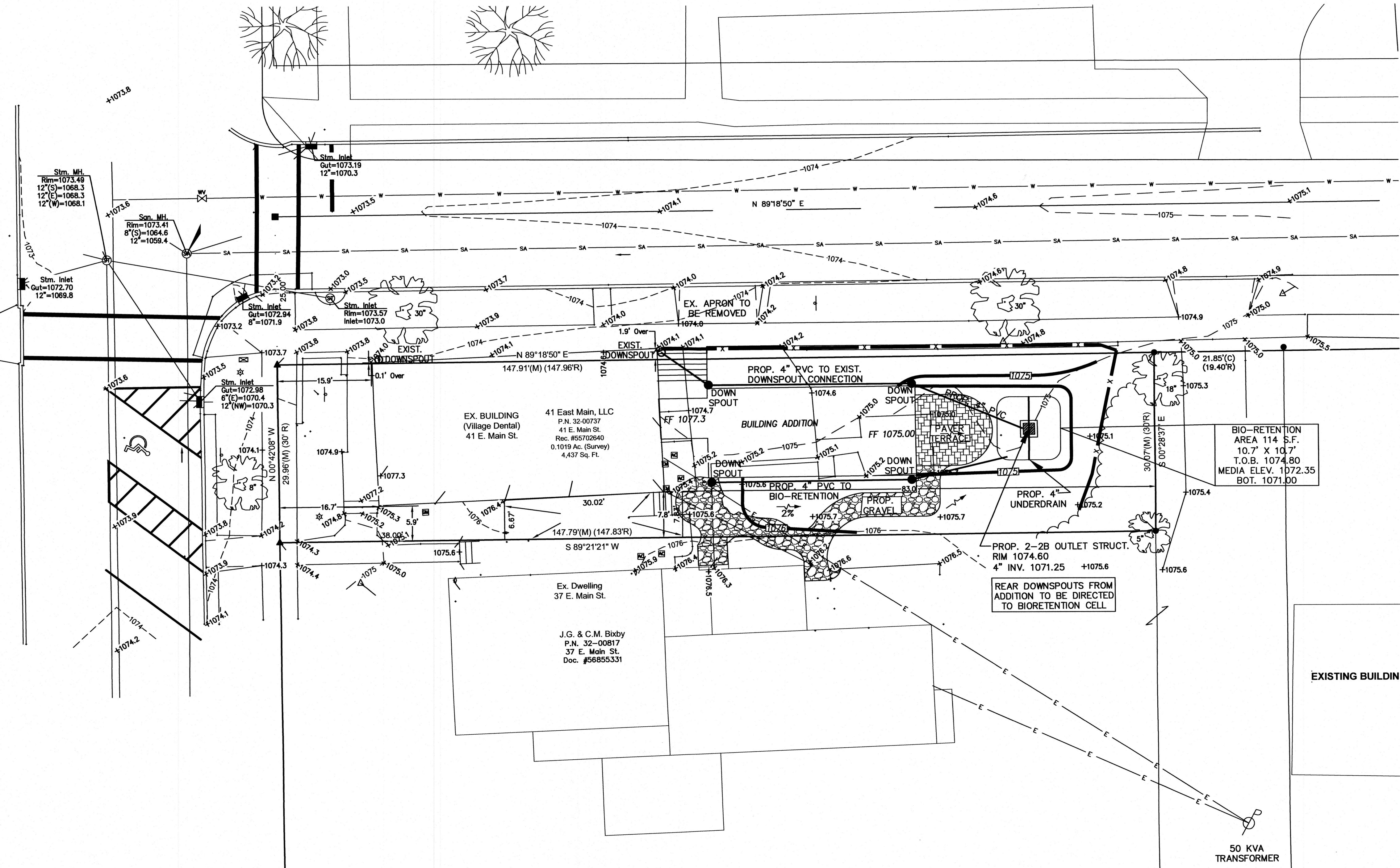
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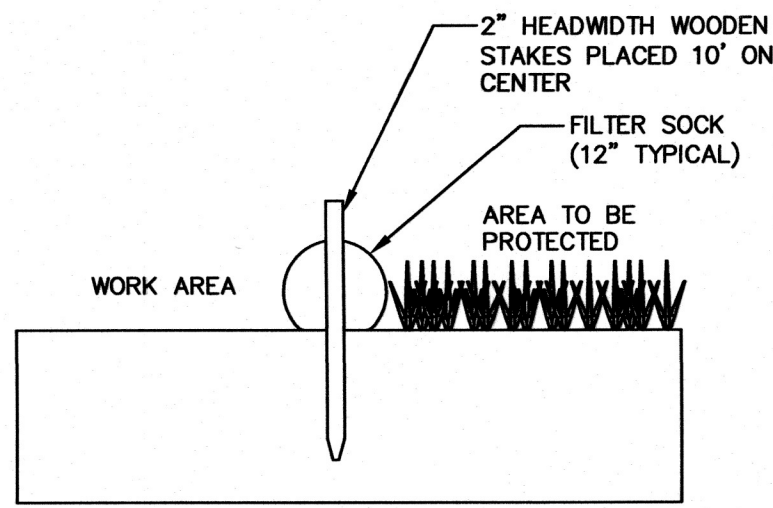
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CONTRACT No. 25-4246

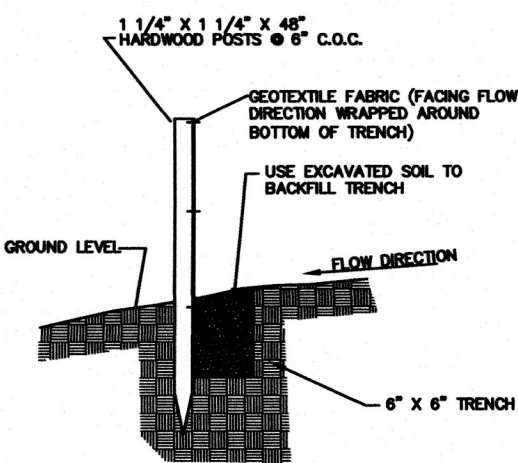


NOTES:
SEE ARCHITECTURAL PLANS FOR BUILDING DIMENSIONS.
TOPOGRAPHIC & EXISTING CONDITIONS SURVEY PROVIDED BY CLIENT.
THERE SHALL BE NO STAGING OF EQUIPMENT, MATERIALS, OR EMPLOYEE VEHICLES IN THE RIGHT OF WAY.
CONTRACTOR TO VERIFY ALL UNDERGROUND UTILITIES WITHIN THE PROJECT AREA.
THIS PLAN MEETS THE 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-OF-WAY 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.

LEGEND

LIMITS OF DISTURBANCE

SILT CONTROL FENCE/SOCK (SF)

INLET PROTECTION (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.
-PERENNIAL 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.

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 THE MOST RECENT DISTURBANCE WITHIN THAT AREA.
DISTURBED AREAS THAT WILL BE IDLE OVER THE WINTER.	PRIOR TO NOVEMBER 1.

NOTE: WHERE VEGETATIVE 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.

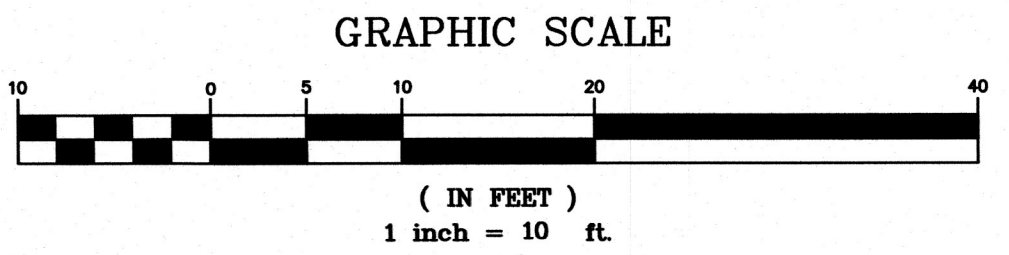
PERMANENT SEEDING & MULCHING (SEED MIX NO. 2):

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.

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 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.



Revisions:

1	9/15/25
2	10/27/25
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HUDSON - SUMMIT COUNTY - OHIO

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Civil Engineers, Surveyors and Land Planners
10335 GOTTSCALK PKWY, SUITE 4 Tel. (440) 645-6900
CHAGRIN FALLS, OHIO 44023 JOEGUTOSKEY@GUTOSKEY.COM

SWM PLAN

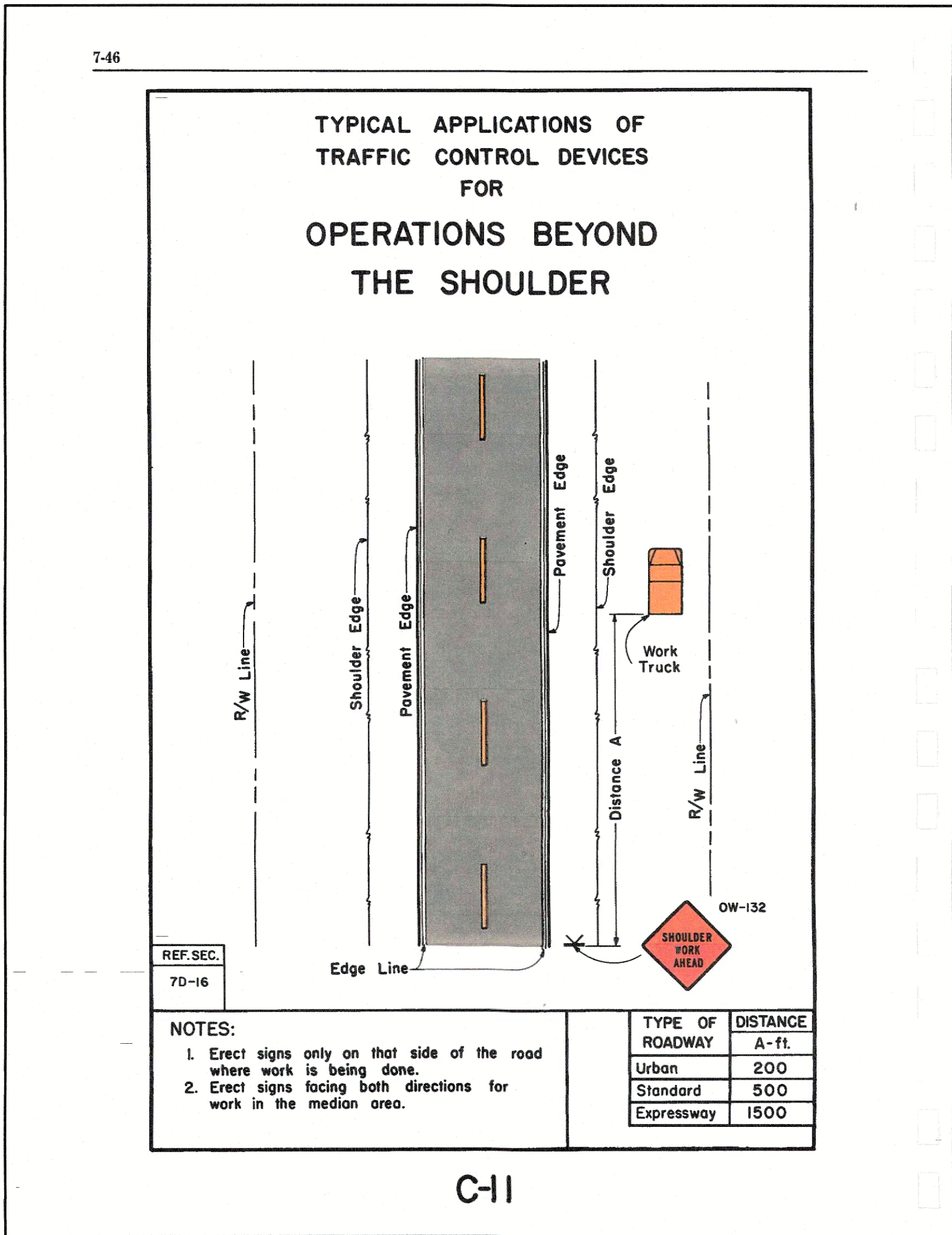
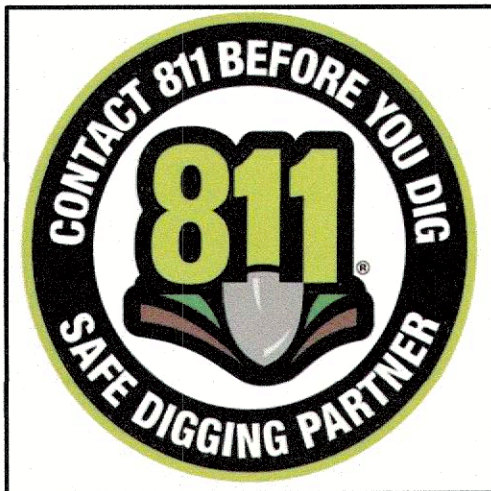
JOSEPH GUTOSKEY
51851
REGISTERED PROFESSIONAL ENGINEER

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

Sheet
C-1.2
CONTRACT No.
25-4246

EXHIBIT A
GENERAL CONSTRUCTION NOTES

- CONSTRUCTION OF THE SITE WORK AND UTILITIES SHALL BE GOVERNED BY THE CITY OF HUDSON'S "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND PAYING FOR ALL PERMITS REQUIRED FOR THE PROJECT.
- THE CONTRACTOR MUST ALERT THE OHIO UTILITY PROTECTION SERVICES AT 1-800-382-2784 AT LEAST 48 HOURS BEFORE ANY EXCAVATION IS TO BEGIN.
- ALL EXISTING APPURTENANCES (UTILITY POLES, VALVES, HYDRANTS, MANHOLES, ETC.) ARE TO BE MAINTAINED BY THE CONTRACTOR UNLESS OTHERWISE SHOWN ON THE PLANS.
- THE DESIGN ENGINEER CERTIFIES THAT ALL UTILITIES ARE SHOWN AS THEY APPEAR ON EXISTING RECORDS OR FIELD LOCATED.
- 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.
- 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.
- NOTIFY THE CITY OF HUDSON ENGINEERING DEPARTMENT A MINIMUM OF FORTY-EIGHT HOURS (2 WORKING DAYS) PRIOR TO THE START OF CONSTRUCTION.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- COMPLIANCE WITH THE OCCUPATIONAL AND SAFETY ACT OF 1970 IS REQUIRED BY ALL CONTRACTORS ON THIS PROJECT.
- ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
- 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.
- 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.
- ALL PROPOSED SLOPES 3:1 OR STEEPER AND ALL EARTHEN DRAINAGE WAYS SHALL RECEIVE JUTE OR EXCELSIOR MATTING AS PER ODOT 667 OR 668.
- 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.
- 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.
- 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.
- 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.
- 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.
- 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.
- ALL CHANGES TO APPROVED DRAWINGS AND/OR SPECIFICATIONS MUST BE REAPPROVED BY THE CITY OF HUDSON PRIOR TO CONSTRUCTION.
- 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.
- 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.
- ALL BONDS AND 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.
- 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.
- 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.
- 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.
- 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.
- ALL SANITARY SEWERS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF HUDSON "ENGINEERING STANDARDS FOR INFRASTRUCTURE CONSTRUCTION", LATEST EDITION.
- 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.



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

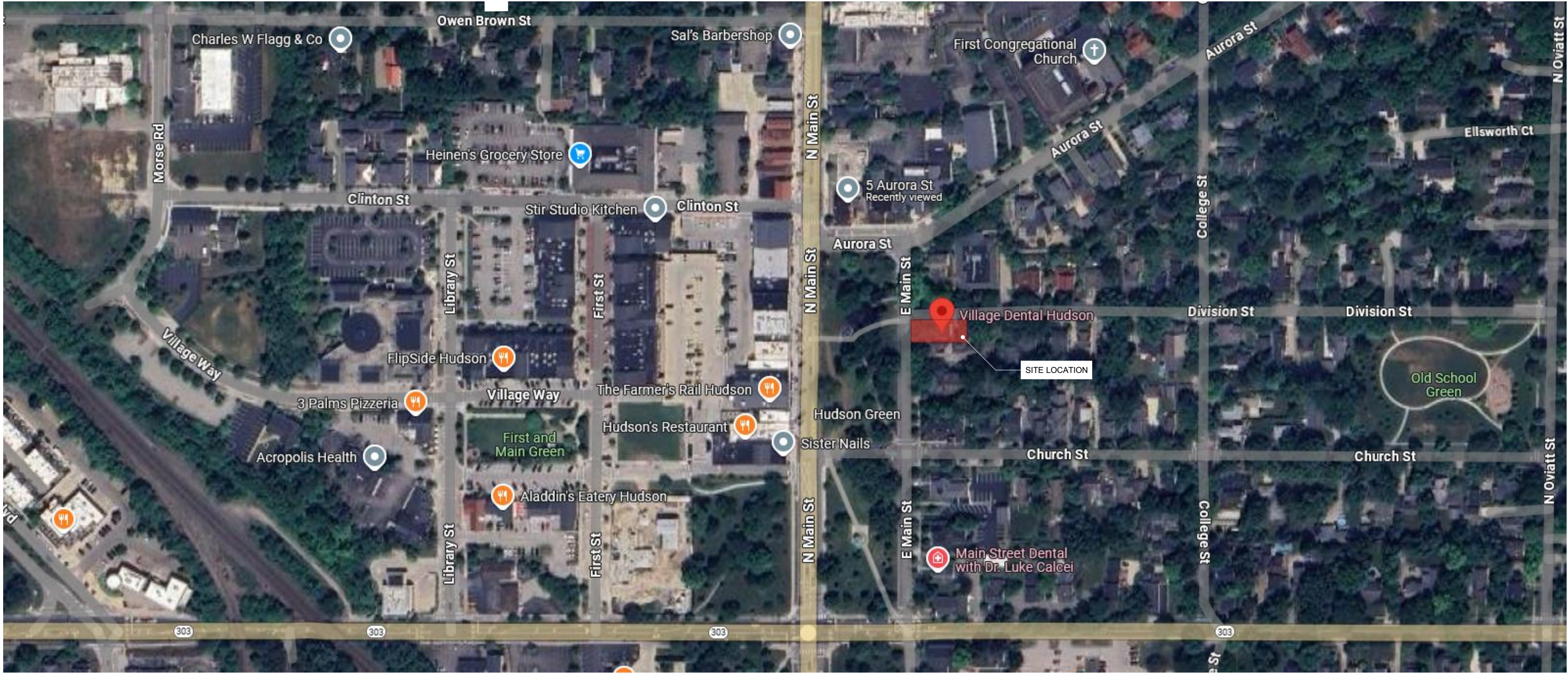
VILLAGE DENTAL
P.P.N.32-00737
41 EAST MAIN ST.
HUDSON - SUMMIT COUNTY - OHIO

GUTOSKEY & ASSOCIATES INC.
Civil Engineers, Surveyors and Land Planners
10195 GOTTSCHALK PKWY, SUITE 4 Tel (440) 543-6900
CHAGRIN FALLS, OHIO 44023 JOEGUTOSKEY@GUTOSKEY.COM

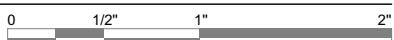
GENERAL NOTES

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



Peninsula

www.pa-architects.com

1775 Main Street
Peninsula, Ohio 44264
T 330.657.2800

PROGRESS
NOT FOR
CONSTRUCTION
10/06/2025

PROJECT TEAM:

P PENINSULA
ARCHITECTS

CIVIL ENGINEER:
GUTOSKEY AND ASSOCIATES
P 406.543.6900

STRUCTURAL ENGINEER:
ORATEC DESIGN BUILD
P 330.552.8211

MEP ENGINEER:
DEWK ASSOCIATES
P 216.531.8860

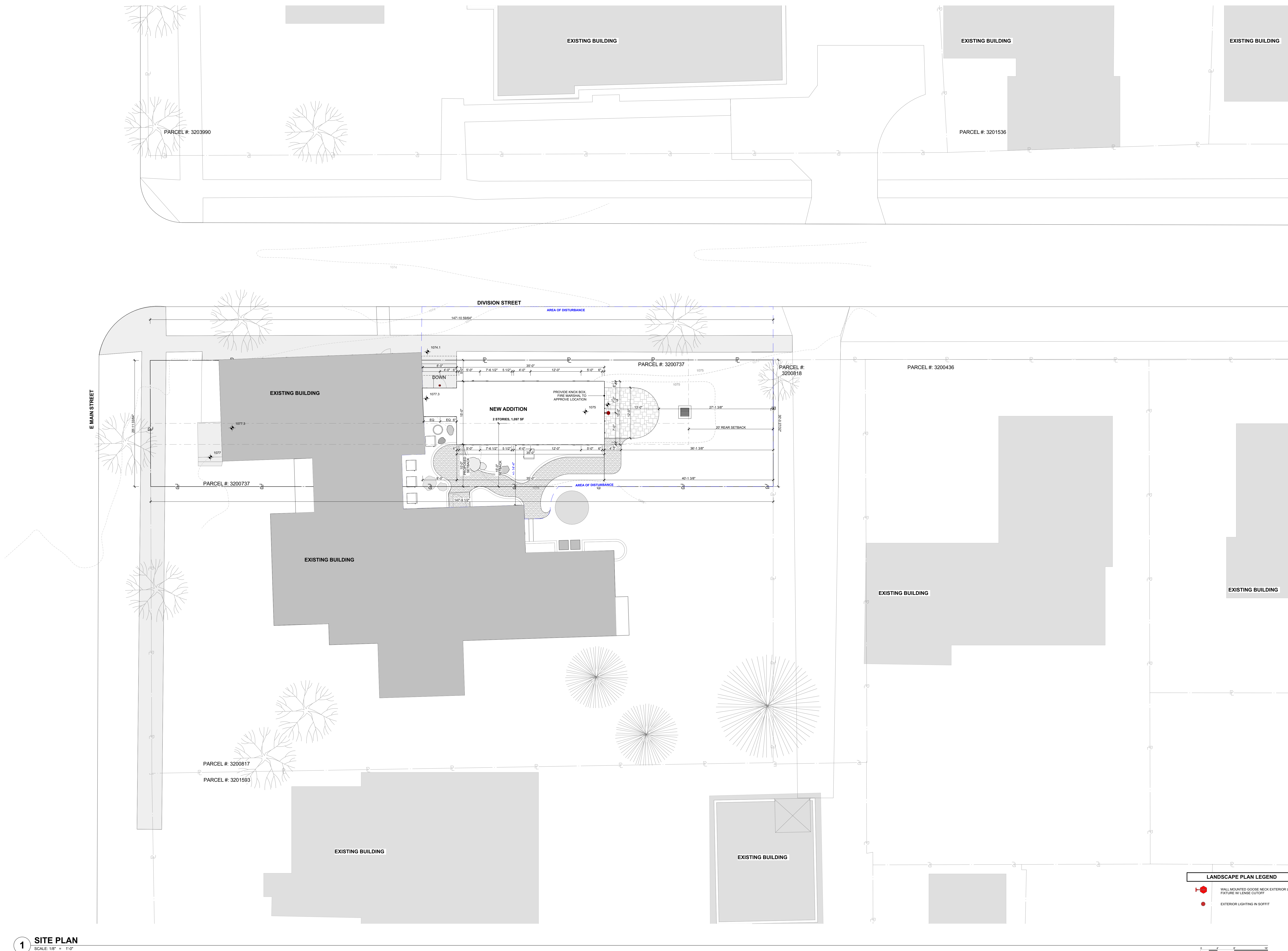
VILLAGE DENTAL
41 E. MAIN STREET, HUDSON, OH 44236

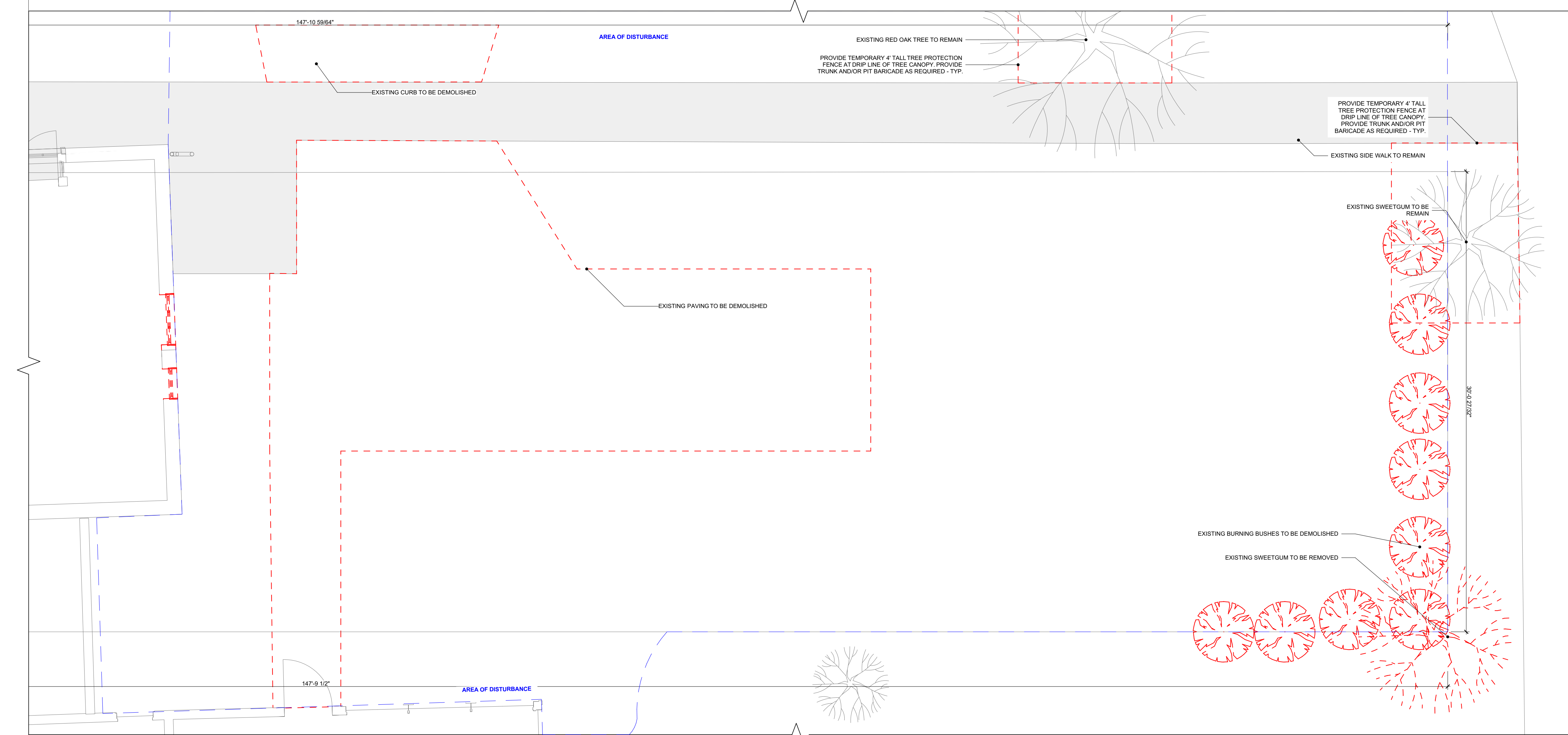
PROJECT #: 2501
ISSUE:
AHR REVIEW 04-01-2025
VARIANCE SET 04-17-2025
PLANNING COMMISSION 09-16-2025

SITE PHOTOS

AS1.00

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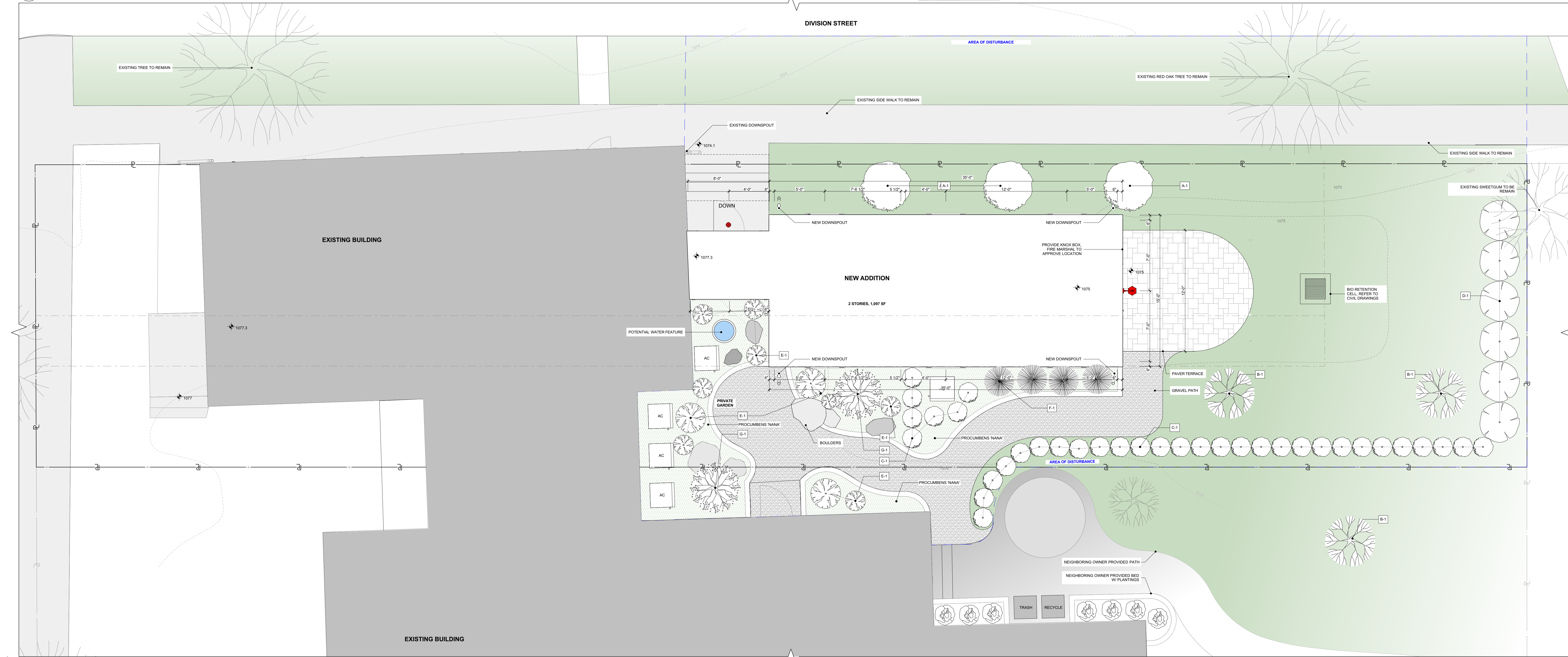


3 DEMOLITION AND PROTECTION LANDSCAPE PLAN
SCALE: 1/4" = 1'-0"

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
	AIR CONDITIONING CONDENSER UNIT

LANDSCAPE NOTES	
1.	GARBAGE CANS ARE TO BE STORED INSIDE ADDITION.



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

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:
- Preparation of subgrade soils in planting areas for each specified soil mix and type.
 - Includes ripping of subgrade and in situ soils, and debris removal.
 - Placement of Soil Mix(s) and Amendments.
 - 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:
- Method 8015.
 - Method 8020.
- C. SSSA – Soil Science Society of America, Inc.
- Methods of Soil Analysis Part 1 – Physical and Mineralogical Methods, 1986.
 - Methods of Soil Analysis Part 3 – Chemical Methods, 1996.
- D. USDA – United States Department of Agriculture:
- Texture Triangle Classification.
 - 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 carelessness 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 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.

2501 – Village Dental FINISH GRADING 31 22 19 - 1

- 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.
- 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 D6936-15.
 - 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:
- 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.
 - Provide a smooth transition between adjacent existing grades and new grades.
 - Out out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
 - Slope finish grades to drain surface water away from buildings, walks, paving, and other structures unless indicated otherwise.
 - Slope finish grades to drain surface water to drainage swales, catch basins, area drains, or trench drains as shown on the Drawings.
 - Grade soil surface smooth to be free of high and low areas which will inhibit surface drainage.
 - 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.
 - Hand-rake soil surface using screed boards, string lines, and laser levels to achieve smooth surfaces acceptable to the Architect.

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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.
- 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:
- 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.
 - 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 minimum 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:
- 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.
 - Stone "Freestanding" walls to be vertical with no batter unless noted on drawings.
 - All walls to be dry laid.
 - The stone of the wall shall be laid to form substantial masonry presenting a neat, finished appearance.
 - Face Stones:
 - Face stones shall be laid to break joints.
 - Minimum overlap: 12-inches unless noted on drawings.
 - Freestanding wall to overlap 50/50 with joints in middle to adjacent stone course.
 - Rock shall be hand finished as needed to keep regular face profiles and batter.
 - All face stones shall be ploughed with a string line on straight walls or laid to batter status.
 - 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.
 - The degree of roughness on the exposed face shall be measured with a six-foot (6') straightedge supported between adjacent projections and stone face.

2501 – Village Dental LANDSCAPE STONework 31 37 19 - 3

- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appliances, 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.
- Large earth moving equipment (D4, D6 dozers) must have rubberized base tracks with low ground pressure.
 - Equipment with metal cleats will not be permitted.

1.06 QUALITY ASSURANCE

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

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- 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 undisturbed surface.
- E. Excessive Compaction:
- Take precautions to prevent finished graded surfaces from becoming excessively compacted.
 - Protect finished graded surfaces from excessive compaction from vehicular, equipment, and foot traffic by laying down planks, plywood, or other accepted protective devices.
 - Do not store or stockpile materials on finished soil graded surfaces.
 - Mechanically loosen excessively compacted soil areas to full depth.

3.06 TOLERANCES

- A. Planting Areas:
- 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.
 - Transition soil surface grades along paving, curbs, and other structures to areas of less strict acceptance over a 5-foot distance.
- B. Allowances: Make proper allowances for settlement.
- 3.07 ADJUSTING
- A. Soil Finished Grade:
- 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.
 - 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.
 - 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:
- Upon completion of finish grading Work, schedule a review by the Architect to obtain aesthetic acceptance.
 - Provide 3 days advance written notification.
 - Do not commence seeding, sodding, or other planting Work until receiving aesthetic acceptance in writing.
- B. Test for Excessive Compaction:
- Where excessive compaction is suspected by Architect, have a Geotechnical Engineer perform nuclear density field tests.
 - 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

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- 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

- Protect accepted mockup from physical damage and erosion until date of Final Completion.
 - 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:
- Do not work soil when moisture content is so great that excessive compaction will occur, nor when it is so dry that dust will be present in the air or that clouds will not break readily.
 - Apply water, if necessary, to bring soil to optimum moisture content for fine grading operations.
 - Do not perform fine grading work when subgrade and/or soils are muddy or frozen.
- C. Existing Conditions:
- 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.
 - 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.
 - 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.
 - Provide minimum 48-hour notice to Construction Manager and receive written notice to proceed before interrupting any utility.
 - 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:

2501 – Village Dental FINISH GRADING 31 22 19 - 3

- 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 of Work. Leave the site in a neat, order condition "broom clean".

END OF SECTION 31 22 19

SECTION 32 13 13 - CONCRETE PAVING

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes exterior cement concrete pavement for the following:
- Pedestrian Concrete Pavement.
 - Curbs and Gutters.
 - Steps and Ramps
 - Sub-base Slabs-on-Grade for Unit Pavements.
 - Job-Built Concrete Edge Restraints.
 - 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.
- Review methods and procedures related to concrete paving, including but not limited to, the following:
 - Concrete mixture design
 - Quality control of concrete materials and concrete paving construction practices.
 - Finishes
 - Require representatives of each entity directly concerned with concrete paving to attend, including the following:
 - Contractor's superintendent.
 - Independent testing agency responsible for concrete design mixtures.
 - Ready-mix concrete manufacturer.
 - Concrete paving Subcontractor.
 - 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.

2501 – Village Dental CONCRETE PAVING 32 13 13 - 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.
- 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.
- Swale Flow Lines, Bottom of Slopes, Top of Slopes and Grade breaks: Install grade stakes at maximum 20 feet on center.
- High Points and Low Points: Install grade stakes at high points and low points including top of berms, catch basins and area drain runs.

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 silt 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:
- 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.
 - Provide barricades, fences, or other barriers to protect existing conditions to remain from damage during construction.
 - Use every possible precaution to prevent excessive compaction of planting area soil within or adjacent to the areas of Work.
 - Do not store material or equipment, permit burning, or operate or park equipment under the branches of existing trees to remain.
 - Submit written notification of conditions damaged during construction immediately to the Owner.

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 builders, 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:
- Dry – Stacked Sandstone Free Standing Wall
 - Dry – Stacked Sandstone Retaining Wall
- 1.02 REFERENCES
- A. The following is a list of standards which may be referenced in this section:
- ASTM International (ASTM):
 - 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 of 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:
- Prior to the construction of the dry stacked stonework, Contractor shall show Architect an example of similar rock features equal to or better than they had constructed previously.
 - 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.
 - 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.

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- 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: Show 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:
- Cementitious materials.
 - Steel reinforcement and reinforcement accessories.
 - Admixtures.
 - Curing and Sealing compounds.
 - Bonding agent or epoxy adhesive.
 - 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:
- Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.
 - Field quality-control reports.
 - 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.
- B. Ready-Mix-Concrete Manufacturer Qualifications: "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- C. Testing Agency Qualifications: Qualified according to ASTM C 1017 and ASTM E 329 for testing indicated.
- 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.
- D. Installer Qualifications:
- Minimum of five (5) years' experience installing finished concrete paving in climates that experience seasonal freeze-thaw cycles.
 - 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 sq. minimum. For each project, include the following information:
 - Project description
 - Project location
 - Date of installation
 - Completed project photos

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- 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.
- Prior to placing each specified soil mix or, rip areas to receive the specified soil on the same day soil mix is placed.
 - Rip subgrade to a depth of 6 inches. Place ripping lines at 18 inches on center.
 - Make second ripping pass in the direction 90 degrees to the direction of the first ripping pass.
 - Do not rip closer than 24 inches to installed underground utility lines and structures.
 - Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so soil material will bond with existing material.
 - 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:
- 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 and/or as designated on the drawings.
 - 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.
 - Do not place final lifts of specified soil until the Transition Layer has been blended.
 - 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.
 - Tree Root Protection
 - All work inflicting on root systems of existing plant material shall be reviewed and approved by the Architect prior to beginning work.
 - Protect tree root systems from damage adjacent to soil work where ripping is required.
 - Soil ripping may not be conducted when existing roots are in the immediate vicinity. All work inflicting on root systems of existing plant material shall be reviewed and approved by the Architect prior to beginning work.
 - Where tree roots are present within the designated soils zone, carefully blend native soils with the Compost using hand tools.
 - 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.

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:
- Basis of Design Manufacturer:

The Bear Hill Stone Company
12470 State Rd. 520
P.O. Box 457
Glenmont, OH 44428
Ph. No. 330 – 377-5110
Ph. www.briarhillstone.com
 - Wall Type 2a and 2b:
 - Match stone type and finish as per Architecture (Ph. No. 440-543-8300)
 - 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:
- Survivability: Class 2; AASHTO M 288.
 - Survivability: As follows:
 - Grab Tensile Strength: 247 lbf; ASTM D 4632.
 - Sewn Seam Strength: 222 lbf; ASTM D 4632.
 - Tear Strength: 90 lbf; ASTM D 4533.
 - Puncture Strength: 90 lbf; ASTM D 4833.
 - Apparent Opening Size: No. 60sieve, maximum; ASTM D 4751.
 - Permeability: 0.02 per second, minimum; ASTM D 4491.
 - UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
 - Manufacturer: Subject to compliance with requirements, provide products by one of the following:
 - Mirafi 140N nonwoven drainage fabric manufactured by Mirafi, Inc., Charlotte, NC 28224.

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- 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.
- 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.
 - Where concrete is called to be sealed, seal one half of the mockup area for color and finish review by Architect.
 - Notify Architect as soon as possible in advance of dates and times when mockups will be constructed.
 - Obtain Architect's approval of mockups before starting construction.
 - Maintain approved mockups during construction in an undisturbed condition as a standard for judging the completed pavement.
 - Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.
 - 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:
- 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.
 - Do not use frozen materials or materials containing ice or snow.
 - 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:
- 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.
 - Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
 - Fog-spray forms and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

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

- The particle size analysis as defined above.
- The pH shall be approx. 5.5 to 7.8 (NCR 221)
- The soluble salts shall be less than 1.5 mmol/cm (NCR 221)
- The organic matter content shall be 3.0 to 6.0% (ASTM D 2974 Method C)
- 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 Compost – Non-proprietary Requirements:

- 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.
- Compost Component Testing/submital results, per the Quality Assurance requirements shall meet the following characteristics:
 - The compost shall be a homogeneous material essentially free of soil clods, lumps, roots, and stones.
 - 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)
 - 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.
 - The compost shall have a pH of 7.2 to 8.0.
 - The compost shall have a soluble salts content less than 6.0 millimhos per cm, when determined on a 1:5 compost:water slurry.

- 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.
- The compost shall have a carbon to nitrogen (C:N) ratio less than 36:1.
- The compost shall have a Solvita® Maturity Index between 6 and 7.
- The compost shall have a moisture content of 35% to 65%.
- The compost shall have a dry bulk density of 0.17 to 0.35 grams per cubic centimeter (g/cc).
- 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).
- 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
- The compost shall meet all applicable state regulations based on the feedstock type.
- 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:

- 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 specifications.
 - Organic Matter Content: 5 to 8 percent
 - pH Level: 5.5 to 7.8 percent
- The controlling factor will be the percent (%) organic material 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.
- Uniformly mix components using a mechanical soil blender designed for such purpose.

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

agrees 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 Components and Soil System Mixes:

- 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.
- Soil Mixes shall not be handled or hauled during rain or wet weather or when near or above the point where maximum compaction will occur.
- 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. Planting Soil Mixes 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

- 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 of the producer, material composition, manufacturer's certified analysis, and the weight or the material. Retain packages for the Architect.
- Store and handle packaged materials in strict compliance with manufacturer's instructions and recommendations. Protect all materials from weather, damage, and theft.
- Soil 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.
- After mixing, soil mixes shall be covered with a tarpaulin until time of actual use and protected from contamination, excessive rainfall, excess water entering the site or erosion.
- Stockpiling
 - 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.
 - 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, soil components or planting system mixes shall be constructed on well drained land, away from the stream.

PART 2 - PRODUCTS

2.01 GENERAL

- All Organic Planting Soil components shall fulfill the requirements as specified.
- Site salvaged topsoil will not be permitted for use as an OPS "Soil System Mix" component.
- 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

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- Sand: A naturally occurring mineral that has been processed to remove coarse gravel, silt and clay fines to meet the specifications.
- 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 material content of not greater than 3% by weight as specified below.
- 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 subsol remaining after completed 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

- Refer to and comply with specifications for submittal procedures and criteria.
- 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 manufacturing or processed items and materials.
 - Locations: Submit locations of material sources and suppliers.
- Soil System Components and Soil Mix Suppliers.
 - Architect shall have the right to reject any soil supplier.
 - Soil mix suppliers shall have a minimum of 5-years of experience at supplying custom mixes.
 - Submit supplier name, address, email, telephone, and fax numbers and contact name.
- Submit certification that accepted supplier can provide enough materials and mixes for the entire project and within the limitations of the Project Schedule.
- 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.
- 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.
 - All tests shall be performed in accordance with the current methods specified by ASTM, SSSA or USEPA, unless otherwise noted. All reports prepared by the testing laboratory shall be sent to the Architect for approval.
- 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.
- Sand and Soil Component Test reports shall include the following:
 - Date issued.
 - Project Title and names of Contractor and supplier.
 - Testing laboratory name, address and telephone number, and name(s), as applicable, of each field inspector or laboratory contact.
 - Date, place, and time of sampling or test, with record of temperature and weather conditions.

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

- The particle size analysis as defined above.
- The pH shall be approx. 5.5 to 7.5 (NCR 221)
- The soluble salts shall be less than 1.5 mmol/cm (NCR 221)
- The organic matter content shall be 4.0% (ASTM D 2974 Method C)
- Certified test results of bulk soils stored by certified suppliers must be within the last 12 months from the date of bid opening.

C. Base Mix Preparation

- 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 soil physical testing laboratory to meet the required performance specification shown below.
- 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.
- 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.
- 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.
- 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 laboratory using a mechanical soil blender designed for such purpose.
- 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.
- For each Planting Mix Type, have one sample tested from each 1000 cu. yds. of manufactured material using the testing as noted above.

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

- 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.
- 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.
- 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.
 - Planting Installations – Soil Mix Type HSCS-P: Organic content level of 5 to 8%.
 - 7.5 to 8.0 pH
- Manufacture 10 to 20 cu. yds. of the 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.
 - The manufactured Planting Mix shall have a granular consistency essentially free of soil lumps larger than 1 inch.
- 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.
- 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.
- For each Planting Mix Type, have one sample tested from each 1000 cu. yds. of manufactured material using the testing as noted above.

- 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.
- 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.
- Deleterious materials shall be determined by ASTM D 5286.
- Percent of organic matter by weight shall be determined by ASTM D 2974 Method C, loss on ignition at 440°C.
- Saturated hydraulic conductivity shall be determined by ASTM F1815.
- 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.
- Soluble salts shall be determined by electrical conductivity of a 1:2 soil:water slurry reported in millimhos per cm.
- Cation Exchange Capacity (CEC) per NCR221 using the ammonium acetate method.
- Soil analysis reports shall also show recommendations for soil additives, including organic and inorganic soil amendments, necessary to accomplish particular mix objectives noted.

- Compost Component Testing Submittals
 - Report(s) of analyses from producers of composted organic materials are required. The compost shall be analyzed using the USCS STA test methods and reporting format, unless otherwise noted. Submit USCS STA Compost Technical Data Sheet for the delivered compost and dated within 6 months of delivery.
 - Contact the testing laboratory to review testing and sampling requirements before sending samples.
 - Composted organic amendments shall be sampled according to the Ohio EPA State Law / Legislation Code: OAC Chapter 3745-24-46.
 - Maintain clear and concise records of testing and sampling procedures.

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

- 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.
 - Certified Local Agencies may be used pending approval by Architect.
- 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.
- Changing testing laboratories during the mix development phase or for quality assurance testing must be authorized by the Architect.
- Statement(s) of Qualifications: Submit within 45 days of notice to proceed to confirm qualifications of the selected testing agencies.
- Submit samples of all listed materials to the Architect for approval:
 - Topsoil, each source, 5 lb. packaged.

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

- Section 31 22 19 – Finish Grading applies.

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- 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.
- 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.

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- Base Mix: Sand and Soil.
- "P" Planting Mixes (Plantings): Base Mix plus Compost.
- Soil components for HSCS Base Mix must be off-site, processed soil, (no exceptions).

2.02 BASE MIX – SOIL SYSTEM COMPONENT MATERIALS

- Base Mix: Sand Component
 - 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 grading characteristics listed in Part 3 when tested in accordance with the ASTM D-422 using U.S.D.A. particle size classifications.
- 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 Sand	0.10 - 0.25	0 - 10
Very Fine Sand	0.05 - 0.10	20 - 40
Silt + Clay	> 0.05	0 - 10

Not more than 12% combined Gravel + Fine Gravel
- Other Gradation Characteristics must fall within the limits specified below:
 - Finesness Modulus (FM) - 2.5 to 3.2
 - Coefficient of Uniformity - 2.5 to 3.8
- The sand shall meet the following specifications. Perform the following tests and submit test reports showing the following criteria are met:
 - The particle size analysis/distribution as defined above
 - The pH shall be 5.5 to 8.2
 - The soluble salts shall be less than 0.5 mmol/cm (NCR 221)
 - The organic matter content shall be less than 1.0% (ASTM D 2974 Method C)
 - 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.
- Provide certification from the supplier that the sand does not contain any toxic substances harmful to plant growth.

PART 2 - PRODUCTS

2.01 GENERAL

- HSCS Soil Mix profile contains the following system components:

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2501 – Village Dental TOPSOIL – HIGH SAND CONTENT SOIL
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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 50 percent passing the 20 mesh sieve and a minimum of 50 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

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- 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 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 rolled 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.

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- 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/silt/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; Planting 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 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 has been completed, 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

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SECTION 32 92 00 - TURF GRASS AND SOD

PART 1 - GENERAL

1.01 SUMMARY

- A. Section Includes:
- Sodding.
 - Turf renovation.
 - Erosion-control material(s).
 - Maintenance.

1.02 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
- B. Base Mix: Homogeneously 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.

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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 soil 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 seed.
- 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 grade.
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.

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each photograph with the full scientific name of the plant, plant size, and name of the growing nursery.

3. Tree Selection Approval:

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 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 recent 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.

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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. Personal 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. Personal 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"

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- 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 corrected 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

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5. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
6. Personal 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.

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sections in TP1'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: Warranty, 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:

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- 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.
2. Modified ERTurf:

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- 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 break the 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 transportation.

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 and burlap plants 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. At 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 follows:
- 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.

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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.ntes.org/data/12017_16-01771600344
- b. Or local equal.
- B. Sod Stakes
1. Basis of Design by: GreenStakes www.GreenStakes.com
- a. Biodegradable Stakes: ASTM D6400 (in USA) & EN1

- Verify plant branching requirements with Architect prior to contract growing.
- Architect will review advance-purchased trees prior to initial purchase at the place of growth.
- 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.
- Review and acceptance of the advance-purchased 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.
- 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.
- Plant Material Review and Tagging:
 - 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.
 - At the Architect's discretion, shrubs may or may not be reviewed, photographed, and tagged at the place of growth.
 - Tagging of plant material at the place of growth does not preclude rejection of all 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

- Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.
 - 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.
 - Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
 - Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 - Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - Uniformly moisten excessively dry soil that is not workable, or which is dusty.
- 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.
- Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.
 - Use every possible precaution to prevent excessive compaction of planting area soil within or adjacent to the areas of Work.
 - 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.

- Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens and diseases. Use integrated pest management practices to minimize, to minimize, use of pesticides and reduce hazards. Treatments include physical controls such as housing off foliage, mechanical controls such as traps, and biological control agents.

3.14 PESTICIDE APPLICATION

- 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.
- Pre-Emergent Herbicides (Selective and Nonselective): Apply to tree, shrub, and ground-cover areas according to manufacturer's written recommendations. Do not apply to seedbed areas.
- 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

- General: Repair or replace existing or new trees and other plants that are damaged by construction operations, in a manner approved by Architect.
 - Submit details of proposed pruning and repairs.
 - Perform repairs of damaged trunks, branches, and roots within 24 hours, if approved.
 - Replace trees and other plants that cannot be repaired and restored to full-growth status, as determined by Architect.
- 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.
 - Provide new trees of same size as those being replaced for each tree of 4 inches or smaller in caliper size.
 - Species of Replacement Trees: Species selected by Architect.

3.16 CLEANING AND PROTECTION

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

- During the project work period and prior to Substantial Completion Acceptance, the Contractor shall maintain all plants.
- 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, lightning and repairing of guys, repairing and replacing of damaged tree

- Maclean PowerSystems
481 Muhn St. Suite 300
Fort Mill, SC 29715.
 - Arbor Stake System: 99.9% biodegradable wooden stake with lock caps.
 - Manufacturer:
Arbor Stakes LLC
www.arborstakes.com
(214) 810-6678.

2.10 LANDSCAPE EDGE RESTRAINTS

- Steel Edging: Standard commercial-steel edging, fabricated in sections of standard lengths, with logs slamped from or welded to face of sections to receive stakes.
 - Basic of Design: Border Guard
 - Manufacturer:
Border Concepts, Inc.
7621 Little Avenue
Suite 426
Charlotte, NC 28226
Ph. No: 800-845-3343
- Edging Size: 3/16 inch thick by 4 inches deep.
- Stakes: Tapered steel, a minimum of 24" long (Super Stakes)
- Accessories: Standard tapered ends, pre-formed corners, and spacers.
- Finish: Unfinished.

2.11 TREE-WATERING DEVICES

- 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.
 - Color: As selected by Architect from manufacturer's full range.

2.12 MISCELLANEOUS PRODUCTS

- 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.
- Planter Drainage Gravel: Washed, sound crushed stone or gravel complying with ASTM D 448 for Size No. 8.
- Planter Filter Fabric: Nonwoven geotextile manufactured for separation applications and made of polypropylene, polyolefin, or polyester fibers or combination of them.
- 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 hydogel, and a maximum of 5.5 percent inert material.

2.13 SOURCE QUALITY CONTROL

- Advanced Tree Procurement:
 - Within 60 days of award of contract, notify Architect in writing of the availability or lack thereof the specified plant material.
 - 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.

- Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
 - 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:
 - Composition: Nitrogen, phosphorous, and potassium in amounts recommended by manufacturer's written instructions.
 - Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorous, and potassium in the following composition:
 - Composition: (high phosphorous, low nitrogen ratio)
- MULCHES**
 - Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
 - Type: Shredded hardwood.
 - Size Range: 3 inches maximum, 1/2 inch minimum.
 - Color: Natural.
 - WEED-CONTROL BARRIERS**
 - Composite Fabric: Woven, needle-punched polypropylene substrate bonded to a nonwoven polypropylene fabric, 4.8 oz./sq. yd.

2.08 PESTICIDES

- 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.
- 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.
- Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.09 TREE-STABILIZATION MATERIALS

- 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.
- Guying Material
 - Abortive -- as manufactured by DeepRoot Green Infrastructure LLC.
 - Or approved Equal.
 - Tree-Tie Webbing: UV-resistant polypropylene or nylon webbing with brass grommets.
- Flags: Standard surveyor's plastic flagging tape, white, 6 inches long.
- Below Grade - Root-Ball Stabilization Materials:
 - 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.
 - Tree Anchor System: Model 68RBL Duckbill Earth Anchors
 - Manufacturer:

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- Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets, to a depth of 10 feet, whichever is less, and backfill with free-draining material.
- 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.
- Notify Architect and Owner should 2nd fill test fail for additional input and corrective action.
- 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.

3.06 TREE, SHRUB, AND VINE PRUNING

- Remove only dead, dying, or broken branches. Do not prune for shape.
- Prune, thin, and shape trees, shrubs, and vines as directed by Architect.
- 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.
- Do not apply pruning paint to wounds.

3.07 TREE STABILIZATION

- Upright Staking Method: Stake trees of 2-inch through 3 1/2-inch caliper. Install trunk stabilization as follows unless otherwise indicated:
 - Install wood stake vertically as per detail driving stake minimum of 18 inches into subgrade.
 - Provide two stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper.
 - Provide three stakes for trees greater than 12 feet high and up to 4 inches in caliper. Space stakes equally around trees.
 - Trees less than 2-1/2 inch do not require staking unless noted otherwise.
 - 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.
- 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.
 - Site-Fabricated, Guying Method: Install minimum of three stakes and guys spaced equally around tree.
 - 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.
 - 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.
 - Attach flags to each flexible tie, 30 inches above finish grade.
- Proprietary Root-ball Stabilization: Install stabilization system sized and positioned as recommended by manufacturer unless otherwise indicated and according to manufacturer's written instructions.
 - 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

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- 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.
 - 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.
- 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.
- 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.
- 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.
- No tree wrap is to be used.

2.02 SHADE AND FLOWERING TREES

- 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.
 - Provide balled and burlapped or container-grown trees.
 - Street Trees: Street trees must be limited to 8 feet minimum.
 - Forked Trunks on trees are not acceptable; each tree must have one string central leader.
- 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:
 - Stem Form: Single stem.
 - Multi-Stem: Unless noted otherwise, tree shall have 3-5 trunks forked at or above root fair collar. Overall height determines size of tree.
 - Provide balled and burlapped trees.
 - Forked Trunks on trees are not acceptable; each tree must have one string central leader.

2.03 SHRUBS

- 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.
 - Provide balled and burlapped or container-grown shrubs.

2.04 GROUND COVER / PERENNIAL / ANNUAL PLANTS

- 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.
- 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

- Refer to Soil Mix specifications test results and Final Grading for soil amendments.
- Bonemeal: Commercial, raw, or steamed, finely ground; a minimum of 1 percent nitrogen and 10 percent phosphoric acid.

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- 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.
- 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.
- Notify Architect and Owner should 2nd fill test fail for additional input and corrective action.
- 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.

- Drainage: Notify Architect if subsol conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

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

3.05 TREE, SHRUB, AND VINE PLANTING

- General: Install plant material in accordance with detailed drawings and recommendations of ANLA.
- 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.
- Root Pruning:
 - If stem girdling roots are encountered at root ball sides, notify the Architect for field review.
 - Upon Architect's acceptance, remove stem girdling roots and kninked roots by cutting cleanly; do not break. Cut roots on 4 sides of root ball 90 degrees to root ball.
- Root Ball Scarification:
 - After removing plant from container, scarify side of root ball to prevent root-bound condition.
 - Loosen root ball soil surface to depth of 1/8 inch to 1/4 inch without damaging roots or breaking root ball.
- 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.
 - Backfill: Planting soil mix as specified on drawings.
 - 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 top of root balls and trim 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.
- 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.
- Continue backfilling process. Water again after placing and tamping final layer of soil.
- Container-Grown Stock and Perennials in Containers: Set each plant plumb and in center of planting bed or trench.
 - Container Stock greater than 1 gallon container, place root flare 1 to 2 inches above finish grade.
 - Perennials or plant stock in 1 gallon and less containers, place top of root ball 1 inch above finish grade.
 - Backfill: Planting soil mix as specified on drawings.
 - Carefully remove root ball from container without damaging root ball or plant.

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- 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.
- Include the following remedial actions as a minimum:
 - Immediately remove dead plants and replace unless required in the succeeding planting season.
 - Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
 - A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.
 - Provide extended warranty for period equal to original warranty period, for replaced plant material.
- End of Warranty Final Acceptance - Acceptance of plants at the end of the warranty period.
 - 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.
 - 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

- 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 discoloration.
 - Growing Practices: Nursery grown in accordance with best horticultural industry practices.
 - Nomenclature: Plant nomenclature shall meet requirements of ICBN and ICNCP.
 - 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.
 - 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.
 - 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.
 - Trees with damaged, crooked, or multiple leaders; light 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 grinding roots will be rejected.
 - 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.
 - Pruning: Do not prune, thin, or shape plants before delivery without acceptance by the Architect.
- 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

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- 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.
- Lay out plants at locations directed by Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.
- 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 against digging, handling, and transportation.
 - If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.
- 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

- 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.
- Placing Planting Soil: Place and mix planting soil in place over exposed subgrade.
- Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.
- 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

- Planting Pits and Trenches: Excavate circular planting pits.
 - 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 an undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
- Excavate approximately three times as wide as ball diameter for balled and burlapped and potted stock.
- Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.
- Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
- 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.
- 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.
- Maintain supervision of excavations during working hours.
- Keep excavations covered or otherwise protected when unattended by Installer's personnel.
- If drain tile is indicated on Drawings or required under planting areas, excavate to top of porous backfill over tile.
- Backfill Soil: Subsoil and topsoil removed from excavations may not be used as backfill soil unless otherwise indicated.
- Obstructions: Notify Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

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wrap material, resetting plants to proper grades and upright position, and furnishing and applying such spray 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

- Upon written notice from the Contractor, the Owners Representative shall review the work and decide if the work is substantially complete.
 - Notification shall be at least 7 days prior to the date the contractor is requesting the review.
- 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.
- 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)

- 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.
 - 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.
 - Notification must define the maintenance needs and describe any corrective action required.
- 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

- 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.
 - If the work is satisfactory, the maintenance period will end on the date of the final observation.
 - 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.
- FAILURE TO PASS OBSERVATION: If the work fails to pass final observation, any subsequent observations must be re-scheduled 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

2501 - Village Dental
PLANTS, TREES, GC
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