COMMUNITY DEVELOPMENT DEPARTMENT

45175 Ten Mile Road
Novi, MI 48375
(248) 347-0415 Phone
(248) 735-5600 Facsimile
www.cityofnovi.org

ZONING BOARD OF APPEALS STAFF REPORT

FOR: City of Novi Zoning Board of Appeals **MEETING DATE:** January 14, 2025

REGARDING: **46500 Humboldt Drive # 50-22-09-176-019 (PZ24-0062)**

BY: Alan Hall, Deputy Director Community Development

I. GENERAL INFORMATION:

Applicant
Lineage Logistics

Variance Type
Dimensional Variance

Property Characteristics
Zoning District: This property is zoned General Industrial (I-2)

Location: south of West Road and west of West Park Road

Parcel #: 50-22-09-176-019

Request
The applicant is requesting variances from the City of Novi Zoning Ordinance Section 5.15.12.b to allow 52.5 ft wide carports (40 ft allowed, variance of 12.5 ft) and to increase the maximum allowed height by 5 ft (12 ft maximum, variance of 5 ft).

II. STAFF COMMENTS:

The applicant, Lineage Logistics, is seeking (2) dimensional variances.

1) *Requesting a 12.5-foot width increase for their carports*
   (The increase is to allow a covered pedestrian walkway and solar panel configuration)
2) *Requesting a 5-foot height increase for the same carports.*
   (The increase is to allow solar panel configuration)

There is a minimum angle for the solar panels to be effective which would affect the roof pitch.

III. RECOMMENDATION:

The Zoning Board of Appeals may take one of the following actions:

1. I move that we ***grant*** the variance in Case No. **PZ24-0062**, sought by _____, for _____ because Petitioner has shown practical difficulty requiring _____ _____ _____.

   (a) Without the variance Petitioner will be unreasonably prevented or limited with respect to use of the property because _____ _____ _____.

   (b) The property is unique because_____ _____ _____.

   (c) Petitioner did not create the condition because_____ _____ _____.

   (d) The relief granted will not unreasonably interfere with adjacent or surrounding properties because_____ _____ _____.

   (e) The relief if consistent with the spirit and intent of the ordinance because _____ _____.

   (f) The variance granted is subject to:

      1. _____.
      2. _____.
      3. _____.
      4. _____.

2. I move that we ***deny*** the variance in Case No. **PZ24-0062**, sought by _____, for _____ because Petitioner has not shown practical difficulty requiring_____ _____ _____.

   (a) The circumstances and features of the property including _____ _____ are not unique because they exist generally throughout the City.

   (b) The circumstances and features of the property relating to the variance request are self-created because _____ _____ _____.

   (c) The failure to grant relief will result in mere inconvenience or inability to attain higher economic or financial return based on Petitioners statements that _____ _____ _____.

   (d) The variance would result in interference with the adjacent and surrounding properties by _____ _____ _____.

   (e) Granting the variance would be inconsistent with the spirit and intent of the ordinance to _____ _____ _____.

Should you have any further questions with regards to the matter please feel free to contact me at (248) 347-0417.

Alan Hall – Deputy Director Community Development - City of Novi

CITY OF NOVI
cityofnovi.org

45175 Ten Mile Road
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ZONING BOARD OF APPEALS APPLICATION

APPLICATION MUST BE FILLED OUT COMPLETELY

RECEIVED
DEC 02 2024
CITY OF NOVI
COMMUNITY DEVELOPMENT

Application Fee: $330.00
Meeting Date: 1-14-25
ZBA Case #: PZ 24-00062

I. PROPERTY INFORMATION (Address of subject ZBA Case)

PROJECT NAME / SUBDIVISION: Lineage Car Ports Addition

ADDRESS: 46500 Humboldt Drive | LOT/SIUTE/SPACE #:

SIDWELL #: 50-22-09 -176 -015 (May be obtain from Assessing Department (248) 347-0485)

CROSS ROADS OF PROPERTY: North of Humboldt East of Magellan

IS THE PROPERTY WITHIN A HOMEOWNER'S ASSOCIATION JURISDICTION? ☐ YES ☐ NO

REQUEST IS FOR: ☐ RESIDENTIAL ☑ COMMERCIAL ☐ VACANT PROPERTY ☐ SIGNAGE

DOES YOUR APPEAL RESULT FROM A NOTICE OF VIOLATION OR CITATION ISSUED? ☐ YES ☐ NO

II. APPLICANT INFORMATION

A. APPLICANT

EMAIL ADDRESS	CELL PHONE NO.
mfahey@madisonei.com	

NAME: Mike Fahey | TELEPHONE NO.: 541 243 2308

ORGANIZATION/COMPANY: Madison Energy Holdings LLC | FAX NO.:

ADDRESS	CITY	STATE	ZIP CODE
8484 Westpark Drive Suite 720	McLean	VA	22102

B. PROPERTY OWNER ☐ CHECK HERE IF APPLICANT IS ALSO THE PROPERTY OWNER

Identify the person or organization that owns the subject property:	EMAIL ADDRESS	CELL PHONE NO.
	cthurston@onelineage.com	

NAME: Chris Thurston | TELEPHONE NO.: 973 997 1654

ORGANIZATION/COMPANY: Lineage Logistics | FAX NO.:

ADDRESS	CITY	STATE	ZIP CODE
46500 Humboldt Drive	Novi	MI	48377

III. ZONING INFORMATION

A. ZONING DISTRICT

☐ R-A ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4 ☐ RM-1 ☐ RM-2 ☐ MH
☐ I-1 ☑ I-2 ☐ RC ☐ TC ☐ TC-1 ☐ OTHER _____

B. VARIANCE REQUESTED

INDICATE ORDINANCE SECTION (S) AND VARIANCE REQUESTED:

1. Section 5.15.12.b Variance requested Exceed allowable width by 12.5 feet
2. Section 5.15.12.b Variance requested Exceed allowable height by 5 feet average.
3. Section _____ Variance requested _____
4. Section _____ Variance requested _____

IV. FEES AND DRAWNINGS

A. FEES

☐ Single Family Residential (Existing) $220 ☐ (With Violation) $275 ☐ Single Family Residential (New) $275
☑ Multiple/Commercial/Industrial $330 ☐ (With Violation) $440 ☐ Signs $330 ☐ (With Violation) $440
☐ House Moves $330 ☐ Special Meetings (At discretion of Board) $660

B. DRAWINGS **1-COPY & 1 DIGITAL COPY SUBMITTED AS A PDF**

- Dimensioned Drawings and Plans
- Site/Plot Plan
- Existing or proposed buildings or addition on the property
- Number & location of all on-site parking, if applicable
- Existing & proposed distance to adjacent property lines
- Location of existing & proposed signs, if applicable
- Floor plans & elevations
- Any other information relevant to the Variance application

ZONING BOARD OF APPEALS APPLICATION

V. VARIANCE

A. VARIANCE (S) REQUESTED

☑ DIMENSIONAL ☐ USE ☐ SIGN

There is a five-(5) hold period before work/action can be taken on variance approvals.

B. SIGN CASES (ONLY)

Your signature on this application indicates that you agree to install a **Mock-Up Sign** ten-(10) days before the schedule ZBA meeting. Failure to install a mock-up sign may result in your case not being heard by the Board, postponed to the next schedule ZBA meeting, or cancelled. A mock-up sign is **NOT** to be actual sign. Upon approval, the mock-up sign must be removed within five-(5) days of the meeting. If the case is denied, the applicant is responsible for all costs involved in the removal of the mock-up or actual sign (if erected under violation) within five-(5) days of the meeting.

C. ORDINANCE

City of Novi Ordinance, Section 3107 – Miscellaneous

No order of the Board permitting the erection of a building shall be valid for a period longer than one-(1) year, unless a building permit for such erection or alteration is obtained within such period and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.

No order of the Board permitting a use of a building or premises shall be valid for a period longer than one-hundred and eighty-(180) days unless such use is establish within such a period; provided, however, where such use permitted is dependent upon the erection or alteration or a building such order shall continue in force and effect if a building permit for such erection or alteration is obtained within one-(1) year and such erection or alteration is started and proceeds to completion in accordance with the terms of such permit.

D. APPEAL THE DETERMINATION OF THE BUILDING OFFICIAL

PLEASE TAKE NOTICE:

The undersigned hereby appeals the determination of the Building Official / Inspector or Ordinance made

☐ CONSTRUCT NEW HOME/BUILDING ☐ ADDITION TO EXISTING HOME/BUILDING ☐ SIGNAGE

☐ ACCESSORY BUILDING ☐ USE ☐ OTHER _____

VI. APPLICANT & PROPERTY SIGNATURES

A. APPLICANT

Michael Fahey — Applicant Signature

Dec 2, 2024 — Date

B. PROPERTY OWNER

If the applicant is not the owner, the property owner must read and sign below:

The undersigned affirms and acknowledges that he, she or they are the owner(s) of the property described in this application, and is/are aware of the contents of this application and related enclosures.

Chris Thurston (Dec 2, 2024 13:30 PST) — Property Owner Signature

Dec 2, 2024 — Date

VII. FOR OFFICIAL USE ONLY

DECISION ON APPEAL:

☐ GRANTED ☐ DENIED

The Building Inspector is hereby directed to issue a permit to the Applicant upon the following and conditions:

_____ — Chairperson, Zoning Board of Appeals

_____ — Date

Community Development Department
45175 Ten Mile Road
Novi, MI 48375
(248) 347-0415 Phone
(248) 735-5600 Facsimile
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REVIEW STANDARDS
DIMENSIONAL VARIANCE

The Zoning Board of Appeals (ZBA) will review the application package and determine if the proposed Dimensional Variance meets the required standards for approval. In the space below, and on additional paper if necessary, explain how the proposed project meets each of the following standards. (Increased costs associated with complying with the Zoning Ordinance will not be considered a basis for granting a Dimensional Variance.)

Standard #1. Circumstances or Physical Conditions.

Explain the circumstances or physical conditions that apply to the property that do not apply generally to other properties in the same zoning district or in the general vicinity. Circumstances or physical conditions may include:

a. **Shape of Lot.** Exceptional narrowness, shallowness or shape of a specific property in existence on the effective date of the Zoning Ordinance or amendment.
☑ Not Applicable ☐ Applicable If applicable, describe below:

and/or

b. **Environmental Conditions.** Exceptional topographic or environmental conditions or other extraordinary situations on the land, building or structure.
☐ Not Applicable ☑ Applicable If applicable, describe below:

The existing parking spaces over which the canopies are to be placed has a center island containing a pedestrian walkway. The intent is to provide a continuous canopy over both the parking spaces and the central walkway, and to use the roof to mount solar collectors. This will require the canopies to be a total of 52.5 feet, and an average height of 17.5 feet, which does not fit into the length and width restrictions imposed by the ordinance

and/or

c. **Abutting Property.** The use or development of the property immediately adjacent to the subject property would prohibit the literal enforcement of the requirements of the Zoning Ordinance or would involve significant practical difficulties.
☑ Not Applicable ☐ Applicable If applicable, describe below:

Standard #2. Not Self-Created.

Describe the immediate practical difficulty causing the need for the Dimensional Variance, that the need for the requested variance is not the result of actions of the property owner or previous property owners (i.e., is not self-created).

5.15.12.b allows for a maximum canopy width of 40 feet and an allowable height of 12 feet. This ordinance envisioned a standard gable roof over a double row of parking with no barrier between the spaces. It does not consider the needs of a solar canopy, which requires a continuous shed roof, making for a taller structure, or allowing for a pedestrian walkway under the canopy.

Standard #3. Strict Compliance.

Explain how the Dimensional Variance in strict compliance with regulations governing area, setback, frontage, height, bulk, density or other dimensional requirements will unreasonably prevent the property owner from using the property for a permitted purpose, or will render conformity with those regulations unnecessarily burdensome.

In order to meet the ordinance requirements for the existing parking, the canopies would have to be redesigned into two separate canopies per row of parking, with no overhang to protect the pedestrian walkway. In addition, they would have to have a pitch that is not favorable for solar collection, in order to meet height and clearance requirements. This might, in fact, make solar collection impractical for this project.

Standard #4. Minimum Variance Necessary.

Explain how the Dimensional Variance requested is the minimum variance necessary to do substantial justice to the applicant as well as to other property owners in the district.

The requested variance is the minimum required in order to provide the desired shelter and surface area for solar collectors to function effectively.

Standard #5. Adverse Impact on Surrounding Area.

Explain how the Dimensional Variance will not cause an adverse impact on surrounding property, property values, or the use and enjoyment of property in the neighborhood or zoning district.

The requested variance will not cause an adverse impact to surrounding property, as it is located towards the rear of the site, and will not be visible from the building front or from nearby roadways. The character of the parking lot will remain similar to that of the surrounding properties, which are all industrial uses.

CONSTRUCTION PLANS

LINEAGE CAR PORTS ADDITION

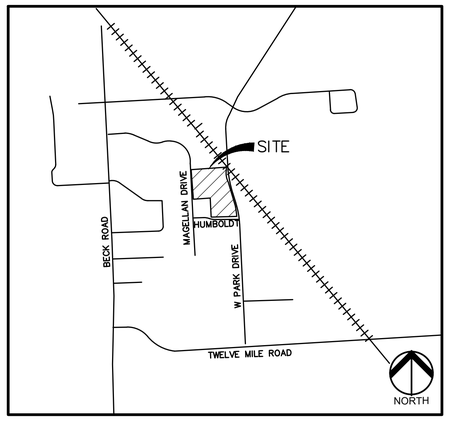
46500 HUMBOLDT DRIVE

CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

PERMIT / APPROVAL SUMMARY		
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL
9/10/2024	11/13/2024	PRELIMINARY SITE PLAN APPROVAL
9/10/2024		FINAL SITE PLAN APPROVAL
9/10/2024		SESC PERMIT

WAIVER AND VARIANCE LIST

1. A WAIVER IS REQUESTED FROM SECTION 5.3.12 OF NOVI ZONING ORDINANCE TO ALLOW SOME OF THE EXISTING INTERIOR LANDSCAPE TREES TO BE REMOVED FOR THE CONSTRUCTION OF SOLAR CANOPIES. REPLACEMENT TREES WILL BE PLACED AROUND THE PERIMETER OF THE PARKING AREA
2. A VARIANCE IS REQUESTED FROM 4.19.2.C.iii AND 5.15.12.b TO ALLOW THE CANOPIES TO EXCEED THE ALLOWABLE WIDTH OF 40 FEET BY 12.5 FEET, AND TO ALLOW THE CANOPIES TO EXCEED THE ALLOWABLE HEIGHT OF 12 FEET BY AN AVERAGE OF 5 FEET.



LOCATION MAP
SCALE: 1" = 1500'

INDEX OF DRAWINGS	
NUMBER	TITLE
	COVER SHEET
C-1.0	OVERALL EXISTING CONDITIONS PLAN
C-1.1	EXISTING CONDITIONS AND DEMOLITION PLAN
C-2.0	OVERALL SITE PLAN
C-2.1	DIMENSION AND PAVING PLAN - 1
C-2.2	DIMENSION AND PAVING PLAN - 2
C-3.1	GRADING AND SESC PLAN - 1
C-3.2	GRADING AND SESC PLAN - 2
C-4.0	UTILITY PLAN
C-5.0	NOTES AND DETAILS
L-1.0	LANDSCAPE PLAN
L-2.1	LANDSCAPE SPECIFICATIONS
L-2.2	LANDSCAPE SPECIFICATIONS
	PHOTOMETRIC SITE PLANS
1 OF 2	PHOTOMETRIC LAYOUT
2 OF 2	PHOTOMETRIC LAYOUT
	CARPORT CANOPY STRUCTURAL PLANS
S0.1	STRUCTURAL NOTES
S0.2	TESTING AND INSPECTION NOTES
S0.3	ABBREVIATIONS AND SYMBOLS
S1.0	CANOPY FOUNDATION PLAN
S1.1	CANOPY FRAMING PLAN
S2.1	TYPICAL CANOPY SECTION
S3.1	DETAILS

DESIGN TEAM

APPLICANT

MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, SUITE 310
VIENNA, VA 22182
CONTACT: NICK PERGE
PHONE: 614-425-0315
EMAIL: NPERGE@MADISONEI.COM

CIVIL ENGINEER

PEA GROUP
58105 VAN DYKE RD.
WASHINGTON TWP., MI 48094
CONTACT: BECKY KLEIN, PE, LEED AP BD+C
PHONE: 844.813.2949
EMAIL: BKLEIN@PEAGROUP.COM

LANDSCAPE ARCHITECT

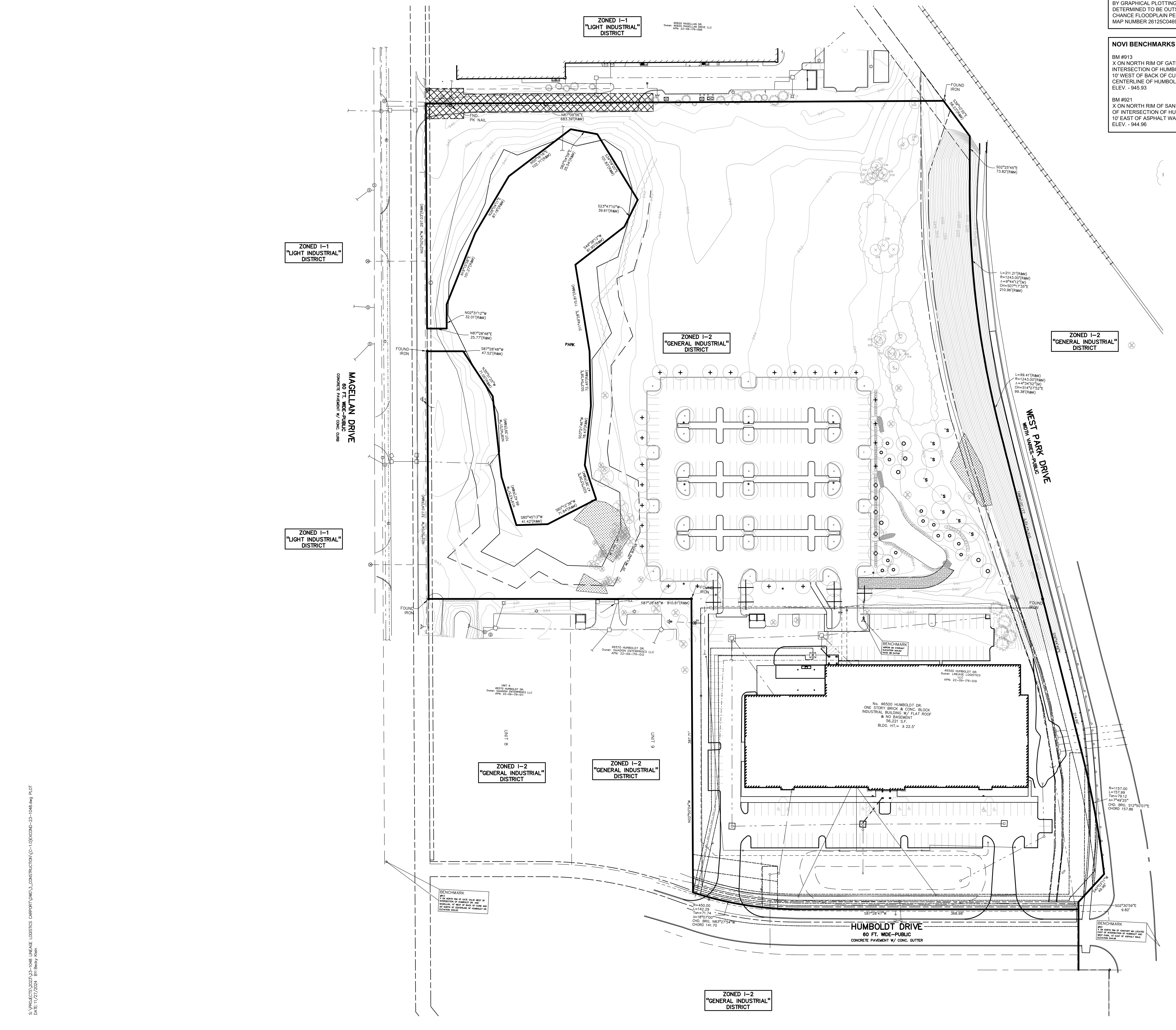
PEA GROUP
7927 NEMCO WAY, STE. 115
BRIGHTON, MI 48116
CONTACT: JANET EVANS, PLA
PHONE: 844.813.2949
EMAIL: JEVANS@PEAGROUP.COM

PEA GROUP

REVISIONS	
DESCRIPTION	DATE
PRELIMINARY AND FINAL SITE PLAN SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

STATE OF MICHIGAN
REBECCA LYNNE KLEIN
License No. 6201058042
REGISTERED PROFESSIONAL ENGINEER

PEA GROUP | LINEAGE CAR PORTS ADDITION | PEA JOB NO. 2023-1048 | CONSTRUCTION PLANS



FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26125C0469F DATED SEPTEMBER 29, 2006.

NOVI BENCHMARKS

BM #913
X ON NORTH RIM OF GATE VALVE WEST OF INTERSECTION OF HUMBOLDT DR. AND MAGELLAN, 10' WEST OF BACK OF CURB AND 25' NORTH OF CENTERLINE OF HUMBOLDT DR.
ELEV. - 945.93

BM #921
X ON NORTH RIM OF SANITARY MH LOCATED EAST OF INTERSECTION OF HUMBOLDT AND WEST PARK, 10' EAST OF ASPHALT WALK.
ELEV. - 944.96

LEGEND:

- EX. OH. ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
- EX. YARD DRAIN, U.G. ROOF DRAIN & DOWNSPOUT
- EX. UNIDENTIFIED STRUCTURE
- EX. MAILBOX, SIGN, LIGHTPOLE & GUARD POST
- EX. FENCE
- EX. GUARD RAIL
- EX. DEC. TREE, CONIFEROUS TREE & SHRUB
- EX. TREE TAG, & TREE LINE
- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND
- IRON FOUND / SET
- NAIL FOUND / NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND / SET
- SECTION CORNER FOUND
- R M C — RECORDED / MEASURED / CALCULATED
- GNSS — GLOBAL NAVIGATION SATELLITE SYSTEM

TOPOGRAPHIC AND BOUNDARY SURVEY DISCLAIMER:
TOPOGRAPHIC AND BOUNDARY SURVEY ELEMENTS OF THIS EXISTING CONDITIONS PLAN, INCLUDING PROPERTY LINES, LEGAL DESCRIPTION, EXISTING UTILITIES, EXISTING ELEVATIONS, EXISTING PHYSICAL FEATURES, AND EXISTING STRUCTURES ARE REFERENCED FROM THE FOLLOWING NOWAK AND FRAUS SURVEYS:

ALTA/NSPS LAND TITLE SURVEY, BY NOWAK AND FRAUS, DATED 03-27-2017
ALTA/NSPS LAND TITLE SURVEY, BY NOWAK AND FRAUS, DATED 08-29-2019
BOUNDARY/TOPOGRAPHIC/WETLAND SURVEY, BY NOWAK AND FRAUS, DATED 08-29-2019

PEA GROUP WILL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF THE SURVEY OR FOR DESIGN ERRORS/OMISSIONS RESULTING FROM SURVEY INACCURACIES.

LEGAL DESCRIPTION:

CURRENT PARCEL ID: 22-09-176-019

PER "5TH AMENDMENT TO CONSOLIDATING MASTER DEED BECK WEST CORPORATE PARK-NOVI CONDOMINIUM" AS RECORDED IN LIBER 53608. PAGE 798, OAKLAND COUNTY RECORDS:

LAND IN THE NORTHWEST CORNER OF TOWNSHIP 1 NORTH, RANGE 8 EAST, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

UNIT 41 OF "BECK WEST CORPORATE PARK - NOVI CONDOMINIUMS" AS RECORDED IN OAKLAND COUNTY RECORDS, SUBDIVISION NO. 1265.

PEA GROUP
t: 844.813.2949
www.peagroup.com

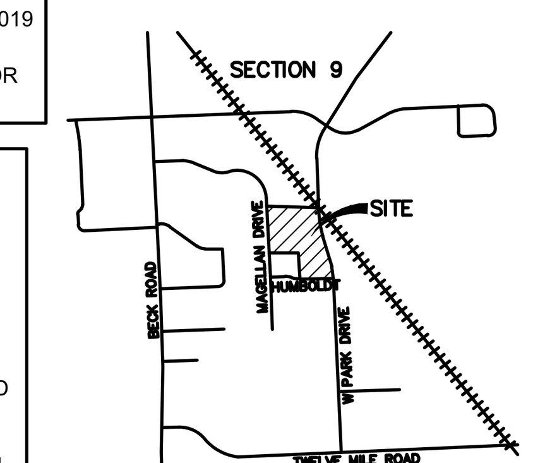
STATE OF MICHIGAN
REBECCA LYNNE KLEIN
License No. 6201058042
LICENSED PROFESSIONAL ENGINEER

NORTH

0 30 60 120
SCALE: 1" = 60'

Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

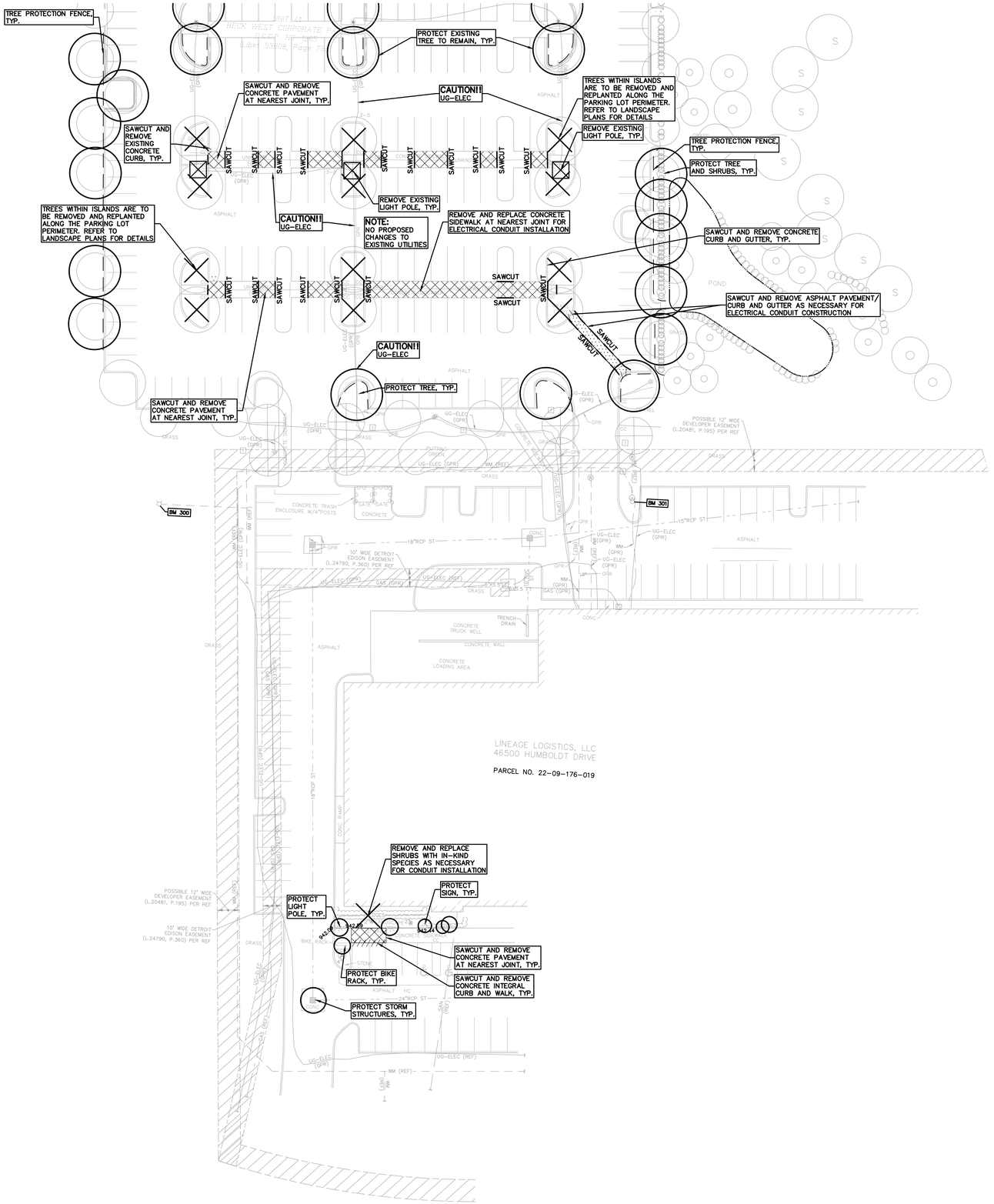
REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
OVERALL EXISTING CONDITIONS PLAN

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:
C-1.0



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ELEV. - 944.96

DEMOLITION LEGEND:

ITEM TO BE PROTECTED
CURB REMOVAL
CONCRETE PAVEMENT AND SIDEWALK REMOVAL
ASPHALT REMOVAL
TREE REMOVAL
SAWCUT
TREE FENCE

GENERAL DEMOLITION NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT:

1. ALL MATERIAL TO BE REMOVED, WHETHER SPECIFICALLY NOTED IN THE PLANS OR NOT, SHALL BE REMOVED FROM THE SITE BY THE CONTRACTOR AND DISPOSED OF OFF-SITE IN A LEGAL MANNER. NO ON-SITE BURY OR BURN PITS SHALL BE ALLOWED.
2. ALL DEMOLITION WORK SHALL CONFORM TO ALL LOCAL CODES AND ORDINANCES.
3. STAGING/PHASING OF DEMOLITION AND CONSTRUCTION IS TO BE COORDINATED WITH THE OWNER AND THE CONTRACTOR PRIOR TO CONSTRUCTION.
4. SPECIFIC DEMOLITION ITEMS HAVE BEEN INDICATED ON THE PLANS AS A GUIDE TO THE GENERAL SCOPE OF THE WORK. IT IS THE INTENT THAT THESE ITEMS SHALL BE COMPLETELY REMOVED BY THE CONTRACTOR ABOVE AND BELOW GROUND, UNLESS SPECIFICALLY NOTED OTHERWISE, AND THAT DEMOLITION WILL INCLUDE BUT WILL NOT NECESSARILY BE LIMITED TO THESE ITEMS. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND EXTENTS OF THE DEMOLITION THAT WILL BE REQUIRED PRIOR TO SUBMITTING A BID.
5. REMOVE ALL STRUCTURES DESIGNATED FOR REMOVAL ACCORDING TO THE DEMOLITION PLAN. THIS INCLUDES CONCRETE, ASPHALT, TREES, ETC.
6. REFER TO SHEET LANDSCAPE PLANS FOR TREE PROTECTION DETAILS.
7. THE CONTRACTOR SHALL, AS A MINIMUM, PROVIDE TREE PROTECTION FENCING AROUND EXISTING TREES TO BE SAVED THAT ARE WITHIN 15 FEET OF CONSTRUCTION ACTIVITIES AND AS INDICATED IN THE PLANS OR PER LOCAL AGENCY REQUIREMENTS.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEAN UP, NOISE, DUST CONTROL, STREET SWEEPING AND HOURS OF OPERATION IN ACCORDANCE WITH THE LOCAL CODES.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADES, SIGNAGE, MARKINGS, LIGHTS AND OTHER TRAFFIC CONTROL DEVICES TO PROTECT THE WORK ZONE AND SAFELY MAINTAIN TRAFFIC PER AGENCY REQUIREMENTS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
10. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL AND REPLACEMENT OF SIGNS AND SUPPORTS WITHIN THE WORK AREA, AS NECESSARY TO FACILITATE CONSTRUCTION. SIGNS SHALL BE PROTECTED OR STOCKPILED FOR REUSE AS SPECIFIED IN THE PLANS OR AS REQUIRED BY THE AGENCY OF JURISDICTION. THE CONTRACTOR SHALL REPLACE ANY DAMAGED SIGNS AND SUPPORTS AT NO ADDITIONAL COST TO THE OWNER.
11. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

LEGEND:

- EX. OH. ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
- EX. GAS LINE
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- EX. WETLAND
- IRON FOUND / SET
- NAIL FOUND / NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND / SET
- SECTION CORNER FOUND
- R M C — RECORDED / MEASURED / CALCULATED
- GNSS — GLOBAL NAVIGATION SATELLITE SYSTEM

REFERENCE DRAWINGS:
TOPOGRAPHIC SURVEY, PEA JOB NO. 2019-436

BENCHMARKS:
(GPS DERIVED - NAVD88)

BM #300
ARROW ON A HYDRANT LOCATED APPROX. 107' WEST OF THE TRASH ENCLOSURE AREA, NORTHWEST OF THE TRUCK LOADING AREA.
ELEV. - 947.10

BM #301 (PER PEA JOB NO. 2019-436)
ARROW ON A HYDRANT LOCATED APPROX. 58' NORTH OF THE BUILDING, NORTHEAST OF THE TRUCK LOADING AREA.
ELEV. - 944.62

TOPOGRAPHIC AND BOUNDARY SURVEY DISCLAIMER:
TOPOGRAPHIC AND BOUNDARY SURVEY ELEMENTS OF THIS EXISTING CONDITIONS PLAN, INCLUDING PROPERTY LINES, LEGAL DESCRIPTION, EXISTING UTILITIES, EXISTING ELEVATIONS, EXISTING PHYSICAL FEATURES, AND EXISTING STRUCTURES ARE REFERENCED FROM THE FOLLOWING NOWAK AND FRAUS SURVEYS:

ALTA/NSPS LAND TITLE SURVEY, BY NOWAK AND FRAUS, DATED 03-27-2017
ALTA/NSPS LAND TITLE SURVEY, BY NOWAK AND FRAUS, DATED 08-29-2019
BOUNDARY/TOPOGRAPHIC/WETLAND SURVEY, BY NOWAK AND FRAUS, DATED 08-29-2019

PEA GROUP WILL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF THE SURVEY OR FOR DESIGN ERRORS/OMISSIONS RESULTING FROM SURVEY INACCURACIES.

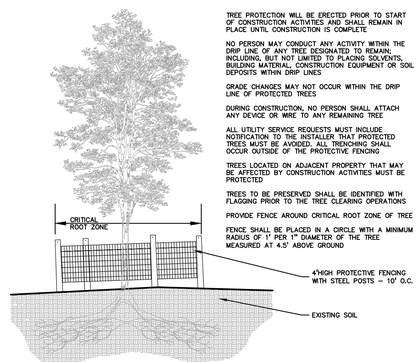
LEGAL DESCRIPTION:

CURRENT PARCEL ID: 22-09-176-019

PER "5TH AMENDMENT TO CONSOLIDATING MASTER DEED BECK WEST CORPORATE PARK-NOVI CONDOMINIUM" AS RECORDED IN LIBER 53608. PAGE 798, OAKLAND COUNTY RECORDS:

LAND IN THE NORTHWEST CORNER OF TOWNSHIP 1 NORTH, RANGE 8 EAST, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:

UNIT 41 OF "BECK WEST CORPORATE PARK - NOVI CONDOMINIUMS" AS RECORDED IN OAKLAND COUNTY RECORDS, SUBDIVISION NO. 1265.



TREE PROTECTION DETAIL
NOT TO SCALE

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REBECCA LYNNE KLEIN
License No. 6201058042
REGISTERED PROFESSIONAL ENGINEER

NORTH
0 15 30 60
SCALE: 1" = 30'

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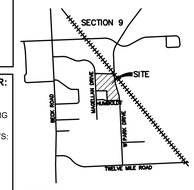


CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

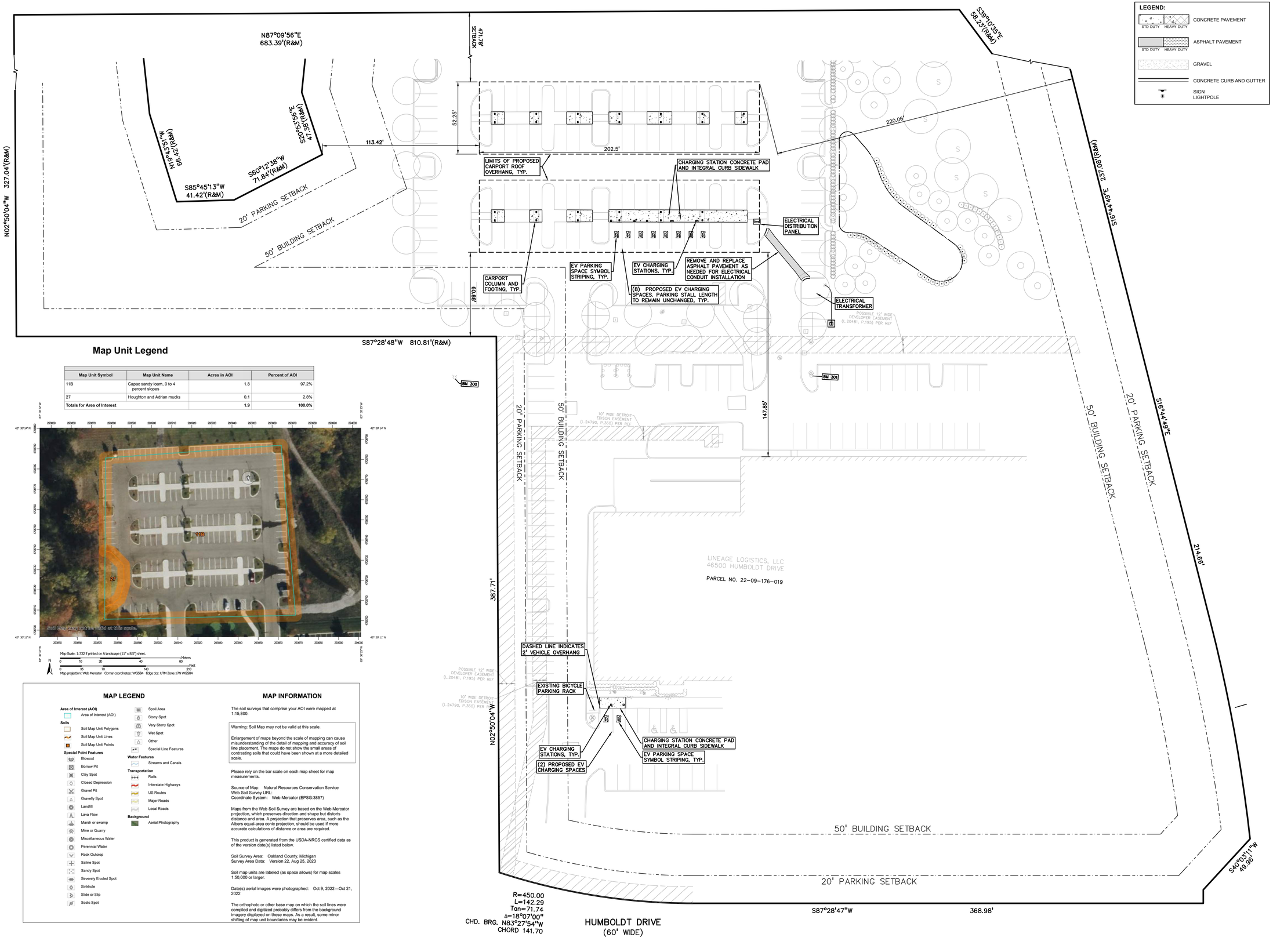
ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
EXISTING CONDITIONS AND DEMOLITION PLAN

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:
C-1.1

S:\PROJECTS\2023\23-1048 LINEAGE LOGISTICS CARPORT\DWG_CONSTRUCTION\C-1.1\[CONDEMODWG-23-1048.dwg PLOT DATE: 12/2/2024 BY: Becky Klein



Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
11B	Capac sandy loam, 0 to 4 percent slopes	1.8	97.2%
27	Houghton and Adrian mucks	0.1	2.8%
Totals for Area of Interest		**1.9**	**100.0%**

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Oakland County, Michigan
Survey Area Data: Version 22, Aug 25, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 9, 2022—Oct 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

LEGEND:
- CONCRETE PAVEMENT (STD DUTY / HEAVY DUTY)
- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY)
- GRAVEL
- CONCRETE CURB AND GUTTER
- SIGN
- LIGHTPOLE

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NORTH

0 15 30 60
SCALE: 1" = 30'

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

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CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
OVERALL SITE PLAN

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:
C-2.0

S:\PROJECTS\2023\23-1048_LINEAGE LOGISTICS CARPORT\Civil\3_CONSTRUCTION\C-2.0SITE_23-1048.dwg PLOT DATE: 11/27/2024 BY: Becky Klein

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
3. REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS

LEGEND:

- CONCRETE PAVEMENT (STD DUTY / HEAVY DUTY)
- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY)
- GRAVEL
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SIGN
- LIGHTPOLE

EXISTING ASPHALT PAVEMENT

EXISTING CONCRETE CURB, TYP.

CARPORT COLUMN AND FOOTING OUTLINE, TYP. REFER TO STRUCTURAL PLANS FOR DETAILS.

9' TYP.

EXISTING ASPHALT PAVEMENT

CARPORT ROOF OVERHANG, TYP.

CONNECT TO EXISTING CONCRETE SIDEWALK AT NEAREST JOINT, TYP.

EXISTING CONCRETE CURB, TYP.

EXISTING CONCRETE CURB, TYP.

CARPORT COLUMN AND FOOTING OUTLINE, TYP. REFER TO STRUCTURAL PLANS FOR DETAILS.

CONNECT TO EXISTING CONCRETE SIDEWALK AT NEAREST JOINT, TYP.

9' (TYP.)

19' (TYP.)

ELECTRICAL DISTRIBUTION PANEL AND PAD. REFER TO ELECTRICAL PLANS FOR DETAILS

18"x6" CONCRETE CURB AND GUTTER, TYP. REFER TO DETAIL ON SHEET C-5.0

3.66'

5'

15'r

PROVIDE BUTT JOINT WHERE PROPOSED ASPHALT PAVEMENT ABUTS EXISTING, TYP. REFER TO DETAIL ON SHEET C-5.0

CONCRETE SIDEWALK, TYP. REFER TO DETAIL ON SHEET C-5.0

(8) EV CHARGING SPACES.

CONNECT TO EXISTING CONCRETE CURB AND GUTTER, TYP.

EV PARKING SPACE SYMBOL STRIPING, TYP. REFER TO DETAIL ON SHEET C-5.0

STANDARD DUTY ASPHALT PAVEMENT, TYP. REFER TO DETAIL ON SHEET C-5.0

EV CHARGING STATION, TYP. REFER TO ELECTRICAL PLANS FOR DETAILS

18"x6" CONCRETE CURB AND GUTTER, TYP. REFER TO DETAIL ON SHEET C-5.0

5'r

CONNECT TO EXISTING CONCRETE CURB AND GUTTER, TYP.

EXISTING ASPHALT PAVEMENT

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NORTH

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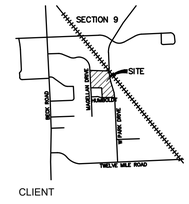

CLIENT

MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE

LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS

PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE

DIMENSION AND PAVING PLAN - 1

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:

C-2.1

S:\PROJECTS\2023\23-1048 LINEAGE LOGISTICS CARPORT\DWG_CONSTRUCTION\C-2.1[Dim-23-1048.dwg PLOT DATE: 12/2/2024 BY: Becky Klein

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
3. REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS

LEGEND:

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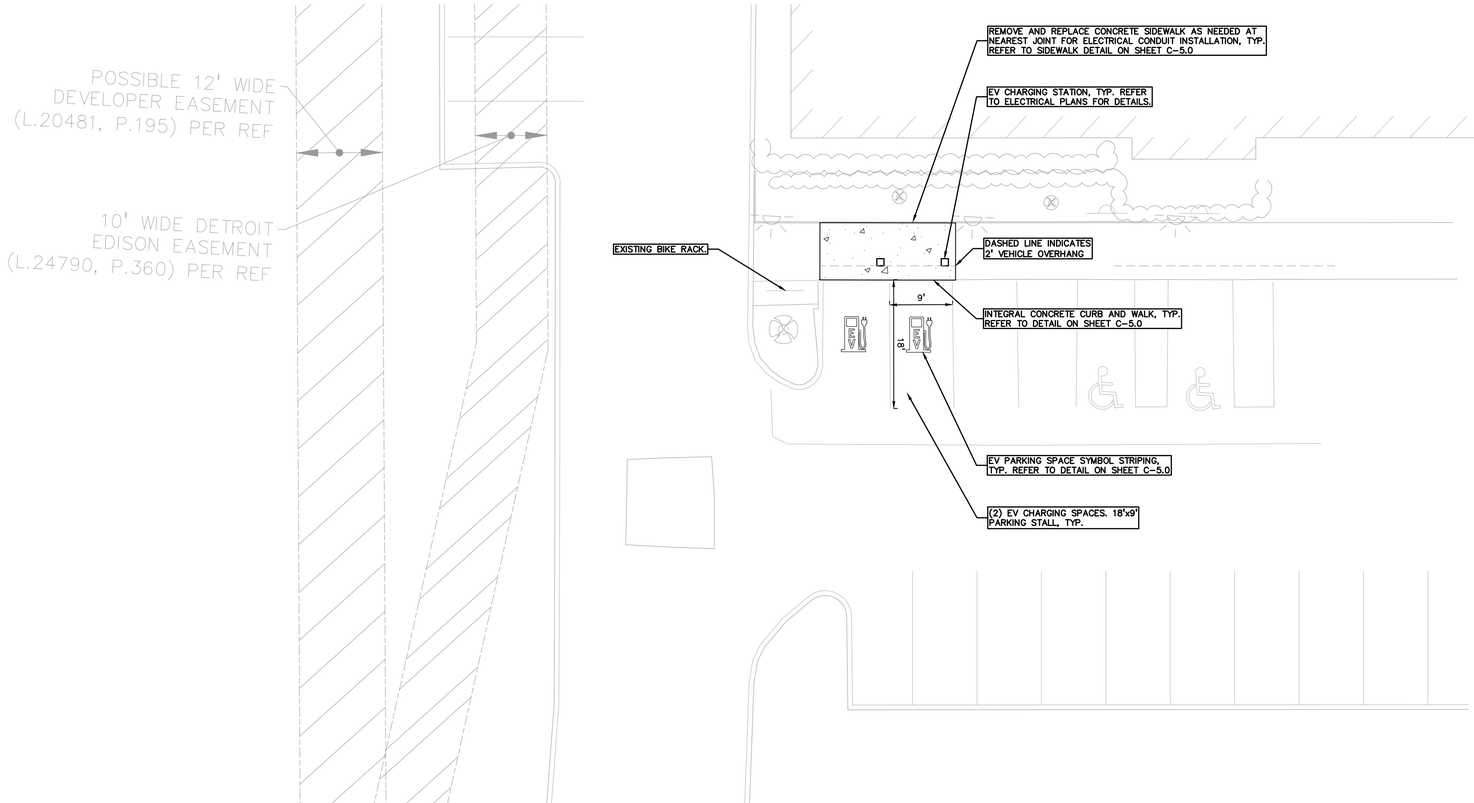

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NORTH

0 5 10 20
SCALE: 1" = 10'

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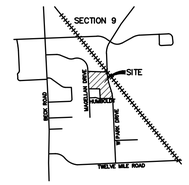


CLIENT

MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE

LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE

DIMENSION AND PAVING PLAN - 2

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:

C-2.2

S:\PROJECTS\2023\23-1048 LINEAGE LOGISTICS CARPORT\DWG\3_CONSTRUCTION\C-2.1DIM-23-1048.dwg PLOT DATE: 11/27/2024 BY: Becky Klein

CITY OF NOVI STANDARD NOTES:

1. IT IS THE DEVELOPER'S RESPONSIBILITY TO GRADE AND STABILIZE DISTURBANCES DUE TO THE INSTALLATION OF PUBLIC UTILITIES
2. ALL DRAINAGE DITCHES SHALL BE STABILIZED WITH EROSION CONTROL BLANKET AND SHALL UTILIZE CHECK DAMS AS NECESSARY. DRAINAGE DITCHES STEEPER THAN 3% SHALL BE SODDED.
3. SLOPES STEEPER THAN 1V:6H (16%) SHALL BE STABILIZED WITH EROSION CONTROL BLANKET
4. ALL CULVERT END SECTIONS MUST CONTAIN GROUTED RIP-RAP IN ACCORDANCE WITH ORDIANCE SPECIFICATIONS
5. THE INSTALLATION OF SILT FENCE AND TREE PROTECTION FENCING SHALL NOT OCCUR PRIOR TO THE INITIAL CITY PRE-CONSTRUCTION MEETING. WHEN NATURAL FEATURES EXIST IN THE SITE, INSPECTION OF STAKING MAY BE REQUIRED PRIOR TO INSTALLATION OF THE FENCING.

SYMBOLS: EROSION CONTROL:

(SP-2) SILT FENCE

(SI-2A) LOW POINT INLET FILTER

HAY BALE

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

BENCHMARKS:
(GPS DERIVED - NAVD88)

BM #300
ARROW ON A HYDRANT LOCATED APPROX. 107' WEST OF THE TRASH ENCLOSURE AREA, NORTHWEST OF THE TRUCK LOADING AREA.
.ELEV. - 947.10

BM #301 (PER PEA JOB NO. 2019-436)
ARROW ON A HYDRANT LOCATED APPROX. 58' NORTH OF THE BUILDING, NORTHEAST OF THE TRUCK LOADING AREA.
ELEV. - 944.62

EROSION CONTROL QUANTITIES:

LOW POINT INLET FILTER	3 EA.
SILT FENCE	30 LF
HAY BALE	2 EA.

NOTE:
REFER TO SHEET C-3.2 FOR SOIL EROSION NOTES AND DETAILS.

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26125C0469F DATED SEPTEMBER 29, 2006.

NOVI BENCHMARKS

BM #913
X ON NORTH RIM OF GATE VALVE WEST OF INTERSECTION OF HUMBOLDT DR. AND MAGELLAN, 10' WEST OF BACK OF CURB AND 25' NORTH OF CENTERLINE OF HUMBOLDT DR.
ELEV. - 945.93

BM #921
X ON NORTH RIM OF SANITARY MH LOCATED EAST OF INTERSECTION OF HUMBOLDT AND WEST PARK, 10' EAST OF ASPHALT WALK.
ELEV. - 944.96

GRADING LEGEND:

+696.91 EXISTING SPOT ELEVATION

622.50 PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.

670 EXISTING CONTOUR

922 PROPOSED CONTOUR

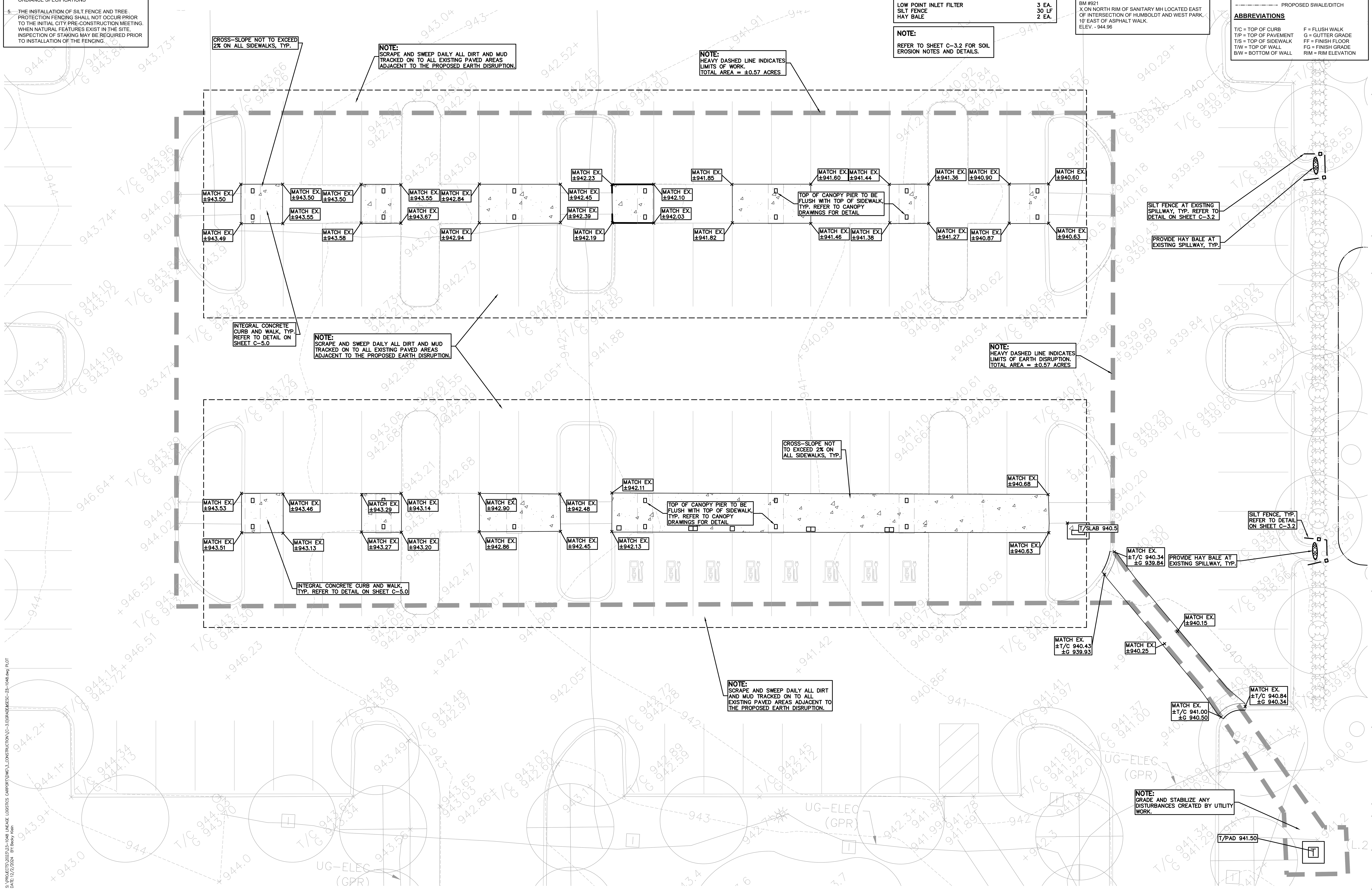
PROPOSED REVERSE GUTTER PAN

PROPOSED RIDGE LINE

PROPOSED SWALE/DITCH

ABBREVIATIONS

T/C = TOP OF CURB	F = FLUSH WALK
T/P = TOP OF PAVEMENT	G = GUTTER GRADE
T/S = TOP OF SIDEWALK	FF = FINISH FLOOR
T/W = TOP OF WALL	FG = FINISH GRADE
B/W = BOTTOM OF WALL	RIM = RIM ELEVATION



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NORTH

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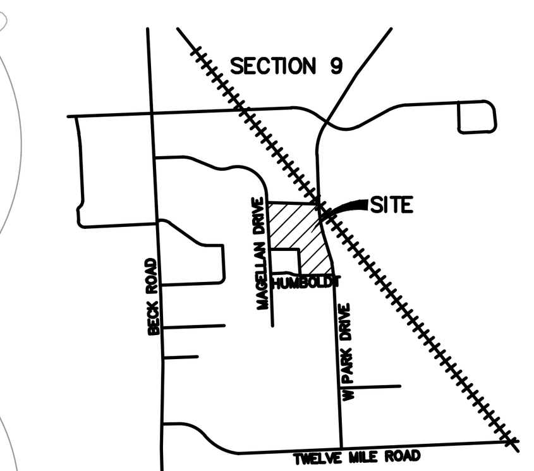


CLIENT

MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE

LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

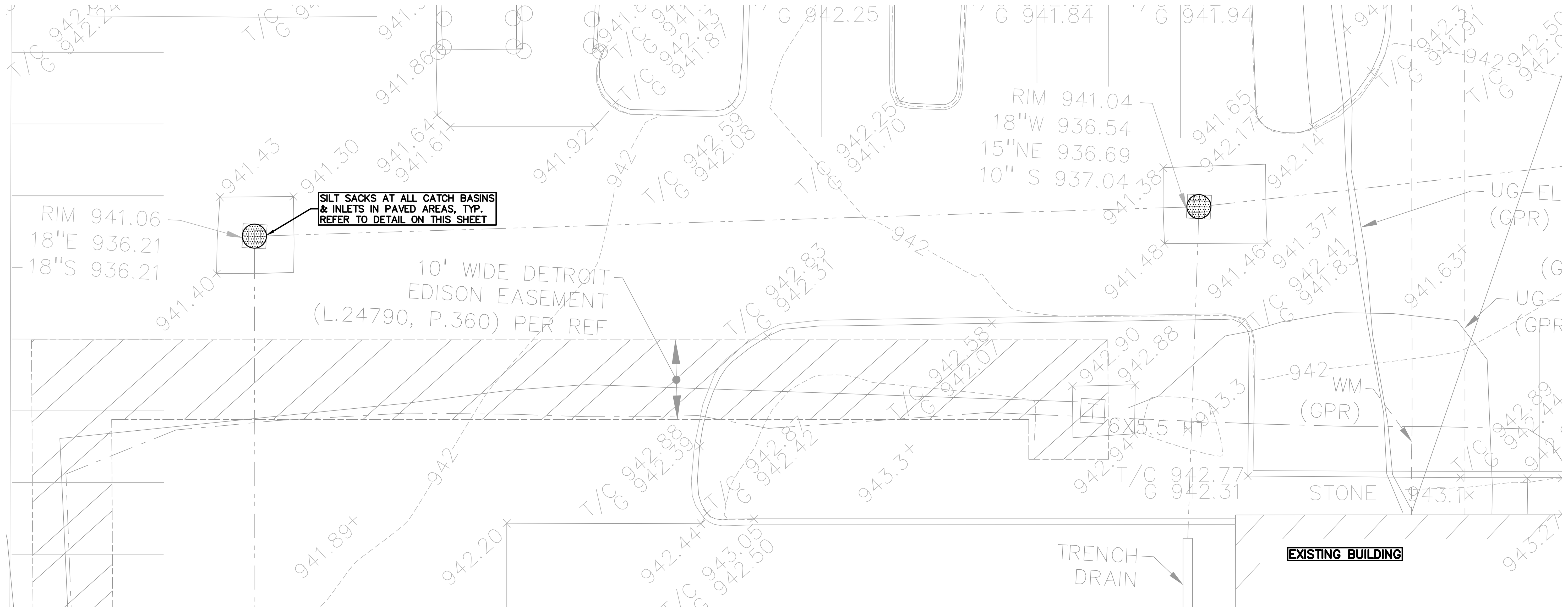
DRAWING TITLE

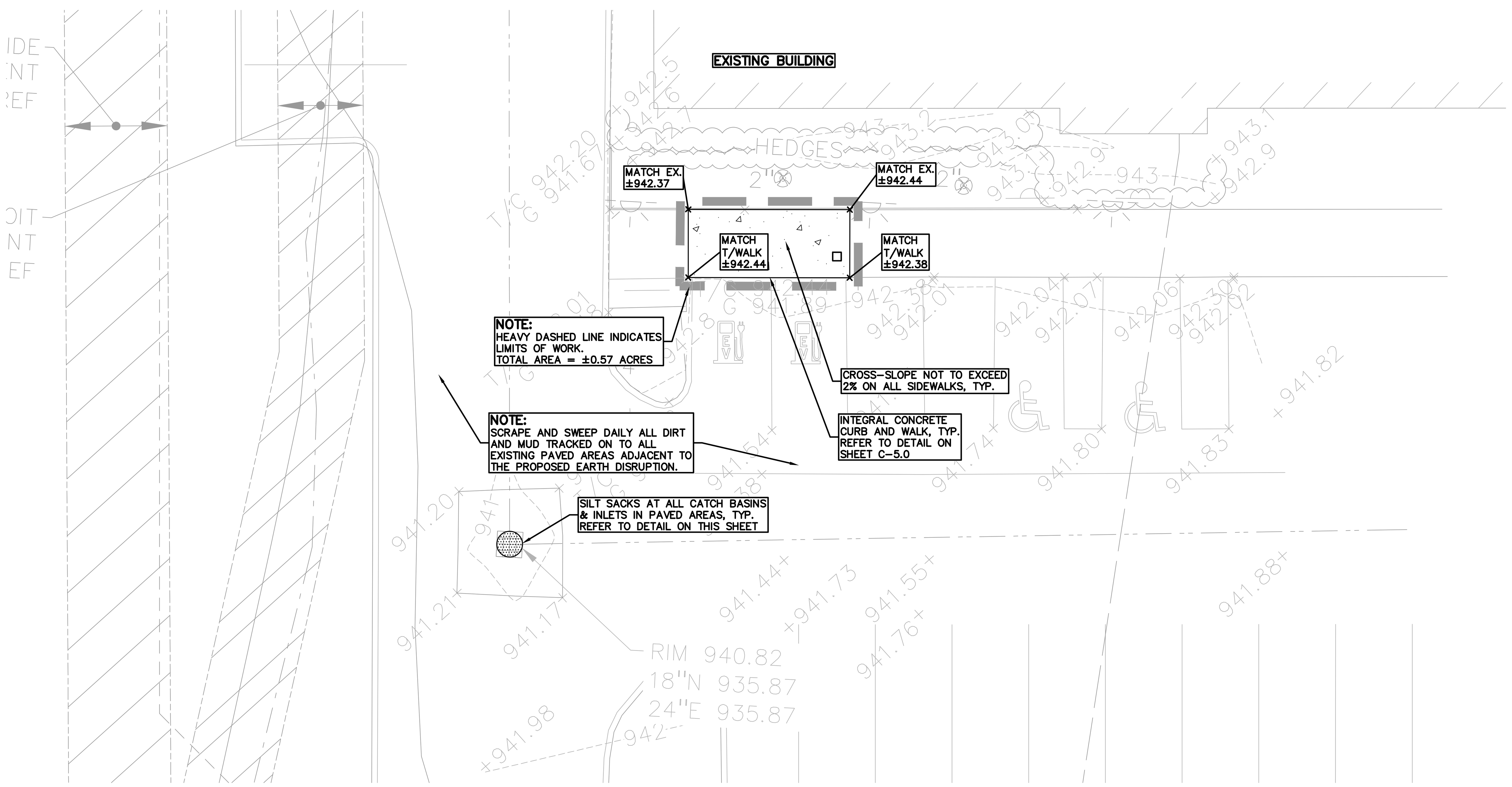
GRADING AND SESC PLAN -1

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:

C-3.1





SEQUENCE OF CONSTRUCTION:

START DAY	END DAY	
1	90	INSTALL TEMPORARY SOIL EROSION CONTROL MEASURES, INLET PROTECTION, ETC. AS NECESSARY.
1	90	MAINTAIN A 25' BUFFER OF VEGETATION AROUND PERIMETER OF SITE WHERE POSSIBLE.
1	15	REMOVE ALL VEGETATION, TREES AND BRUSH FROM THE PROPOSED CONSTRUCTION AREA UNLESS MARKED TO REMAIN. STRIP AND STOCKPILE TOPSOIL AS REQUIRED. ALL STOCKPILES MUST BE GRADED AND SEEDED.
5	14	REMOVE ALL PAVEMENT, CURB, ETC. AS REQUIRED TO INSTALL THE PROPOSED WORK AS SHOWN ON THE TOPOGRAPHIC SURVEY AND DEMOLITION PLAN.
5	14	DISPOSE OF ALL EXCESS/UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO ON-SITE BURN OR BURY PITS ALLOWED.
28	40	TEMPORARY SEEDING MUST BE PROVIDED IN AREAS NOT TO BE WORKED ON FOR 15 DAYS OR LONGER.
40	50	FINE GRADE SITE AND PREPARE FOR SITE PAVING OPERATIONS.
50	60	INSTALL ALL PAVEMENT, SIDEWALKS, CURBING AS PROPOSED. IF PERMANENT LANDSCAPING IS NOT TO BE INSTALLED SOON AFTER PAVING IS COMPLETE, ALL AREAS WITHIN 20 FEET OF BACK OF CURB MUST BE TEMPORARILY SEEDED. REPAIR INLET PROTECTION, SILT FENCE AND ANY OTHER DAMAGED SOIL EROSION CONTROL MEASURES AS NECESSARY.
60	70	FINAL GRADE, REDISTRIBUTE STOCKPILED TOPSOIL, ESTABLISH VEGETATION AND INSTALL ALL PERMANENT LANDSCAPING IN ALL DISTURBED AREAS NOT BUILT.
70	80	CLEAN PAVEMENT AND REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES. RE-ESTABLISH VEGETATION AS REQUIRED.
90	90	REMOVE SEDIMENTATION CONTROLS ONCE ENTIRE SITE HAS BEEN PERMANENTLY STABILIZED.

BENCHMARKS:
(GPS DERIVED - NAVD88)

BM #300
ARROW ON A HYDRANT LOCATED APPROX. 107' WEST OF THE TRASH ENCLOSURE AREA, NORTHWEST OF THE TRUCK LOADING AREA.
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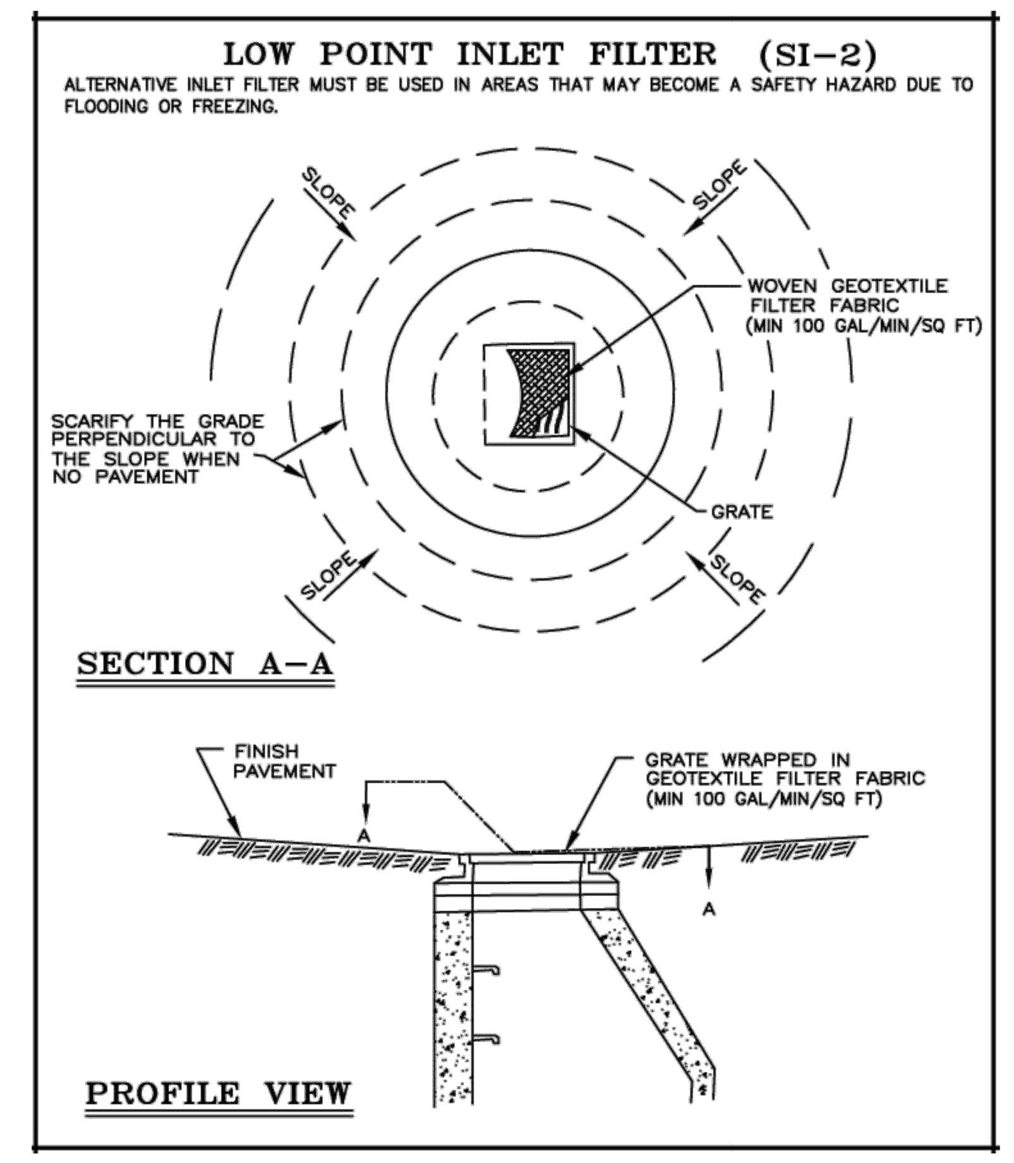
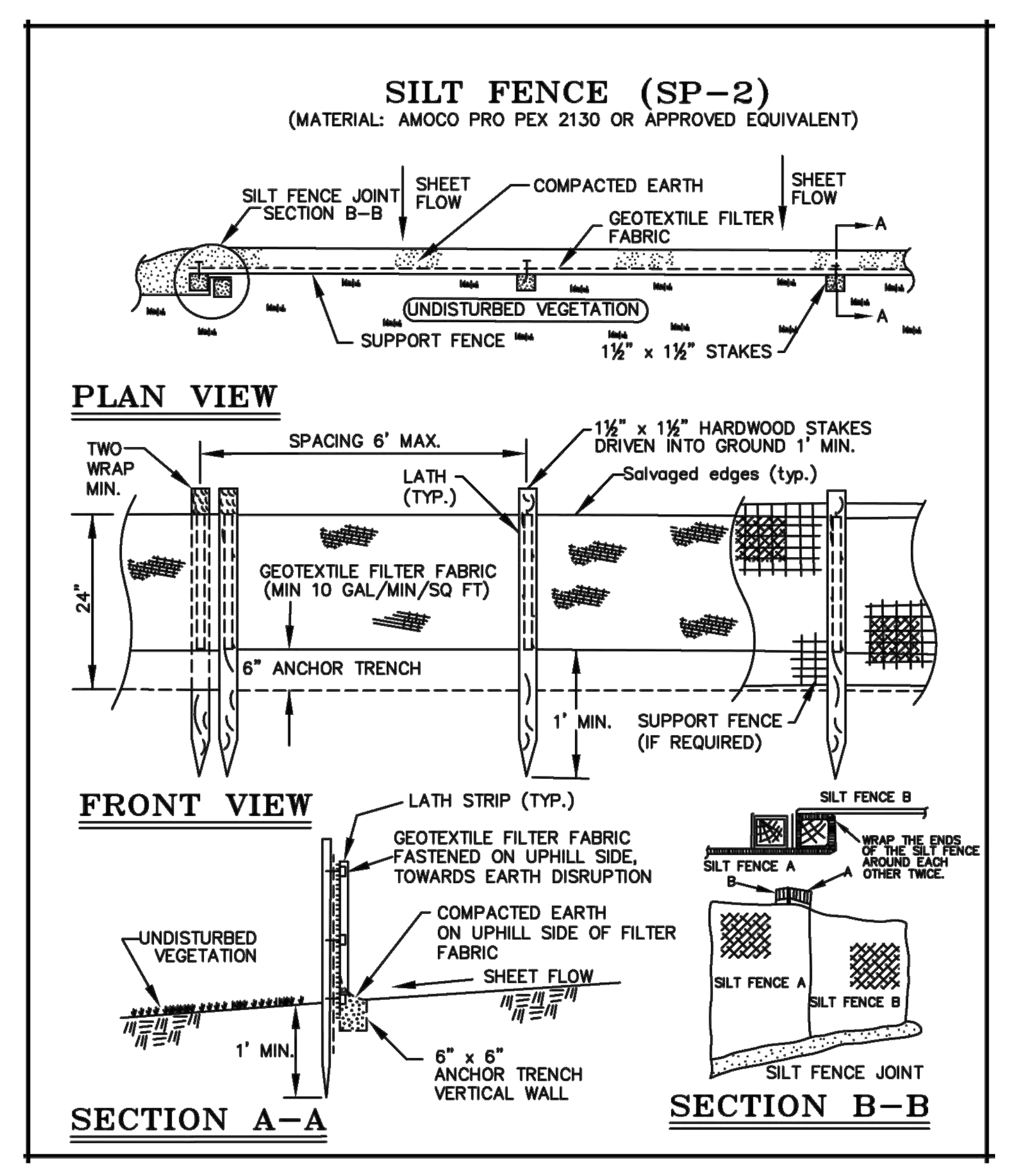


OCWRC LOW POINT INLET FILTER DETAIL
NOT TO SCALE



OCWRC SILT FENCE DETAIL
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NOVI BENCHMARKS

BM #913
X ON NORTH RIM OF GATE VALVE WEST OF INTERSECTION OF HUMBOLDT DR. AND MAGELLAN, 10' WEST OF BACK OF CURB AND 25' NORTH OF CENTERLINE OF HUMBOLDT DR.
ELEV. - 945.93

BM #921
X ON NORTH RIM OF SANITARY MH LOCATED EAST OF INTERSECTION OF HUMBOLDT AND WEST PARK, 10' EAST OF ASPHALT WALK.
ELEV. - 944.96

GRADING LEGEND:

+696.91 EXISTING SPOT ELEVATION
622.50 PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
670 EXISTING CONTOUR
922 PROPOSED CONTOUR
PROPOSED REVERSE GUTTER PAN
PROPOSED RIDGE LINE
PROPOSED SWALE/DITCH

ABBREVIATIONS

T/C = TOP OF CURB	F = FLUSH WALK
T/P = TOP OF PAVEMENT	G = GUTTER GRADE
T/S = TOP OF SIDEWALK	FF = FINISH FLOOR
T/W = TOP OF WALL	FG = FINISH GRADE
B/W = BOTTOM OF WALL	RIM = RIM ELEVATION

SYMBOLS: EROSION CONTROL:

(SI-2A) LOW POINT INLET FILTER

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE OF CONSTRUCTION

1. SEE OAKLAND COUNTY W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL SOIL EROSION CONTROL RELATED DETAILS.
2. PLACE SILT FENCE & INSTALL INLET FILTERS ON EXISTING STORM SEWER STRUCTURES, ACCORDING TO PLANS.
3. INSTALL TEMPORARY CRUSHED CONCRETE ACCESS DRIVE AT ALL CONSTRUCTION ENTRANCES. (80'x24'x8" W/MINIMUM OF 1"-3" CRUSHED CONCRETE – NO FINES).
4. REMOVE CURB, PAVEMENT, TREES, ETC. AS DIRECTED ON THE DEMOLITION PLAN.
5. STRIP AND STOCKPILE TOPSOIL FOR RESTORATION REQUIREMENTS.
6. DISPOSE OF ALL EXCESS, UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO BURN OR BURY PITS ALLOWED.
7. UNSUITABLE MATERIALS CONSIST OF, BUT ARE NOT NECESSARILY LIMITED TO THE FOLLOWING: CONCRETE, ASPHALT, TREES, BRUSH, STUMPS, ROOTS, OR OTHER MISCELLANEOUS DEBRIS OR TRASH.
8. MASS GRADE THE SITE IN ACCORDANCE WITH THE PLANS.
9. INSTALL SEED, MULCH AND EROSION CONTROL BLANKETS AS SHOWN ON THE PLAN WITHIN 5 DAYS OF COMPLETION OF MASS GRADING OR WHENEVER DISTURBED AREAS WILL REMAIN UNCHANGED FOR 30 DAYS OR GREATER. 3-4" TOPSOIL WILL BE USED WHERE VEGETATION IS REQUIRED.
10. COMPLETE ROUGH GRADING OF SITE AND INSTALL UTILITIES. PLACE INLET FILTERS AT ALL INLETS AND CATCH BASINS, AS SHOWN.
11. FINISH GRADE AND PAVE SITE AS PROPOSED TO DRAIN TO STORM SEWER SYSTEM. REPAIR INLET FILTERS AS REQUIRED.
12. APPLY TOPSOIL, SEED AND MULCH/SOD TO ALL DISTURBED AREAS UPON COMPLETION OF GRADING. THE CONTRACTOR SHALL STAGE CONSTRUCTION ACTIVITIES IN ORDER TO MINIMIZE THE EXPOSURE OF UNSTABILIZED AREAS.
13. CLEAN PAVEMENT AND STORM SEWERS. REMOVE SILT FENCE, AND INLET FILTERS ONCE VEGETATION HAS BEEN ESTABLISHED.
14. CLEAN DETENTION BASIN AND OVERFLOW SPILLWAYS AND REPAIR RIPRAP AS NECESSARY.
15. ALL DIRT AND MUD TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED DAILY.
16. STREET CATCH BASINS TO BE PERIODICALLY CLEANED AND FILTER CLOTH CHANGED AND MAINTAINED.

GENERAL SITE CONDITIONS:

1. ACCORDING TO THE OAKLAND COUNTY USDA WEB SOIL SURVEY, THE SITE GENERALLY CONSISTS OF THE FOLLOWING SOIL TYPES:

   11B – CAPAC SANDY LOAMS
   27 – HOUGHTON AND ADRIAN MUCKS

2. TOTAL DISTURBED AREA = ±0.57 ACRES
3. N.P.D.E.S. NOTICE OF COVERAGE IS NOT REQUIRED

SOIL EROSION MAINTENANCE SCHEDULE AND NOTES:

1. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY:

TBD

2. IF ANY DAMAGE HAS OCCURRED AS A RESULT OF STORM WATER DISCHARGE FROM THE SITE, THE FOLLOWING STEPS SHALL BE IMPLEMENTED.

3. ANY DEBRIS OR DIRT ON ANY PAVED AREA RESULTING FROM CONSTRUCTION TRAFFIC SHALL BE CLEANED IN A PROMPT MANNER BY THE CONTRACTOR. THE CONSTRUCTION DRIVE SHALL BE CLEANED AT THE END OF EACH DAY.

4. ALL DIRT AND MUD TRACKED ONTO PAVED AREAS SHALL BE REMOVED BY THE CONTRACTOR DAILY BY SCRAPING. STREET SWEEPING IS REQUIRED WEEKLY.

5. SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT UP SEDIMENT WHEN THE SEDIMENT HEIGHT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPLACE, RETRENCH OR REBACKFILL THE SILTATION FENCE SHOULD IT FALL OR BE DAMAGED DURING CONSTRUCTION.

6. INLET FILTER MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY ACCUMULATED SILT OR OTHER DEBRIS. THE REMOVAL OF SILT SHOULD BE WITH THE USE OF A STIFF BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FILTERS CAN NOT BE CLEANED OR ARE DAMAGED, THEN THE FABRIC MUST BE REPLACED.

7. CONTRACTOR SHALL PROVIDE WATER TRUCK TO WATER DOWN THE SITE ON A DAILY BASIS AS REQUIRED TO MAINTAIN DUST CONTROL.

8. IF HIGH GROUNDWATER IS ANTICIPATED OR ENCOUNTERED DURING CONSTRUCTION A DEWATERING PLAN MUST BE SUBMITTED TO THE CITY ENGINEERING DIVISION FOR REVIEW.

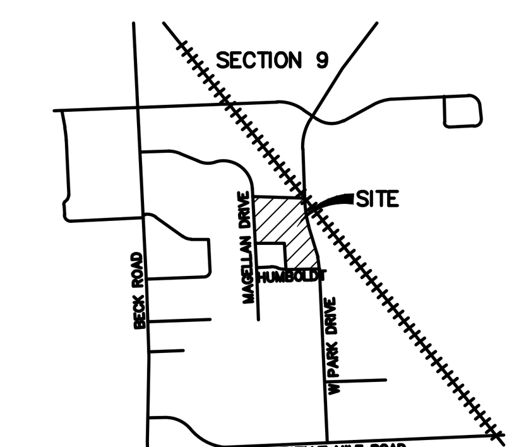
PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

SCALE: 1" = 10'

Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

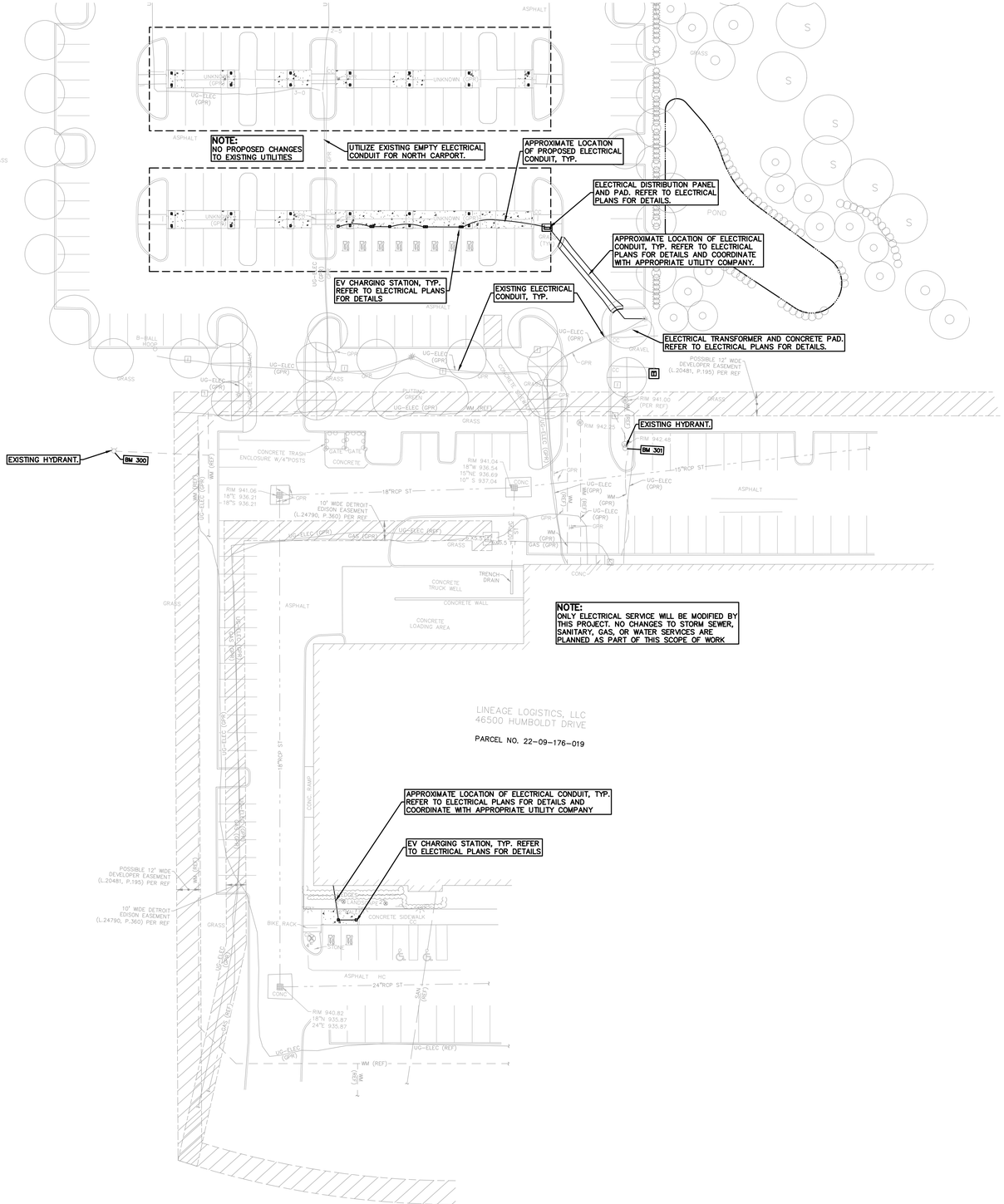
REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
GRADING AND SESC PLAN - 2

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:
C-3.2



UTILITY LEGEND:

- EX. OH. ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- PROPOSED WATER MAIN
- PROPOSED HYDRANT AND GATE VALVE
- PROPOSED TAPPING SLEEVE, VALVE & WELL
- PROPOSED POST INDICATOR VALVE
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY CLEANOUT & MANHOLE
- PROPOSED STORM SEWER
- PROPOSED STORM SEWER CLEANOUT & MANHOLE
- PROPOSED CATCH BASIN, INLET & YARD DRAIN

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
REBECCA LYNNE KLEIN
License No. 6201058042
REGISTERED PROFESSIONAL ENGINEER

NORTH

0 15 30 60
SCALE: 1" = 30'

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

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CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
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FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
UTILITY PLAN

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:
C-4.0

S:\PROJECTS\2023\23-1048 LINEAGE LOGISTICS CARPORT\DWG\3_CONSTRUCTION\C-4.0UTIL-23-1048.dwg PLOT DATE: 11/27/2024 BY: Becky Klein

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOT AND MUNICIPALITY STANDARDS AND REGULATIONS.
2. THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. THE CONTRACTOR SHALL CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO AT HIS OWN RISK.
4. ALL NECESSARY PERMITS, TESTING, BONDS AND INSURANCES ETC., SHALL BE PAID FOR BY THE CONTRACTOR. THE OWNER SHALL PAY FOR ALL CITY INSPECTION FEES.
5. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IF NO NOTIFICATION IS GIVEN AND DAMAGE RESULTS, SAID DAMAGE WILL BE REPAIRED AT SOLE EXPENSE OF THE CONTRACTOR. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.
6. CONTRACTOR SHALL VERIFY THAT THE PLANS AND SPECIFICATIONS ARE THE VERY LATEST PLANS AND SPECIFICATIONS AND FURTHERMORE, VERIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED. ALL ITEMS CONSTRUCTED BY THE CONTRACTOR PRIOR TO RECEIVING FINAL APPROVAL, HAVING TO BE ADJUSTED OR RE-DONE, SHALL BE AT THE CONTRACTORS EXPENSE. SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE PLANS AND/OR SPECIFICATIONS, THEY SHALL SEEK CLARIFICATION IN WRITING FROM THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE EXPENSE TO THE CONTRACTOR.
7. ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
8. ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, CITY AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
10. THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT WITHIN 100 FEET OF ANY WATER COURSE (STREAM, RIVER, COUNTY DRAIN, ETC.) AND LAKE, REGARDLESS OF THE APPLICATION OR LOCATION OF THE WATER COURSE OR LAKE RELATIVE TO THE PROJECT LIMITS.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

PAVING NOTES:

1. IN AREAS WHERE NEW PAVEMENTS ARE BEING CONSTRUCTED, THE TOPSOIL AND SOIL CONTAINING ORGANIC MATTER SHALL BE REMOVED PRIOR TO PAVEMENT CONSTRUCTION.
2. REFER TO ARCHITECTURAL PLANS FOR DETAILS OF FROST SLAB AT EXTERIOR BUILDING DOORS.
3. CONSTRUCTION TRAFFIC SHOULD BE MINIMIZED ON THE NEW PAVEMENT. IF CONSTRUCTION TRAFFIC IS ANTICIPATED ON THE PAVEMENT STRUCTURE, THE INITIAL LIFT THICKNESS COULD BE INCREASED AND PLACEMENT OF THE FINAL LIFT COULD BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. THIS ACTION WILL ALLOW REPAIR OF LOCALIZED FAILURE, IF ANY DOES OCCUR, AS WELL AS REDUCE LOAD DAMAGE ON THE PAVEMENT SYSTEM.
4. ALL EXPANSION JOINTS AND CONCRETE PAVEMENT JOINTS TO BE SEALED.
5. CONCRETE PAVEMENT JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION;
   - 5.1. WHERE PROPOSED CONCRETE ABUTS A STRUCTURE, PROVIDE A MINIMUM 1/2" EXPANSION JOINT. THE JOINT FILLER BOARD MUST BE AT LEAST THE FULL DEPTH OF THE CONCRETE AND HELD DOWN A 1/2" TO ALLOW FOR SEALING.
   - 5.2. WHERE PROPOSED CONCRETE ABUTS EXISTING CONCRETE OR IN BETWEEN POURS OF PROPOSED CONCRETE (CONSTRUCTION JOINT), PROVIDE 5/8" DOWELS EVERY 30" CENTER TO CENTER HALF WAY ALONG THE THICKNESS OF THE PROPOSED PAVEMENT. ALTERNATE DOWELS SIZES AND SPACING MUST BE APPROVED THE ENGINEER PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
   - 5.3. WHERE PROPOSED CONCRETE ABUTS EXISTING OR PROPOSED SIDEWALK OR CURBING, PROVIDE A MINIMUM 1/2" EXPANSION JOINT.
   - 5.4. CONTROL, LONGITUDINAL AND/OR TRANSVERSE JOINTS SHALL BE PLACED TO PROVIDE PANELS WITHIN THE PAVEMENT AS SQUARE AS POSSIBLE WITH THE FOLLOWING MAXIMUM SPACING PARAMETERS:
     - 5.4.1. 6-INCH THICK CONCRETE PAVEMENT: 12' X 12'
     - 5.4.2. 8-INCH THICK CONCRETE PAVEMENT: 15' X 15'
   - 5.5. IRREGULAR-SHAPED PANELS MAY REQUIRE THE USE OF REINFORCING MESH OR FIBER MESH AS DETERMINED BY THE ENGINEER. THE USE OF MESH MUST BE APPROVED THE ENGINEER PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
   - 5.6. IF A JOINT PLAN IS NOT PROVIDED IN THE PLANS, THE CONTRACTOR SHALL SUBMIT ONE TO THE ENGINEER FOR REVIEW PRIOR TO COMMENCING WORK AND VIA THE SUBMITTAL PROCESS.
6. CONCRETE CURBING JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
   - 6.1. JOINTS WHEN ADJACENT TO ASPHALT PAVEMENT
     - 6.1.1. PLACE CONTRACTION JOINTS AT 10' INTERVALS
     - 6.1.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING.
     - 6.1.3. PLACE 1" EXPANSION JOINT:
       - 6.1.3.1. AT SPRING POINTS OF INTERSECTIONS OR ONE OF THE END OF RADIUS LOCATIONS IN A CURVE
       - 6.1.3.2. AT 400' MAXIMUM INTERVALS ON STRAIGHT RUNS
       - 6.1.3.3. AT THE END OF RADIUS AT OPPOSITE ENDS IN A CURBED LANDSCAPE ISLAND
   - 6.2. JOINTS WHEN TIED TO CONCRETE PAVEMENT
     - 6.2.1. PLACE CONTRACTION JOINTS OPPOSITE ALL TRANSVERSE CONTRACTION JOINTS IN PAVEMENT
     - 6.2.2. PLACE 1/2" EXPANSION JOINT AT CATCH BASINS, EXISTING AND PROPOSED SIDEWALK OR EXISTING CURBING.
     - 6.2.3. PLACE 1" EXPANSION JOINT OPPOSITE ALL TRANSVERSE EXPANSION JOINTS IN PAVEMENT
     - 6.2.4. CURB AND GUTTER AND CONCRETE SHALL BE TIED TOGETHER SIMILAR TO A LONGITUDINAL LANE TIE JOINT (MDOT B1 JOINT)
   - 6.3. IN BETWEEN POURS OF PROPOSED CONCRETE CURBING (CONSTRUCTION JOINT):
     - 6.3.1. CARRY THE REBAR CONTINUOUSLY BETWEEN POURS
     - 6.3.2. IF THE REBAR IS NOT LONG ENOUGH TO CARRY CONTINUOUSLY, THEN TIE TWO PIECES OF REBAR PER THE LATEST MDOT SPECIFICATIONS
7. CONCRETE SIDEWALK JOINTING – UNLESS SHOWN OTHERWISE IN THE PLANS OR REQUIRED BY THE AUTHORITY HAVING JURISDICTION
   - 7.1. PLACE TRANSVERSE CONTRACTION JOINTS EQUAL TO THE WIDTH OF THE WALK WHEN WIDTH IS LESS THAN 8'
   - 7.2. PLACE TRANSVERSE AND LONGITUDINAL CONTRACTION JOINTS EQUAL TO 1/2 THE WIDTH OF THE WALK WHEN WIDTH IS EQUAL TO OR GREATER THAN 8'
   - 7.3. PLACE 1" EXPANSION JOINT WHERE ABUTTING SIDEWALK RAMP AND/OR RADIUS IN INTERSECTION
   - 7.4. PLACE TRANSVERSE 1/2" EXPANSION JOINT AT MAXIMUM OF 100' SPACING
   - 7.5. PLACE 1/2" EXPANSION JOINT WHEN ABUTTING A FIXED STRUCTURE, OTHER PAVEMENT (CONCRETE PAVEMENT AND DRIVE APPROACHES), UTILITY STRUCTURES, LIGHT POLE BASES AND COLUMNS

CONSTRUCTION MATERIAL SUBMITTALS

UNLESS REQUIRED OTHERWISE IN THE PROJECT SPECIFICATIONS, THE CONTRACTOR SHALL ONLY SUBMIT THE FOLLOWING CONSTRUCTION MATERIAL SUBMITTALS, AS APPLICABLE TO THE PLANS, FOR REVIEW BY THE ENGINEER. UNLESS APPROVED IN ADVANCE AND IN WRITING BY THE ENGINEER, ANY MATERIAL SUBMITTALS PROVIDED TO THE ENGINEER FOR REVIEW IN ADDITION TO THIS LIST SHALL BE RETURNED TO THE CONTRACTOR WITHOUT A REVIEW BEING PERFORMED.

1. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
2. PAVEMENT AGGREGATE BASE MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
3. PAVEMENT MIX DESIGNS SUBMITTED FOR REVIEW BY THE ENGINEER MUST FOLLOW THE CURRENT MDOT REVIEW CHECKLISTS AS SUMMARIZED BELOW AND ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER:
   - •8.1. CONCRETE MIX DESIGN REVIEW CHECKLIST (FORM 2000)
   - •8.2. SUPERPAVE MIX DESIGN CHECKLIST (FORM 1862)
   - •8.3. MARSHALL MIX DESIGN CHECKLIST (FORM 1849)

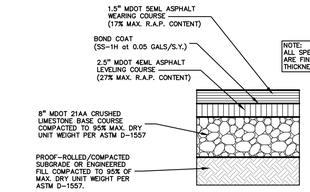
** ANY SPECIALITY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY DO NOT STATE FOR THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW BUT THE CONTRACTOR REQUESTS TO BE REVIEWED. THE CONTRACTOR'S REQUEST FOR REVIEW MUST BE IN WRITING AND APPROVED BY THE ENGINEER PRIOR TO SUBMITTING THE INFORMATION.

AGGREGATE BASE NOTE:
THIS PAVEMENT SECTION DESIGN ASSUMES THE USE OF MDOT 21AA CRUSHED LIMESTONE BASE MATERIAL THAT MEETS THE REQUIREMENTS OF MDOT STANDARD SPECIFICATION SECTION 902 FOR AGGREGATES. IF CRUSHED CONCRETE AGGREGATE BASE IS PROPOSED IN LIEU OF THE SPECIFIED CRUSHED LIMESTONE MATERIAL, PEA GROUP WILL REQUIRE A MINIMUM 25% INCREASE IN BASE THICKNESS. HOWEVER, IF TESTING DOCUMENTATION IS PROVIDED TO PEA GROUP THAT SHOWS THAT THE CRUSHED CONCRETE MATERIAL MEETS ALL REQUIREMENTS OF MDOT SPECIFICATION SECTION 902, THEN THE 25% INCREASE IN THICKNESS MAY BE REEVALUATED.

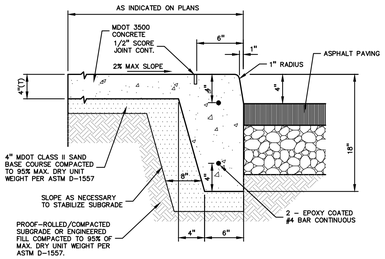
ASPHALT MATERIAL NOTES:
HOT-MIX ASPHALT MIXTURES UTILIZING RECYCLED ASPHALT PAVEMENT (RAP) MUST MEET MDOT SPECIAL PROVISION 12SP501(E). THE BINDER GRADE FOR THIS WORK IS PG64-28. IF ASPHALT MIXES CONTAINING RAP ARE TO BE SUPPLIED FOR THIS PROJECT, THE ASPHALT BINDER MUST BE REVISED PER MDOT "TIER 1" OR "TIER 2" REQUIREMENTS (RAP CONTENT UP TO 27% MAXIMUM). TIER 3 MIXES ARE NOT ACCEPTABLE ON THIS PROJECT. AN ASPHALT MIX DESIGN FOR ALL SPECIFIED MIXES SHOULD BE FORWARDED TO PEA GROUP FOR REVIEW PRIOR TO CONSTRUCTION

ASPHALT MIX DESIGN CHART

COMMERCIAL ADT 0-300	COMMERCIAL ADT 301-1000	COMMERCIAL ADT 1001-3400	COMMERCIAL ADT 3401	APPLICATION RATE (LB/YD²), MINIMUM - MAXIMUM	COURSE APPLICATION
2EL	2EML	2EMH	2EH	435-550	BASE
3EL	3EML	3EMH	3EH	330-410	BASE AND/OR LEVELING
4EL	4EML	4EMH	4EH	220-275	LEVELING AND/OR TOP
5EL	5EML	5EMH	5EH	165-220	TOP
PG 58-28	PG 64-28	PG 64-28	PG 70-28P		

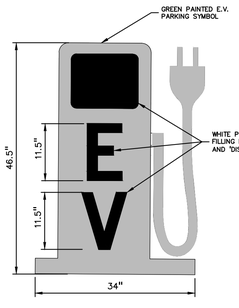


STANDARD DUTY ASPHALT DETAIL
(NOT FOR USE IN THE RIGHT-OF-WAY)
NOT TO SCALE

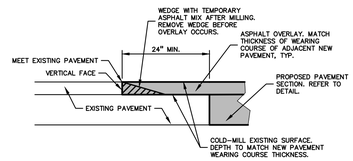


CONTRACTION JOINTS TO BE T/4 DEEP. SPACED AT INTERVALS TO MATCH SIDEWALK WIDTH (SAWCUT). 1/2-INCH PRE-MOLDED FILLER EXPANSION JOINTS WITH JOINT SEALANT SHALL BE PLACED ONLY WHERE SIDEWALK ABUTS A STRUCTURE.

INTEGRAL CURB AND SIDEWALK
NOT TO SCALE



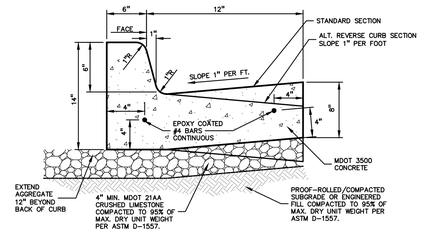
EV PARKING SYMBOL
NOT TO SCALE



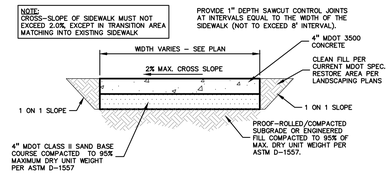
BUTT JOINT DETAIL
NOT TO SCALE

NOTE:
ALTERNATE REVERSE CURB SECTION TO BE USED ONLY WHEN DRAINING AWAY FROM CURB. SEE PLAN FOR LOCATION.

NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. PROVIDE EXPANSION JOINT AND JOINT SEALANT AT END OF RADIUS RETURNS PER MDOT AND ACA STANDARDS. PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.



18"x6" STANDARD CONCRETE CURB AND GUTTER
NOT TO SCALE



CONCRETE SIDEWALK
NOT TO SCALE

PEA GROUP
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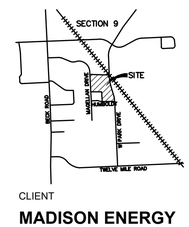
STATE OF MICHIGAN
REBECCA LYNNE KLEIN
License No. 6201058042
REGISTERED PROFESSIONAL ENGINEER

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE LOCATIONS. NO WARRANTY IS EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS

PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

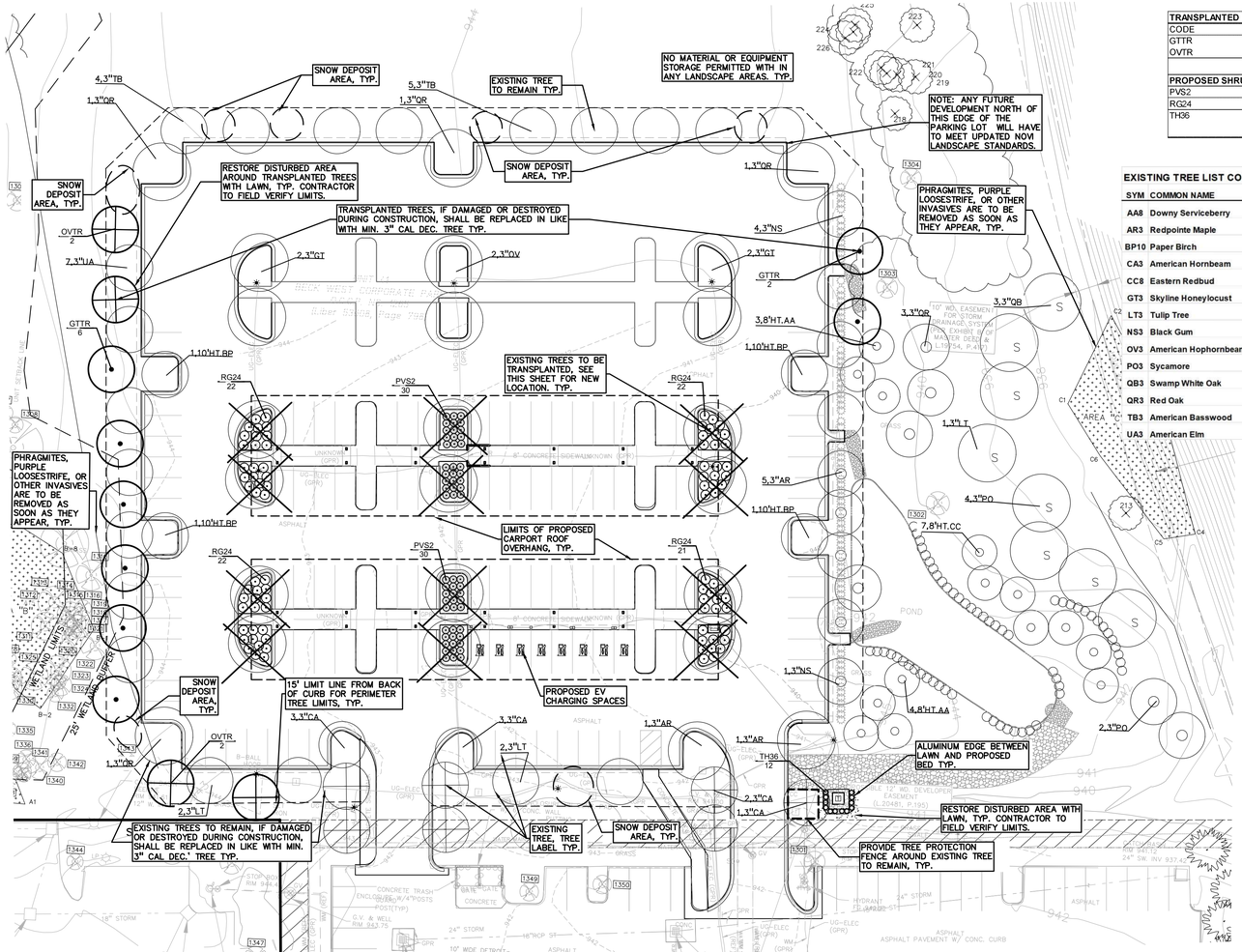
ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
NOTES AND DETAILS

PEA JOB NO.	2023-1048
P.M.	BK
DN.	MT
DES.	MT

DRAWING NUMBER:
C-5.0

S:\PROJECTS\2023\23-1048 LINEAGE LOGISTICS CARPORT\Civil\3_CONSTRUCTION\C-5.0DETAILS-23-1048.dwg PLOT DATE: 11/27/2024 BY: Becky Klein



TRANSPLANTED DECIDUOUS TREES								
CODE	QTY	UNIT	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	DESIGNATION
GTTR	8	ea	GLEDITSIA TRIACANTHOS INERMIS 'SKYCOLE'	SKYLINE HONEY LOCUST	3" CAL	TRANSPLANT	PER PLAN	NATIVE
OVTR	4	ea	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	3" CAL	TRANSPLANT	PER PLAN	NATIVE
	12		SUBTOTAL					
PROPOSED SHRUBS/ PERENNIALS								
PVS2	60	ea	SHENANDOAH SWITCH GRASS	PANICUM VIRGATUM 'Shenandoah'	1 GAL	CONT.	36" O.C.	NATIVE
RG24	87	ea	GRO LOW SUMAC	RHUS AROMATICA 'Gro-Low'	2` HT.	CONT.	48" O.C.	NATIVE
TH36	12	ea	TAXUS X MEDIA 'HICKSII'	HICKS ANGLO-JAPANESE YEW	3` HT.	CONT.	30" O.C.	NON-NATIVE
	159		SUBTOTAL					

EXISTING TREE LIST CODES

SYM	COMMON NAME	SCIENTIFIC NAME
AA8	Downy Serviceberry	*Amelanchier arborea*
AR3	Redpointe Maple	*Acer rubrum 'Redpointe'*
BP10	Paper Birch	*Betula papyrifera*
CA3	American Hornbeam	*Carpinus caroliniana*
CC8	Eastern Redbud	*Cercis candadensis*
GT3	Skyline Honeylocust	*Gleditsia triacanthos*
LT3	Tulip Tree	*Liriodendron tulipifera*
NS3	Black Gum	*Nyssa sylvatica*
OV3	American Hophornbeam	*Ostrya virginiana*
PO3	Sycamore	*Platanus occidentalis*
QB3	Swamp White Oak	*Quercus bicolor*
QR3	Red Oak	*Quercus rubra*
TB3	American Basswood	*Tilia americana*
UA3	American Elm	*Ulmus americana*

LANDSCAPING COST OPINION

QUANTITY	UNIT	DESCRIPTION	UNIT PRICE	ITEM PRICE
99	EA.	SHRUBS	$50.00	$4,950.00
60	EA.	PERENNIALS/ORNAMENTAL GRASSES	$15.00	$900.00
12	EA.	DECIDUOUS TREES RELOCATION	$400.00	$4,800.00
60	L.F.	ALUMINUM EDGING	$5.00	$300.00
28	C.Y.	TOPSOIL FOR SEED LAWN (3" DEPTH)	$7.00	$196.00
334	S.Y.	SEED LAWN	$3.00	$1,002.00
		TOTAL LANDSCAPING		$12,308.00

TRANSFORMER SCREENING DETAIL

NOT TO SCALE

PERENNIAL PLANTING DETAIL

NOT TO SCALE

SPECIFICATION FOR LANDSCAPE BED EDGING:

LANDSCAPE BED EDGING SHALL BE COMMERCIAL GRADE ALUMINUM AS MANUFACTURED BY PERMALOC 1.800.356.9660 OR APPROVED EQUAL.

(8') EIGHT OR (16') SIXTEEN FOOT SECTIONS SHALL BE USED WITH ONE STAKE PER (38") THIRTY EIGHT INCHES OF EDGING.

EDGING SHALL BE $\frac{3}{8}$" THICK X 4" DEPTH WHEN ADJ. TO MULCH AND $\frac{3}{8}$" THICK X 5 ½" DEPTH WHEN ADJ. TO ROCK. FINISH, BLACK DURAFLEX MEETS AAMA 2603

STAKE SHALL SECURELY ENGAGE EDGING AND SHALL BE ENTIRELY BELOW TOP SURFACE OF EDGING.

EDGING SHALL HAVE A MINIMUM OF (2") TWO INCHES OF INTERLOCKING OVERLAP BETWEEN SECTIONS.

INSTALL AS PER MANUFACTURER'S SPECIFICATIONS WITH TOP OF EDGING $\frac{1}{4}$"–$\frac{1}{2}$" ABOVE COMPACTED FINISH GRADE. FINISH GRADE TO BE COMPACTED ON EITHER SIDE OF EDGING TO MAINTAIN STABILITY.

ALUM. EDGING DETAIL

NOT TO SCALE

NOTE:

ORIENT STAKING/GUYING TO PREVAILING WINDS, EXCEPT ON SLOPES GREATER THAN 3:1 ORIENT TO SLOPE.

USE SAME STAKING/GUYING ORIENTATION FOR ALL PLANTS WITHIN EACH GROUPING OR AREA

TREE STAKING DETAIL

NOT TO SCALE

NOTE:

1. SHRUB SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.
2. PRUNE ONLY DEAD OR BROKEN BRANCHES.
3. REMOVE ALL TAGS, STRING, PLASTIC, ROPES, CABLES, AND OTHER MATERIALS THAT ARE UNSIGHTLY AND COULD CAUSE GIRDLING.

SHRUB PLANTING DETAIL

NOT TO SCALE

NOTE:

1. TREE SHALL BEAR SAME RELATION TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.
2. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.
3. REMOVE ALL TAGS, STRING, PLASTIC, ROPES, CABLES, AND OTHER MATERIALS THAT ARE UNSIGHTLY AND COULD CAUSE GIRDLING.
4. DIRT FROM ROOTBALL IS TO BE REMOVED TO EXPOSE ROOT FACE.

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

KEY:

- = EXISTING TREES TO REMAIN
- 4,3"QR = EXISTING TREE LABEL QTY, SIZE AT TIME OF PLANTING, TYPE
- ☒ = TREES TO BE RELOCATED
- = RELOCATED TREE IN NEW LOCATION
- = PROPOSED SHRUBS
- = PROPOSED PERENNIALS
- ▨ = RESTORE DISTURBED LAWN, VERIFY LIMITS
- = POTENTIAL SNOW STORAGE AREA
- — — — — = 15' LINE FOR PERIMETER TREE LIMITS
- = TREE PROTECTION FENCE SEE DETAIL ON SHEET C–1.1

CITY OF NOVI REQUIREMENTS

AS PER PLAN REVIEW CENTER REPORT DATED JULY 17, 2024 NO NEW TREES ARE REQUIRED AS LONG AS THE RELOCATED TREES ARE REPLACED AROUND THE PARKING LOT TO PROVIDE SHADE.

A WAIVER IS REQUESTED FROM SECTION 5.3.12 OF NOVI ZONING ORDINANCE TO ALLOW SOME OF THE EXISTING INTERIOR LANDSCAPE TREES TO BE REMOVED FOR THE CONSTRUCTION OF SOLAR CANOPIES. REPLACEMENT TREES WILL BE PLACED AROUND THE PERIMETER OF THE PARKING AREA

PROVIDED: 12 EXISTING TREES RELOCATED WITHIN 15' OF THE PARKING LOT, PROPOSED EVERGREEN SHRUBS AT NEW TRANSFORMER LOCATION AND PROPOSED SHRUBS/PERENNIALS UNDER NEW CARPORT CANOPY

THE OWNER SHALL COMPARE THE ORIGINAL APPROVED LANDSCAPED PLANS TO THE EXISTING LANDSCAPE PLANTINGS AROUND THE ENTIRE SITE AND WILL REPLACE ANY MISSING OR DEAD PLANTINGS PER THE ORIGINAL APPROVED LANDSCAPE PLAN.

INVASIVE PLANT NOTE:

IF PHRAGMITES STILL EXIST OR OTHER INVASIVE SPECIFIES, IT SHALL BE CHEMICALLY TREATED BY A LICENSE ANC CONTRACTOR TO KILL IT.

REPLACEMENT / TRANSPLANT TREE NOTE:

IF TREE TO BE TRANSPLANTED IS IN POOR CONDITION, DAMAGED, OR DEAD - REPLACE WITH NEW TREE OF SAME SPECIES AND MIN. 3" CAL. SIZE.

IRRIGATION NOTE:

EXISTING IRRIGATION SYSTEM SHALL BE EXTENDED/ MODIFIED AS NECESSARY FOR NEW PLANTING LOCATIONS/ RELOCATED TREES.

TRANSPLANTED MATERIAL GUIDELINES

1. ALL TRANSPLANTED TREES SHALL BE FROM ON-SITE. TREES MAY BE REJECTED FOR REASONS OF INSECT INFESTATION, DISEASE OR TREE DAMAGE.
2. THE ROOT BALL OF ANY TRANSPLANTED TREE SHALL MEASURE 1 FOOT FOR EACH INCH OF TRUNK DIAMETER MEASURED 12" ABOVE THE GROUND.
3. IF THERE IS AN OPTION BETWEEN IMMEDIATELY TRANSPLANTING OR TEMPORARILY STOCKPILING TREES, TREES SHOULD BE IMMEDIATELY TRANSPLANTED
4. IF TREES ARE TO BE STORED, THEY SHALL BE BURLAPPED AND HEELED IN WITH MULCH IN A PRE-DETERMINED AREA PROVIDED BY CONTRACTOR.
5. THE TREES SHALL BE PROVIDED WITH ACCESSIBLE WATER TO ENSURE THEIR VIABILITY DURING STORAGE.
6. TREES TRANSPLANTED IN CLOSE PROXIMITY TO CONSTRUCTION AREAS ARE TO HAVE TREE PROTECTION FENCING INSTALLED AT THEIR DRIP LINE.
7. TRANSPLANTED TREES ARE GUARANTEED FOR 2 YEARS. IF THEY WEAKEN OR FAIL DURING THAT TIME THEY MUST BE REPLACED.

CITY OF NOVI LANDSCAPE NOTES:

1. ALL PLANT MATERIALS ARE TO BE INSTALLED IN A SOUND, WORKMAN-LIKE MANNER AND IN ACCORDANCE WITH THE CURRENT CITY OF NOVI PLANTING REQUIREMENTS.
2. ALL PLANT MATERIALS SHALL BE INSTALLED BETWEEN MARCH 15th AND NOVEMBER 15th.
3. ALL PLANT MATERIALS ARE TO BE NORTHERN NURSERY GROWN NO. 1 GRADE AND INSTALLED ACCORDING TO ACCEPTED PLANTING PROCEDURES. ALL PLANT MATERIALS SHALL CONFORM TO THE CURRENT AMERICAN ASSOCIATION OF NURSERYMEN (AAN) STANDARDS FOR NURSERY STOCK. THEY SHALL BE PLANTED ACCORDING TO THE CITY OF NOVI PLANTING DETAILS AND SPECIFICATIONS. THE CITY SHALL HAVE THE RIGHT TO INSPECT THE PLANT MATERIALS PRIOR TO PLANTING AND TO REJECT ANY PLANT MATERIALS DEEMED NOT TO MEET THE STANDARDS OF THE CITY OF NOVI ZONING ORDINANCE OR LANDSCAPE DESIGN MANUAL.
4. ALL TREES SHALL HAVE A CENTRAL LEADER AND A RADIAL BRANCHING STRUCTURE. PARK GRADE TREES ARE NOT ACCEPTABLE. ALL TREES SHALL BE BALLED AND BURLAPPED (B&B).
5. ANY DECIDUOUS CANOPY TREES WITH BRANCHES THAT MIGHT TEND TO DEVELOP INTO “V” CROTCHES SHALL BE SUBORDINATED SO AS NOT TO BECOME DOMINANT BRANCHES.
6. MULCH SHALL BE NATURAL COLOR, FINELY SHREDDED HARDWOOD BARK FOR ALL PLANTINGS - 3” THICK FOR TREES IN A 4-FOOT DIAMETER CIRCLE WITH 3” PULLED AWAY FROM TRUNK, 3” THICK FOR SHRUBS AND SHRUB BEDS, AND 2” THICK FOR PERENNIALS AND PERENNIAL BEDS. ALSO PULL AWAY ROOT BALL DIRT FROM TRUNK AND ROOT FLARE.
7. ALL PLANT MATERIAL SHALL BE WARRANTIED FOR TWO (2) FULL YEARS AFTER DATE OF ACCEPTANCE BY THE CITY OF NOVI. ALL UNHEALTHY AND DEAD MATERIAL SHALL BE REPLACED WITHIN THREE (3) MONTHS OR THE NEXT APPROPRIATE PLANTING PERIOD.
8. ALL PLANT MATERIAL SHALL BE MAINTAINED IN A HEALTHY GROWING CONDITION, INCLUDING WATERING, CULTIVATION, WEED CONTROL AND SOIL ENRICHMENTS AS MAY BE NECESSARY.
9. ANY SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED IN WRITING BY THE CITY OF NOVI PRIOR TO INSTALLATION.
10. ALL LANDSCAPE AREAS ARE TO BE MAINTAINED IN A HEALTHY GROWING CONDITION FREE OF DEBRIS AND REFUSE AND IN CONFORMANCE WITH THE APPROVED LANDSCAPE PLAN.
11. CONTRACTOR TO REMOVE ALL CONSTRUCTION DEBRIS AND EXCESS MATERIAL FROM THE SITE PRIOR TO FINAL ACCEPTANCE.
12. PLANT MATERIALS, EXCEPT SOD, GROUND COVERS AND CREEPING VINE TYPE PLANTINGS, SHALL NOT BE LOCATED WITHIN FOUR (4) FEET OF THE PROPERTY LINE.
13. ALL TRANSFORMERS ARE TO BE SCREENED ON THREE SIDES (MINIMUM) IN ACCORDANCE WITH THE CITY OF NOVI ORDINANCE AND SO AS TO NOT CONFLICT WITH DTE RESTRICTIONS (SEE DETAIL THIS SHEET).
14. THE OWNER IS RESPONSIBLE FOR REQUEST OF FINAL INSPECTION AND ACCEPTANCE OF THE LANDSCAPE AT THE END OF THE 2-YEAR GUARANTEE PERIOD.
15. THE PROVIDER OF THE FINANCIAL GUARANTEE FOR THE LANDSCAPE INSTALLATION SHALL BE FULLY REPSONSIBLE FOR COMPLETION OF THE LANDSCAPE INSTALLATION AND MAINTENANCE PER THE APPROVED LANDSCAPE PLAN AND APPLICABLE CITY ORDINANCES.

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NORTH

0 15 30 60
SCALE: 1" = 30'

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CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
LANDSCAPE PLAN

PEA JOB NO.	2023-1048
P.M.	BK
DN.	CAL
DES.	JLE

DRAWING NUMBER:
L-1.0

GENERAL LANDSCAPING REQUIREMENTS

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. General procedures and requirements for Site Work.

2.0 PRODUCTS — Not Used

3.0 EXECUTION

3.1 PREPARATION

3.1.1 Protection

1. Spillage:

   A. Avoid spillage by covering and securing loads when hauling on or adjacent to public streets or highways.

   B. Remove spillage and sweep, wash, or otherwise clean project, streets, and highways.

2. Erosion Control:

   A. Take precautions necessary to prevent erosion and transportation of soil downstream, to adjacent properties, and into on-site or off-site drainage systems.

   B. Develop, install, and maintain an erosion control plan if required by law.

   C. Repair and correct damage caused by erosion.

3. Existing Plants And Features:

   A. Do not damage tops, trunks, and roots of existing trees and shrubs on site which are intended to remain.

   B. Do not use heavy equipment within branch spread. Interfering branches may be removed only with permission of Landscape Architect.

   C. Do not damage other plants and features which are to remain.

3.1.2 If specified precautions are not taken or corrections and repairs made promptly, Owner may take such steps as may be deemed necessary and deduct costs of such from monies due to Contractor. Such action or lack of action on Owner's part does not relieve Contractor from responsibility for proper protection of the Work.

END OF SECTION

LANDSCAPING PREPARATION

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. General landscape work requirements.

1.2 QUALITY ASSURANCE

1.2.1 Comply with all applicable local, state and federal requirements, regarding materials, methods of work, and disposal of excess and waste materials.

1.2.2 Obtain and pay for all required inspections, permits, and fees.

1.2.3 Provide notices required by governmental authorities.

1.3 PROJECT CONDITIONS

1.3.1 Locate and identify existing underground and overhead services and utilities within contract limit work areas. (Call Miss Dig: 1-800-482-7171 in Michigan).

1.3.2 Provide adequate means to protect utilities and services designated to remain.

1.3.3 Repair utilities damaged during site work operations at Subcontractor's expense.

1.3.4 When uncharted or incorrectly charted underground piping or other utilities and services are encountered during site work operations, notify the applicable utility company immediately to obtain procedure directions. Cooperate with the applicable utility company in maintaining active services in operation.

1.3.5 Locate, protect, and maintain benchmarks, monuments, control points and project engineering reference points. Re-establish disturbed or destroyed items at Subcontractor's expense.

1.3.6 Perform landscape work operations and the removal of debris and materials to assure minimum interference with streets, walks, and other adjacent facilities.

1.3.7 Obtain governing authorities' written permission when required to close or obstruct streets, walks and adjacent facilities. Provide alternate routes around closed or obstructed traffic ways when required by governing authorities.

1.3.8 Protect and maintain street lights, utility poles and services, traffic signal control boxes, curb boxes, valves and other services, except items designated for removal.

1.3.9 The General Contractor will occupy the premises and adjacent facilities during the entire period of construction. Perform landscape work operations to minimize conflicts and to facilitate General Contractor's use of the premises and conduct of his normal operations.

1.3.10 Perform landscape preparation work before commencing landscape construction.

1.3.11 Provide necessary barricades, coverings and protection to prevent damage to existing improvements indicated to remain.

1.3.12 Protect existing trees scheduled to remain against injury or damage including cutting, breaking or skinning of roots, trunks or branches, smothering by stockpiled construction materials, excavated materials or vehicular traffic within branch spread.

2.0 PRODUCTS

2.1 MATERIALS/EQUIPMENT

2.1.1 As selected by the General Contractor, except as indicated.

1. Tree protection:

   A. Wood fencing — Snow fencing 4' height.

   B. Posts — Steel fence post.

   C. Herbicide for lawn restoration — "Round-up" by Monsanto.

3.0 EXECUTION

3.1 EXISTING UTILITIES

3.1.1 Call "MISS DIG" 811 before construction begins. Information on the drawings related to existing utility lines and services is from the best sources presently available. All such information is furnished only for information and is not guaranteed. Excavate test pits as required to determine exact locations of existing utilities.

3.2 CLEARING

3.2.1 Locate and suitably identify trees and improvements indicated to remain.

3.2.2 Fencing/soil erosion fence is to be installed.

3.2.3 Any equipment that compacts the soil in the areas of existing trees is not allowed.

3.2.4 Protect trees scheduled to remain with 4' high snow fence per plans.

3.2.5 No vehicular traffic is permitted beneath drip line at any time. All lawn areas are to be worked by hand.

3.2.6 Clear and grub areas within contract limits as required for site access and execution of the work.

3.2.7 Remove trees, plants, undergrowth, other vegetation and debris, except items indicated to remain.

3.2.8 Treat planting and lawn areas as required with herbicide per manufacturer recommendations to kill existing vegetation prior to planting, seeding and sodding.

3.2.9 Remove stumps and roots to a clear depth of 36" below subgrades. Remove stumps and roots to their full depth within 5'0" of underground structures, utility lines, footings, and paved areas.

3.3 DISPOSAL OF WASTE MATERIALS

3.3.1 Stockpile, haul from site and legally dispose of waste materials and debris. Accumulation is not permitted.

3.3.2 Maintain disposal routes, clear, clean and free of debris.

3.3.3 On site burning of combustible cleared materials is not permitted.

3.3.4 Upon completion of landscape preparation work, clean areas within contract limits, remove tools and equipment. Site to be clear, clean and free of materials and debris and suitable for site work operations.

3.3.5 Materials, items and equipment not scheduled for reinstallation or salvaged for the General Contractor are the property of the Landscape Contractor. Remove cleared materials from the site as the work progresses. Storage and sale of Landscape Contractors salvage items on site is not permitted.

END OF SECTION

FINISH GRADING AND TOPSOIL PLACEMENT

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Perform finish grading and topsoil placement required to prepare site for installation of landscaping as described in Contract Documents.

1.2 SUBMITTALS

1.2.1 Quality Assurance

1. Submit test on imported topsoil and on site stockpiled topsoil by independent licensed testing laboratory prior to use. Imported topsoil shall meet minimum specified requirements and be approved by Landscape Architect prior to use.

2. Provide and pay for testing and inspection during topsoil operations. Laboratory, inspection services, and Soils Engineer shall be acceptable to the Landscape Architect.

3. Submit report stating location of source of imported topsoil and account of recent use.

4. Test for pH factor, mechanical analysis, and percentage of organic content.

5. Submit test reports to General Contractor.

6. Sub-Contractor, or testing agency to make recommendations on type of quantity of additives required to establish satisfactory pH factor and supply of nutrients to bring nutrients to satisfactory level for planting.

1.3 QUALITY ASSURANCE

1.3.1 Participate in pre-installation meeting with Landscape Architect.

1.4 PROJECT CONDITIONS

1.4.1 Also see Landscape Preparation Section.

1.4.2 Protect existing trees, plants, lawns, and other features designated to remain as part of the landscaping work.

1.4.3 Promptly repair damage to adjacent facilities caused by topsoil operations. Cost of repair at Subcontractor's expense.

1.4.4 Promptly notify the General Contractor and Landscape Architect of unexpected subsurface conditions.

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Topsoil: supplied and stockpiled topsoil proposed for use must meet the testing criteria results specified. Topsoil must conform to adjustments and recommendations from the soil test and by the Landscape Architect.

2.1.2 Existing topsoil: existing topsoil from on-site stockpile shall be utilized. All processing, cleaning, and preparation of this stored topsoil to render it acceptable for use is the responsibility of the Subcontractor.

2.1.3 Provide additional topsoil as required to complete the job. Topsoil must meet testing criteria results specified.

2.1.4 All processing, cleaning, and preparation of this supplied topsoil to render it acceptable for use is the responsibility of the Subcontractor.

2.1.5 Supplied and stockpiled topsoil, shall be fertile, friable, dark in color and representative of local productive soil, capable of sustaining vigorous plant growth and free of clay lumps, subsoil, noxious weeds or other foreign matter such as stones of 1" in any dimension, roots, sticks, and other extraneous material: not frozen or muddy. PH of soil range between 5.0 and 7.5

2.1.6 Soil shall not contain more than 2 percent of particles measuring over 2.0 mm in largest size

2.1.7 Prepared topsoil shall be used in planting mixtures as specified in Trees, Plants, and Ground Cover; all beds prepared as specified.

3.0 EXECUTION

3.1 EXAMINATION

3.1.1 Do not commence work of this Section until grading tolerances specified are met.

3.2 PREPARATION

3.2.2 Prior to grading, dig out weeds from planting areas by their roots and remove from site. Before placing top soil in landscape areas, remove rocks larger than 1 inch in any dimension and foreign matter such as building rubble, wire, cans, sticks, concrete, etc.

3.2.3 Prior to placing topsoil, remove any imported base material present in planting areas down to natural subgrade or other material acceptable to Landscape Architect.

3.3 PERFORMANCE

3.3.1 Site Tolerances

1. Total Topsoil Depth —

   A. Lawn And Groundcover Planting Areas — 3 inches minimum compacted.

   B. Shrub Planting Areas — 12 inches minimum throughout entire shrub bed area.

2. Elevation of topsoil relative to walks or curbs —

   A. Seeded Lawn Areas — 1/4 inch below

   B. Sodded Lawn Areas — 1 1/2 inches below

   C. Shrub And Ground Cover Areas — 3 inches below

3.3.2 Do not expose or damage existing shrub or tree roots.

3.3.3 Redistribute approved existing top soil stored on site as a result of rough grading. Remove organic material, rocks and clods greater than 1 inch in any dimension, and other objectionable materials. Provide additional approved imported topsoil required for specified topsoil depth and bring surface to specified elevation relative to walk or curb.

3.3.4 For trees, shrubs, ground cover beds and plant mix for beds see Exterior Plants section.

3.3.5 Provide earth berming where indicated on Plans.

3.3.6 Berming to be free flowing in shape and design, as indicated, and to blend into existing grades gradually so that the toe of slope is not readily visible. Landscape Architect or General Contractor's representative to verify final contouring before planting.

3.3.7 Regardless of finish grading elevations indicated, it is intended that grading be such that proper drainage of surface water away from buildings will occur and that no low areas are created to allow ponding. Subcontractor to consult the General Contractor and Landscape Architect regarding variations in grade elevations before rough grading is completed.

3.3.8 Slope grade away from building for 12 feet minimum from walls at slope of 1/2 inch per ft minimum unless otherwise noted. High point of finish grade at building foundation shall be 6 inches minimum below finish floor level. Direct surface drainage in manner indicated on Drawings by molding surface to facilitate natural run-off of water. Fill low spots and pockets with top soil and grade to drain properly.

3.3.9 Rake all topsoil to remove clods, rocks, weeds, and debris.

3.3.10 Grade and shape area to bring surface to true uniform planes free from irregularities and to provide proper drainage and slopes per plans.

3.4 CLEANING

3.4.1 Upon completion of topsoil operations, clean areas within contract limits, remove tools, equipment, and haul all excess topsoil off-site. Site shall be clear, clean, free of debris, and suitable for site work operations.

END OF SECTION

LAWN SEEDING

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Furnish and install seeded lawn as described in Contract Documents.

1.2 SUBMITTALS

1.2.1 Submit seed vendor's certification for required grass seed mixture, indicating percentage by weight, and percentage of purity, germination, and weed seed for each grass species.

1.3 DELIVERY AND STORAGE

1.3.1 Deliver seed and fertilizer materials in original unopened containers, showing weight, analysis, and name of manufacturer. Store in a manner to prevent wetting and deterioration.

1.4 PROJECT CONDITIONS

1.4.1 See landscape preparation section.

1.4.2 Work notification: Notify Landscape Architect of General Contractor's representative at least seven (7) working days prior to start of seeding operation.

1.4.3 Protect existing utilities, paving, and other facilities from damage caused by seeding operations.

1.4.4 Perform seeding work only after planting and other work affecting ground surface has been completed.

1.4.5 Provide hose and lawn watering equipment as required.

1.4.6 The irrigation system will be installed prior to seeding. Locate, protect, and maintain the irrigation system during seeding operations. Repair irrigation system components damaged during seeding operations at the Sub-Contractor's expense.

1.5 WARRANTY

1.5.1 See Landscape Maintenance and Warranty Section

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Topsoil for Seeded Areas: See Topsoil Placement and Drawings.

2.1.2 Lawn seeded areas: Fresh, clean and new crop seed mixture. Mixed by approved methods.

2.1.3 Seed mixture composed of the following varieties, mixed to the specified proportions by weight and tested to minimum percentages of purity and germination.

2.1.4 Irrigated Lawn Seed Mixture proportioned by volume as indicated below:

SEED TYPE	PROPORTION	PURITY	GERMINATION
Kentucky Bluegrass	50%	90%	75%
Penn Lawn Fescue	30%	95%	80%
Annual Ryegrass	20%	95%	80%

2.1.5 Non-Irrigated Seed Mixture proportioned by volume as indicated below:

SEED TYPE	PROPORTION	PURITY	GERMINATION
Penn Lawn Fescue	60%	90%	85%
Kentucky 28@ Common Bluegrass	20%	90%	90%
Pennfine Perennial Rye	20%	90%	90%

2.1.6 Fertilizer: granular, non burning product composed of not less that 50% organic slow acting, guaranteed analysis professional fertilizer.

2.1.7 Ground Limestone: Used if required by soil test report: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20% mesh sieve.

2.1.8 Straw Mulch: Used in crimping process only. Clean oat or wheat straw well seasoned before baling, free from mature seed-bearing status, or roots of prohibited or noxious weeds.

2.1.9 Water: Free of substance harmful to seed growth. Hoses or other methods to transpiration furnished by Sub Contractor.

3.0 EXECUTION

3.1 INSPECTION

3.1.1 Landscape Architect or General Contractor's representative must approve finish surfaces, grades, topsoil quality and depth. Do not start seeding work until unsatisfactory conditions are corrected.

3.2 PREPARATION

3.2.1 SURFACE PREPARATION

1. Seven days maximum prior to seeding, —

   A. Treat Lawn areas if required with "Round-Up" by Monsanto, per label direction to kill existing vegetation prior to seeding.

   B. Loosen topsoil areas to minimum depth of 4", dampen thoroughly, and cultivate to properly break up clods and lumps.

   C. Rake area to remove clods, rocks, weeds, roots, debris, and stones over 1" in any dimension.

   D. Grade lawn areas to smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain.

   E. Apply limestone to supplied topsoil if required by soil test report at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 no more that 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.

   F. Apply fertilizers to indicated turf areas at a rate equal to 1 lb. of actual nitrogen 1,000 sq. ft. (43 lbs / acre).

   G. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 1" by approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.

   H. After lawn areas have been prepared, take no heavy objects over them except lawn rollers.

   I. After preparation of lawn areas and with topsoil in semi-dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs according to soil type.

   J. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.

   K. Restore prepared areas to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to seeding.

3.3 INSTALLATION

3.3.1 SEEDING

1. Seed lawns only between April 1, and June 1, and fall seeding between August 15, and October 15, or at such other times acceptable to Landscape Architect.

2. Seed immediately after preparation of bed. Seed indicated areas within contract Limits and areas adjoining contract limits disturbed as a result of construction operations.

3. Perform seeding operations when the soil is dry and when the winds do not exceed five(5) miles per hour velocity.

4. Apply seed with a rotary or drop type distributor. Install seed evenly by sowing equal quantities in two (2) directions, at right angles to each other.

5. Sow seed at a rate of 300 lbs./acre.

6. After seeding, rake or drag surface of soil lightly to incorporate seed into top 1/8" of soil. Roll with light lawn roller.

7. Provide soil erosion planting mat where grade conditions required to stabilize the planting area.

3.3.2 HYDRO-SEEDING

1. Hydro-seeding: The application of grass seed and a wood cellulose fiber mulch tinted green shall be accomplished in one operation by use of an approved spraying machine.

   A. Mix seed, fertilizer, and wood cellulose fiber in required amount of water to produce a homogeneous slurry. Add wood cellulous fiber after seed, water, and fertilizer have been thoroughly mixed and apply at the rate of 200 pounds per acre dry weight.

   B. For hydro-seeding, wood cellulose fiber shall be used. Silva-Fiber Mulch by Weyerhaeuer Company, Tacoma, WA (800-443-9179).

   C. Hydraulically spray material on ground to form a uniform cover impregnated with grass seed.

   D. Immediately following application of slurry mix, make separate application of wood cellulose mulch at the rate of 1,000 pounds, dry weight, per acre.

   E. Apply cover so that rainfall or applied water will percolate to underlying soil.

3.3.3 MULCHING

1. Place straw mulch on seeded areas within 24-hours after seeding.

2. Place straw mulch uniformly in a continuous blanket at a rate of 2-1/2 tons per acre, or two (2) 50 lb. bales per 1,000 sq. ft. of area. A mechanical blower may be used for straw mulch application when acceptable to the Landscape Architect.

3. Crimp straw into soil by use of a "crimper". Two passes in alternate direction required. Alternative methods on areas too small for crimper must be approved by the Landscape Architect or Owner's Representative.

3.3.3 ESTABLISH LAWN

1. Establish dense lawn of permanent grasses, free from lumps and depressions. Any area failing to show uniform germination to be reseeded; continue until dense lawn established.

2. Damage to seeded area resulting from erosion to be repaired by Sub Contractor.

3. In event Sub Contractor does not establish dense lawn during first germination period, return to project to refertilize and reseed to establish dense lawn.

4. Should the seeded lawn become largely weeds after germination, Sub Contractor is responsible to kill the weeds and reseed the proposed lawn areas to produce a dense turf, as specified.

3.4 CLEANING

3.4.1 Perform Cleaning during installation of the work and upon completion of the work to the approval of the Landscape Architect. Remove from site all excess materials, debris, and equipment. Repair damage resulting from seeding operations.

3.5 MAINTENANCE

3.5.1 See Landscape Maintenance and Warranty Section.

3.6 ACCEPTANCE

3.6.1 See Landscape Maintenance and Warranty Section.

END OF SECTION

LAWN SODDING

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Furnish and install sodded lawn as described in Contract Documents.

1.2 QUALITY ASSURANCE

1.2.1 Sod: Comply with American Sod Producers Association (ASPA) classes of sod materials.

1.3 SUBMITTALS

1.3.1 Submit sod growers certification of grass species. Identify source location.

1.3.2 Submit manufacturer's certification of fertilizer.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Cut, deliver, and install sod within 24 hour period.

1.4.2 Do not harvest or transport sod when moisture content may adversely affect sod survival.

1.4.3 Protect sod from sun, wind, and dehydration prior to installation. Do not tear, stretch, or drop sod during handling and installation.

1.4.4 Sod which dries out before installation will be rejected.

1.5 PROJECT CONDITIONS

1.5.1 See Landscape Preparation section.

1.5.2 Work notification: Notify Landscape Architect or General Contractor's representative at least seven (7) working days prior to start of sodding operation.

1.5.3 Protect existing utilities, paving, and other facilities from damage caused by sodding operations.

1.5.4 Perform sodding work only after planting and other work affecting ground surface has been completed.

1.5.5 Restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.

1.5.6 Provide hose and lawn watering equipment as required.

1.5.7 The irrigation system will be installed prior to sodding. Locate, protect, and maintain the irrigation system during sodding operations. Repair irrigation system components damaged during sodding operations at the Subcontractor's expense.

1.6 WARRANTY

1.6.1 See Landscape Maintenance and Warranty Section.

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Sod: An "approved" nursery grown blend of improved Kentucky Bluegrass varieties.

2.1.2 Sod containing Common Bermudagrass, Quackgrass, Johnsongrass, Poison Ivy, Nutsedge, Nimblewill, Canada Thistle, Timothy, Bentgrass, Wild Garlic, Ground Ivy, Perennial Sorrel, or Bramegrass weeds will not be acceptable.

2.1.3 Provide well rooted, healthy sod, free of diseases, nematodes and soil borne insects. Provide sod uniform in color, leaf texture, density, and free of weeds, undesirable grasses, stones, roots, thatch, and extraneous material; viable and capable of growth and development when planted.

2.1.4 Furnish sod, machine stripped in square pads or strips not more than 3'-0" long; uniformly 1" to 1-1/2" thick with clean cut edges. Mow sod before stripping.

2.1.5 Fertilizer: granular, non burning product composed of not less that 50% organic slow acting, guaranteed analysis professional fertilizer.

2.1.6 Type A: starter fertilizer containing 20% nitrogen, 12% phosphoric acid, and 8% potash by by weight or similar approved composition.

2.1.7 Ground Limestone: Used if required by soil test report: Containing not less than 85% of total carbonates and ground to such fineness that 50% will pass through a 100 mesh sieve and 90% will pass through a 20% mesh sieve.

2.1.8 Stakes: softwood, 3/4" x 8" long.

2.1.9 Water: Free of substance harmful to seed growth. Hoses or other methods to transpiration furnished by Sub Contractor.

2.1.10 Topsoil: see Topsoil Placement section.

3.0 EXECUTION

3.1 INSPECTION

3.1.1 Landscape Architect or General Contractor's representative must approve finish surfaces, grades, topsoil quality and depth. Do not start sodding work until unsatisfactory conditions are corrected.

3.2 PREPARATION

3.2.1 Surface Preparation:

1. Seven days maximum prior to sodding, —

   a. Treat Lawn areas if required with herbicide per manufacturer recommendations to kill existing vegetation prior to sodding.

   b. Loosen topsoil areas to minimum depth of 4", dampen thoroughly, and cultivate to properly break up clods and lumps.

   c. Rake area to remove clods, rocks, weeds, roots, debris, and stones over 1" in any dimension.

   d. Grade lawn areas to smooth, free draining even surface with a loose, moderately coarse texture. Roll and rake, remove ridges, and fill depressions as required to drain.

   e. Apply limestone to supplied topsoil if required by soil test report at rate determined by the soil test, to adjust pH of topsoil to not less than 6.0 no more that 6.8. Distribute evenly by machine and incorporate thoroughly into topsoil.

   f. Apply fertilizers to indicated turf areas at a rate equal to 1 lb. of actual nitrogen 1,000 sq. ft. (43 lbs / acre).

   g. Apply fertilizers by mechanical rotary or drop type distributor, thoroughly and evenly incorporated with soil to a depth of 1" by approved method. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.

   h. After lawn areas have been prepared, take no heavy objects over them except lawn rollers.

   i. After preparation of lawn areas and with topsoil in semi-dry condition, roll lawn planting areas in two directions at approximately right angles with water ballast roller weighing 100 to 300 lbs.

   j. Rake or scarify and cut or fill irregularities that develop as required until area is true and uniform, free from lumps, depressions, and irregularities.

   k. Restore prepared areas to specified condition if eroded, settled or otherwise disturbed after fine grading and prior to sodding.

   l. Dampen dry soil prior to sodding.

3.3 INSTALLATION

3.3.1 Sodding:

1. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips. Do not overlay edges. Stagger strips to offset joints in adjacent course. Remove excess sod to avoid othering of adjacent grass. Provide sod pad top flush with adjacent curbs, sidewalks, drains, and seeded areas.

2. Do not lay dormant sod or install sod on saturated, frozen soil.

3. Install initial row of sod in a straight line, beginning at the bottom of slopes, perpendicular to direction of the sloped area. Place subsequent rows parallel to and lightly against previously installed row.

4. Peg sod on slopes greater than 3 to 1 or in centerline of swales to prevent slippage at a rate of 2 stakes per yard of sod.

5. Water sod thoroughly with a fine spray immediately after laying to obtain moisture penetration through sod into top 4 inches of topsoil.

6. Roll with light lawn roller in two directions perpendicular to each other to ensure contact with sub grade.

7. Install sod at indicated areas within contract limits and areas adjoining contract limits disturbed as a result of construction operations.

8. Damage to sodded area resulting from erosion to be repaired by Subcontractor.

3.4 CLEANING

3.4.1 Perform Cleaning during installation of the work and upon completion of the work to the approval of the Landscape Architect. Remove from site all excess materials, debris, and equipment. Repair damage resulting from sodding operations.

3.5 MAINTENANCE

3.5.1 See Landscape Maintenance and Warranty Section.

3.6 ACCEPTANCE

3.6.1 See Landscape Maintenance and Warranty Section.

END OF SECTION

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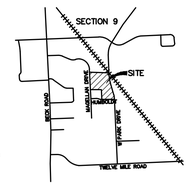
REGISTERED PROFESSIONAL ENGINEER

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE
LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

DRAWING TITLE
LANDSCAPE SPECIFICATIONS

PEA JOB NO.	2023-1048
P.M.	BK
DN.	CAL
DES.	JLE

DRAWING NUMBER:
L-2.1

S:\PROJECTS\2023\23-1048_LINEAGE_LOGISTICS_CARPORT\NOVI\3_CONSTRUCTION\L\L-2.0_LANDSCAPE SPECS- 23-1048.dwg
PLOT DATE: 11/27/2024 BY: Becky Klein

EXTERIOR PLANTS

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Furnish and install landscaping plants as described in Contract Documents.

1.2 QUALITY ASSURANCE

1.2.1 Plant names indicated, comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name and legibly tagged.

1.2.2 Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock". A plant shall be dimensioned as it stands in its natural position.

1.2.3 All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of two years.

1.2.4 Stock furnished shall be at least the minimum size indicated. Larger stock is acceptable, at no additional charge. Larger plants shall not be cut back to size indicated.

1.2.5 Provide "specimen" plants with a special height, shape, or character of growth. Landscape Subcontractor is to tag specimen trees or shrubs at the source of supply. The Landscape Subcontractor shall inspect all plant material at source prior to Landscape Architect's approval. Landscape Subcontractor shall accompany Landscape Architect on final selection trip. The Landscape Architect will inspect specimen selections for suitability and adaptability to selected location. When specimen plants cannot be purchased locally, provide sufficient photographs of the proposed specimen plants for approval.

1.2.6 Plants may be inspected and approved at the place of growth for compliance with specification requirements for quality, size, and variety.

1.2.7 Approval of plant selection at the place of growth shall not impair the right of inspection and rejection upon delivery at the site or during progress of the work.

1.2.8 Provide percolation testing by filling plant pits with water and monitoring length of time for water to completely percolate into soil. Submit test results to Landscape Architect prior to starting work.

1.2.9 Before proceeding with work, check and verify dimensions and quantities. Report variations between Drawings and site to Landscape Architect before proceeding with work of this section.

1.2.10 Plant totals are for convenience only and are not guaranteed. Verify amounts shown on Drawings. All plantings indicated on Drawings are required unless indicated otherwise.

1.3 SUBMITTALS

1.3.1 Provide and pay for material testing. Testing agency shall be acceptable to the Landscape Architect. Provide the following data:

1. The loss of weight by ignition and moisture absorption capacity shall be tested for peat moss.

1.3.2 Submit the following material samples to Landscape Architect:

1. Compost, shredded hardwood bark mulch, planting accessories, pre-emergent herbicides, and plant fertilizers.

1.3.3 Submit the following materials certification to Landscape Architect:

1. Topsoil source and ph value, compost, and plant fertilizer.

1.4 DELIVERY, STORAGE, AND HANDLING

1.4.1 Deliver fertilizer materials in original, unopened and undamaged containers showing weight, analysis, and name of manufacturer. Store in manner to prevent wetting and deterioration.

1.4.2 Take all precautions customary in good trade practice in preparing plants for moving. Workmanship that fails to meet the highest standards will be rejected.

1.4.3 Spray deciduous plants in foliage with an approved "Anti-Desiccant" immediately after digging to prevent dehydration.

1.4.4 Dig, pack, transport, and handle plants with care to ensure protection against injury.

1.4.5 Inspection certificates required by law shall accompany each shipment invoice or order to stock on arrival. The certificate shall be filed with the General Contractor's representative.

1.4.6 Protect all plants from drying out. If plants cannot be planted immediately upon delivery, properly protect them with soil, shredded hardwood bark mulch, or in a manner acceptable to the General Contractor's representative.

1.4.7 Water heeled in plantings daily.

1.4.8 No plant shall be bound with rope or wire in a manner that could damage or break the branches.

1.4.9 Cover plants transported on open vehicles with a protective covering to prevent wind burn.

1.4.10 Frozen or muddy topsoil is not acceptable.

1.5 PROJECT CONDITIONS

1.5.1 See Landscape Preparation Section.

1.5.2 Work notification: notify Landscape Architect at least seven working days prior to installation of plant material.

1.5.3 Protect existing utilities, paving, and other facilities from damage caused by landscaping operations.

1.5.4 A complete list of plants, including a schedule of sizes, quantities, and other requirements is shown on the proposal form. In the event that quantity discrepancies or material omissions occur in the proposal form, Subcontractor shall notify the Landscape Architect during the proposal bidding process.

1.5.5 An irrigation system will be installed prior to planting. Locate, protect, and maintain the irrigation system during planting operations. Repair irrigation system components, damaged during planting operations, at the Landscape Subcontractor's expense.

1.5.6 The Landscape Subcontractor shall inspect existing soil conditions in all areas of the site where his operations will take place, prior to the beginning of work. It is the responsibility of the Landscape Subcontractor to notify the General Contractor's representative and the Landscape Architect in writing of any conditions which could affect the survivability of plant material to be installed.

1.6 WARRANTY

1.6.1 See Landscape Maintenance and Warranty Standards.

2.0 PRODUCTS

2.1 MATERIALS

2.1.1 Plants: Provide plants typical of their species or variety; with normal, densely developed branches and vigorous, fibrous root systems. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation. All plants shall have a fully developed form without voids and open spaces.

1. Dig balled and burlapped plants with firm, natural balls of earth of sufficient diameter and depth to encompass the fibrous and feeding root system necessary for full recovery of the plant. Provide ball sizes complying with the latest edition of the "American Standard for Nursery Stock". Cracked or mushroomed balls are not acceptable.

2. All trees shall have clay or clay loam balls. Trees with sand balls will be rejected.

3. Provide tree species that mature at heights over 25'-0" with a single, main trunk. Trees that have the main trunk forming a "Y" shape are not acceptable.

4. Plants planted in rows shall be matched in form, (see specimen stock).

5. Plants larger than those specified in the plant list may be used when acceptable to the Landscape Architect.

6. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.

7. Evergreen trees shall be unsheared and branched to the ground.

8. Shrubs and small plants shall meet the requirements for spread and height indicated on the drawings.

9. Plant materials shall be subject to approval by the Landscape Architect as to size, health, quality, and character.

10. Bare root trees are not acceptable.

11. Provide plant materials from licensed nursery or grower.

2.1.2 Bare root plants: dug with adequate fibrous roots, to be covered with a uniformly thick coating of mud by being puddled immediately after they are dug or packed in moist straw or peat moss.

2.1.3 Container grown stock: grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm, and whole.

1. No plants shall be loose in the container.

2. Container stock shall not be root bound.

3. Single stemmed or thin plants will not be accepted.

4. Side branches shall be generous, well twigged, and the plant as a whole well bushed to the ground.

5. Plants shall be in a moist, vigorous condition, free from dead wood, bruises or other root or branch injuries.

2.1.4 Collected stock consists of plants growing under natural conditions in soils and climate as exist at location to be planted, in locations lending themselves to proper collecting practices. Root system (balls) to be at least twenty-five (25%) percent larger than specified for nursery grown material.

2.1.5 Specimen stock: all specimen designated plantings are to be nursery grown, fully developed, excellent quality, and typical example of the species. Plants designated to be planted in rows must be matched, symmetrical, and uniform in height, spread, caliper, and branching density.

1. Matched plantings should be obtained from the same nursery and, preferably, from the same row or line. All specimen material will be approved by the Landscape Architect at nursery.

2.1.6 Topsoil for planting mix: fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well drained arable site, reasonably free from clay, lumps, coarse sands, stones, plants, roots, sticks, and other foreign materials with acidity range of between ph 6.0-6.8 for ericaceous plants.

2.1.7 Compost: Well decomposed, stable, weed free organic matter source.

2.1.8 Planting mixture Type A - trees: standard planting backfill shall be a mixture of ⅓native soil (excavated from plant pits), ⅓topsoil, and ⅓sand. Add fertilizer Type "A" and "B" to planting mixture per manufacturer's requirements. Follow planting details.

2.1.9 Planting mixture Type B for perennial flowers, groundcover beds, and ericaceous plants: planting backfill shall be a mixture of 1/3 screened topsoil, 1/3 sand and 1/3 compost. Al existing soil shall be excavated and removed. Adding fertilizer types "A" and "B" to mixture per manufacturer's requirements. Follow planting details. Planting mixture Type C for annual flower beds: same as Type "B". Submit a sample to the Landscape Architect for approval prior to installation.

2.1.10 Plant fertilizer Type A to be "Drimanure" applied per manufacturer recommendations.

2.1.11 Plant fertilizer Type B to be "14-14-14". Apply per manufacturer recommendations.

2.1.12 Bone Meal - 5 lbs. per cubic yard of soil mixes.

2.1.13 Lime to be ground dolomitic limestone, ninety-five (95%) percent passing through #100 mesh screen. Use to adjust soil pH only, under direction of Landscape Architect.

2.1.14 Sand to be clean, coarse, ungraded conforming to ASTM-C-3 for fine aggregates.

2.1.15 Anti-Desiccant: protective film emulsion providing a protective film over plant surfaces; permeable to permit transpiration. Mixed and applied in accordance with Manufacturer's instructions.

2.1.16 Shredded bark mulch shall be double processed, dark shredded hardwood bark that is clean, free of debris and sticks. Materials shall be uniform in size, shape, and texture. Submit samples to Landscape Architect for approval prior to installation. Install mulch to finish grade, level smooth, without ridges, humps, or depressions.

2.1.17 Water: free of substances harmful to plant growth. Hoses or other methods of transportation shall be furnished by Sub Contractor.

2.1.18 Stakes for staking: (3) Three Hardwood, 2" x 2" x 8'-0" long. Driven a min. of 18" deep firmly into subgrade prior to backfilling. Stakes for guying: Hardwood, 2" x 2" x 36" long.

2.1.19 Guying/staking material: Wt 2"-3" wide fabric straps, connect from tree to stake. Remove after (1) one year, allow for flexibility. (do not use wire and hose).

2.1.20 Tree wrap: standard waterproofed tree wrapping paper, 2-1/2" wide, made of 2 layers of crepe kraft paper weighing not less than 30 lbs. per ream, cemented together with asphalt. Secure tree wrap with biodegradable material at top and bottom. Remove after first winter.

2.1.21 Twine: two-ply jute material.

2.2 MEASUREMENTS

2.2.1 Measure height and spread of specimen plant materials with branches in their normal positions as indicated on Drawings or Plant List.

2.2.2 The measurements for height shall be taken from the ground level to the average height of the top of the plant and not the longest branch.

2.2.3 Measurement should be average of plant, not greatest diameter. For example, plant measuring 15 inches in widest direction and 9 inches in narrowest direction would be classified as 12 inch stock.

2.2.4 Plants properly trimmed and transplanted should measure same in every direction.

2.2.5 Measure caliper of trees 6 inches above surface of ground.

2.2.6 Where caliper or other dimensions of plant materials are omitted from Plant List, plant materials shall be normal stock for type listed.

2.2.7 Plant materials larger than those specified may be supplied, with prior written approval of Landscape Architect, and:

1. If complying with Contract Document requirements in all other respects.

2. If at no additional cost to Owner.

3. If sizes of roots or balls are increased proportionately.

2.2.8 The height of the trees, specified by height, measured from the crown of the roots to the top of the top branch, shall not be less than the minimum size designated on the drawings.

3.0 EXECUTION

3.1 INSPECTION

3.1.1 Landscape Architect or General Contractor's representative must approve proposed planting areas and conditions of installation. Do not start planting work until unsatisfactory conditions are corrected.

3.1.2 Individual plant locations shall be staked on the project site by the Landscape Contractor and approved by the Landscape Architect before any planting pits are dug. The Landscape Architect reserves the right to adjust plant material locations to meet field conditions, without additional cost to the General Contractor / Owner.

3.1.3 Accurately stake plant material according to the Drawings. Stakes shall be above grade, painted a bright color, and labeled with the name of the plant material to be installed at that location.

3.2 TIME OF PLANTING

3.2.1 Evergreen material: Plant Evergreen materials between September 1 and October 15 or in spring before new growth begins. If project requirements require planting at other times, plants shall be sprayed with anti-desiccant prior to planting operations.

3.2.2 Deciduous material: Plant deciduous materials in a dormant condition. If deciduous trees are planted in leaf, they shall be sprayed with anti-desiccant prior to planting operation.

3.2.3 Planting times other than those indicated must be acceptable to the Landscape Architect.

3.3 PREPARATION

3.3.1 General: See Landscape Preparation Section

3.3.2 Vegetation Removal

1. Strip existing grass and weeds, including roots from all bed areas leaving the soil surface one (1") inch below finish grade.

2. Herbicide: as required to prepare area for new planting applied to all ground cover, evergreen and shrubbery beds and all mulch areas before application of preemergence herbicide, per manufacturer's recommendations. Clean area of all dead material after five (5) days.

3. Pre-Emergence Herbicide: applied per manufacturer recommendations to same area where "Herbicide" has been applied and to planting bed areas, after area is cleared of dead vegetation.

4. Herbicides to be applied by licensed applicator as required by the State.

5. Excavate circular plant pits with vertical sides, except for plants specifically indicated to be planted in beds. Provide plant pits per planting details. Depth of pit shall accommodate the root system. Scarify the bottom of the pit to a depth of 6".

6. Roughen sides of excavations.

7. Provide premixed planting mixture Type "A" for use around the balls and roots of all deciduous and evergreen tree plantings.

3.3.3 Ground Cover Beds, Perennial Flower Beds, and Ericaceous Plant Beds

1. Excavate existing soil to 12" depth over entire bed area and remove soil from site. Scarify bottom of bed to a 4" depth. Set plants according to drawings and backfill entire bed with premixed planting mixture "Type B". Ground Cover shall be planted after bed has been backfilled with plant mix and mulched. Plant ground cover through mulch and into plant mix.

3.3.4 Mass Shrub Beds / Hedge Beds:

1. Excavate existing soil to 18" depth over entire bed area and remove soil from site. Scarify bottom of the bed to a 4" depth. Set plants according to drawings and Specifications. Backfill entire bed with (premixed) specified planting mixture Type "A".

3.3.5 Annual Flower Beds:

1. Excavate existing soil to 8" depth over entire bed area and remove soil from site. Scarify bottom of bed to a 4" depth. Backfill entire bed to an 8" depth with premixed planting mixture "Type B".

3.4 INSTALLATION

3.4.1 Planting shall be performed only by experienced workman familiar with planting procedures under the supervision of a qualified supervisor.

3.4.2 Planting pits shall be round, with vertical sides and flat bottoms, and sized in accordance with outlines and dimensions shown on the planting details.

3.4.3 See drawings for planting details.

3.4.4 If obstructions are encountered that are not indicated, do not proceed with planting operations until alternative plant locations have been selected and approved in writing by the Landscape Architect. Where location or spacing dimensions are not clearly shown, request clarification by the Landscape Architect.

3.4.5 Set plant material in the planting pit to proper grade and alignment.

1. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure.

2. Set plant material so it is flush to finish grade after settling, or 1-2" higher in poorly drained soil, or as directed by Landscape Architect.

3. No filling will be permitted around the trunks or stems.

4. Do not cover top of root ball with soil.

5. Backfill pit with planting mixture. Do not use frozen or muddy mixtures for backfilling.

6. Form a ring of soil around the edge of the planting pit to retain water.

3.4.6 After balled and burlapped plants are set, tamp planting mixture around of balls and fill all void and remove air pockets.

3.4.7 Remove all burlap, ropes, and wires from top 1/3 of balls.

3.4.8 Space ground cover plants in accordance with indicated dimensions. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants. Plant to within 12" of trunks and shrubs and to within 6" of planting bed.

3.4.9 Spread and arrange roots of bare rooted plants in their natural position. Work in planting mixture. Do not mat roots together. Cut all broken and frayed roots before installing planting mixture.

3.4.10 Water immediately after planting.

3.4.11 Apply pre-emergent herbicide to bed areas per manufacturer's recommendations before mulching.

3.5 MULCHING

3.5.1 Mulch trees and shrub planting pits and shrub beds with shredded hardwood bark mulch 3" deep to dripline immediately after planting. Leave 3" circle of bare soil around tree trunk. Thoroughly water mulched areas. After watering, rake mulch to provide a uniform finished surface.

3.5.2 Mulch shall not be placed in contact with trunks or stems. Form saucer with 4" continuous rim.

3.5.3 Mulch ground cover beds with shredded bark mulch 2" to 3 " deep prior to planting.

3.5.4 Plant ground cover through mulch.

3.6 WRAPPING, GUYING, AND STAKING

3.6.1 Inspect trees for injury to trunks, evidence of insect infestation and improper pruning before wrapping.

3.6.2 Wrap trunks of all trees spirally from bottom to top with specified tree wrap and secure in place.

3.6.3 Stake deciduous trees under 4" caliper. Stake evergreen trees under 6'-0" tall and over with metal fence post, three (3)per tree.

3.6.4 Stake/guy all trees immediately after installation. When high winds or other conditions which may effect tree survival or appearance occur during the warranty period, the Sub-Contractor shall immediately repair the staking/guying.

3.6.5 Guy deciduous trees 4" caliper and over. Stake evergreen trees 6'-0" tall and over with metal fence post, three (3) per tree.

3.6.6 All work shall be acceptable to the Landscape Architect/Owner's representative.

3.7 PRUNING

3.7.1 Remove or cut back broken, damaged, and unsymmetrical growth of new wood.

3.7.2 Multiple leader plants: preserve the leader which will best promote the symmetry of the plant. Do not prune terminal leader. Cut branches flush with the trunk of the main branch, at a point beyond a lateral shoot or bud a distance of not less than ½the diameter of the supporting branch. Make cut on an angle.

3.7.3 Prune evergreens only to remove broken or damaged branches.

3.8 MAINTENANCE

3.8.1 See Landscape Maintenance and Warranty Standards.

3.9 CLEANING

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

END OF SECTION

LANDSCAPE MAINTENANCE AND WARRANTY STANDARDS

1.0 GENERAL

1.1 SUMMARY

1.1.1 Includes But Not Limited To

1. Provide maintenance for new landscaping as described in Contract Documents.

2. The requirements of the Section include a two (2) year warranty period, per city of Novi Ordinance, from date of acceptance of installation performed by the General Contractor's Representative and Landscape Architect.

2.0 PRODUCTS - Not Used

3.0 EXECUTION

3.1 PERFORMANCE

3.1.1 Acceptance of Installation

1. At the completion of all landscape installation, or pre-approved portions thereof, the Landscape Subcontractor shall request in writing an inspection for Acceptance of Installation in which the Landscape Subcontractor, Landscape Architect, and General Contractor's Representative shall be present.

   a. Following the acceptance inspection a punch list will be issued by the Landscape Architect.

   b. Upon completion of all punch list items, the Landscape Architect and/or General Contractor's Representative shall reinspect the project and issue a written statement of Acceptance of Installation and establish the beginning of the Project Warranty Period.

   c. At the time of acceptance all plant material shall be of vigorous health.

   d. It is the responsibility of the Landscape Subcontractor to make the written request for inspection of installation in a timely fashion.

   e. If there is plant material loss prior to the Landscape Subcontractor's written request for inspection of installation, the Landscape Contractor shall make all replacements of this dead material at no additional cost. These replacements are not considered to be the replacement of dead plant material by the Landscape Subcontractor during the two (2) year project warranty period, as outlined below.

2. Landscape work may be inspected for acceptance in parts agreeable to the General Contractor's Representative and Landscape Architect provided work offered for inspection is complete, including maintenance as required.

3. For work to be Inspected for partial acceptance, the Landscape Subcontractor shall provide a drawing outlining work completed and supply a written statement requesting acceptance of this work completed to date.

3.1.2 Project Warranty

1. The Project Warranty Period begins upon written preliminary acceptance of the project installation by the Landscape Architect and General Contractor's representative.

2. The Landscape Subcontractor shall guarantee trees, shrubs, ground cover beds and seeded or sodded areas through construction and for a period of two (2) years after date of Acceptance of Installation against defects including death and unsatisfactory growth, except for defects resulting from neglect, abuse or damage by others or unusual phenomena or incidents which are beyond Landscape Subcontractor's control.

3.1.3 Maintenance During Two (2) Year Project Warranty

1. To insure guarantee standards, the following maintenance procedures for trees, shrubs, and ground covers shall be executed during construction and for the full Project Warranty Periods.

   a. Landscape Subcontractor shall be responsible for unlimited replacement of any plant materials up to and during the two (2) year Project Warranty Period. A plant that dies within the first growing season should be replaced within 3 months or during the first available growing season, whichever comes first. These include those which are dead or in the opinion of the Landscape Architect are in an unhealthy or unsightly condition, or having lost natural shape, resulting from dieback, excessive pruning, or inadequate or improper maintenance as part of the guarantee.

   b. Prior to any replacements, Landscape Subcontractor shall review individual plants in question with Landscape Architect to determine reason for plant demise.

2. Replacements must meet the standards specified on the Landscape plans and in the specifications, i.e. quality, species of plant material and planting procedures to receive approval of replacement materials by Landscape Architect.

3. Costs for replacements are assumed part of bid quotations and therefore will not result in an additional cost to General Contractor or Landscape Architect.

4. Areas damaged as a result of replacement operation are to be restored by Landscape Subcontractor at no cost to the General Contractor or Landscape Architect.

5. The Landscape Subcontractor shall be responsible for watering all plantings through the warranty period and shall keep guy wires taut, raise tree balls which settle, furnish and apply sprays as necessary to keep the plantings free of disease and insects until the end of the warranty period.

6. The Landscape Subcontractor shall remove and replace trees, shrubs or other plants found to be dead or in unhealthy condition.

   a. Rejected plants and materials shall be removed promptly.

   b. Replacements shall be made during the following normal planting schedule.

   c. Trees and shrubs which are in doubt shall be replaced, unless, in the opinion of the Landscape Architect, it is advisable to extend Project Warranty Period for full growing Season.

7. The Landscape Contractor shall apply anti-desiccants on evergreen trees and evergreen shrub beds within 150' of major streets and drives, no later than December 1, during the two (2) year project warranty.

8. All ropes around trunk, as well as burlap, shall be removed at the time of planting per detail.

9. All stakes, guy wires, tree wrap paper, dead twigs and branches shall be removed from tree and plant materials by July 1st of the year following planting.

3.1.4 Maintenance of Seeded Lawn Areas

1. The Landscape Subcontractor shall maintain seeded lawn areas.

   a. Water, fertilize, weed, and apply chemicals until a dense lawn of permanent grasses, free from lumps and depressions or any bare spots, none of which is larger than one (1) foot of area up to a maximum of 3% of the total seeded lawn area is established.

   b. Seeded lawn that fails to show a uniform growth and/or germination shall be reseeded until a dense cover is established, regardless of what season the seed was installed.

2. The Landscape Subcontractor shall maintain and mow all lawn areas for until acceptance of installation (typically 3 mows). When lawn reaches 3" in height it shall be cut to 2" in height.

3. The Owner assumes cutting responsibilities following the Acceptance of Installation of the seeded lawn.

4. At conclusion of Project Warranty Period and after receiving Written Final Acceptance by General Contractor's representative and Landscape Architect, the Owner shall assume all seeded lawn maintenance responsibilities.

3.1.5 Maintenance of Sodded Lawn Areas

1. The Landscape Subcontractor shall maintain sodded lawn areas.

   a. Water, fertilize, spot weed, apply herbicides, fungicides, insecticides and reseod until a full uniform, smooth stand of sod is knitted to topsoil, and accepted by the Landscape Architect or his or her representative.

2. Water sod thoroughly, as required to establish proper rooting.

3. Repair, rework, and reseod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod.

4. Mow lawn areas once as soon as sod has rooted sufficiently and knitted to the topsoil. Cut back to 2" height. Not more than 40% of grass leaf shall be removed at any single mowing. Excess clipping to be removed by the Landscape Subcontractor. The Landscape Subcontractor shall be responsible for lawn mowing until acceptance of installation (typically 3-mows).

5. The Owner assumes mowing responsibilities following the Acceptance of Installation of the sodded lawn.

6. At conclusion of Project Warranty Period and after receiving Written Final Acceptance by General Contractor's representative and Landscape Architect, the Owner shall assume all sodded lawn maintenance responsibilities.

3.1.6 Final Acceptance Upon Conclusion of the Warranty Period

1. At the conclusion of the Project Warranty Period the Landscape Subcontractor shall request a project inspection for final acceptance in which the Landscape Contractor, Landscape Architect and Owner's Representative shall be present.

2. After the inspection for final acceptance, a punch list will be issued by the Landscape Architect. Upon completion of all punch list items, the Landscape Architect and the Owner's Representative shall reinspect the project and issue a Written Statement of Final Acceptance.

END OF SECTION

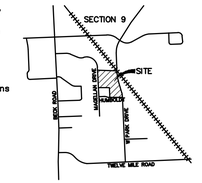
NOTE: The Owners may at their option elect to utilize a Construction Manager in lieu of a General Contractor for all matters pertaining to these specifications and the site work.

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
REBECCA LYNNE KLEIN
License No. 6201058042
REGISTERED PROFESSIONAL ENGINEER

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

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT

MADISON ENERGY INVESTMENTS
8100 BOONE BLVD, STE 310
VIENNA, VIRGINIA

PROJECT TITLE

LINEAGE CAR PORTS ADDITION
46500 HUMBOLDT DRIVE
NOVI, MICHIGAN

REVISIONS	
PSP AND FSP SUBMITTAL	9/12/2024
FSP/VARIANCE SUBMITTAL	12/2/2024

ORIGINAL ISSUE DATE:
AUGUST 16, 2024

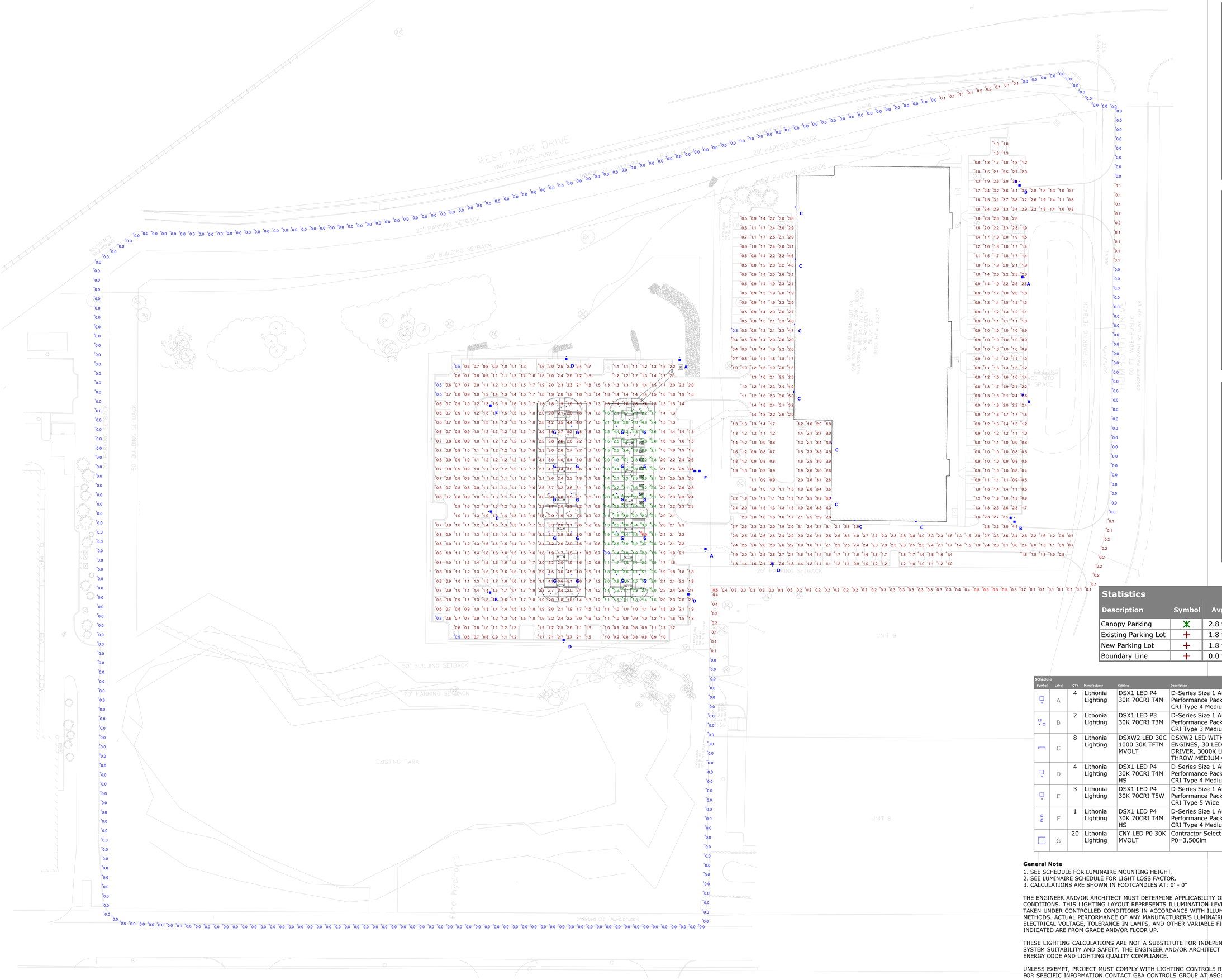
DRAWING TITLE

LANDSCAPE SPECIFICATIONS

PEA JOB NO.	2023-1048
P.M.	BK
DN.	CAL
DES.	JLE

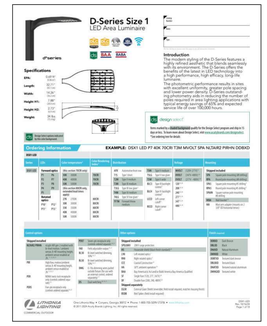
DRAWING NUMBER:

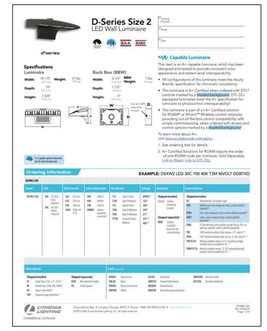
L-2.2



Plan View
Scale - 1" = 35ft

1. ELECTRICAL SERVICE TO LIGHT FIXTURES SHALL BE PLACED UNDERGROUND.
2. FLASHING LIGHT SHALL NOT BE PERMITTED.
3. ONLY NECESSARY LIGHTING FOR SECURITY PURPOSES AND LIMITED OPERATIONS SHALL BE PERMITTED AFTER A SITES HOURS OF OPERATION.
4. HOURS OF OPERATION ARE: 6AM TO 7PM, M-F





Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Canopy Parking	✳	2.8 fc	6.9 fc	0.9 fc	7.7:1	3.1:1
Existing Parking Lot	+	1.8 fc	5.3 fc	0.3 fc	17.7:1	6.0:1
New Parking Lot	+	1.8 fc	6.9 fc	0.5 fc	13.8:1	3.6:1
Boundary Line	+	0.0 fc	0.5 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	QTY	Manufacturer	Catalog	Description	Lamp Output	LLF	Input Power	Mounting Height
	A	4	Lithonia Lighting	DSX1 LED P4 30K 70CRI T4M	D-Series Size 1 Area Luminaire P4 Performance Package 3000K CCT 70 CRI Type 4 Medium	15613	0.9	123.94	24'
	B	2	Lithonia Lighting	DSX1 LED P3 30K 70CRI T3M	D-Series Size 1 Area Luminaire P3 Performance Package 3000K CCT 70 CRI Type 3 Medium	13206	0.9	204.34	24'
	C	8	Lithonia Lighting	DSXW2 LED 30C 1000 30K TFTM MVOLT	DSXW2 LED WITH 3 LIGHT ENGINES, 30 LED's, 1000mA DRIVER, 3000K LED, TYPE FORWARD THROW MEDIUM OPTIC	10355	0.9	109	18'
	D	4	Lithonia Lighting	DSX1 LED P4 30K 70CRI T4M HS	D-Series Size 1 Area Luminaire P4 Performance Package 3000K CCT 70 CRI Type 4 Medium Houseside Shield	13431	0.9	123.93 73	24'
	E	3	Lithonia Lighting	DSX1 LED P4 30K 70CRI T5W	D-Series Size 1 Area Luminaire P4 Performance Package 3000K CCT 70 CRI Type 5 Wide	16324	0.9	123.94	24'
	F	1	Lithonia Lighting	DSX1 LED P4 30K 70CRI T4M HS	D-Series Size 1 Area Luminaire P4 Performance Package 3000K CCT 70 CRI Type 4 Medium Houseside Shield	13431	0.9	247.87 46	24'
	G	20	Lithonia Lighting	CNY LED P0 30K MVOLT	Contractor Select CNY LED Canopy P0=3,500lm	3669	0.9	26.35	13'10" & 16'10"

General Note
1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

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Alternates Note
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Ordering Note
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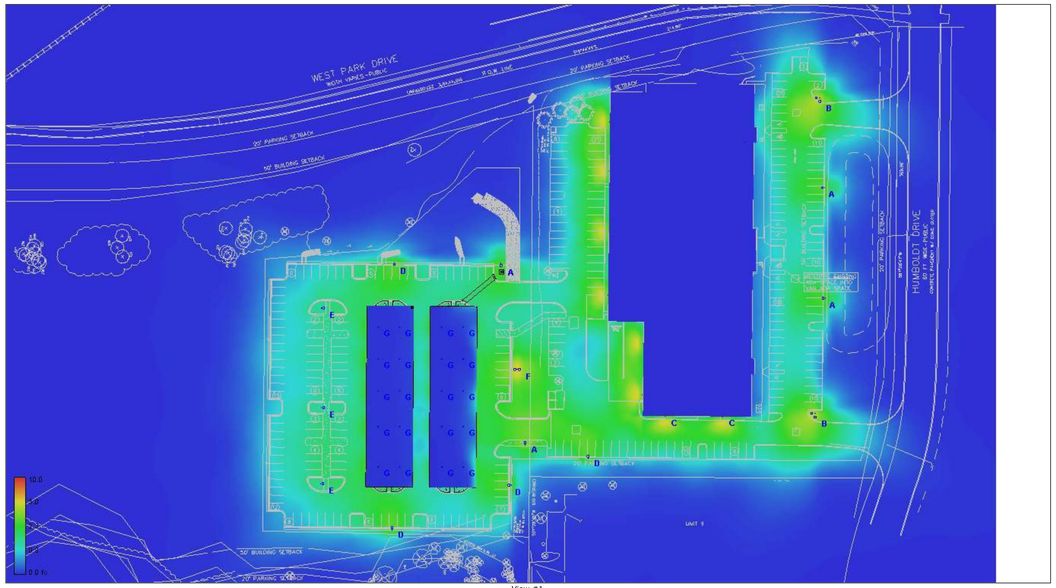
46500 HUMBOLDT DRIVE - SITE
PHOTOMETRIC LAYOUT
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer
KS
Date
11/04/2024
Scale
Not to Scale
Drawing No.
#24-33156_V2



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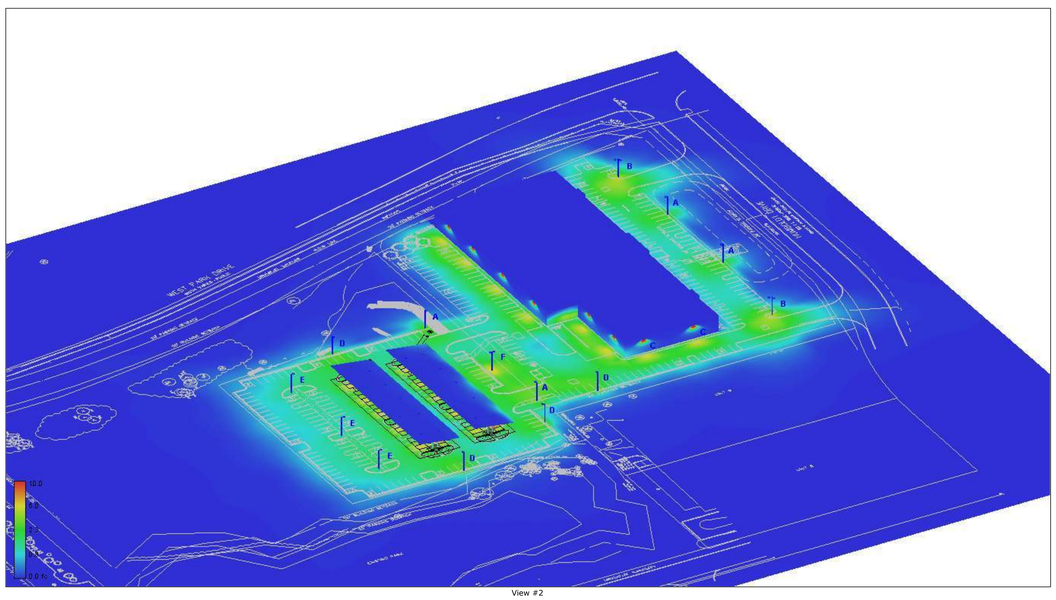

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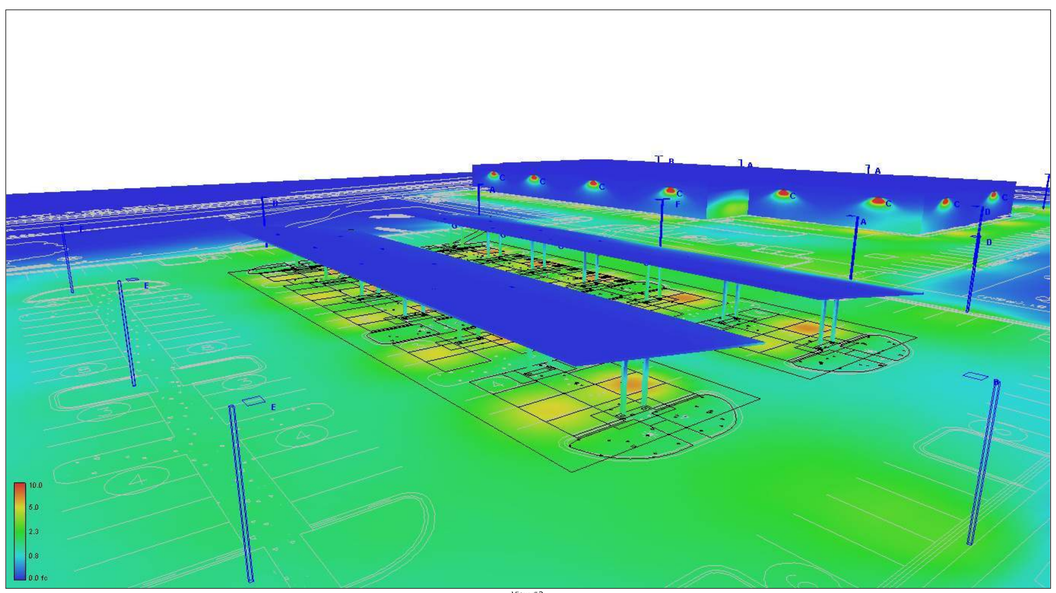

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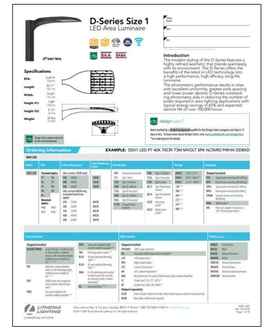

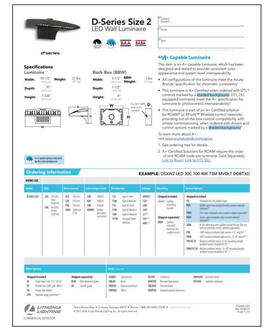

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GBA

46500 HUMBOLDT DRIVE - SITE
PHOTOMETRIC LAYOUT
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer
KS
Date
11/04/2024
Scale
Not to Scale
Drawing No.
#24-33156_V2

GENERAL NOTES

1. "STRUCTURAL ENGINEER" IN THESE NOTES REFERS TO TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC, THE STRUCTURAL ENGINEER OF RECORD.
2. "SPECIALTY ENGINEER" IN THESE NOTES REFERS TO AN ENGINEER LICENSED OR REGISTERED TO PRACTICE STRUCTURAL ENGINEERING IN THE STATE IN WHICH THE PROJECT IS LOCATED.
3. STRUCTURAL DRAWINGS ARE TO BE COORDINATED AND USED IN CONJUNCTION WITH THE ARCHITECTURAL, CIVIL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS. SEE MECHANICAL DRAWINGS FOR EQUIPMENT PADS, BASES, SUPPORTS, AND DUCT PENETRATIONS.
4. TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC. SHALL NOT BE RESPONSIBLE FOR, NOR HAVE CONTROL OR CHARGE OF CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES FOR THE SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THIS PROJECT, AND SHALL NOT BE RESPONSIBLE FOR CONTRACTOR'S FAILURE TO CARRY OUT HIS WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
5. TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC. SHALL NOT BE RESPONSIBLE FOR, NOR HAVE CONTROL OVER, THE ACTS OR OMISSIONS OF THE CONTRACTOR, SUBCONTRACTORS, ANY OF THEIR AGENTS, OR EMPLOYEES, OR ANY OTHER PERSONS PERFORMING ANY OF THE WORK, OR FOR THE FAILURE OF ANY OF THEM TO CARRY OUT THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL PROVIDE AND BE RESPONSIBLE FOR ALL TEMPORARY SHORING AND BRACING REQUIRED FOR THE CONSTRUCTION OF THIS PROJECT. ALL SHORING AND BRACING MEMBERS AND CONNECTIONS SHALL BE OF SUFFICIENT STRENGTH TO SUPPORT THE IMPOSED LOADS. TEMPORARY MEMBERS AND CONNECTIONS SHALL NOT BE REMOVED UNTIL PERMANENT MEMBERS ARE IN PLACE AND FINAL CONNECTIONS ARE MADE.
7. CONTRACTOR SHALL VERIFY IN FIELD ALL DIMENSIONS, ELEVATIONS AND MEMBER SIZES AS SHOWN ON THE CONTRACT DRAWINGS FOR THE EXISTING CONSTRUCTION, PRIOR TO THE DETAILING OR FABRICATION OF ANY NEW STRUCTURAL ELEMENT. CONTRACTOR SHALL DOCUMENT ANY CONSTRUCTION-RELATED DISCREPANCIES. CONTRACTOR SHALL FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER FOR REVIEW (28) CALENDAR DAYS PRIOR TO THE SCHEDULED START OF ANY DETAILING OR FABRICATION.
8. THE CONTRACTOR SHALL PROVIDE ALL MEASURES AND PRECAUTIONS NECESSARY TO PREVENT DAMAGE AND SETTLEMENT OF EXISTING OR NEW CONSTRUCTION INSIDE OR OUTSIDE THE PROJECT LIMITS DURING EXCAVATION AND FOUNDATION CONSTRUCTION. ANY DAMAGE TO NEW OR EXISTING CONSTRUCTION INSIDE OR OUTSIDE OF THE PROJECT LIMITS, CAUSED BY CONSTRUCTION TECHNIQUES IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. NO FIELD MODIFICATIONS TO ANY STRUCTURAL COMPONENTS SHALL BE MADE WITHOUT PRIOR APPROVAL BY THE STRUCTURAL ENGINEER. THIS INCLUDES, BUT IS NOT LIMITED TO REVISIONS DUE TO MISLOCATION, MISFIT, OR ANY OTHER CONSTRUCTION ERRORS.
10. NO OPENING SHALL BE PLACED IN ANY STRUCTURAL MEMBER (OTHER THAN AS INDICATED ON APPROVED SHOP DRAWINGS) UNTIL THE LOCATION HAS BEEN APPROVED BY THE STRUCTURAL ENGINEER.
11. PROVIDE SLEEVE LAYOUTS FOR ALL PENETRATIONS THROUGH STRUCTURAL MEMBERS (ALL TRADES ARE INCLUDED). LAYOUTS ARE TO BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
12. SUPPORT ALL ROOF MOUNTED EQUIPMENT OR EQUIPMENT SUSPENDED FROM FLOORS OR THE ROOF ONLY ON/FROM BEAMS DESIGNATED FOR SUCH PURPOSE. IF NO SUPPORT HAS BEEN DESIGNATED, OR IF A QUESTION ARISES, NOTIFY STRUCTURAL ENGINEER PRIOR TO ERECTION OF EQUIPMENT.
13. ALL DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS ARE INTENDED TO BE TYPICAL FOR SIMILAR SITUATIONS ELSEWHERE, UNLESS OTHERWISE NOTED. FOR DETAILS AND DIMENSIONS NOT INDICATED ON THE STRUCTURAL DRAWINGS, SEE THE ARCHITECTURAL DRAWINGS.
14. MATERIALS AND EQUIPMENT SHALL BE STORED AND TRANSPORTED IN A MANNER SO AS NOT TO EXCEED THE ALLOWABLE FLOOR OR ROOF LOADING INDICATED IN THE "SCHEDULE OF BUILDING DESIGN LOADS" ON THE CONSTRUCTION DOCUMENTS OR THE ALLOWABLE CAPACITY OF THE CONSTRUCTED MEMBER, WHICHEVER IS SMALLER.
15. ALL MEMBERS SHOWN ON FRAMING PLANS BETWEEN COLUMN LINES/GRID LINES SHALL BE EQUALLY SPACED, UNLESS NOTED OTHERWISE.

SHOP DRAWINGS

1. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW AND APPROVAL.
2. ALL SHOP DRAWING SUBMITTALS SHALL BE AS DESCRIBED IN THE PROJECT SPECIFICATIONS OR IN THESE NOTES IF THERE IS NO PROJECT SPECIFICATION.
3. SHOP DRAWINGS AND RELATED MATERIALS PREPARED BY SUPPLIERS AND SUBCONTRACTORS SHALL BE REVIEWED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE ARCHITECT/STRUCTURAL ENGINEER. THE GENERAL CONTRACTOR SHALL REVIEW ALL SUBMISSIONS FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATION OF CONSTRUCTION, TECHNICAL CONTENT, COORDINATION OF TRADES, DIMENSIONAL ACCURACY, SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. THE GENERAL CONTRACTOR SHALL APPROVE AND SO STAMP EACH SUBMISSION BEFORE SUBMITTING TO THE ARCHITECT/STRUCTURAL ENGINEER.
4. THE STRUCTURAL DRAWINGS SHALL NOT BE USED AS THE BACKGROUNDS FOR THE PRODUCTION OF ANY SHOP DRAWINGS THAT ARE SUBMITTED FOR REVIEW.
5. ANY DEVIATIONS FROM THE STRUCTURAL DRAWINGS OR SPECIFICATIONS SHALL BE NOTED AND BUBBLED ON THE SHOP DRAWINGS THAT ARE SUBMITTED FOR APPROVAL.
6. FOR SHOP DRAWINGS TO BE RESUBMITTED TO THE STRUCTURAL ENGINEER FOR A SUBSEQUENT REVIEW, ALL CHANGES SHALL BE NOTED AND BUBBLED.
7. THE GENERAL CONTRACTO SHALL SUBMIT TO THE STRUCTURAL ENGINEER, OWNER, AND SS, LLC THE BELOW INDICATED VERIFICATION SUBMITTALS FOR REVIEW AND APPROVAL:
   - A. AS-BUILT SURVEY DRAWING OF THE CONSTRUCTED CONCRETE PIERS INDICATING THE FOLLOWING:
     - a. DIMENSIONED LOCATION IN PLAN OF ALL PIERS INCLUDING ANY ADJUSTMENTS MADE TO THEM RELATIVE TO THE FOUNDATION PLAN.
     - b. ELEVATION OF THE TOP OF EACH PIER AND THE SURFACE GRADE ADJACENT TO THE PIER.
     - c. CONFIRMATION OF ACCOURATE PLACEMENT OF THE COLUMN BASE ANCHOR RODS INCLUDING ANY ANCHOR RODS THAT ARE PLACED OUT OF TOLERANCE.
   - B. STRUTURAL STEEL CANOPY STRUCTURES ARE BASED ON THE USE OF THE **VSUN550W SOLAR PANEL MODULE MANUFACTURED BY VSUN**. THE GENERAL CONTRACTOR SHALL SUBMIT WRITTEN VERIFICATION OF THE USE OF THIS MODULE SYSTEM.

STRUCTURAL SYSTEM

1. THE GRAVITY LOADS RESISTING SYSTEM CONSISTS OF STEEL PURLINS, STEEL BEAMS, AND STEEL COLUMNS ON CONCRETE FOOTINGS.
2. THE LATERAL LOAD RESISTING SYSTEM CONSISTS OF STEEL ORDINARY CANTILEVER COLUMNS ON CONCRETE FOOTINGS.

FOUNDATIONS

1. **FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT PERFORMED BY XXX DATED XXX, 2022. CONTRACTOR SHALL FOLLOW ALL REQUIREMENTS SPECIFIED IN THIS REPORT.**
2. **FOUNDATION STRUCTURE IS BASED ON THE USE OF CONTINUOUS STRIP FOOTINGS AND/OR SPREAD FOOTINGS APPLYING A MAXIMUM PRESSURE OF 1,500 POUNDS PER SQUARE FOOT TO THE SOIL.**
3. ALL ENGINEERED FILL IS TO BE COMPACTED TO ACHIEVE THIS BEARING PRESSURE AS VERIFIED BY FIELD TESTING BY THE OWNER'S TESTING AGENCY. IF FIELD CONDITIONS DO NOT PROVIDE THIS MINIMUM VALUE, THE STRUCTURAL ENGINEER AND ARCHITECT SHOULD BE NOTIFIED IMMEDIATELY.
4. **PER THE ABOVE REFERENCED REPORT, THE LATERAL EARTH PRESSURE IS AS FOLLOWS:**
   - **A. PASSIVE EARTH PRESSURE - XXX PSF/FOOT**
5. SHOULD UNSUITABLE BEARING CONDITIONS BE ENCOUNTERED DURING EXCAVATION, NOTIFY THE OWNER, STRUCTURAL ENGINEER AND SS, LLC BEFORE CONTINUING WITH CONSTRUCTION.
6. THE CONCRETE FOR EACH ISOLATED FOOTING SHALL BE PLACED IN ONE (1) CONTINUOUS POUR.
7. THE CONTRACTOR MUST PROVIDE SURFACE DRAINAGE AND PUMPS TO PROTECT ALL EXCAVATION FROM FLOODING. FLOODING OF ANY EXCAVATION AFTER APPROVAL OF THE SUBGRADE WILL BE CAUSE FOR CONCRETE RE-PREPARATION AND RE-APPROVAL OF THE SUBGRADE.
8. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY MEASURES TO PREVENT ANY WATER, FROST OR ICE FROM PENETRATING ANY FOOTING OR SLAB SUBGRADE BEFORE AND AFTER PLACING OF CONCRETE AND UNTIL SUCH SUBGRADES ARE FULLY PROTECTED BY THE PERMANENT BUILDING STRUCTURE.
9. THE CONTRACTOR'S PROCEDURES AND SEQUENCING FOR FOUNDATION INSTALLATION SHALL PREVENT SETTLEMENT OF ADJACENT CONSTRUCTION. THE CONTRACTOR SHALL HAVE SOLE RESPONSIBILITY FOR ALL REMEDIAL WORK RESULTING FROM SUCH SETTLEMENT.
10. RECORDS OF ANY EXISTING SUBGRADE INTERFERENCES OTHER THAN THOSE INTERFERENCES SHOWN OR INDICATED ON THE CONSTRUCTION DOCUMENTS, ARE NOT CURRENTLY AVAILABLE. DURING EXCAVATION WORK, INTERFERENCES MAY BE DISCOVERED. CONTRACTOR SHALL DOCUMENT CONSTRUCTION - RELATED DIMENSIONS OF ALL INTERFERENCES. CONTRACTOR TO FURNISH THE ABOVE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE OWNER, STRUCTURAL ENGINEER AND SS, LLC FOR REVIEW.
11. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE FOUNDATION TESTING AND INSPECTION REQUIREMENTS.

STRUCTURAL CONCRETE

1. CONCRETE MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN CONCRETE INSTITUTE PUBLICATIONS:
   - A. ACI 301 - "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS"
   - B. ACI 302 - "RECOMMENDED PRACTICE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION"
   - C. ACI 304 - "RECOMMENDED PRACTICE FOR MEASURING, MIXING, TRANSPORTING AND PLACING CONCRETE"
   - D. ACI 311 - "ACI MANUAL OF CONCRETE INSPECTION"
   - E. ACI 315 - "DETAILS AND DETAILING OF CONCRETE REINFORCEMENT"
   - F. ACI 318 - "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE"
   - G. ACI 347 - "RECOMMENDED PRACTICE FOR CONCRETE FORMWORK"
2. PROVIDE CONCRETE TO OBTAIN A MINIMUM COMPRESSIVE STRENGTH AT 28 DAYS, f'c = 4,000 PSI
3. LABORATORY TEST REPORTS OR MATERIAL CERTIFICATES FOR CONCRETE MATERIALS AND MIX DESIGN TEST DATA, IN CONFORMANCE WITH ACI STANDARDS, SHALL BE SUBMITTED FOR REVIEW FOR EACH TYPE OF CONCRETE TO BE USED. EACH SUBMITTED MIX DESIGN SHALL IDENTIFY THE APPLICATION FOR WHICH THE MIX WILL BE USED.
4. ALL CONCRETE SHALL BE NORMAL WEIGHT UNLESS NOTED OTHERWISE.
5. ALL CONCRETE ELEMENTS SUBJECT TO FREEZING AND THAWING DURING CONSTRUCTION OR OVER THE SERVICE LIFE OF THE STRUCTURE SHALL CONTAIN AN AIR ENTRAINMENT ADMIXTURE AS SPECIFIED IN ACI-318, LATEST EDITION.
6. NO CALCIUM CHLORIDE SHALL BE USED IN ANY CONCRETE.
7. THE CONTRACTOR SHALL SUBMIT CHECKED, DETAILED REINFORCEMENT SHOP DRAWINGS SHOWING THE LOCATIONS AND DETAILING OF ALL FOFOUNDATIONS, CONSTRUCTION JOINTS, CONTROL JOINTS, ETC. PRIOR TO FABRICATION. DETAILS SHALL INCLUDE STEEL SIZES, LAPS, SPACING AND PLACEMENT.
8. PROVIDE ADEQUATE BOLSTERS, HI-CHAIRS, SUPPORT BARS, ETC., TO MAINTAIN SPECIFIED CLEARANCES FOR THE ENTIRE LENGTH OF ALL REINFORCING BARS. PROVIDE CONTINUOUS #4 SPACER BARS IN WALLS AND SLABS TO SUPPORT DOWELS.
9. PROVIDE PLASTIC TIPPED ACCESSORIES FOR REINFORCEMENT AT ALL FACES OF EXPOSED CONCRETE, INTERIOR OR EXTERIOR.
10. ALL FIELD BENDING OF REINFORCEMENT SHALL BE DONE COLD. HEATING OF BARS WILL NOT BE PERMITTED.
11. IF STRUCTURAL CONCRETE MEMBERS (STRUCTURED SLABS, BEAMS AND GIRDERS) ARE NOT CONSTRUCTED IN ONE CONTINUOUS POUR THE VERTICAL CONSTRUCTION JOINT BETWEEN POURS SHALL BE PLACED WITHIN THE MIDDLE FIFTH OF THE MEMBER SPAN AND CONTINUOUSLY KEYED. THE MEMBER SHALL BE SHORED UNTIL THE CONCRETE HAS ATTAINED THE MINIMUM 28-DAY STRENGTH. SEE TYPICAL CONSTRUCTION JOINT DETAILS. ALTERNATE CONSTRUCTION JOINT LOCATIONS MUST BE REVIEWED BY THE STRUCTURAL ENGINEER. NO HORIZONTAL CONSTRUCTION JOINTS WILL BE PERMITTED IN SLABS AND BEAMS UNLESS SPECIFICALLY SHOWN ON THE DRAWINGS.
12. NO ALUMINUM OF ANY TYPE SHALL BE ALLOWED IN THE CONCRETE WORK, UNLESS COATED TO PREVENT ALUMINUM CONCRETE REACTION.
13. UNLESS OTHERWISE NOTED ON THE DRAWINGS, SLEEVES FOR PIPES AND CONDUITS PENETRATING GRADE BEAMS AND CONCRETE WALLS SHALL BE STEEL PIPE SLEEVES OF NOMINAL DIAMETER 2 INCHES LARGER THAN THE NOMINAL SIZE OF THE PIPE PENETRATING THE STRUCTURAL MEMBER. THE THICKNESS OF THE SLEEVE SHALL CONFORM TO SCHEDULE 40 BUT NEED NOT BE MORE THAN 3/8 INCH. ALL SUCH SLEEVE LOCATIONS SHALL BE REVIEWED BY THE STRUCTURAL ENGINEER AND ARCHITECT PRIOR TO INSTALLATION.
14. ALL REINFORCING STEEL SHALL BE HIGH STRENGTH NEW BILLET STEEL, CONFORMING TO ASTM A615 GRADE 60 UNLESS NOTED OTHERWISE.
15. ALL BAR DETAILING AND ACCESSORIES TO BE FURNISHED SHALL CONFORM TO TYPICAL DETAILS IN THE ACI STANDARD 315 DETAILING MANUAL LATEST EDITION, EXCEPT AS OTHERWISE SHOWN, NOTED, OR SPECIFIED.
16. DETAILING AND ACCESSORIES SHALL CONFORM TO THE ACI DETAILING MANUAL AND TO THE CRSI MANUAL OF STANDARD PRACTICE. LATEST EDITIONS, UNLESS OTHERWISE NOTED BELOW, ON THE DRAWINGS, OR IN THE SPECIFICATIONS.
17. ALL HOOKS SHALL BE "STANDARD" HOOKS AS PER ACI 318, UNLESS NOTED OTHERWISE.
18. THE MINIMUM LENGTH OF ALL LAP SPLICES NOT DIMENSIONED ON THE DRAWINGS SHALL BE AS FOLLOWS:

BAR SIZE	f'c	SLAB/BEAM		WALL		COLUMN VERTICAL
		TOP	OTHER	VERT	HORIZ	
#3	4000	25"	19"	19"	25"	-
	5000	22"	17"	17"	22"	
	6000	20"	16"	16"	20"	
#4	4000	33"	25"	25"	33"	-
	5000	29"	23"	23"	29"	
	6000	27"	21"	21"	27"	
#5	4000	41"	31"	31"	41"	19"
	5000	36"	28"	28"	36"	
	6000	33"	26"	26"	33"	
#6	4000	49"	37"	37"	49"	23"
	5000	44"	34"	34"	44"	
	6000	40"	31"	31"	40"	
#7	4000	71"	54"	54"	71"	27"
	5000	63"	49"	49"	63"	
	6000	58"	45"	45"	58"	
#8	4000	81"	62"	62"	81"	30"
	5000	72"	56"	56"	72"	
	6000	66"	51"	51"	66"	
#9	4000	91"	70"	70"	91"	34"
	5000	81"	63"	63"	81"	
	6000	74"	57"	57"	74"	
#10	4000	102"	79"	79"	102"	39"
	5000	92"	71"	71"	92"	
	6000	84"	64"	64"	84"	
#11	4000	114"	87"	87"	114"	43"
	5000	102"	78"	78"	102"	
	6000	93"	71"	71"	93"	

NOTES:
- A. THE ABOVE TABLE IS BASED ON THE CLEAR SPACING OF BARS BEING NOT LESS THAN 2x THE MAXIMUM BAR DIAMETER AND THE CLEAR COVER OF BARS BEING NOT LESS THAN ONE BAR DIAMETER. MULTIPLY THE LENGTH BY 1.5 FOR ALL OTHER CASES.
- B. TOP BARS ARE HORIZONTAL BARS PLACED SUCH THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE SPLICE.
- C. FOR EPOXY COATED BARS, MULTIPLY THE LENGTHS SHOWN IN THE TABLE ABOVE BY 1.5.
- D. LENGTHS ARE BASED ON NORMAL WEIGHT CONCRETE. FOR LIGHTWEIGHT CONCRETE, MULTIPLY THE LENGTHS SHOWN IN THE TABLE ABOVE BY 1.3.
- E. WHERE BARS OF DIFFERENT SIZE ARE TO BE SPLICED, THE LENGTH SHALL BE THAT REQUIRED FOR THE LARGER BAR.
- F. LENGTHS SHALL BE SPECIFICALLY DIMENSIONED AT ALL LOCATIONS ON THE SHOP DRAWINGS.
- G. FOR CONCRETE STRENGTH BETWEEN LISTED VALUES, USE LENGTH OF THE NEXT LOWER CONCRETE STRENGTH LISTED VALUE.
- H. FOR CONCRETE STRENGTHS EXCEEDING 6000 PSI, USE THE LENGTH FOR 6000 PSI CONCRETE STRENGTH.

THE ABOVE TABLE UTILIZES "CLASS B" SPLICES.

20. MECHANICAL COUPLERS MAY BE USED IN LIEU OF LAP SPLICES. MECHANICAL COUPLERS MUST BE CAPABLE OF SUSTAINING 125% OF THE BAR CAPACITY.

21. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE CONCRETE TESTING AND INSPECTION REQUIREMENTS.

POST-INSTALLED ANCHORS

1. WHERE EPOXY SYSTEM IS INDICATED ON THE PLANS OR DETAILS, USE HILTI HY-200 ADHESIVE IN CONCRETE AND SOLID GROUTED MASONRY UNLESS NOTED OTHERWISE. THE CONTRACTOR MAY SUBMIT SUBSTITUTE EPOXY SYSTEMS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF HILTI HY-200 ADHESIVE.
2. DRILL HOLES TO EPOXY MANUFACTURER'S RECOMMENDED SIZE. CLEAN HOLES WITH A CIRCULAR WIRE OR NYLON BRUSH AND BLOW OUT WITH COMPRESSED AIR.
3. WHERE MECHANICAL EXPANSION ANCHORS ARE INDICATED ON THE PLANS OR DETAILS, USE HILTI KWIK BOLT 3 ANCHORS IN CONCRETE UNLESS NOTED OTHERWISE. THE CONTRACTOR MAY SUBMIT SUBSTITUTE EXPANSION ANCHOR SYSTEMS FOR APPROVAL PROVIDED THEY MEET OR EXCEED THE CAPACITY OF HILTI KWIK BOLT 3 ANCHORS.
4. POST-INSTALLED ANCHORS MUST BE INSTALLED USING THE SPACING AND EDGE DISTANCES GIVEN ON THE PLANS OR DETAILS. IF FIELD CONDITIONS DICTATE THAT THE ANCHOR SPACING OR EDGE DISTANCES BE MODIFIED, THE CONTRACTOR SHALL SUBMIT A FIELD SKETCH TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO MAKING ANY MODIFICATIONS.
5. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE POST-INSTALLED ANCHORS TESTING AND INSPECTION REQUIREMENTS.

STRUCTURAL STEEL

1. FURNISH STRUCTURAL STEEL IN ACCORDANCE WITH AISC SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS AND AISC CODE OF STANDARD PRACTICE, LATEST EDITIONS.
2. STRUCTURAL STEEL MATERIAL SHALL BE AS INDICATED BELOW UNO:

STRUCTURAL SHAPES	SPECIFICATION
WIDE FLANGES	ASTM A992
CHANNELS	ASTM A36
ANGLES	ASTM A36
SQUARE & RECTANGULAR HSS	ASTM A500, GRADE C
PLATES	ASTM A36
THREADED RODS	ASTM A36
ANCHOR BOLT ASSEMBLIES	ASTM F1554, GRADE 36
HIGH STRENGTH BOLTS	ASTM A325 OR SAE GRADE 5, AS NOTED

3. ALL STRUCTURAL STEEL FRAMEWORK INCLUDED IN THESE DOCUMENTS ARE CLASSIFIED AS NON-SELF-SUPPORTING. ALL CONNECTIONS SPECIFIED HEREIN ARE BASED ON LOADING CONDITIONS OF THE FULLY COMPLETED STRUCTURE IN ITS ENTIRETY INCLUDING THE FUNCTIONS OF THE COLUMN BASE PLATES AND ANCHOR BOLTS. INSTABILITIES CAN BE EXPECTED DURING THE ERECTION PROCESS DUE TO LACK OF INSTALLED ROOF, FLOOR, WALL AND SLAB DIAPHRAGMS AS WELL AS STEEL BRACING, CONNECTION RIGIDITIES AND OTHER SUCH STABILIZING ELEMENTS. THE GENERAL CONTRACTOR SHALL IDENTIFY THE SEQUENCE AND SCHEDULING OF CONSTRUCTION ITEMS AND COORDINATE THE ACTIVITIES OF ALL TRADES INCLUDING THE STEEL FABRICATOR AND ERECTOR. THE ERECTOR SHALL SUBMIT AN ERECTION PLAN AND A TEMPORARY BRACING SCHEME TO THE CONTRACTOR AND OWNER WHICH IS FOR RECORD PURPOSES ONLY. THIS SUBMITTAL WILL NOT BE REVIEWED AND IS NOT A DESIGN FUNCTION OF THE STRUCTURAL ENGINEER.
4. THE FABRICATOR/ERECTOR SHALL SUBMIT TO THE STRUCTURAL ENGINEER AND ARCHITECT FOR REVIEW, ENGINEERED AND CHECKED DRAWINGS SHOWING FABRICATION DETAILS, FIELD ASSEMBLY DETAILS AND ERECTION DIAGRAMS FOR ALL STRUCTURAL STEEL ELEMENTS.
5. ALL BEAMS AND JOISTS SHALL BE FABRICATED WITH THE NATURAL CAMBER UP. PROVIDE FABRICATED CAMBERS AS INDICATED ON THE DRAWINGS.
6. AFTER FABRICATION, ALL STEEL SHALL BE CLEANED OF ALL RUST, LOOSE MILL SCALE, AND OTHER FOREIGN MATERIALS.
7. WELDING SHALL BE PERFORMED WITH E70XX LOW HYDROGEN ELECTRODES. ALL WELDING SHALL BE PERFORMED BY CERTIFIED/QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.1, "STRUCTURAL WELDING CODE - STEEL," LATEST EDITION.
8. MINIMUM FILLET WELD SIZE SHALL COMPLY WITH THE AISC SPECIFICATION REQUIREMENTS, BUT SHALL NOT BE LESS THAN 3/16 INCH UNLESS NOTED OTHERWISE.
9. ALL BOLTS, NUTS AND WASHERS SHALL CONFORM TO THE REQUIREMENTS OF "AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," LATEST EDITION. ALL BOLT HOLES SHALL BE "SHORT SLOTTED", UNLESS NOTED OTHERWISE.
10. ALL STEEL BEAM AND GIRDER CONNECTIONS SHALL BE SIMPLE SHEAR CONNECTIONS UTILIZING HIGH STRENGTH BOLTS IN BEARING-TYPE CONNECTIONS WITH THREADS EXCLUDED FROM THE SHEAR PLANE UNLESS NOTED OTHERWISE. BOLTS ARE TO BE TIGHTENED TO THE "SNUG TIGHT" CONDITION UNLESS NOTED AS "SLIP CRITICAL". BOLTS DESIGNATED AS "SLIP CRITICAL" ARE TO BE TIGHTENED PER THE ABOVE MENTIONED BOLT SPECIFICATION.
11. BOLTED CONNECTIONS SHALL USE A MINIMUM OF (2) 3/4"Ø BOLTS UNLESS NOTED OTHERWISE.
12. THERE SHALL BE NO FIELD CUTTING OF STRUCTURAL STEEL MEMBERS FOR THE WORK OF OTHER TRADES WITHOUT THE PRIOR APPROVAL OF THE STRUCTURAL ENGINEER OF RECORD.
13. STEEL WORK SHALL SLOPE IN ACCORDANCE WITH ELEVATIONS GIVEN ON STRUCTURAL DRAWINGS.
14. COATING SYSTEM FOR "EXPOSED TO OUTSIDE ATMOSPHERE" STRUCTURAL STEEL COMPONENTS:
    - A. AFTER THE STRUCTURAL STEEL COMPONENTS ARE FABRICATED, THEY SHALL BE HOT DIPPED GALVANIZED IN ACCORDANCE WITH ASTM 123, UNLESS NOTED OTHERWISE.
15. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE STRUCTURAL STEEL TESTING AND INSPECTION REQUIREMENTS.

COLD FORMED STEEL FRAMING (TGRWA DESIGN)

1. FURNISH COLD FORMED STEEL FRAMING IN ACCORDANCE WITH AMERICAN IRON AND STEEL INSTITUTE, "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS," LATEST EDITION.
2. COLD FORMED STEEL FRAMING EXAMPLE MEMBER DESIGNATION IS AS SUCH:
   - A. 600S200-54:
     1. 600 = 6" WEB DEPTH
     2. S = STUD SECTION
     3. 200 = 2" FLANGE WIDTH
     4. 54 = 54 MILS = 16 GAUGE
3. ALL FRAMING SHALL BE FORMED FROM SHEET STEEL CORRESPONDING TO THE REQUIREMENTS OF ASTM A1003, STRUCTURAL GRADE, TYPE H WITH MINIMUM G90 ZINC COATING AND MINIMUM YIELD STRENGTH OF 50 KSI, UNLESS NOTED OTHERWISE.
4. ALL FRAMING SHALL BE MINIMUM 54 MILS, UNLESS NOTED OTHERWISE.
5. ALL STUD SECTIONS SHALL BE PUNCHED WITH STANDARD HOLES WITH STIFFENED FLANGES. ALL TRACK SECTIONS SHALL BE UNPUNCHED WITH UNSTIFFENED FLANGES.
6. FASTENING OF COMPONENTS SHALL BE WITH SELF DRILLING SCREWS OR WELDING. SCREWS AND WELDING SHALL BE SUFFICIENT SIZE TO ENSURE THE STRENGTH OF THE CONNECTION. WIRE TYING OF COMPONENTS SHALL NOT BE PERMITTED. ALL WELDS SHALL BE TOUCHED-UP WITH A ZINC RICH PAINT MEETING ASTM A780.
7. ALL WELDING SHALL BE PERFORMED BY QUALIFIED WELDERS AND SHALL CONFORM TO THE AWS D1.3, "STRUCTURAL WELDING CODE - SHEET STEEL," LATEST EDITION.
8. CONNECTIONS OF ALL COLD FORMED STEEL FRAMING TO COLD FORMED STEEL FRAMING SHALL BE WITH MINIMUM OF (2) #10 SELF TAPPING SHEET METAL SCREWS WITH LOW PROFILE HEAD, UNLESS NOTED OTHERWISE.
9. CONNECTIONS OF ALL COLD FORMED STEEL FRAMING TO STRUCTURAL STEEL FRAMING SHALL BE WITH MINIMUM OF (2) 0.145"Ø POWDER-ACTUATED FASTENING PINS, UNLESS NOTED OTHERWISE.
10. CONTRACTOR SHALL SUBMIT COLD FORMED STEEL FRAMING SHOP DRAWINGS TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO COMMENCING CONSTRUCTION. SHOP DRAWINGS SHALL SHOW LAYOUT, SPACING, SIZES, THICKNESS, AND TYPES OF COLD FORMED STEEL FRAMING, FASTENING AND ANCHORAGE DETAILS, REINFORCING CHANNELS, OPENING FRAMING, SUPPLEMENTAL FRAMING, STRAPPING, BRACING, BRIDGING, SPLICES, AND ACCESSORIES. PROVIDE ADDITIONAL INFORMATION WITH SHOP DRAWING SUBMITTAL AS INDICATED IN PROJECT SPECIFICATIONS.
11. REFER TO THE TESTING AND INSPECTION SECTION OF THESE NOTES FOR THE COLD FORMED STEEL FRAMING TESTING AND INSPECTION REQUIREMENTS.

STRUCTURAL LOADING CRITERIA

1. STRUCTURAL BUILDING CODE - 2015 MICHIGAN BUILDING CODE
2. ROOF DEAD LOADS: SEE "SCHEDULE OF BUILDING DESIGN LOADS"
   - A. SOLAR PANELS = 2.5 PSF
   - B. MISC. WIRING AND CONNECTORS: 1.0 PSF
   - C. STRUCTURAL = WELF WEIGHT OF STRUCTURAL MEMBERS INDICATED
3. ROOF LIVE LOADS: SOLAR PANELS NOT DESIGNED FOR OCCUPANCY
4. WIND LOADS:
   - A. BASIC WIND SPEED (3 SECOND GUST) - V = 115 MPH (ULTIMATE)
   - B. RISK CATEGORY = II
   - C. IMPORTANCE FACTOR I = 1.00
   - D. EXPOSURE CATEGORY = B
   - E. WIND LOADS ON OPEN BUILDING WITH MONOSLOPE ROOF:
     1. VERTICAL FACES OF STRUCTURAL MEMBERS (ALL DIRECTIONS) = 32.6 PSF
     2. WIND PARALLEL TO ROOF SLOPE
        - A. VERTICAL DOWN FORCE AT WINDWARD HALF OF ROOF, CASE A = 23.7 PSF
        - B. VERTICAL DOWN FORCE AT LEEWARD HALF OF ROOF, CASE A = 8.3 PSF
        - C. VERTICAL UPLIFT FORCE AT WINDWARD HALF OF ROOF, CASE B = 24.6 PSF
        - D. VERTICAL UPLIFT FORCE AT LEEWARD HALF OF ROOF, CASE B = 7.4 PSF
     3. WIND PERPENDICULAR TO ROOF SLOPE
        - a. VERTICAL UPLIFT/DOWN FORCE AT WINDWARD EDGE = 16.0 PSF
        - b. VERTICAL UPLIFT/DOWN FORCE AWAY FROM WINDWARD EDGE = 12.6 PSF
        - c. VERTICAL UPLIFT/DOWN FORCE AT LEEWARD EDGE = 7.4 PSF
   - F. COMPONENTS TRANSFERRING WIND LOAD TO PRIMARY STRUCTURAL SYSTEM = SEE REFERENCED CODE ABOVE.
5. SNOW LOADS:
   - A. GROUND SNOW LOAD - Pg = 25 PSF
   - B. IMPORTANCE FACTOR = 1.0
   - C. THERMAL FACTOR, Ct = 1.2
   - D. EXPOSURE FACTOR = 0.9
   - E. FLAT ROOF SNOW LOAD Pf = 20 PSF
6. SEISMIC LOADS:
   - A. SHORT PERIOD MAPPED SPECTRAL ACCELERATION Ss = 0.088
   - B. 1-SECOND PERIOD MAPPED SPECTRAL ACCELERATION S1 = 0.046
   - C. SITE CLASS = D (ASSUMED)
   - D. RISK CATEGORY = II
   - E. IMPORTANCE FACTOR I = 1.00
   - F. SHORT PERIOD SITE COEFFICIENT Fa = 1.6
   - G. 1-SECOND PERIOD SITE COEFFICIENT Fv = 2.4
   - H. SHORT PERIOD DESIGN SPECTRAL RESPONSE ACCELERATION SDS = 0.094
   - I. 1-SECOND PERIOD DESIGN SPECTRAL RESPONSE ACCELERATION SD1 = 0.074
   - J. SEISMIC DESIGN CATEGORY = A
   - K. BASIC SEISMIC FORCE RESISTING SYSTEM = STEEL ORDINARY CANTILEVER COLUMN SYSTEMS
   - L. RESPONSE MODIFICATION COEFFICIENT R = 1.25
   - M. SEISMIC RESPONSE COEFFICIENT, Cs = 0.01

REVISION SCHEDULE

REV	ISSUE FOR	DATE

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STRUCTURAL NOTES

SPECIAL INSPECTIONS AND TESTS (2015 MICHIGAN STATE BUILDING CODE)

1. THE OWNER OR THE OWNER'S AUTHORIZED AGENT, OTHER THAN THE CONTRACTOR, SHALL EMPLOY ONE OR MORE APPROVED AGENCIES TO PROVIDE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION ON THE TYPES OF WORK SPECIFIED BELOW AND IDENTIFY THE APPROVED AGENCIES TO THE BUILDING OFFICIAL.

2. THE APPROVED AGENCIES SHALL PROVIDE WRITTEN DOCUMENTATION TO THE BUILDING OFFICIAL DEMONSTRATING THE COMPETENCE AND RELEVANT EXPERIENCE OR TRAINING OF THE SPECIAL INSPECTORS WHO WILL PERFORM THE SPECIAL INSPECTIONS AND TESTS DURING CONSTRUCTION.

3. THE CONSTRUCTION OR WORK FOR WHICH SPECIAL INSPECTION OR TESTING IS REQUIRED SHALL REMAIN ACCESSIBLE AND EXPOSED FOR SPECIAL INSPECTION OR TESTING PURPOSES UNTIL COMPLETION OF THE REQUIRED SPECIAL INSPECTIONS OR TESTS.

4. APPROVED AGENCIES SHALL KEEP RECORDS OF SPECIAL INSPECTIONS AND TESTS. THE APPROVED AGENCY SHALL SUBMIT REPORTS OF SPECIAL INSPECTIONS AND TESTS TO THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. REPORTS SHALL INDICATE THAT WORK INSPECTED OR TESTED WAS OR WAS NOT COMPLETED IN CONFORMANCE TO APPROVED CONSTRUCTION DOCUMENTS. DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THEY ARE NOT CORRECTED, THE DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE BUILDING OFFICIAL AND TO THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF WORK. A FINAL REPORT DOCUMENTING REQUIRED SPECIAL INSTRUCTIONS AND TESTS, AND CORRECTION OF ANY DISCREPANCIES NOTED IN THE INSPECTIONS OR TESTS, SHALL BE SUBMITTED AT A POINT IN TIME AGREED UPON PRIOR TO THE START OF WORK BY THE OWNER OR THE OWNER'S AUTHORIZED AGENT TO THE BUILDING OFFICIAL.

5. REFER TO 2015 MICHIGAN STATE BUILDING CODE FOR DEFINITION OF TERMS.

SOILS CONSTRUCTION (IBC 1705.6)

1. VERIFY SUBGRADE IS ADEQUATE TO ACHIEVE DESIGN BEARING CAPACITY	☐ CONTINUOUS	☒ PERIODIC	PRIOR TO PLACEMENT OF CONCRETE.
2. VERIFY EXCAVATIONS EXTEND TO PROPER DEPTH AND MATERIAL	☐ CONTINUOUS	☒ PERIODIC	PRIOR TO PLACEMENT OF COMPACTED FILL OR CONCRETE.
3. VERIFY THAT SUBGRADE HAS BEEN APPROPRIATELY PREPARED PRIOR TO PLACING COMPACTED FILL	☐ CONTINUOUS	☒ PERIODIC	PRIOR TO PLACEMENT OF COMPACTED FILL
4. PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS	☐ CONTINUOUS	☒ PERIODIC	ALL MATERIALS SHALL BE CHECKED AT EACH LIFT FOR PROPER CLASSIFICATIONS AND GRADATIONS NOT LESS THAN ONCE FOR EACH 10,000 FT² OF SURFACE AREA
5. VERIFY PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION	☒ CONTINUOUS	☐ PERIODIC	

CONCRETE CONSTRUCTION (IBC 1705.3 AND IBC CHAPTER 19)

1. REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS	☐ CONTINUOUS	☒ PERIODIC	VERIFY PRIOR TO PLACING CONCRETE THAT REINFORCING IS OF SPECIFIED TYPE, GRADE AND SIZE; THAT IT IS FREE OF OIL, DIRT AND RUST; THAT IT IS LOCATED AND SPACED PROPERLY; THAT HOOKS, BENDS, TIES, STIRRUPS AND SUPPLEMENTAL REINFORCEMENT ARE PLACED CORRECTLY; THAT LAP LENGTHS, STAGGER AND OFFSETS ARE PROVIDED; AND THAT ALL MECHANICAL CONNECTIONS ARE INSTALLED PER THE MANUFACTURER'S INSTRUCTIONS AND/OR EVALUATION REPORT. (REF. CHAPTER 20 AND SECTIONS 25.2, 25.3, & 26.6.1-26.6.3 OF ACI 318)
2. CAST-IN ANCHORS & EMBEDS	☐ CONTINUOUS	☒ PERIODIC	COMPLY WITH SECTIONS 1.9 & 17.8.2 OF ACI 318.
3A. POST-INSTALLED ANCHORS (ADHESIVE)	☒ CONTINUOUS	☐ PERIODIC	ALL POST-INSTALLED ANCHORS/DOWELS SHALL BE SPECIALLY INSPECTED AS REQUIRED BY THE APPROVED ICC-ES REPORT, AND SHALL COMPLY WITH SECTIONS 17.8.2, 26.7.2, AND 26.13.3.2&3 OF ACI 318.
3B. POST-INSTALLED ANCHORS (NON-ADHESIVE)	☐ CONTINUOUS	☒ PERIODIC	ALL POST-INSTALLED ANCHORS/DOWELS SHALL BE SPECIALLY INSPECTED AS REQUIRED BY THE APPROVED ICC-ES REPORT, AND SHALL COMPLY WITH SECTIONS 17.8.2, 26.7.2, AND 26.13.3.2&3 OF ACI 318.
4. USE OF REQUIRED MIX DESIGN	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT ALL MIXES USED COMPLY WITH THE APPROVED CONSTRUCTION DOCUMENTS AND CHAPTER 19 & SECTIONS 26.4.3&4 OF ACI 318.
5. CONCRETE SAMPLING FOR STRENGTH TESTS, SLUMP, AIR CONTENT, AND TEMPERATURE	☐ CONTINUOUS	☒ PERIODIC	COMPLY WITH SECTIONS 26.4 & 26.12 OF ACI 318.
6. CONCRETE & SHOTCRETE PLACEMENT	☒ CONTINUOUS	☐ PERIODIC	COMPLY WITH SECTION 26.5 OF ACI 318 AND SECTION 1908 OF IBC.
7. CURING TEMPERATURE AND TECHNIQUES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT THE AMBIENT TEMPERATURE FOR CONCRETE IS KEPT AT > 50°F FOR AT LEAST 7 DAYS AFTER PLACEMENT. HIGH-EARLY-STRENGTH CONCRETE SHALL BE KEPT AT > 50°F FOR AT LEAST 3 DAYS. ACCELERATED CURING METHODS MAY BE USED. THE AMBIENT TEMPERATURE FOR SHOTCRETE SHALL BE > 40°F FOR THE SAME PERIOD OF TIME AS NOTED FOR CONCRETE. SHOTCRETE SHALL BE KEPT CONTINUOUSLY MOIST FOR AT LEAST 24 HOURS AFTER SHOTCRETING. ALL CONCRETE MATERIALS, REINFORCEMENT, FORMS, FILLERS, AND GROUND SHALL BE FREE FROM FROST. IN HOT WEATHER CONDITIONS ENSURE THAT APPROPRIATE MEASURES ARE TAKEN TO AVOID PLASTIC SHRINKAGE CRACKING AND THAT THE SPECIFIED WATER/CEMENT RATIO IS NOT EXCEEDED. (REF SECTIONS 26.5.3 THRU 26.5.5 OF ACI 318)
8. PRE-STRESSED CONCRETE	☒ CONTINUOUS	☐ PERIODIC	COMPLY WITH SECTION 26.10.2 OF ACI 318.
9. ERECTION OF PRECAST CONCRETE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT ALL PRECAST ELEMENTS ARE LIFTED, ASSEMBLED AND BRACED IN ACCORDANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS.
10. STRENGTH VERIFICATION FOR REMOVAL OF SHORES/FORMS AND FOR POST-TENSIONED CONCRETE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT ADEQUATE STRENGTH HAS BEEN ACHIEVED PRIOR TO THE REMOVAL OF SHORES AND FORMS OR THE STRESSING OF POST-TENSIONED TENDONS.
11. FORMWORK	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT THE FORMS ARE PLACED PLUMB AND CONFORM TO THE SHAPES, LINES, AND DIMENSIONS OF THE MEMBERS AS REQUIRED BY THE APPROVED CONSTRUCTION DOCUMENTS.
12. VERIFICATION OF WELDABILITY OF REINFORCING STEEL	☐ CONTINUOUS	☒ PERIODIC	VERIFY WELDABILITY OF REINFORCING STEEL BASED UPON CARBON EQUIVALENT AND IN ACCORDANCE WITH AWS D1.4 & SECTION 26.6.4.1 OF ACI 318.

STRUCTURAL STEEL (IBC 1705.2.1, 1705.12.1 & 1705.13.1)

PRIOR TO WELDING (TABLE N5.4-1, AISC 360)			
1. VERIFY WELDING PROCEDURES (WPS) AND CONSUMABLE CERTIFICATES	☒ CONTINUOUS	☐ PERIODIC	
2. MATERIAL IDENTIFICATION	☐ CONTINUOUS	☒ PERIODIC	VERIFY TYPE AND GRADE OF MATERIAL
3. WELDER IDENTIFICATION	☐ CONTINUOUS	☒ PERIODIC	A SYSTEM SHALL BE MAINTAINED BY WHICH A WELDER WHO HAS WELDED A JOINT OR MEMBER CAN BE IDENTIFIED
4. FIT-UP GROOVE WELDS	☐ CONTINUOUS	☒ PERIODIC	VERIFY JOINT PREPARATION, DIMENSIONS, CLEANLINESS, TACKING, AND BACKING.
5. ACCESS HOLES	☐ CONTINUOUS	☒ PERIODIC	VERIFY CONFIGURATION AND FINISH.
6. FIT-UP OF FILLET WELDS	☐ CONTINUOUS	☒ PERIODIC	VERIFY ALIGNMENT, GAPS AT ROOT, CLEANLINESS OF STEEL SURFACES, AND TACK WELD QUALITY AND LOCATION.

STRUCTURAL STEEL (CONT) (IBC 1705.2.1, 1705.12.1 & 1705.13.1)

DURING WELDING (TABLE N5.4-2, AISC 360)			
1. USE OF QUALIFIED WELDERS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT WELDERS ARE APPROPRIATELY QUALIFIED.
2. CONTROL AND HANDLING OF WELDING CONSUMABLES	☐ CONTINUOUS	☒ PERIODIC	VERIFY PACKAGING AND EXPOSURE CONTROL.
3. CRACKED TACK WELDS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT WELDING DOES NOT OCCUR OVER CRACKED TACK WELDS.
4. ENVIRONMENTAL CONDITIONS	☐ CONTINUOUS	☒ PERIODIC	VERIFY WIND SPEED IS WITHIN LIMITS AS WELL AS PRECIPITATION AND TEMPERATURE.
5. WPS FOLLOWED	☐ CONTINUOUS	☒ PERIODIC	VERIFY ITEMS SUCH AS SETTINGS ON WELDING EQUIPMENT, TRAVEL SPEED, WELDING MATERIALS, SHIELDING GAS TYPE/FLOW RATE, PREHEAT APPLIED, INTERPASS TEMPERATURE MAINTAINED, AND PROPER POSITION.
6. WELDING TECHNIQUES	☐ CONTINUOUS	☒ PERIODIC	VERIFY INTERPASS AND FINAL CLEANING, EACH PASS IS WITHIN PROFILE LIMITATIONS, AND QUALITY OF EACH PASS.
AFTER WELDING (TABLE N5.4-3, AISC 360)			
1. WELDS CLEANED	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT WELDS HAVE BEEN PROPERLY CLEANED.
2. SIZE, LENGTH, AND LOCATION OF WELDS	☒ CONTINUOUS	☐ PERIODIC	
3. WELDS MEET VISUAL ACCEPTANCE CRITERIA	☒ CONTINUOUS	☐ PERIODIC	VERIFY CRACK PROHIBITION, WELD/BASE METAL FUSION, CRATER CROSS SECTION, WELD PROFILES, WELD SIZE, UNDERCUT, AND POROSITY ARE ALL ACCEPTABLE
4. ARC STRIKES	☒ CONTINUOUS	☐ PERIODIC	
5. K-AREA	☒ CONTINUOUS	☐ PERIODIC	
6. BACKING & WELD TABS REMOVED	☒ CONTINUOUS	☐ PERIODIC	
7. REPAIR ACTIVITIES	☒ CONTINUOUS	☐ PERIODIC	
8. DOCUMENT ACCEPTANCE OR REJECTION OF WELDED JOINT/MEMBER	☒ CONTINUOUS	☐ PERIODIC	
NONDESTRUCTIVE TESTING (SECTION N5.5, AISC 360)			
1. CJP WELDS (RISK CAT. II)	☐ CONTINUOUS	☒ PERIODIC	ULTRASONIC TESTING SHALL BE PERFORMED ON 10% OF CJP GROOVE WELDS IN BUTT, T- AND CORNER JOINTS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN MATERIALS 5/16 INCH THICK OR GREATER. TESTING RATE MUST BE INCREASED IF > 5% OF WELDS TESTED HAVE UNACCEPTABLE DEFECTS PER SECTION N5.5F.
2. CJP WELDS (RISK CAT. III OR IV)	☒ CONTINUOUS	☐ PERIODIC	ULTRASONIC TESTING SHALL BE PERFORMED ON ALL CJP GROOVE WELDS IN BUTT, T- AND CORNER JOINTS SUBJECT TO TRANSVERSELY APPLIED TENSION LOADING IN MATERIALS 5/16 INCH THICK OR GREATER, A REDUCTION IN THE RATE OF ULTRASONIC TESTING IS ALLOWED PER SECTION N5.5E.
3. ACCESS HOLES (FLANGE > 2")	☒ CONTINUOUS	☐ PERIODIC	MAGNETIC PARTICLE TESTING OR PENETRANT TESTING SHALL BE PERFORMED. ANY CRACK SHALL BE DEEMED UNACCEPTABLE
4. WELDED JOINTS SUBJECT TO FATIGUE	☒ CONTINUOUS	☐ PERIODIC	REFER TO APPENDIX 3, TABLE A-3.1.
PRIOR TO BOLTING (TABLE N5.6-1, AISC 360) NOT REQUIRED IF ONLY SNUG-TIGHT JOINTS ARE SPECIFIED [PER SECTION N5.6(1) OF AISC 360].			
1. CERTIFICATIONS OF FASTENERS	☒ CONTINUOUS	☐ PERIODIC	
2. FASTENERS MARKED	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENERS HAVE BEEN MARKED IN ACCORDANCE WITH ASTM REQUIREMENTS.
3. PROPER FASTENERS FOR JOINT	☐ CONTINUOUS	☒ PERIODIC	VERIFY GRADE, TYPE, AND BOLT LENGTH IF THREADS ARE EXCLUDED FROM THE SHEAR PLANE.
4. PROPER BOLTING PROCEDURE	☐ CONTINUOUS	☒ PERIODIC	VERIFY PROPER PROCEDURE IS USED FOR THE JOINT DETAIL.
5. CONNECTING ELEMENTS	☐ CONTINUOUS	☒ PERIODIC	VERIFY APPROPRIATE FAYING SURFACE CONDITION AND HOLE PREPARATION, IF SPECIFIED, MEET REQUIREMENTS.
6. PRE-INSTALLATION VERIFICATION TESTING	☐ CONTINUOUS	☒ PERIODIC	OBSERVE AND DOCUMENT VERIFICATION TESTING BY INSTALLATION PERSONNEL FOR FASTENER ASSEMBLIES AND METHODS USED. COMPONENTS.
7. PROPER STORAGE	☐ CONTINUOUS	☒ PERIODIC	VERIFY PROPER STORAGE OF BOLTS, NUTS, WASHERS, AND OTHER FASTENER COMPONENTS.
DURING BOLTING (TABLE N5.6-2, AISC 360) NOT REQUIRED IF ONLY SNUG-TIGHT JOINTS ARE SPECIFIED [PER SECTION N5.6(1) OF AISC 360]. NOT REQUIRED FOR PRETENSIONED JOINTS USING TURN-OF-THE-NUT METHOD WITH MATCH-MARKING, DIRECT-TENSION-INDICATORS, OR TWIST-OFF TYPE TENSION CONTROL METHOD [PER SECTION N5.6(2) OF AISC 360			
1. FASTENER ASSEMBLIES	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENER ASSEMBLIES ARE OF SUITABLE CONDITION, PLACED IN ALL HOLES, AND WASHERS ARE POSITIONED AS REQUIRED.
2. SNUG-TIGHT PRIOR TO PRETENSIONING	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT JOINTS ARE BROUGHT TO SNUG-TIGHT CONDITION PRIOR TO PRETENSIONING OPERATION.
3. FASTENER COMPONENT	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENER COMPONENT IS NOT TURNED BY WRENCH PREVENTED FROM ROTATING.
4. PRETENSIONED FASTENERS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT FASTENERS ARE PRETENSIONED IN ACCORDANCE WITH RCSC SPECIFICATION, PROGRESSING SYSTEMATICALLY FROM THE MOST RIGID POINT TOWARD THE FREE EDGES.
AFTER BOLTING (TABLE N5.6-3, AISC 360)			
1. DOCUMENT ACCEPTANCE OR REJECTION OF BOLTED CONNECTIONS	☒ CONTINUOUS	☐ PERIODIC	
OTHER STEEL INSPECTIONS (SECTION N5.7, AISC 360; TABLES J8-1 & J10-1, AISC 341)			
1. STRUCTURAL STEEL DETAILS	☐ CONTINUOUS	☒ PERIODIC	ALL FABRICATED STEEL OR STEEL FRAMES SHALL BE INSPECTED TO VERIFY COMPLIANCE WITH THE DETAILS SHOWN IN THE CONSTRUCTION DOCUMENTS, SUCH AS BRACES, STIFFENERS, MEMBER LOCATIONS, AND PROPER APPLICATION OF JOINT DETAILS AT EACH CONNECTION.
2. ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL	☐ CONTINUOUS	☒ PERIODIC	SHALL BE ON THE PREMISES DURING THE PLACEMENT OF ANCHOR RODS AND OTHER EMBEDMENTS SUPPORTING STRUCTURAL STEEL FOR COMPLIANCE WITH CONSTRUCTION DOCUMENTS. VERIFY THE DIAMETER, GRADE, TYPE, AND LENGTH OF THE ANCHOR ROD OR EMBEDDED ITEM, AND THE EXTENT OR DEPTH OF EMBEDMENT PRIOR TO PLACEMENT OF CONCRETE.
3. REDUCED BEAM SECTIONS (RBS)	☒ CONTINUOUS	☐ PERIODIC	VERIFY CONTOUR AND FINISH AS WELL AS DIMENSIONAL TOLERANCES (SEE TABLE J8-1 OF AISC 341).
4. PROTECTED ZONES	☒ CONTINUOUS	☐ PERIODIC	VERIFY THAT NO HOLES OR UNAPPROVED ATTACHMENTS ARE MADE WITHIN THE PROTECTED ZONE (SEE TABLE J8-1 OF AISC 341).
5. H-PILES	☒ CONTINUOUS	☐ PERIODIC	VERIFY THAT NO HOLES OR UNAPPROVED ATTACHMENTS OCCUR WITHIN THE PROTECTED ZONES OF PILING (SEE TABLE J10-1 OF AISC 341).
STEEL ELEMENTS OF COMPOSITE CONSTRUCTION (TABLE N6.1, AISC 360; TABLES J9-1 THRU J9-3, AISC 341)			
1. PLACEMENT AND INSTALLATION OF STEEL DECK	☒ CONTINUOUS	☐ PERIODIC	
2. PLACEMENT AND INSTALLATION OF STEEL HEADED STUD ANCHORS	☒ CONTINUOUS	☐ PERIODIC	
3. DOCUMENT ACCEPTANCE OR REJECTION OF STEEL ELEMENTS	☒ CONTINUOUS	☐ PERIODIC	
4. REINFORCING STEEL	☐ CONTINUOUS	☒ PERIODIC	VERIFY APPROPRIATE REINFORCEMENT SIZE, SPACING, AND ORIENTATION; THAT IT HAS NOT BEEN RE-BENT IN FIELD; THAT IT IS CORRECTLY TIED AND SUPPORTED; AND THAT REQUIRED STEEL CLEARANCES HAVE BEEN PROVIDED.
5. COMPOSITE MEMBER SIZE	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT COMPOSITE MEMBER IS THE REQUIRED SIZE.

COLD-FORMED STEEL CONSTRUCTION (IBC 1705.2.4 , 1705.11.2 & 1705.12.3):

1. COLD FORMED STEEL PURLINS	☐ CONTINUOUS	☒ PERIODIC	VERIFY THAT THE SIZES, GRADES, CONFIGURATIONS, AND CONNECTIONS OF THE COLD FORMED STEEL FRAMING MATCH THE STRUCTURAL DRAWINGS.

THESE DRAWINGS COVER THE DESIGN OF THE COMPLETED STRUCTURE ONLY, AND THE STRUCTURAL ENGINEERS DO NOT ASSUME ANY RESPONSIBILITY FOR ANY MEANS, METHODS OR TECHNIQUES OF CONSTRUCTION NOR FOR IMPLEMENTATION OF ANY LOCAL, STATE, OR FEDERAL SAFETY REQUIREMENTS CONCERNING SAFETY OF WORKMEN OR ANY OTHERS ON OR ABOUT THE JOBSITE.

TESTING AND INSPECTION NOTES

REVISION SCHEDULE

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ABBREVIATIONS

ADDL	ADDITIONAL	LIN	LINEAR
ALT	ALTERNATE	LL	LIVE LOAD
ALUM	ALUMINUM	LLH	LONG LEG HORIZONTAL
APPROX	APPROXIMATE	LLV	LONG LEG VERTICAL
ARCH	ARCHITECT(URAL)	LSL	LONG SLOT
ASSY	ASSEMBLY	LVL	LAMINATED VENEER LUMBER
B/	BOTTOM OF	LW	LIGHT WEIGHT
BLDG	BUILDING	MAX	MAXIMUM
BM	BEAM	MECH	MECHANICAL
BOT	BOTTOM	MED	MEDIUM
BRDG	BRIDGING	MEP	MECHANICAL ELECTRICAL PLUMBING
BRG	BEARING		
BRKT	BRACKET	MEZZ	MEZZANINE
BW	BOTH WAYS	MFR	MANUFACTURER
C/C	CENTER TO CENTER	MIN	MINIMUM
CCD	CHICAGO CITY DATUM	MISC	MISCELLANEOUS
CFS	COLD FORM STEEL	MK	MARK
CIP	CAST IN PLACE	MO	MASONRY OPENING
CJ	CONSTRUCTION JOINT, CONTROL JOINT	MTL	METAL
		NIC	NOT IN CONTRACT
CJP	COMPLETE JOINT PENETRATION	NOM	NOMINAL
CL	CENTERLINE	NS	NEAR SIDE
CLR	CLEAR	NTS	NOT TO SCALE
CMU	CONCRETE MASONRY UNIT	NW	NORMAL WEIGHT
COL	COLUMN	OC	ON CENTER
CONC	CONCRETE	OD	OUTSIDE DIAMETER
CONN	CONNECTION	OPNG	OPENING
CONT	CONTINUOUS	OPP	OPPOSITE
COORD	COORDINATE, COORDINATION	OPP HD	OPPOSITE HAND
CTR	CENTER	PC	PRECAST CONCRETE
CU FT	CUBIC FOOT	PCF	POUNDS PER CUBIC FOOT
CU YD	CUBIC YARD	PERIM	PERIMETER
DBA	DEFORMED BAR ANCHOR	PERP	PERPENDICULAR
DEG	DEGREE	PL	PLATE
DEMO	DEMOLISH	PLF	POUNDS PER LINEAR FOOT
DIA	DIAMETER	PLUMB	PLUMBING
DIM	DIMENSION	PLYWD	PLYWOOD
DL	DEAD LOAD	PROJ	PROJECT
DWG	DRAWING	PSF	POUNDS PER SQUARE FOOT
DWGS	DRAWINGS	PSI	POUNDS PER SQUARE INCH
(E)	EXISTING	PSL	PARALLEL STRAND LUMBER
EA	EACH	PT	POST TENSIONED
EF	EACH FACE	QTY	QUANTITY
EL	ELEVATION	RAD	RADIUS
ELEC	ELECTRICAL	REBAR	REINFORCING BAR
EMBED	EMBEDDED	REF	REFER, REFERENCE
ENGR	ENGINEER	REINF	REINFORCE, REINFORCEMENT
EOD	EDGE OF DECK	REQD	REQUIRED
EOS	EDGE OF SLAB	REV	REVISION
EQ	EQUAL, EQUIVALENT	RO	ROUGH OPENING
EQUIP	EQUIPMENT	SC	SLIP CRITICAL
EW	EACH WAY	SCHED	SCHEDULE
EXIST	EXISTING	SE	STRUCTURAL ENGINEER
EXP JT	EXPANSION JOINT	SECT	SECTION
EXT	EXTERIOR	SF	SQUARE FOOT
FDN	FOUNDATION	SHT	SHEET
FF	FINISHED FLOOR	SIM	SIMILAR
FIN	FINISH	SOG	SLAB ON GRADE
FLR	FLOOR	SPECS	SPECIFICATIONS
FS	FAR SIDE	SQ	SQUARE
FT	FOOT, FEET	SQ FT	SQUARE FOOT (FEET)
FTG	FOOTING	SS	STAINLESS STEEL
GA	GAUGE	SSL	SHORT SLOT
GALV	GALVANIZED	STD	STANDARD
GB	GRADE BEAM	STIFF	STIFFENER
GC	GENERAL CONTRACTOR	STL	STEEL
GYP	GYPSUM	STRUCT	STRUCTURAL
GYP BD	GYPSUM BOARD	SYM	SYMMETRICAL
HORIZ	HORIZONTAL	t	THICKNESS
ID	INSIDE DIAMETER	T&B	TOP & BOTTOM
IN	INCH(ES)	T/	TOP OF
INFO	INFORMATION	TEMP	TEMPORARY
INSUL	INSULATION	THRU	THROUGH
INT	INTERIOR	TYP	TYPICAL
JST	JOIST	UNO	UNLESS NOTED OTHERWISE
JT	JOINT	VERT	VERTICAL
K	KIPS	VIF	VERIFY IN FIELD
KSI	KIPS PER SQUARE INCH	W/	WITH
LAT	LATERAL	W/O	WITHOUT
LB	POUND	WF	WIDE FLANGE
LFH	LONG FACE HORIZONTAL	WP	WORK POINT
LFV	LONG FACE VERTICAL	WWF	WELDED WIRE FABRIC
		YD	YARD

MARK DESIGNATIONS

AP#	INDICATES AUGER CAST-IN-PLACE PILE. REFER TO AUGER CAST-IN-PLACE PILE SCHEDULE FOR ADDITIONAL INFORMATION.
B#	INDICATES BEAM TYPE. REFER TO BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
BF#	INDICATES BRACED FRAME TYPE. REFER TO BRACED FRAME ELEVATIONS AND DETAILS FOR ADDITIONAL INFORMATION.
BP#	INDICATES BASE PLATE TYPE. REFER TO BASE PLATE SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
C#	INDICATES COLUMN TYPE. REFER TO COLUMN SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
CC#	INDICATES CAISSON CAP TYPE. REFER TO CAISSON CAP SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
CS#	INDICATES CAISSON TYPE. REFER TO CAISSON SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
DP#	INDICATES DRIVEN / DRILLED PILE TYPE. REFER TO DRIVEN / DRILLED PILE SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
F#	INDICATES SPREAD FOOTING TYPE. REFER TO FOOTING SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
GB#	INDICATES GRADE BEAM TYPE. REFER TO GRADE BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
J#	INDICATES JOIST TYPE. REFER TO JOIST SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
L#	INDICATES LINTEL TYPE. REFER TO LINTEL SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION
P#	INDICATES PIER TYPE. REFER TO PIER DETAILS FOR ADDITIONAL INFORMATION.
PC#	INDICATES PILE CAP TYPE. REFER TO PILE CAP DETAILS FOR ADDITIONAL INFORMATION.
PCB#	INDICATES PRECAST BEAM TYPE BY PRECAST MANUFACTURER.
PCP#	INDICATES PRECAST PLANK TYPE BY PRECAST MANUFACTURER.
PTB#	INDICATES POST TENSIONED BEAM TYPE. REFER TO POST TENSIONED BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
SW#	INDICATES SHEAR WALL TYPE. REFER TO SHEAR WALL ELEVATIONS, SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
SWB#	INDICATES SHEAR WALL BEAM TYPE. REFER TO SHEAR WALL BEAM SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
T#	INDICATES TRUSS TYPE. REFER TO TRUSS SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.
WD#	INDICATES WOOD DECK TYPE. REFER TO WOOD DECK SCHEDULE AND DETAILS FOR ADDITIONAL INFORMATION.

HATCH PATTERNS

	EARTH / NATIVE SOIL
	GRAVEL
	GROUT / SAND
	CONCRETE
	STEEL
	WOOD
	CONCRETE MASONRY - PLAN
	CONCRETE MASONRY - ELEVATION
	BRICK
	GEOFOAM
	PRECAST - SOLID
	PRECAST - INSULATED
	SHEAR WALL
	DEMOLITION

GENERAL SYMBOLS

X	REVISION
	REVISION CLOUD
NORTH	NORTH ARROW
	ELEVATION TARGET
	SLAB STEP
	RAMP SLOPE UP
	RAMP SLOPE DOWN
	SPAN DIRECTION OF ONE WAY SLAB, WOOD DECK OR METAL ROOF DECK
	SPAN DIRECTION OF TWO WAY SLAB

TYPICAL STEEL BEAM DESIGNATIONS

W/Xx/XX (X) <C=X">
[-X X/X"]

(X)	**INDICATES NUMBER OF X/X" ØxX" WELDED HEADED STUDS UNIFORMLY SPACED ALONG THE BEAM AND SLAB INTERFACE LENGTH. REFER TO DETAIL XX/SXXX FOR ADDITIONAL INFORMATION.**
<C=X">	INDICATES REQUIRED CAMBER UP FOR FLOOR FRAMING. INSTALL ALL BEAMS AND GIRDERS WITHOUT CAMBER SPECIFIED WITH NATURAL CAMBER UP.
[-X X/X"]	INDICATES ELEVATION DIFFERENCE BETWEEN TYPICAL T/STEEL ELEVATION AND THIS MEMBER

STEEL FRAMING SYMBOLS

	MOMENT CONNECTION
	DRAG STRUT CONNECTION
	SLIP CRITICAL CONNECTION
	SLIDE BEARING CONNECTION
X	BEAM OPENING. REFER TO BEAM OPENING SCHEDULE FOR ADDITIONAL INFORMATION.
	STAIR CONNECTION
	COLUMN SPLICE OR BEAM SPLICE
	COLUMN ABOVE
	ROOF DAVIT
	ROOF TIEBACK
	ROOF FALL ARREST
RTU# XXX LBS	ROOFTOP UNIT DESIGNATION

REVISION SCHEDULE

REV	ISSUE FOR	DATE

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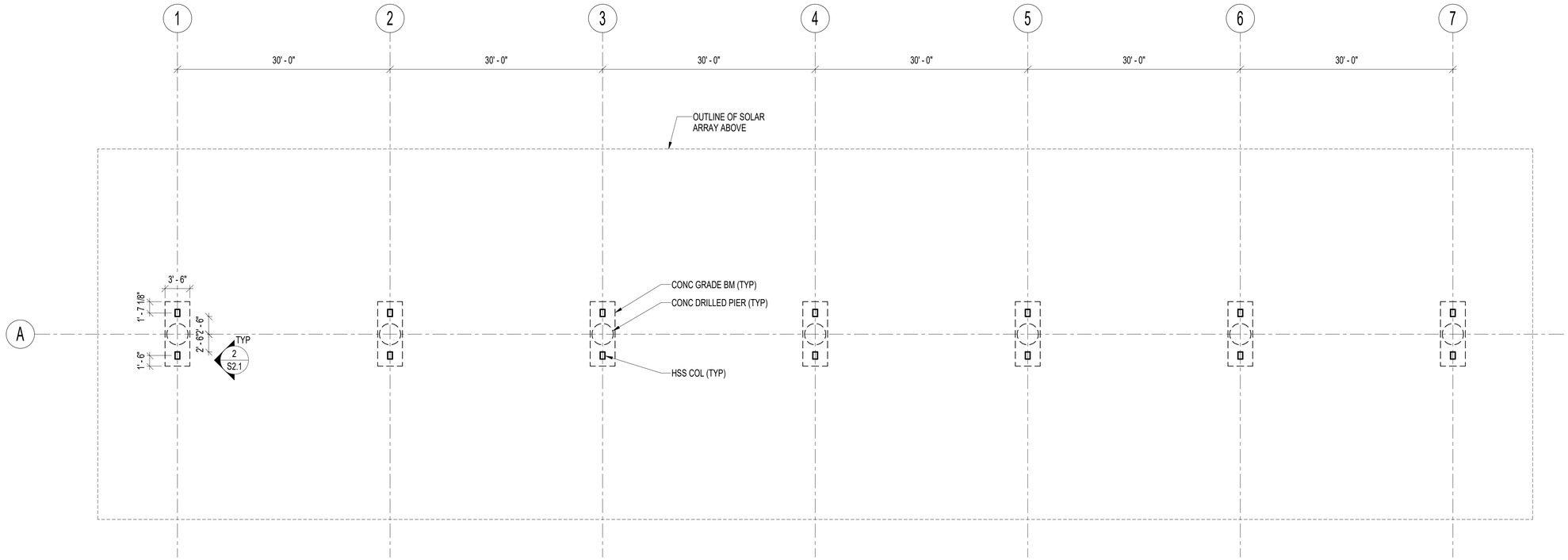
LINEAGE HQ SOLAR PROJECT
46500 HUMBOLDT DR., NOMI, MI

SEAL

DRAWN: NC
CHECKED: SEO
DATE: 07/29/16
SCALE: NTS
JOB NO.: 23116
SHEET: S0.3

ABBREVIATIONS AND SYMBOLS



1 CANOPY FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. RECORDS OF ANY EXISTING SUBGRADE INTERFERENCES OTHER THAN THOSE SHOWN OR INDICATED ON THE CONSTRUCTION DOCUMENTS ARE NOT CURRENTLY AVAILABLE. DURING EXCAVATION, INTERFERENCES MAY BE DISCOVERED. CONTRACTOR SHALL DOCUMENT CONSTRUCTION-RELATED DIMENSIONS ON ALL INTERFERENCES, AND FURNISH THE INFORMATION IN THE FORM OF DETAILED SKETCHES TO THE STRUCTURAL ENGINEER OF RECORD PRIOR TO FABRICATION OF FOUNDATION REINFORCEMENT.
2. GENERAL CONTRACTOR SHALL COORDINATE WITH CIVIL/SITE LAYOUT FOR LOCATIONS OF CANOPY STRUCTURES. COORDINATE WITH THE PARKING LAYOUT SUCH THAT THE NEW CANOPY COLUMNS DO NOT INTERFERE WITH ANY PARKING SPACES.

CANOPY FOUNDATION PLAN

REVISION SCHEDULE

REV	ISSUE FOR	DATE

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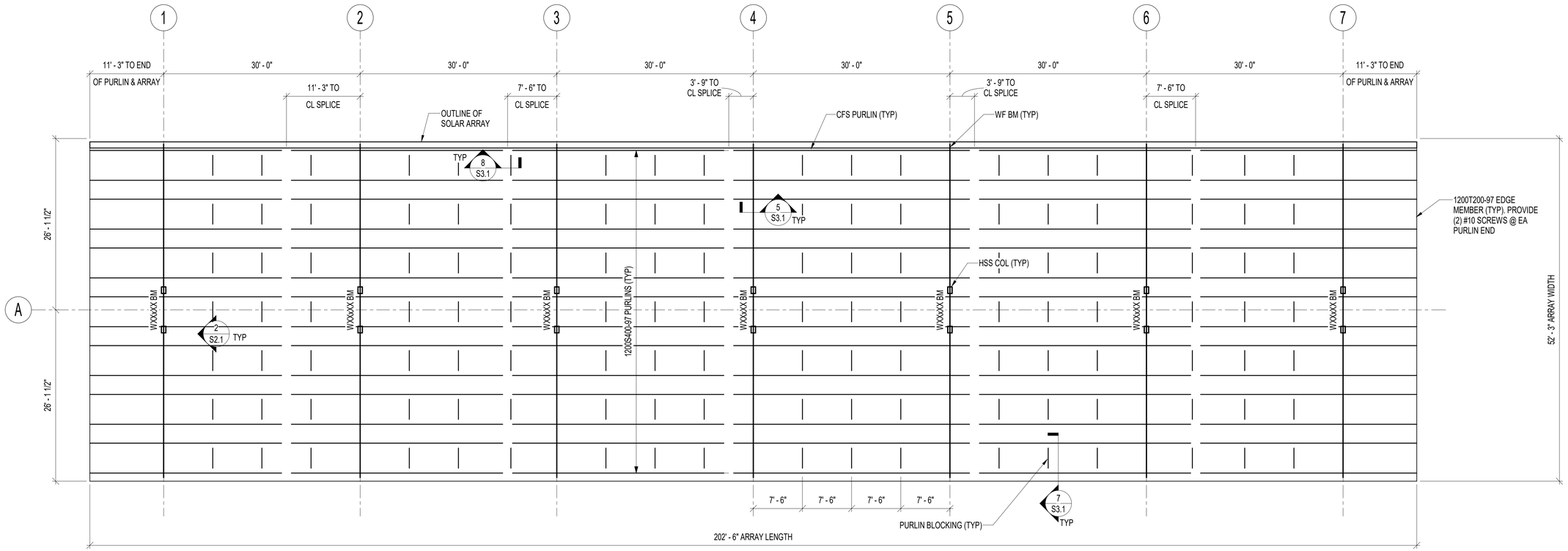
SEAL

DRAWN: NC
CHECKED: SEO
DATE: 08/02/24
SCALE: 1/8" = 1'-0"
JOB NO.: 23116
SHEET: S1.0



1 CANOPY FRAMING PLAN

SCALE: 1/8" = 1'-0"

CANOPY FRAMING PLAN

REVISION SCHEDULE

REV	ISSUE FOR	DATE

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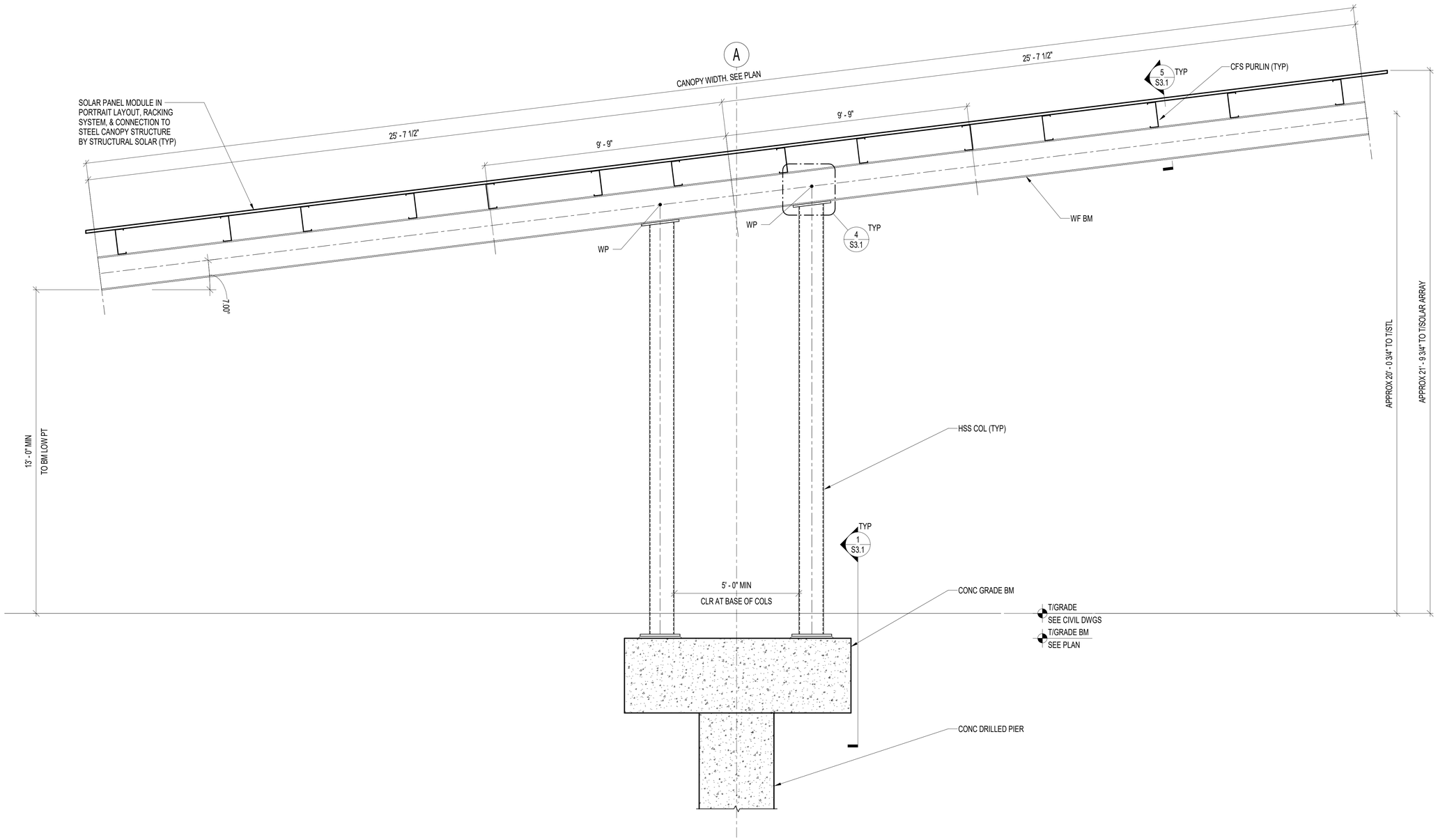
SEAL

DRAWN: NC
CHECKED: SEO
DATE: 08/02/24
SCALE: 1/8" = 1'-0"
JOB NO.: 23116
SHEET: S1.1



2 TYPICAL CANOPY ELEVATION
SCALE: 1/2" = 1'-0"

THE DESIGN SHOWN ON THESE DRAWINGS IS INTENDED FOR THE NAMED STRUCTURE ONLY AND ANY USE FOR OTHER STRUCTURES IS EXPRESSLY FORBIDDEN WITHOUT THE WRITTEN CONSENT OF TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC. ANY CHANGES MADE TO THESE DRAWINGS BY OTHERS THAN THE ENGINEERS, TYLK GUSTAFSON RECKERS WILSON ANDREWS, LLC, SHALL VOID THE DESIGN AND RELIEVE THE ENGINEERS OF ANY FURTHER RESPONSIBILITY FOR THE DESIGN.

THESE DRAWINGS COVER THE DESIGN OF THE COMPLETED STRUCTURE ONLY, AND THE STRUCTURAL ENGINEERS DO NOT ASSUME ANY RESPONSIBILITY FOR ANY MEANS, METHODS OR TECHNIQUES OF CONSTRUCTION NOR FOR IMPLEMENTATION OF ANY LOCAL, STATE, OR FEDERAL SAFETY REQUIREMENTS CONCERNING SAFETY OF WORKMEN OR ANY OTHERS ON OR ABOUT THE JOBSITE.

TYPICAL CANOPY SECTION

REVISION SCHEDULE

REV	ISSUE FOR	DATE

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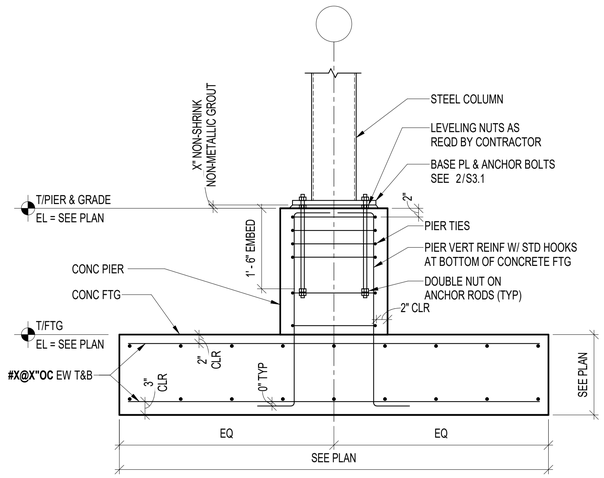
SEAL

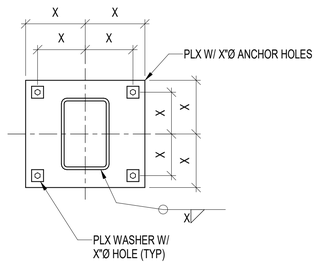
DRAWN: NC
CHECKED: SEO
DATE: 10/04/23
SCALE: 1/2" = 1'-0"
JOB NO.: 23116
SHEET: S2.1



1 CONCRETE FOOTING SECTION

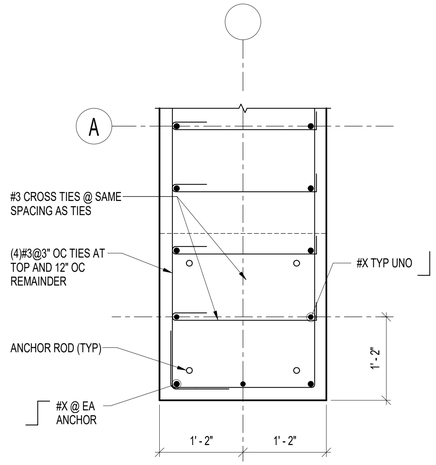
SCALE: NTS

NOTES:
1. REFER TO FOUNDATIONS NOTES ON S0.1.



2 WF COLUMN BASE DETAIL

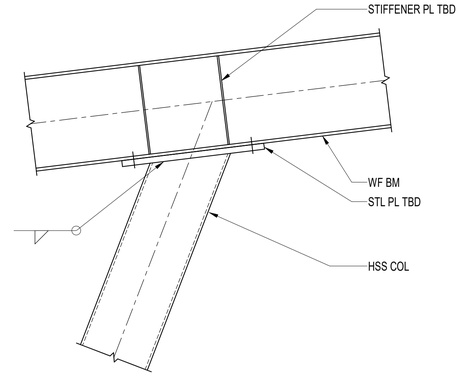
SCALE: NTS



3 PIER DETAIL

SCALE: NTS

NOTES:
1. PIER IS SYMMETRIC ABOUT GRID A



4 BEAM-TO-COLUMN CONNECTION DETAIL

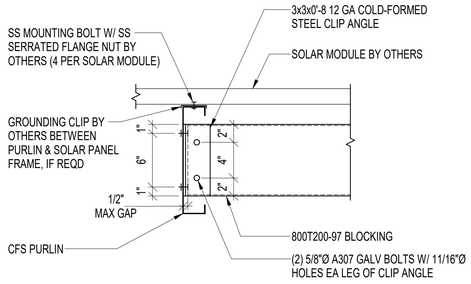
SCALE: NTS

5 PURLIN-TO-BEAM CONNECTION DETAIL

SCALE: NTS

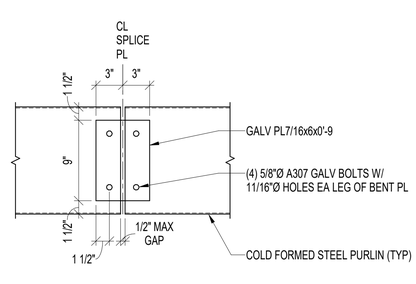
6 PURLIN-TO-BEAM CONNECTION DETAIL

SCALE: NTS



7 PURLIN BLOCKING DETAIL

SCALE: NTS



8 PURLIN SPLICE CONNECTION DETAIL

SCALE: NTS

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DETAILS

REVISION SCHEDULE

REV	ISSUE FOR REVIEW	DATE
		08/21/24

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SEAL

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CHECKED: SEO
DATE: 11/17/2022
SCALE: As indicated
JOB NO.: 23116
SHEET: S3.1