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:** June 11, 2024

REGARDING: **210 Buffington Drive # 50-22-03-385-026 (PZ24-0022)**

BY: Alan Hall, Deputy Director Community Development

I. GENERAL INFORMATION:

Applicant
Scenic Pines Estates

Variance Type
Dimensional Variance

Property Characteristics

Zoning District:	This property is zoned One-Family Residential (R-4)
Location:	south of South Lake Drive, east of West Park Drive
Parcel #:	50-22-03-385-026

Request
The applicant is requesting a variance from the City of Novi Zoning Ordinance Section 3.28.6.C.iv.a to omit the requirement for a landscape berm along the east, west and south property lines.

II. STAFF COMMENTS:

The applicant is seeking a variance to not provide a landscape berm along two property lines. The site has an irregular shape with regulated woodlands and wetlands component.

History: *On November 19, 2019 – This same variance was approved, but now has expired.*

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. **PZ24-0022**, 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. **PZ24-0022**, 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

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ZONING BOARD OF APPEALS APPLICATION

APPLICATION MUST BE FILLED OUT COMPLETELY

RECEIVED
MAY 01 2024
CITY OF NOVI
COMMUNITY DEVELOPMENT

I. PROPERTY INFORMATION (Address of subject ZBA Case)

PROJECT NAME / SUBDIVISION: SCENIC PINES ESTATES

ADDRESS: 1207 Pembine, Novi (JSP18-76) 210 Buffington Dr SF

LOT/SIUTE/SPACE #:

SIDWELL #: 50-22-03 -378 -009 SF
May be obtain from Assessing Department (248) 347-0485

Application Fee: $330.00

Meeting Date: 6-11-24

ZBA Case #: PZ 24-0022

CROSS ROADS OF PROPERTY: Pembine Road between Buffington Road and Henning Road

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

NAME	EMAIL ADDRESS	CELL PHONE NO.
Todd Rankine	Todd.Rankine@singhmail.com	248-866-9799

ORGANIZATION/COMPANY	TELEPHONE NO.
Singh Development	248-865-1614

ADDRESS	CITY	STATE	ZIP CODE	FAX NO.
7125 Orchard Lake Road	West Bloomfield	MI	48322	248-865-1630

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.
NAME		TELEPHONE NO.
ORGANIZATION/COMPANY		FAX NO.

ADDRESS	CITY	STATE	ZIP CODE

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 3.28.6.C.iv.a Variance requested Delete the requirement for landscape berm along the east, west and south property lines
2. Section _____ Variance requested _____
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

Applicant Signature _____ Date 05.01.2024

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.

Property Owner Signature _____ Date 05.01.2024

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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ZONING BOARD OF APPEALS VARIANCE APPLICATION CHECKLIST

The following items are required for a complete Variance application. Incomplete applications will be returned.

☑ **Signed Application Form**

Complete the Zoning Board of Appeals application form. Application must be signed by the applicant and the property owner (if different).

☑ **Response to Variance Review Standards – Dimensional, Use, or Sign**

Select the applicable Review Standards for the requested Variance and complete in full. Use additional paper if needed. If you don't know which Review Standards to complete, call the Community Development Department at 248.347.0415 for guidance.

☑ **Dimensioned Site Plan (1 copy & 1 digital copy submitted as a PDF)**

- Existing or proposed buildings or additions on the property.
- Number and location of all on-site parking spaces.
- Existing and proposed distances to adjacent property lines.
- Location of existing and proposed signs, if applicable.
- Any other information relevant to the Variance application.

☑ **Dimensioned Drawings and Plans (1 copy & 1 digital copy submitted as a PDF)**

- Floor plans and elevations with all proposed buildings and additions.
- All existing and proposed signs on the property (photographs may be used).
- For use variances, include floor plan showing the existing and proposed layout and functions of each area.
- For multi-family residential structures or projects, a summary showing the existing and proposed number of dwelling units by type (efficiency, one-bedroom, two-bedroom, etc.)

☑ **Other Helpful Information – Optional (1 copy & 1 digital copy submitted as a PDF)**

- Photographs of the lot or structure that shows the special conditions or circumstances described in the application.
- Photographs or maps that show how other properties in the area enjoy the same type of property rights related to the Variance.
- Letters of support from the neighbors who would be most affected by your request.

☑ **Fee** (make check payable to the City of Novi)

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

Additional Information

In the course of reviewing the application, the Planning Department staff may request additional information from the applicant.

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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:
See attached.

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:
See attached.

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).

See attached.

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.

See attached.

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.

See attached.

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.

See attached.

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.)

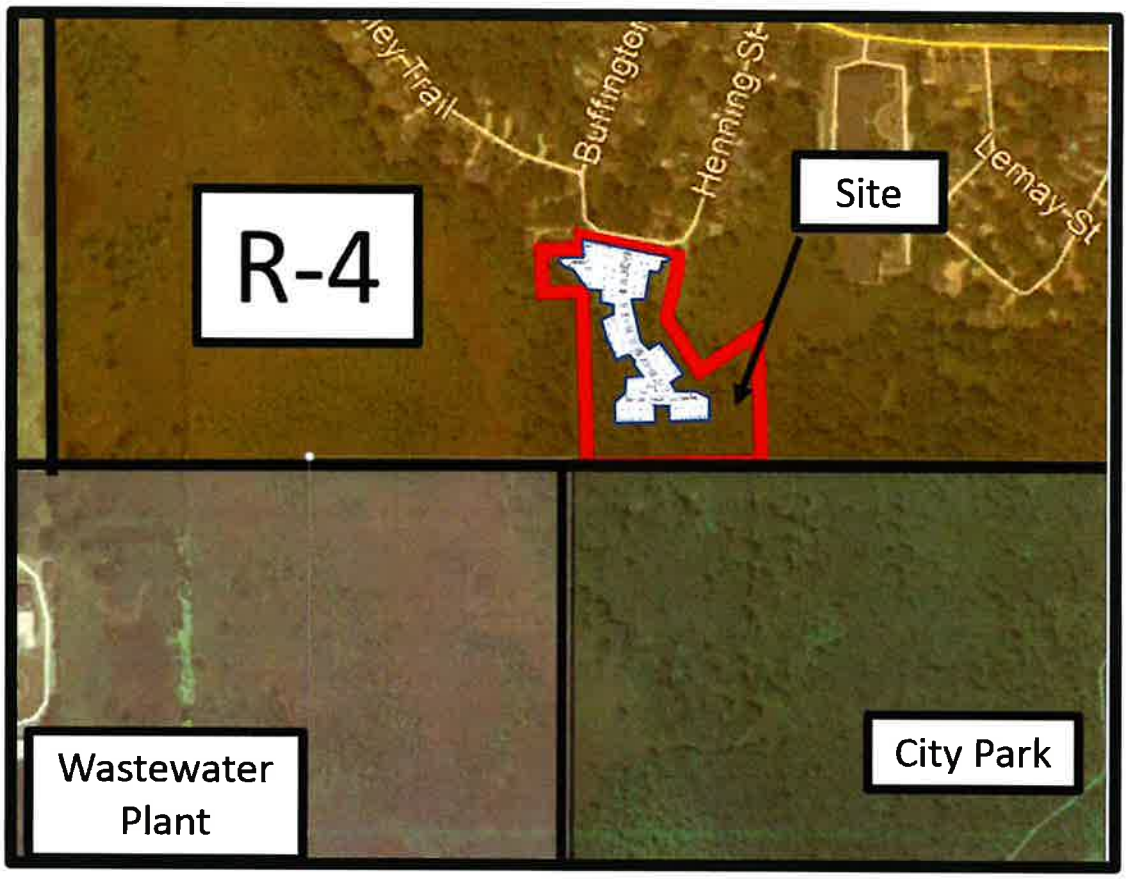
Standard #1. Circumstances or Physical Conditions.

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. **Applicable**, described below:

The need for a variance is due to unique circumstances peculiar to this property. These conditions create an unnecessary hardship that requires relief. The property is irregularly shaped. The unusual shape of the property is a polygon with uneven lengths and 11 unique bearings. Berm construction would be irregular and haphazard if were to follow the East, South and West property lines. Additionally, the geometry of the property lines would have the berm changing direction several times creating an unusual and impractical configuration winding through the existing woodlands that won't serve the purpose intended. A berm is provided at the north property line parallel with the existing street and situated in a standard configuration to provide intended screening between residential properties. The City of Novi Ordinance Section 3104 allows the Zoning board of Appeals to permit the elimination of the berm requirement prescribed in the Zoning Ordinance because the property line configuration clearly demonstrates that the Shape of the Property is so unique that the circumstances are not generally applicable to other rectilinear properties. This property meets the required legal standard.

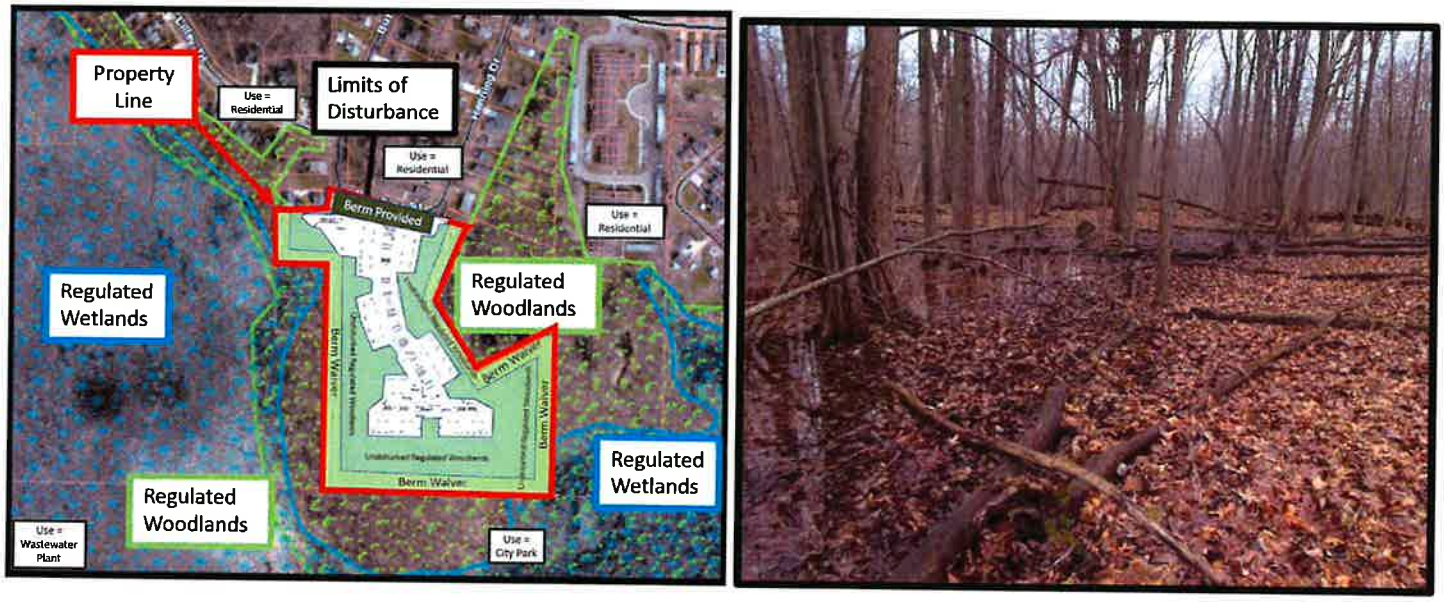
Exhibit 1: Shape of Property



b. **Environmental Conditions.** Exceptional topographic or environmental conditions or other extraordinary situations on the land, building or structure. **Applicable**, described below:

The need for a variance is due to unique circumstances peculiar to this property. These conditions create an unnecessary hardship that requires relief. The Site Area is 9.44 AC gross and includes 1.7 Ac of regulated wetlands and 7.45 Ac of regulated woodland that constitute 80% of the net acreage. These natural features are an important element for the property and surrounding community. The site plan strives to preserve the natural features to maximum affect by utilizing the City of Novi Cluster option which permits clustering of the units on the interior of the site to leave large sections undisturbed. The undisturbed area acts as a natural buffer between properties. The requirement to cut down trees and impact wetlands to construct a screening berm in the middle of the existing woods is impractical and undesirable. The existence of the abundant natural features on the site is the environmental condition that creates and extraordinary situation requiring relief. The City of Novi Ordinance Section 3104 allows the Zoning board of Appeals to permit the elimination of the screening berm requirement prescribed in the Zoning Ordinance because the large quantity of natural feature demonstrate that Environmental Conditions exist on the property that do not apply generally to other properties. This site clearly meets the legal standard.

Exhibit 2: Environmental Conditions



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/Not Required.**

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).

The applicant's problem is not self-created. The problem is an unnecessary hardship on the property owner requiring relief. Per City of Novi Zoning section 3.28.6.C the Planning Commission can and on 9/25/2019 did approve a reduction to building setbacks to preserve the natural features of the site. Commission approved a reduction of front building setbacks from the streets from 30 feet from the edge of pavement to 25 feet in order to protect regulated woodlands in the back yards. The approval was conditioned on a ZBA variance for elimination of the berms in question. The reason the Planning Commission could not waive the berm requirement themselves is because Section

3.28.6.C.iv.a wording says single-family residential "districts" rather than single-family residential "use." The wording of the ordinance inadvertently moves the jurisdiction out of Planning Commission purview regarding berm construction and places it into the jurisdiction of the ZBA as a zoning matter. This applicant did not write the ordinance and had no part in choice of words. The intent of the ordinance was to create berms between uses to protect adjacent neighbors from viewing non-standard configurations. The actual situation is there are no residential uses in proximity to the east, south, and west property lines and never will be. Those adjacent properties are zoned for residential uses but can never be developed as such. There is a city park to the east and south and a wastewater plant to the west. All the adjacent property is burdened with a 300 Ac wetland that is un-buildable. If the planners who wrote the ordinance has considered the possibility of a cluster development adjacent to permanent non-residential uses in a residential district, they may have had the foresight to include the phrase "residential use" rather than "residential district." Unfortunately, not every possible situation can be anticipated when the ordinances are being written and they did use the word "district" which make this a ZBA matter. The City planner is in full support of the variance, and as stated previously, the City Planning Commission has already approved it, subject to the ZBA granting the required variance to eliminate the required berm so a 75' natural buffer can remain. The City of Novi Ordinance Section 3104 allows the Zoning board of Appeals to permit the elimination of the berm requirement prescribed in the Zoning Ordinance because the narrative demonstrates that the elimination of the berm was not Self-Created. The legal standard has been met.

Exhibit 3: Condition created by Ordinance word selection

C. Reduced setbacks subject to the Planning Commission making the following findings:

i. The proposed changes will not adversely affect neighboring properties;

ii. Density will not exceed that permitted in the district;

iii. Safe access is provided to the development; and

iv. The following conditions are met:

a. A landscape berm meeting the requirements of Section 5.5.3.A.i - ii is provided adjacent to other single family residential districts;

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.

The property cannot be reasonably used for the purposes permitted which creates an unnecessary hardship. On 9/25/2019 the Planning commission unanimously approved the Scenic Pines Estates JSP 18-76 Special Land Use Permit, Preliminary Site Plan with One-Family clustering option and site condominium, Wetland Permit, Woodland Permit, and Stormwater Management Plan. Without ZBA approval of elimination of the berm, supported by planning staff and Planning Commission, the property owner will be unreasonably prevented from using the property for the approved and permitted purpose. Strict compliance with the berm requirement would render the City of Novi cluster option unavailable without cutting down the natural features it aims to protect. The clustered development area has

prescribed dimensional constraints, separations and requirements that limit the amount of development area. If berms were required within the development area, the area to build homes and infrastructure would be unavailable and the cluster option unobtainable. The spirit and intent of the cluster ordinance could not be achieved WITHOUT the variance. The City of Novi Ordinance Section 3104 allows the Zoning board of Appeals to permit the elimination of the berm requirement prescribed in the Zoning Ordinance because strict compliance with the berm requirement will unreasonably prevent use of the property in the permitted manner and the legal standard has been met.

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 variance requested is the minimum variance necessary. The 75' setback required by the City of Novi Cluster Option Ordinance along the three property lines in question will remain in full force and affect and will protect and preserve regulated woodland and wetlands along those property lines. The North property line is not included in this request because a berm can be built at that location without clearing abundant natural features to make way for the berm. The City of Novi Ordinance Section 3104 allows the Zoning board of Appeals to permit the elimination of the berm requirement prescribed in the Zoning Ordinance for three of the four property lines because the facts above demonstrate that the elimination of the requirement is limited to the east, west and south property lines, but EXCLUDES the north property line and is the minimum variance necessary to do substantial justice to the applicant as well as to other property owners in the district by preserving and protecting natural features rather than building a berm. The proposal meets the legal standard.

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 variance will not alter the essential character of the area but will actually enhance the character. Clearing the regulated woodlands creates an unnecessary hardship on both the property owner and the adjacent neighboring properties due to the loss of significant natural features. The spirit of the Zoning Ordinance is observed because the proposed 75' wide undisturbed regulated woodlands and wetlands on the eastern, southern, and western property lines create a natural buffer between the property and the adjacent districts so no adverse impacts will be introduced. These natural features provide a superior buffer than the alternative required by the zoning ordinance, from which we seek relief. Removal of these wonderful resources to build a less effective screening berm in their stead would be a disservice to the community and at the same time render the Cluster Option virtually pointless. Property values will not be diminished or impaired but instead will be enhanced through the preservation of the natural features for the property owner and adjacent parcels. The supply of light and air will remain exactly as they are in the existing condition by preserving the woodlands. Public safety is unaffected by the elimination of the berm because the berm requirement is not a public safety provision. Preserving the existing woodlands will not unreasonably increase the threat of fire danger because the woods currently exist naturally and is intermixed with 300 acres of wetland. The variance will not in any other respect impact the public health, safety, comfort, or morals or general welfare of residents. By granting this variance, substantial justice will be provided to the petitioner and surrounding property owners. The City of Novi Ordinance Section 3104 allows the Zoning board of Appeals to permit the elimination of the berm requirement prescribed in the Zoning Ordinance because the facts presented above demonstrate that the elimination of the berm requirement does not create an Adverse Impact on Surrounding Area and the proposed alternative meets the required legal standard.

Petitioner has met all requirements set forth to grant the variance.
All the Elements of Practical Difficulty exist. We respectfully request your support.

Exhibit 4: Enlarged version of site constraints and waiver locations

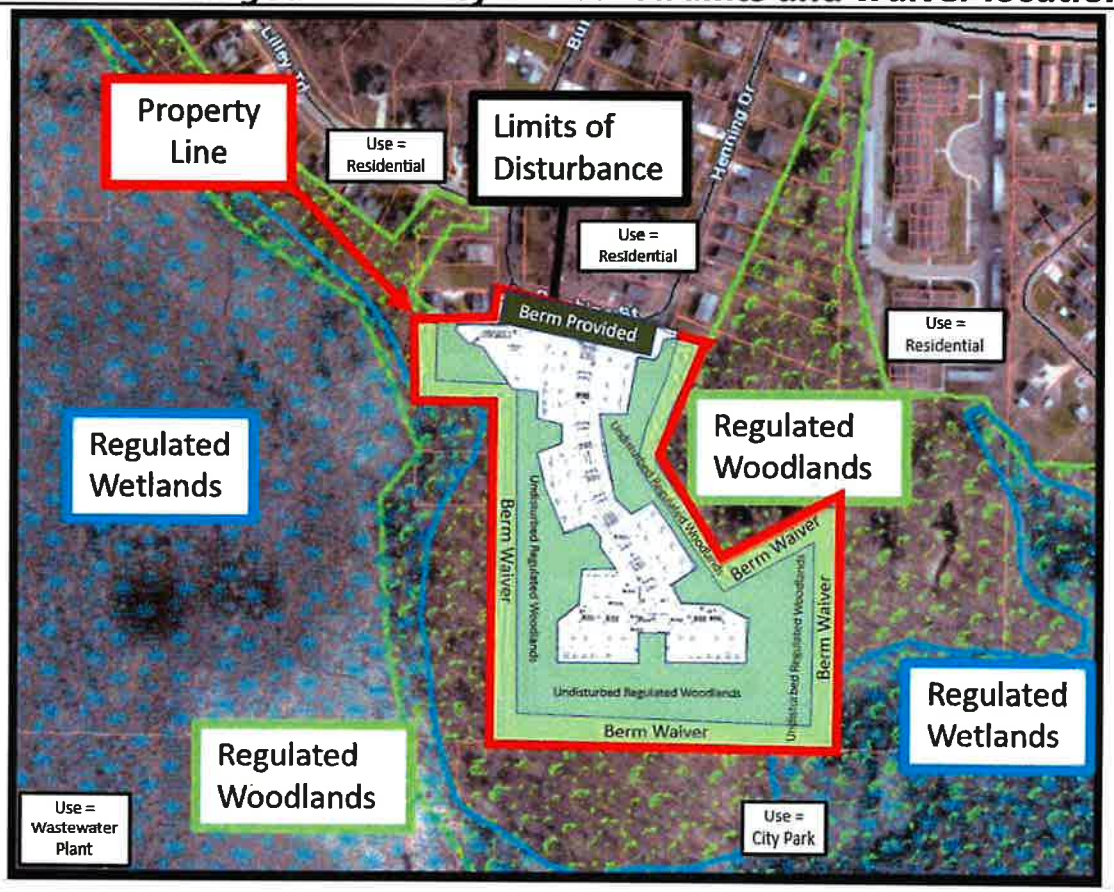
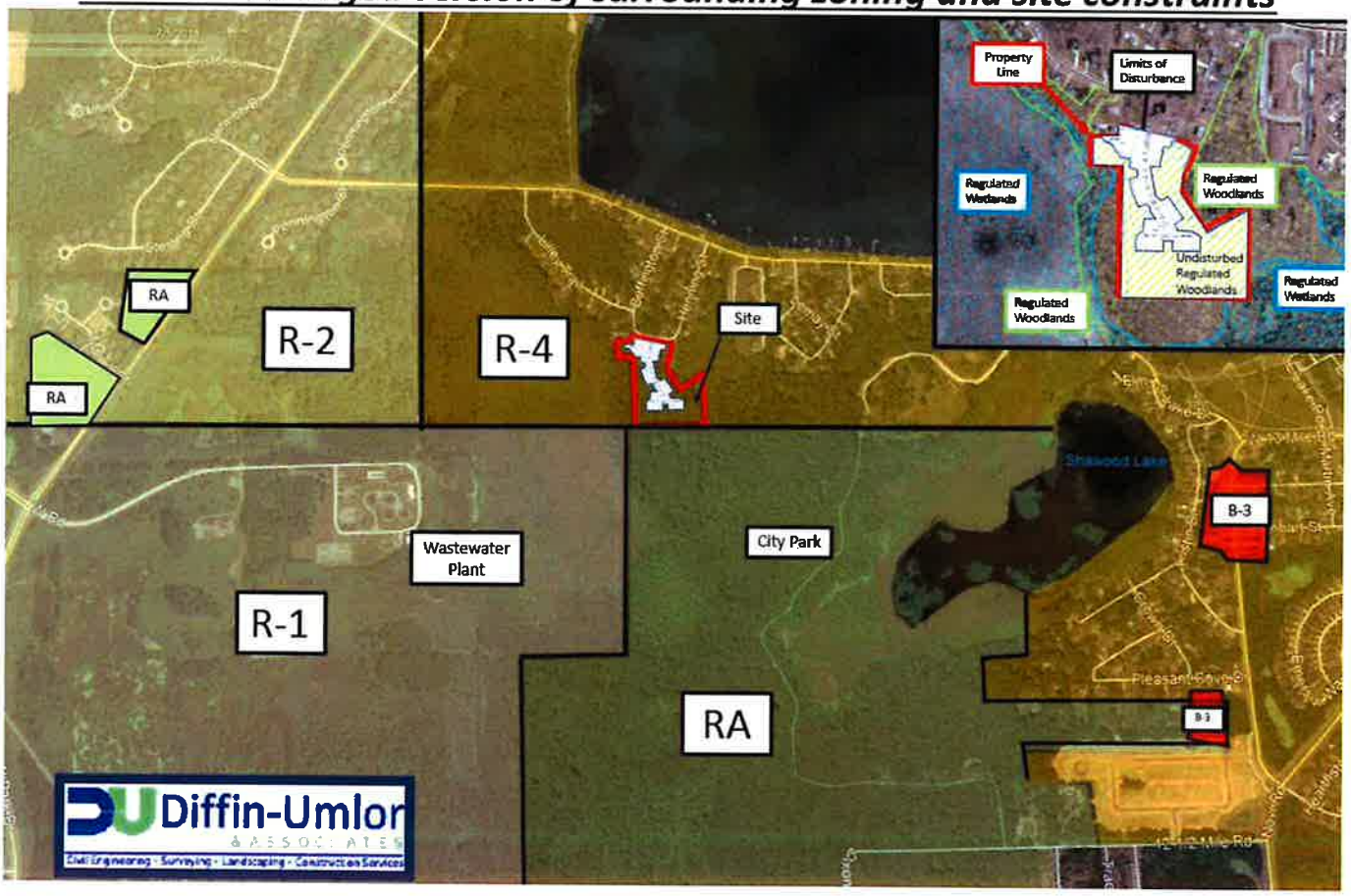


Exhibit 5: Enlarged version of surrounding zoning and site constraints

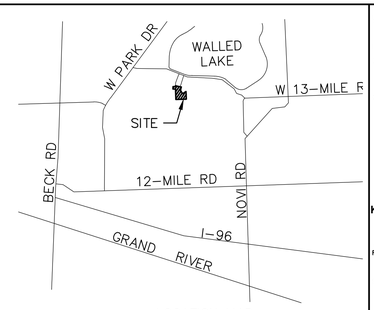


FINAL SITE PLAN/ENGINEERING DEVELOPMENT DRAWINGS

SCENIC PINES ESTATES

PROPOSED RESIDENTIAL DEVELOPMENT
CITY OF NOVI, OAKLAND COUNTY, MICHIGAN
SECTION 3, TOWN 1 NORTH, RANGE 8 EAST

SINGH
A TRADITION OF EXCELLENCE



LOCATION MAP
1" = 4000'

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

CONTACT INFORMATION

CITY OF NOVI
CITY MANAGER
PETE AUGER
PHONE: (248) 347-0420
45175 WEST 10 MILE ROAD
NOVI, MI 48375

CITY OF NOVI
CITY PLANNER
BARBARA McBETH
PHONE: (248) 347-0475
45175 WEST 10 MILE ROAD
NOVI, MI 48375

CITY OF NOVI
PLANNER
SRI KOMARAGIRI
PHONE: (248) 735-5607
45175 TEN MILE RD
OAKLAND COUNTY, MI 48375

CITY OF NOVI
FIRE MARSHALL
KEVIN PIERCE
PHONE: (248) 347-0504
45175 TEN MILE RD
OAKLAND COUNTY, MI 48375

CITY OF NOVI
LANDSCAPE ARCHITECT
RICK MEADER, R.L.A.
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45175 TEN MILE RD
OAKLAND COUNTY, MI 48375

CITY OF NOVI
CITY REVIEW ENGINEER
KATE RICHARDSON
PHONE: (248) 347-045445175 TEN MILE RD
OAKLAND COUNTY, MI 48375

ECT
WOODLANDS/WETLANDS CONSULTANT
PETE HILL
PHONE: (734) 769-3004
2200 COMMONWEALTH BLVD., SUITE 300
ANN ARBOR, MI 48105

SET BM
BM #10657
SET BM BENCH TIE EAST FACE OF UTILITY POLE 18'± N SW PROP CORNER 132'± SW OF 18" RED OAK (TAG 175)
ELEV=933.59

BM #10194
SET BM TIE EAST FACE OF UTILITY POLE 267'± SOUTH OF PEMBINE RD 20'± WEST OF 14" RED OAK (TAG 22)

NOVI BM
BM ID: 333
X ON NORTH FLANGE BOLT OF FIRE HYDRANT LOCATED 50 SOUTH OF VERNTERLINE OF SOUTH LAKE DRIVE AND WEST SIDE ENTRANCE TO CONDOS #1127-1155 SOUTH LAKE DRIVE.

BM ID: 332
X ON NORTH RIM OF GATEWELL LOCATED 20 FEET NORTH OF VENTERLINE OF SOUTH LAKE DRIVE AND BETWEEN HOUSES #1331 AND #1321 SOUTH LAKE DRIVE.

APPROVED-PERMIT LIST

PRELIMINARY SITE PLAN	APPROVED 9-25-2019

NOT APPROVED-PERMIT LIST

PRELIMINARY SITE PLAN CITY OF NOVI	APPROVED
FINAL SITE PLAN CITY OF NOVI	REQUIRED
CITY OF NOVI RIGHT-OF-WAY PERMIT CITY OF NOVI	ISSUED
GRADING PERMIT CITY OF NOVI	NOT APPROVED
RETAINING WALL PERMIT CITY OF NOVI	NOT APPROVED
SOIL EROSION AND SEDIMENTATION CITY OF NOVI	APPROVED
ACT 451 NOTICE OF COVERAGE: MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY	REQUIRED
PART 303 WETLAND PERMIT; MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY	ISSUED
WETLAND PERMIT, CITY OF NOVI	APPROVED
WETLAND BUFFER AUTHORIZATION	APPROVED
WOODLANDS PERMIT, CITY OF NOVI	APPROVED
PART 41 WASTEWATER SYSTEM PERMIT; MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY	REQUIRED
ACT 399 WATER SYSTEM CONSTRUCTION PERMIT, MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY	APPROVED

REQUESTED VARIANCES:

1. DRIVEWAY SPACING: WAIVER FOR THE MINIMUM OPPOSITE SIDE DRIVEWAY SPACING IS REQUESTED
2. STREET TREE LOCATION: REQUEST TO NOT PLANT 3 STREET TREES DUE TO LACK OF ROOM AS A RESULT OF CLUSTERING
3. CLUSTERS ARE REQUIRED TO BE 30' FROM EDGE OF PAVEMENT DRIVE. PROPOSED SET BACK FROM CURB IS 25' TO PRESERVE NATURAL FEATURE TO GREATEST EXTENT POSSIBLE CONSTANT WITH PRIOR APPROVAL (EXPIRED) WAIVER IS REQUESTED
4. WAIVER REQUESTED FOR NOT MEETING THE MINIMUM DISTANCE BETWEEN THE SIDEWALK AND THE CURB IN LIMITED AREAS (IN FRONT OF UNITS ONLY)

ENGINEER/SURVEYOR

The UMLOR Group
LAND DEVELOPMENT SERVICES
Wes Lee O. Umlor, P.E.
49287 WEST ROAD
WIXOM, MI 48393
Phone: (248) 773-7656
Fax: (866) 690-4307
E-mail: wumlor@umlorgroup.com
Web: www.umlorgroup.com Michigan

OWNER\DEVELOPER

SINGH DEVELOPMENT LLC
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322
PH: (248) 865-1600

SINGH
A TRADITION OF EXCELLENCE

WETLAND CONSULTANT

WILSON ROAD GROUP
303 W. NEPESSING ST
LAPEER, MI 48446
PH: (810) 664-6300

LANDSCAPE ARCHITECT

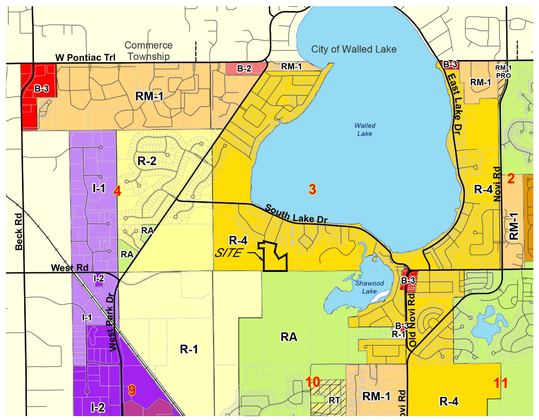
ALLEN DESIGN
PH: (248) 467-4669
EMAIL:JCA@WIDEOENWEST.COM

GEOTECHNICAL CONSULTANT

MCDOWELL & ASSOCIATES
DAVID QUINTAL (248) 399-2066
EMAIL: DAVID.QUINTAL@MCDOWASC.COM

SITE MAP

SCALE: 1=200'



ZONING DISTRICT MAP

SCALE: 1=2000'

Zoning Districts

- R-A: Residential Acreage
- R-1: One-Family Residential
- R-2: One-Family Residential
- R-3: One-Family Residential
- R-4: One-Family Residential
- RT: Two-Family Residential
- RM-1: Low-Density Multiple-Family
- RM-2: High-Density Multiple-Family
- MH: Mobile Home
- B-1: Local Business
- B-2: Community Business
- B-3: General Business
- C: Conference
- EXPO: Expo
- GE: Gateway East
- FS: Freeway Service
- I-1: Light Industrial
- I-2: General Industrial
- NCC: Non-Center Commercial
- OS-1: Office Service
- OSC: Office Service Commercial
- OST: Office Service Technology
- EXO: OST District with EXO Overlay
- RC: Regional Center
- P-1: Vehicular Parking
- TC: Town Center
- TC-1: Town Center-1

GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE CITY OF NOVI'S CURRENT STANDARDS AND SPECIFICATIONS, UNLESS OTHERWISE APPROVED.
2. ALL PAVEMENT MARKINGS, TRAFFIC CONTROL SIGNS, AND PARKING SIGNS SHALL COMPLY WITH THE DESIGN AND PLACEMENT REQUIREMENTS OF THE 2011 MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.
3. CONTRACTRO TO FIELD VERIFY ALL EXISTING UTILITY LOCATIONS, INVERTS AND GRADES PRIOR TO START OF WORK.
4. TWO (2) COPIES OF AS-BUILT PLANS SHALL BE SUBMITTED TO THE CITY ENGINEER WITHIN THIRTY (30) DAYS OF THE COMPLETION OF THE UTILITY INSTALLATION AS PER SECTION 31-7 (A) CITY OF NOVI ORDINANCE.
5. CITY OF NOVI HAS NO RESPONSIBILITY TO IMPROVE OR MAINTAIN THE PRIVATE STREETS CONTAINED WITHIN OR PRIVATE STREETS PROVIDING ACCESS TO THE PROPERTY DESCRIBED IN THIS PLAN.
6. "ECONOMIC IMPACT; 25 HOMES X $500,000 (APPROX) = $12,500,000 INCREASE TAX BASE AT BUILDOUT". HOME SIZE & EXPECTED SALES PRICE OF NEW HOMES: 1,800-2,200 Sq ft, $450,000-$600,000".
7. THE SITE PLAN SHALL BE DESIGNED IN ACCORDANCE WITH THE DESIGN AND CONSTRUCTION STANDARDS (CHAPTER 11).

FIRE DEPARTMENT NOTES

1. ALL FIRE HYDRANTS AND WATER MAINS SHALL BE INSTALLED AND IN SERVICE PRIOR TO ABOVE FOUNDATION BUILDING CONSTRUCTION.
2. ALL ROADS SHALL BE PAVED AND CAPABLE OF SUPPORTING 35 TONS PRIOR TO CONSTRUCTION OF ABOVE FOUNDATIONS.
3. BUILDING ADDRESSES SHALL BE POSTED FACING THE STREET DURING ALL PHASES OF CONSTRUCTION. ADDRESSES SHALL BE A MINIMUM OF THREE INCHES IN HEIGHT ON A CONTRASTING BACKGROUND.
4. PROVIDE 4"-6" DIAMETER OF CONCRETE FILLED STEEL POST 48" ABOVE FINISH GRADE AT EACH HYDRANT AS REQUIRED.
5. FIRE LANES SHALL BE POSTED WTH "FIRE LANE - NO PARKING" SIGNS IN ACCORDANCE WITH ORDINANCE #85.99.02.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

ALL WORK SHALL CONFORM TO CITY OF NOVI & OAKLAND COUNTY STANDARDS AND SPECIFICATIONS.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

NOTE: SEE ESTIMATED QUANTITIES ON SHEET 10

UTILITY WARNING

UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.

Sheet List Table

CITY OF NOVI / OAKLAND CO. STANDARD DETAILS

1. PAVEMENT DETAILS
2. STORM SEWER DETAILS
3. SANITARY SEWER DETAILS NO. 1
4. SANITARY SEWER DETAILS NO. 2
5. WATER SYSTEM DETAILS NO. 1
6. WATER SYSTEM DETAILS NO. 2
7. LANDSCAPE DETAILS
8. DETAILS FOR PATHWAYS & BOARDWALKS

SITE DATA:

GROSS ACREAGE	9.44 AC.
PROPOSED RIGHT OF WAY	0.13 AC.
NET SITE ACREAGE (PRESERVATION)	9.31 AC.
REGULATED WETLANDS	1.70 AC.
NET SITE ACREAGE (DENSITY)	7.61 AC.
PROPOSED DENSITY	3.3 DU AC.
RESIDENTIAL UNITS PERMITTED	25.146 UNITS
RESIDENTIAL UNITS PROPOSED	25 UNITS
PERCENT OF SITE THAT IS REGULATED WOODLANDS	79%
REGULATED WOODLANDS ACREAGE	7.45
ACRES OF WOODLANDS TO REMAIN	4.96
PERCENT OF SITE PERMANENTLY PRESERVED	53.3% (4.96 AC.)
TREES REMOVED	220
REPLACEMENT TREES REQUIRED	
CURRENT ZONING	R-4 ONE FAMILY RESIDENTIAL
PROPOSED ZONING	R-4 ONE FAMILY RESIDENTIAL -CLUSTER OPTION
MASTER PLAN	SINGLE FAMILY RESIDENTIAL

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#2001054570
LICENSED PROFESSIONAL ENGINEER

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES
CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

COVER SHEET

DATE: 11-27-2019

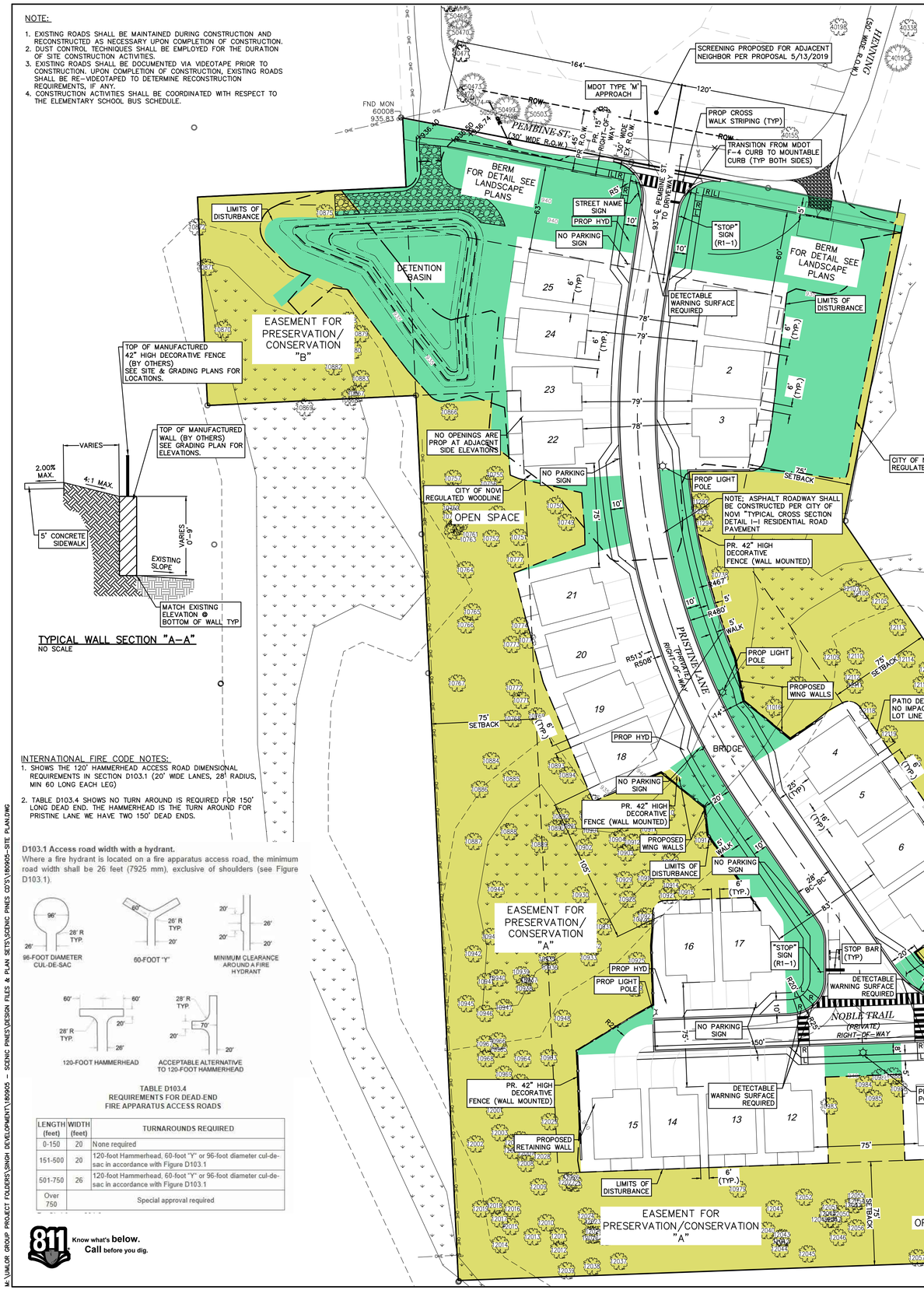
REVISIONS
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 -- -- --
AS NOTED
JOB NO. 180905
SHEET NO. 1
SHEET 1 OF 38

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CO'S\180905-COVER SHEET.DWG

NOTE:

1. EXISTING ROADS SHALL BE MAINTAINED DURING CONSTRUCTION AND RECONSTRUCTED AS NECESSARY UPON COMPLETION OF CONSTRUCTION.
2. DUST CONTROL TECHNIQUES SHALL BE EMPLOYED FOR THE DURATION OF SITE CONSTRUCTION ACTIVITIES.
3. EXISTING ROADS SHALL BE DOCUMENTED VIA VIDEOTAPE PRIOR TO CONSTRUCTION. UPON COMPLETION OF CONSTRUCTION, EXISTING ROADS SHALL BE RE-VIDEOTAPED TO DETERMINE RECONSTRUCTION REQUIREMENTS, IF ANY.
4. CONSTRUCTION ACTIVITIES SHALL BE COORDINATED WITH RESPECT TO THE ELEMENTARY SCHOOL BUS SCHEDULE.



TYPICAL WALL SECTION "A-A"
NO SCALE

INTERNATIONAL FIRE CODE NOTES:

1. SHOWS THE 120' HAMMERHEAD ACCESS ROAD DIMENSIONAL REQUIREMENTS IN SECTION D103.1 (20' WIDE LANES, 28' RADIUS, MIN 60 LONG EACH LEG)
2. TABLE D103.4 SHOWS NO TURN AROUND IS REQUIRED FOR 150' LONG DEAD END. THE HAMMERHEAD IS THE TURN AROUND FOR PRISTINE LANE WE HAVE TWO 150' DEAD ENDS.

D103.1 Access road width with a hydrant.
Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet (7925 mm), exclusive of shoulders (see Figure D103.1).

TABLE D103.4
REQUIREMENTS FOR DEAD-END FIRE APPARATUS ACCESS ROADS

LENGTH (feet)	WIDTH (feet)	TURNAROUNDS REQUIRED
0-150	20	None required
151-500	20	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
501-750	26	120-foot Hammerhead, 60-foot "Y" or 96-foot diameter cul-de-sac in accordance with Figure D103.1
Over 750	Special approval required	

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

PROPOSED CLUSTER SEPARATION TABLE

CLUSTER 1	CLUSTER 2	TOTAL NUMBER OF HOMES	MINIMUM DISTANCE REQUIRED (FRONT & REAR)	PROPOSED (FRONT & REAR)	MINIMUM DISTANCE REQUIRED(SIDE)	PROPOSED (SIDE)
8-9-10-11	4-5-6-7	8	100	105, N/A	75	N/A
18-19-20-21	4-5-6-7	8	100	N/A	75	N/A
4-5-6-7	12-13-14-15	8	100	138, N/A	75	N/A
1-2-3	22-23-24-25	7	85	78, N/A	75	N/A
1-2-3	18-19-20-21	7	85	N/A	75	N/A
12-13-14-15	16-17	6	75	75, N/A	60	N/A
4-5-6-7	16-17	6	75	83, N/A	60	N/A
8-9-10-11	16-17	6	75	N/A	60	N/A
8-9-10-11	12-13-14-15	8	100	N/A	75	75
22-23-24-25	18-19-20-21	8	100	N/A	75	75
1-2-3	4-5-6-7	7	85	N/A	75	199
18-19-20-21	16-17	6	75	N/A	60	105

GENERAL NOTES:
THE LOT LOCATED ON THE NORTH SIDE OF SOUTH LAKE DRIVE (50-22-03-327-004) IS NOT PART OF THIS SITE PLAN, NO CHANGES TO THAT LOT ARE PROPOSED BY APPLICANT. APPROVAL OF THIS SITE PLAN DOES NOT INCLUDE SITE PLAN APPROVAL FOR THAT LOT.

NOTE:
ALL UNITS SHOWN PROVIDE 6 FEET OF SEPARATION BETWEEN BUILDINGS. PER SECTION 3.28, 4. B MINIMUM BETWEEN UNITS WITH WALLS WITH OPENINGS: 10 FEET MINIMUM BETWEEN UNITS WITH WALLS WITH NO OPENINGS: 6 FEET

NORTH

40' 0 20' 40' 80' 160'
(IN FEET)
1 inch = 40' ft.

LEGEND

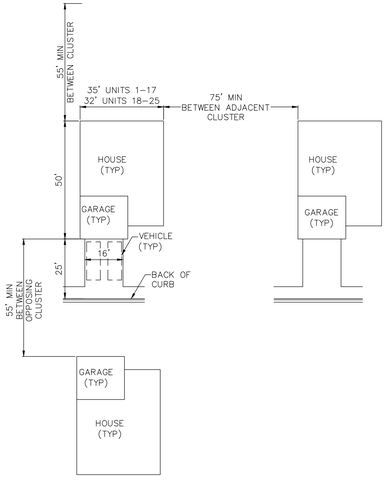
SYMBOL	DESCRIPTION
	PR ASPHALT
	PR CONC
	PR CROSS WALK
	PR DEVELOPED OPEN SPACE
	PRESERVED WOODLANDS OPEN SPACE

SIGN TABLE		
SIGN #	SIGN TYPE	REQUIRED
R1-1	STOP (30")	2
D3-2	STREET NAME SIGN	2
R8-3A	NO PARKING (18")	8

NOTES:
1. ALL SIGNS WILL COMPLY WITH CURRENT 2011 MMUTCD STANDARDS
2. ALL TRAFFIC CONTROL SIGNS WILL COMPLY WITH FHWA STANDARD ALPHABET SERIES.
3. ALL TRAFFIC CONTROL SIGNS WILL USE HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETRO-REFLECTIVITY REQUIREMENTS.
4. CITY OF NOVI HAS NO RESPONSIBILITY TO IMPROVE OR MAINTAIN THE PRIVATE STREETS WITHIN OR PRIVATE STREETS PROVIDING ACCESS TO THE PROPERTY DESCRIBED IN THIS PLAN.

SITE DATA

SITE AREA	9.44 AC.
R.O.W. DEDICATION	0.13 AC.
NET SITE AREA (PRESERVATION)	9.31 AC.
REGULATED WETLANDS	1.70 AC.
NET SITE AREA (DENSITY)	7.61 AC.
PROPOSED DENSITY	3.3 UNITS/AC.
RESIDENTIAL UNITS PERMITTED	25.146
RESIDENTIAL UNITS PROPOSED	25
REGULATED WOODLAND	7.45 AC.
RWA/NSA (7.45/9.31)	80%
WOODLANDS REQUIRED TO REMAIN	4.67 AC.
PERCENT OF SITE PERMANENTLY PRESERVED	53.3% (4.96 AC.)
MAX. LOT COVERAGE < 25% (ALL BUILDINGS)	(CLUSTER OPTION)
MIN. FLOOR AREA > (1000 Sq ft)	1,318-1,518 Sq ft
MAX. BUILDING HEIGHT	35 (2.5 STORIES)
BUILDING HEIGHT PROVIDED	30
TOTAL LOT COVERAGE (BUILDING TOTAL)	35'x50'=1,750 SQ-FT./UNIT x 17 = 29,750 SQ-FT., 32'x50'=1,600 SQ-FT./UNIT x 8 = 12,800 SQ-FT., 29,750 +12,800 = 42,550 SQ-FT. = 0.98 ACRES 0.98 AC/9.31 AC. = 10.52% < 25%
PROPOSED PRIVATE ROAD PAVEMENT AREA	25,009 Sq ft



NOTE:

1. TRASH SHALL BE WEEKLY CURB SIDE PICKUP
2. PER SECTION 26.5-35(C), A STATEMENT IS REQUIRED ON ANY PLAN CONTAINING A PRIVATE STREET WITH THE FOLLOWING LANGUAGE: "CITY OF NOVI HAS NO RESPONSIBILITY TO IMPROVE OR MAINTAIN THE PRIVATE STREETS CONTAINED WITHIN OR PRIVATE STREETS PROVIDING ACCESS TO THE PROPERTY DESCRIBED IN THIS PLAN".

STATE OF MICHIGAN
WES LEE O'UMLOR
ENGINEER
6201045479
LICENSED PROFESSIONAL ENGINEER

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

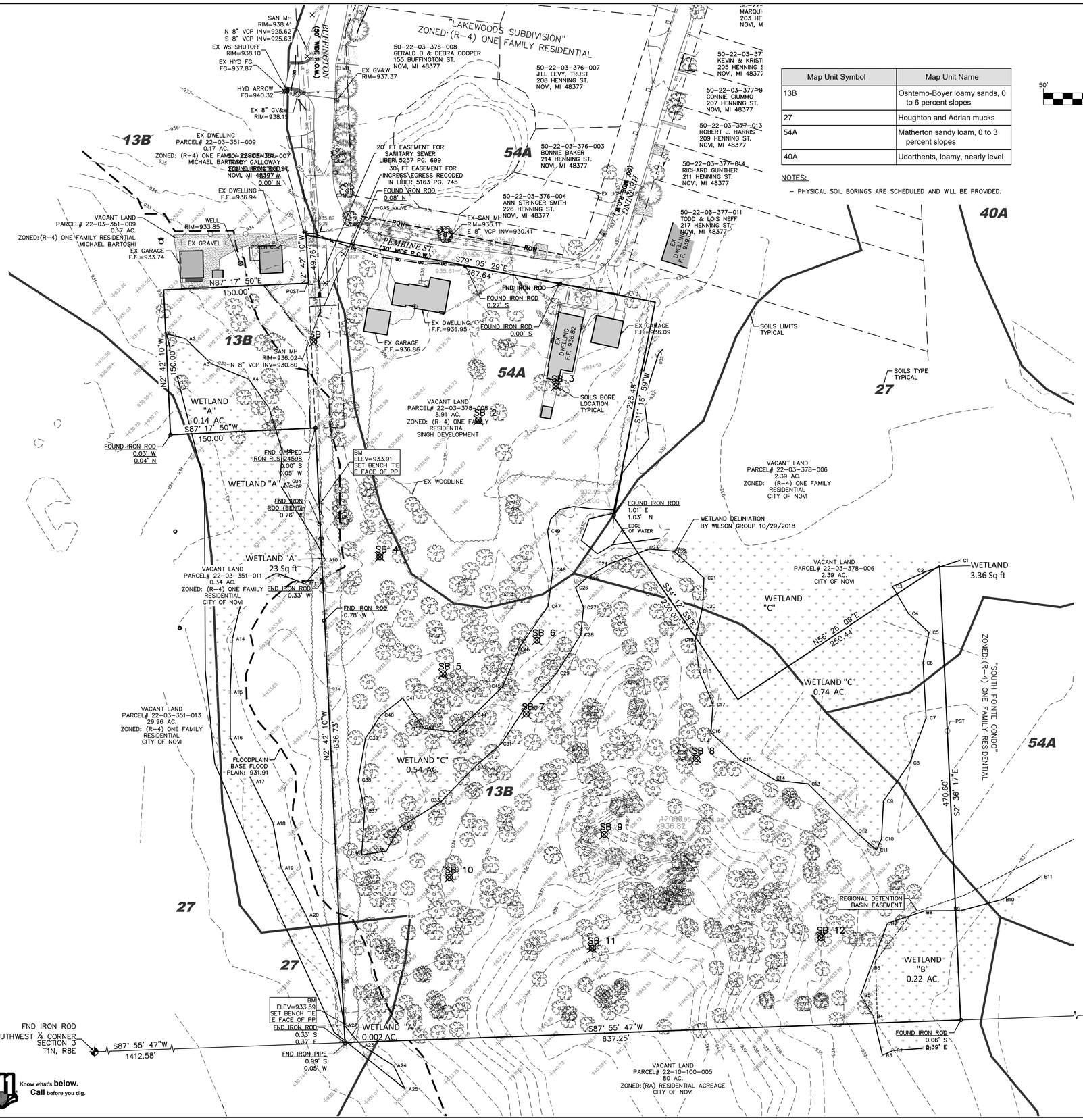
SITE PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 2
SHEET 2 OF 38

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-SITE PLAN.DWG



Map Unit Symbol	Map Unit Name
13B	Oshtemo-Boyer loamy sands, 0 to 6 percent slopes
27	Houghton and Adrian mucks
54A	Matherton sandy loam, 0 to 3 percent slopes
40A	Udorthents, loamy, nearly level

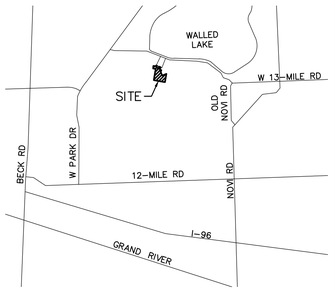
NOTES:

– PHYSICAL SOIL BORINGS ARE SCHEDULED AND WILL BE PROVIDED.

NORTH

50' 0 25' 50' 100' 200'

(IN FEET)
1 inch = 50' ft.



LOCATION MAP
NO SCALE

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CLEAN OUT		SIGN	ST ST	EX STORM
E	ELEC. RISER		2 POLE SIGN	SS SS	EX SANITARY
	FIRE HYDRANT		MAILBOX	W W	EX WM
E.T.	ELEC. TRANSFORMER		POST	OHE OHE	ELEC OVERHEAD
	GUY ANCHOR	E	ELECTRICAL RISER	UE UE	UNDERGROUND ELECTRIC
	STM. MANHOLE	T	TELEPHONE RISER	UG UG	GAS
S	SAN. MANHOLE	C	COMMUNICATIONS RISER		FENCE
	VENT		ELECTRICAL METER	X X X	SILT FENCE
	WATER STOP BOX		EXISTING FLAG POLE	OHF OHF	EX FIBER OH
W	GATE VALVE	GEN	EXISTING GENERATOR		EX GUARDRAIL
	SPEAKER BOX		EXISTING SIGNAL POLE		EX WETLAND BUFFER
	POWER POLE	G	EXISTING GAS METER		EX GRAVEL
	SINGLE LIGHT POLE		SET IRON		EX ASPHALT
	DOUBLE LIGHT POLE		FOUND IRON		EX CONCRETE
	ROUND CATCH BASIN	(R)	RECORDED DISTANCE	85	REGULATED TREE
	SQUARE CATCH BASIN	(M)	MEASURED DISTANCE		
SB 1	SOIL BORE LOCATION				

SET BM
BM #10657
SET BM BENCH TIE EAST FACE OF UTILITY POLE 18'± N SW PROP CORNER 132'± SW OF 18" RED OAK (TAG 175)
ELEV=933.59

BM #10194
SET BM TIE EAST FACE OF UTILITY POLE 267'± SOUTH OF PEMBINE RD 20'± WEST OF 14" RED OAK (TAG 22)

NOVI BM
BM ID: 333
X ON NORTH FLANGE BOLT OF FIRE HYDRANT LOCATED 50 SOUTH OF VERNTERLINE OF SOUTH LAKE DRIVE AND WEST SIDE ENTRANCE TO CONDOS #1127–1155 SOUTH LAKE DRIVE.

BM ID: 332
X ON NORTH RIM OF GATEWELL LOCATED 20 FEET NORTH OF VENTERLINE OF SOUTH LAKE DRIVE AND BETWEEN HOUSES #1331 AND #1321 SOUTH LAKE DRIVE.

NOTES:

– FLOODPLAIN NOTE:
ACCORDING TO THE NATIONAL FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 26125C0488F DATED SEPTEMBER 29, 2006 PORTIONS OF THE SITE ARE IN ZONE "X" (0.2%) ANNUAL CHANCE FLOOD HAZARD, AREAS OF 1% ANNUAL CHANCE OF FLOOD WITH AVERAGE DEPTH LESS THAN ONE FOOT OR WITH DRAINAGE AREAS OF LESS THAN ONE SQUARE MILE. THE REMAINDER OF THE SITE LIES IN ZONE "X"– AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

– THE LOCATION OF THE EXISTING UTILITIES AS SHOWN WERE OBTAINED FROM MUNICIPAL AND UTILITY COMPANIES RECORDS. NO GUARANTEE CAN BE MADE REGARDING THE COMPLETENESS OR EXACTNESS OF THE UTILITIES LOCATION. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY IN THE FIELD THE LOCATION OF ALL UTILITIES ANDY POTENTIAL CONFLICT SHALL BE REPORTED TO THE ENGINEER PRIOR TO CONSTRUCTION.

– THE CONTRACTOR SHALL CONTACT MISS DIG 3 WORKING DAYS PRIOR TO CONSTRUCTION.

– WETLANDS FLAGGED BY WILSON ROAD GROUP.

– !! CAUTION !!
DANGEROUS AND SENSITIVE UNDERGROUND FACILITIES MAY BE PRESENT THROUGHOUT THE PROJECT AREA THAT DO NOT APPEAR ON THIS DRAWING. ALL UNDERGROUND FACILITIES MUST BE LOCATED AND STAKED BY THE APPROPRIATE AGENCIES PRIOR TO EXCAVATION.

LEGAL DESCRIPTION AS SURVEYED

PART OF THE S.W. ¼ CORNER OF SECTION 3, T1N., R8E., CITY OF NOVI, OAKLAND COUNTY, MICHIGAN. BEGINNING AT A POINT S.87°55'47"W. 642.40 FEET, FROM THE SOUTH ¼ CORNER OF SAID SECTION 3; THENCE S.87°55'47"W. 637.25 FEET; THENCE N.02°42'10"W. 636.73 FEET; THENCE S.87° 17' 50"W. 150.00 FEET; THENCE N.02°42'10"W. 150.00 FEET; THENCE N.87°17'50"E. 150.00 FEET; THENCE N.02°42'10"W. 49.76 FEET TO SOUTHWEST CORNER OF "LAKEWOODS SUBDIVISION"; THENCE S.79°05'29"E. 367.64 FEET; THENCE S.11° 16' 59"W. 225.48 FEET; THENCE S.34°12'58"E. 230.00 FEET; THENCE N.56°26'09"E. 250.44 FEET; THENCE S.02°36'17"E. 470.60 FEET TO A POINT OF BEGINNING. CONTAINING 9.44 ACRES. SIDEWELL # 22-03-378-007

I HEREBY CERTIFY TO SINGH DEVELOPMENT THAT THIS SURVEY HAS BEEN COMPILED FROM A SURVEY ACTUALLY MADE ON THE GROUND UNDER MY SUPERVISION ON OCT, 2018 AND THAT IT IS CORRECT AND THAT I HAVE COMPLIED WIT THE REQUIREMENTS OF ACT 132, P.A. OF 1970 AND THAT THE ERROR OR CLOSURE OF THE UNADJUSTED FIELD OBSERVATION IS WITHIN THE LIMITS ESTABLISHED FOR THE PROFESSION

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
22010345
LICENSED PROFESSIONAL ENGINEER

DATE:
SIGNED: WES LEE O. UMLOR
PS NO.: 56369

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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EXISTING CONDITIONS PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 25 50
1" = 50 FEET
JOB NO. 180905
SHEET NO. 3
SHEET 3 OF 38

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LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
⊡	CLEAN OUT	⍭	SIGN	— ST — ST —	EX STORM
E	ELEC. RISER	○ ○	2 POLE SIGN	— SS — SS —	EX SANITARY
✲	FIRE HYDRANT	▯	MAILBOX	— W — W —	EX WM
E.T.	ELEC. TRANSFORMER	○	POST	— OHE — OHE —	ELEC OVERHEAD
⌐	GUY ANCHOR	E	ELECTRICAL RISER	— UE — UE —	UNDERGROUND ELECTRIC
Ⓓ	STM. MANHOLE	T	TELEPHONE RISER	— UG — UG —	GAS
Ⓢ	SAN. MANHOLE	C	COMMUNICATIONS RISER	—○—	FENCE
↑	VENT	E	ELECTRICAL METER	— x — x — x —	SILT FENCE
WV ⋈	WATER STOP BOX		EXISTING FLAG POLE	— OHF — OHF —	EX FIBER OH
Ⓦ	GATE VALVE	GEN	EXISTING GENERATOR	⊓ ⊓	EX GUARDRAIL
◇	SPEAKER BOX	⊗	EXISTING SIGNAL POLE	— — — —	EX WETLAND BUFFER
⊖	POWER POLE	G	EXISTING GAS METER	▒	EX GRAVEL
☼	SINGLE LIGHT POLE	●	SET IRON	☐	EX ASPHALT
⊕	DOUBLE LIGHT POLE	◎	FOUND IRON	░	EX CONCRETE
⊙	ROUND CATCH BASIN	(R)	RECORDED DISTANCE	85	REGULATED TREE
☐	SQUARE CATCH BASIN	(M)	MEASURED DISTANCE		
SB 1 ⊗	SOIL BORE LOCATION				

DEMO LEGEND

SYMBOL	DESCRIPTION
202	EX TREE REMOVAL
○	TREE CRITICAL ROOT ZONE
▨	WETLAND BUFFER DISTURBANCE AREA
▦	WETLAND DISTURBANCE AREA (TEMPORARY)
▧	REMOVE

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ONSITE DEMOLITION PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 4
SHEET 4 OF 38

WES LEE C. UMLOR

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M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 – SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-DEMOLITION PLAN.DWG

NORTH

30' 0 15' 30' 60' 120'

(IN FEET)
1 inch = 30' ft.

MATCH LINE

REGULATED WOODLINE

WETLAND BUFFER PERMANENT DISTURBANCE AREA 2,842 SF, 0.065 AC.

WETLAND "C" ONSITE BUFFER AREA= 41575 SQ FT

EDGE OF WATER

PRISTINE LANE (PRIVATE)

WETLAND PERMANENT DISTURBANCE AREA 3,315 SF, 0.076 AC.

WETLAND BUFFER PERMANENT DISTURBANCE AREA 4,428 SF, 0.056 AC.

S34° 12' 50"E 470.60'

WETLAND "C"

N56° 26' 09"E 250.44'

WETLAND "C" 0.74 AC.

PST

N2° 42' 10"W 636.73'

WETLAND "C" 0.54 AC.

WETLAND BUFFER PERMANENT DISTURBANCE AREA 131 SF, 0.003 AC.

WETLAND "C" ONSITE BUFFER AREA= 8775 SQ FT

NOBLE TRAIL (PRIVATE)

CITY OF NOVI REGULATED WOODLINE

WETLAND "B" ONSITE BUFFER AREA= 5150 SQ FT

WETLAND "B" 0.22 AC.

BM ELEV=933.59 SET BENCH TIE E FACE OF PP

S87° 55' 47"W 637.25'

S2° 36' 17"E 470.60'

DEMO LEGEND

SYMBOL	DESCRIPTION
202	EX TREE REMOVAL
	TREE CRITICAL ROOT ZONE
	WETLAND BUFFER DISTURBANCE AREA
	WETLAND DISTURBANCE AREA (TEMPORARY)
	REMOVE

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

DEMOLITION PLAN – SOUTH

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 15 30
1" = 30 FEET
JOB NO. 180905
SHEET NO. **5**
SHEET 5 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#2101054571
LICENSED PROFESSIONAL ENGINEER

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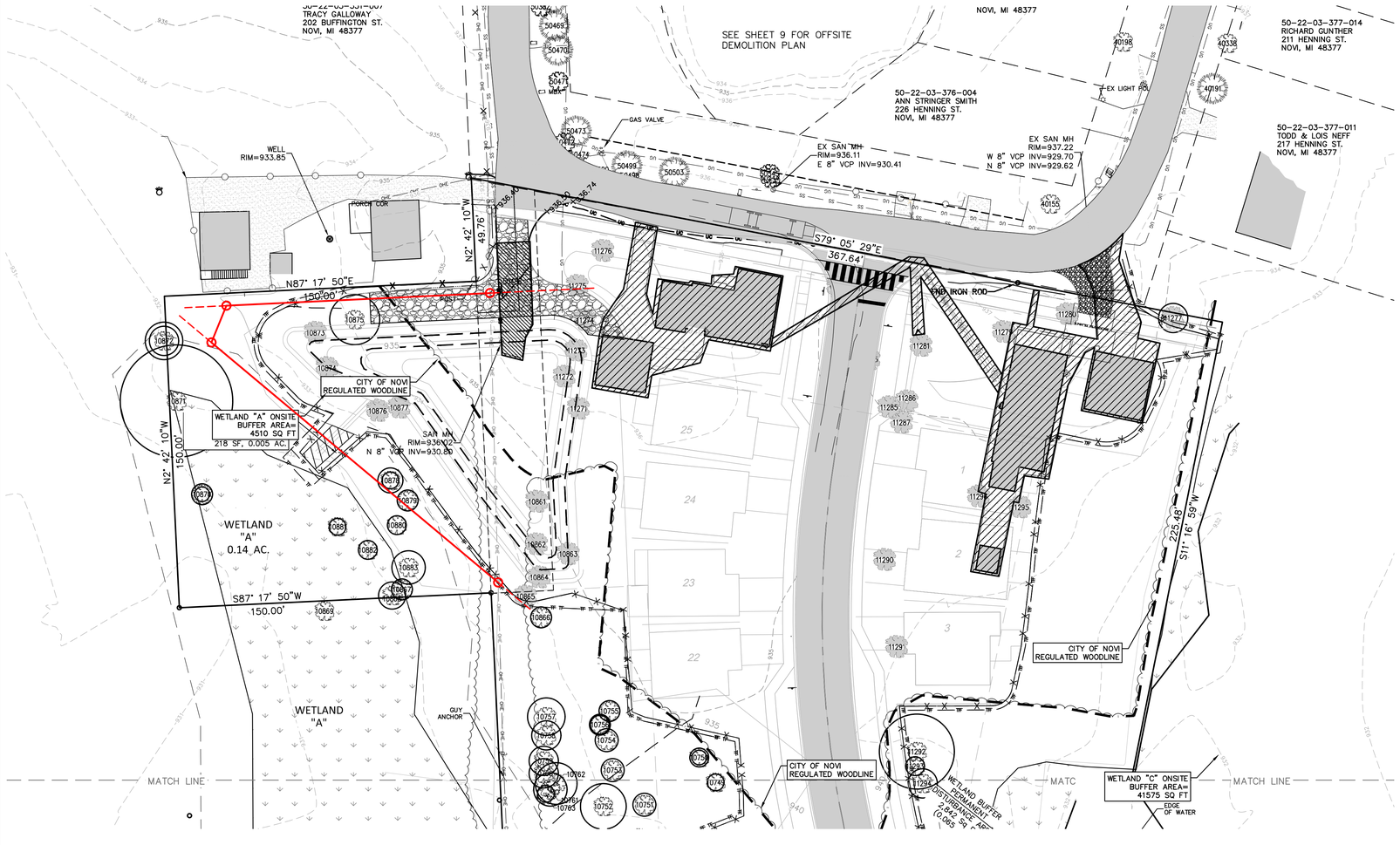
Know what's **below.** **Call** before you dig.



NORTH

30' 0 15' 30' 60' 120'

(IN FEET)
1 inch = 30' ft.

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
CO	CLEAN OUT	S	SIGN	ST ST	EX STORM
E	ELEC. RISER		2 POLE SIGN	SS SS	EX SANITARY
	FIRE HYDRANT		MAILBOX	W W	EX WM
E.T.	ELEC. TRANSFORMER		POST	OHE OHE	ELEC OVERHEAD
	GUY ANCHOR	E	ELECTRICAL RISER	UE UE	UNDERGROUND ELECTRIC
	STM. MANHOLE	T	TELEPHONE RISER	UG UG	GAS
S	SAN. MANHOLE	C	COMMUNICATIONS RISER		FENCE
	VENT		ELECTRICAL METER	X X X	SILT FENCE
	WATER STOP BOX		EXISTING FLAG POLE	OHF OHF	EX FIBER OH
W	GATE VALVE	GEN	EXISTING GENERATOR		EX GUARDRAIL
	SPEAKER BOX		EXISTING SIGNAL POLE		EX WETLAND BUFFER
	POWER POLE	G	EXISTING GAS METER		EX GRAVEL
	SINGLE LIGHT POLE		SET IRON		EX ASPHALT
	DOUBLE LIGHT POLE		FOUND IRON		EX CONCRETE
	ROUND CATCH BASIN	(R)	RECORDED DISTANCE		
	SQUARE CATCH BASIN	(M)	MEASURED DISTANCE	85	REGULATED TREE
SB 1	SOIL BORE LOCATION				

DEMO LEGEND

SYMBOL	DESCRIPTION
	EX TREE REMOVAL
	TREE CRITICAL ROOT ZONE
	WETLAND BUFFER DISTURBANCE AREA
	WETLAND DISTURBANCE AREA (TEMPORARY)
	REMOVE

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3 | TOWN 1 NORTH, RANGE 8 EAST | CITY OF NOVI | OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

DEMOLITION PLAN – NORTH

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 15 30
1" = 30 FEET
JOB NO. 180905
SHEET NO. 6
SHEET 6 OF 38

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
#2101045
LICENSED PROFESSIONAL ENGINEER

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Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition	Status	Replacement Trees	Value
1	Prunis serotina	Black Cherry	8	8	Good	Save	0	$ -
2	Tilia	Basswood	(2) 18	36	Good	Save	0	$ -
3	Quercus rubra	Red Oak	15	15	Good	remove	2	$ 800
4	Quercus rubra	Red Oak	15	15	Good	remove	2	$ 800
5	Quercus rubra	Red Oak	17	17	Good	remove	2	$ 800
6	Quercus rubra	Red Oak	10	10	Good	remove	1	$ 400
7	Acer saccharinum	Silver Maple	11	11	Good	remove	1	$ 400
8	Quercus rubra	Red Oak	9	9	Good	remove	1	$ 400
9	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
10	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
11	Acer saccharinum	Silver Maple	10	10	Good	remove	1	$ 400
12	Acer saccharinum	Silver Maple	8	8	Good	Save	0	$ -
13	Tilia	Basswood	(2) 7, 9	9	Good	Save	0	$ -
14	Acer rubrum	Red Maple	11	11	Good	Save	0	$ -
15	Acer rubrum	Red Maple	22	22	Good	Save	0	$ -
16	Quercus rubra	Red Oak	11	11	Good	Save	0	$ -
17	Tilia	Basswood	11	11	Good	Save	0	$ -
18	Prunis serotina	Black Cherry	10	10	Good	Save	0	$ -
19	Tilia	Basswood	(2) 9, 10	19	Good	Save	0	$ -
20	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
21	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
22	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
23	Quercus rubra	Red Oak	(2) 14	28	Good	Save	0	$ -
24	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
25	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
26	Quercus rubra	Red Oak	8	8	Good	Save	0	$ -
27	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
28	Carya glabra	Pignut Hickory	16	16	Good	Save	0	$ -
29	Acer rubrum	Red Maple	8	8	Good	Save	0	$ -
30	Acer rubrum	Red Maple	16	16	Good	Save	0	$ -
31	Quercus rubra	Red Oak	13	13	Good	Save	0	$ -
32	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
33	Carya glabra	Pignut Hickory	11	11	Good	remove	1	$ 400
34	Quercus rubra	Red Oak	24	24	Good	Save	0	$ -
35	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
36	Quercus rubra	Red Oak	22	22	Good	Save	0	$ -
37	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
38	Prunis serotina	Black Cherry	9	9	Good	Save	0	$ -
39	Quercus rubra	Red Oak	(3) 14,15,18	47	Good	remove	6	$ 2,400
40	Acer rubrum	Red Maple	8	8	Good	Save	0	$ -
41	Quercus rubra	Red Oak	22	22	Good	remove	3	$ 1,200
42	Carya glabra	Pignut Hickory	8	8	Good	remove	1	$ 400
43	Quercus rubra	Red Oak	21	21	Good	remove	3	$ 1,200
44	Tilia	Basswood	9	9	Good	remove	1	$ 400
45	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
46	Carya glabra	Pignut Hickory	15	15	Good	remove	2	$ 800
47	Quercus rubra	Red Oak	14	14	Good	remove	2	$ 800
48	Carya glabra	Pignut Hickory	15	15	Good	remove	2	$ 800
49	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
50	Tilia	Basswood	11	11	Good	remove	1	$ 400
51	Quercus rubra	Red Oak	15	15	Good	remove	2	$ 800
52	Quercus rubra	Red Oak	24	24	Good	remove	3	$ 1,200
53	Carya glabra	Pignut Hickory	12	12	Good	remove	2	$ 800
54	Quercus rubra	Red Oak	14	14	Good	remove	2	$ 800
55	Quercus rubra	Red Oak	8	8	Good	remove	1	$ 400
56	Tilia	Basswood	9	9	Good	remove	1	$ 400
57	Tilia	Basswood	12	12	Good	remove	2	$ 800
58	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
59	Acer rubrum	Red Maple	9	9	Good	remove	1	$ 400
60	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
61	Quercus rubra	Red Oak	15	15	Good	remove	2	$ 800
62	Acer rubrum	Red Maple	(2) 10	20	Good	remove	2	$ 800
63	Quercus rubra	Red Oak	(3) 10,18,18	46	Good	remove	6	$ 2,400
64	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
65	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
66	Tilia	Basswood	14	14	Good	remove	2	$ 800
67	Tilia	Basswood	10	10	Good	remove	1	$ 400
68	Tilia	Basswood	9	9	Fair	remove	1	$ 400
69	Tilia	Basswood	9	9	Good	remove	1	$ 400
70	Tilia	Basswood	11	11	Good	remove	1	$ 400
71	Tilia	Basswood	10	10	Good	Save	0	$ -
72	Ulmus	Elm	10	10	Good	Save	0	$ -
73	Quercus alba	White Oak	13	13	Good	Save	0	$ -
74	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
75	Acer rubrum	Red Maple	(6) 7-10	35	Good	Save	0	$ -
76	Salix	Willow	54	54	Poor	Save	0	$ -
77	Acer rubrum	Red Maple	(2) 14,18	32	Good	Save	0	$ -
78	Carya glabra	Pignut Hickory	14	14	Good	remove	2	$ 800
79	Tilia	Basswood	22	22	Good	remove	3	$ 1,200
80	Quercus rubra	Red Oak	24	24	Good	Save	0	$ -
81	Tilia	Basswood	20	20	Good	remove	2	$ 800
82	Tilia	Basswood	20	20	Fair	remove	2	$ 800
83	Tilia	Basswood	(5) 8-12	50	Good	Save	0	$ -
84	Tilia	Basswood	10	10	Good	Save	0	$ -
85	Tilia	Basswood	9	9	Good	Save	0	$ -
86	Tilia	Basswood	8	8	Good	Save	0	$ -
87	Tilia	Basswood	9	9	Good	Save	0	$ -
88	Tilia	Basswood	(2) 16	32	Good	Save	0	$ -
89	Quercus alba	White Oak	44	44	Good	Save	0	$ -
90	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
91	Tilia	Basswood	(2) 20	40	Good	Save	0	$ -
92	Quercus rubra	Red Oak	(3) 6,12,20	32	Good	Save	0	$ -
93	Acer rubrum	Red Maple	20	20	Good	Save	0	$ -
94	Acer rubrum	Red Maple	18	18	Good	Save	0	$ -
95	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
96	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
97	Acer rubrum	Red Maple	20	20	Good	Save	0	$ -
98	Quercus rubra	Red Oak	9	9	Good	Save	0	$ -
99	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
100	Tilia	Basswood	10	10	Fair	remove	1	$ 400

Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition	Status	Replacement Trees	Value
101	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
102	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
103	Quercus rubra	Red Oak	10	10	Poor	Save	0	$ -
104	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
105	Quercus rubra	Red Oak	(2) 10,16	26	Good	Save	0	$ -
106	Quercus alba	White Oak	14	14	Good	Save	0	$ -
107	Acer rubrum	Red Maple	22	22	Good	Save	0	$ -
108	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
109	Quercus rubra	Red Oak	12	12	Good	Save	0	$ -
110	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
111	Quercus alba	White Oak	10	10	Good	Save	0	$ -
112	Quercus rubra	Red Oak	10	10	Good	Save	0	$ -
113	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
114	Acer rubrum	Red Maple	16	16	Good	Save	0	$ -
115	Acer rubrum	Red Maple	(3) 7,12,12	24	Good	Save	0	$ -
116	Quercus rubra	Red Oak	10	10	Good	Save	0	$ -
117	Acer rubrum	Red Maple	22	22	Good	Save	0	$ -
118	Tilia	Basswood	11	11	Good	Save	0	$ -
119	Tilia	Basswood	20	20	Good	Save	0	$ -
120	Quercus alba	White Oak	15	15	Good	Save	0	$ -
121	Tilia	Basswood	12	12	Good	Save	0	$ -
122	Quercus rubra	Red Oak	11	11	Good	remove	1	$ 400
123	Quercus alba	White Oak	20	20	Good	remove	2	$ 800
124	Tilia	Basswood	(2) 8,16	22	Good	remove	3	$ 1,200
125	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
126	Carya glabra	Pignut Hickory	17	17	Good	remove	2	$ 800
127	Quercus rubra	Red Oak	10	10	Good	remove	1	$ 400
128	Quercus rubra	Red Oak	12	12	Good	Save	0	$ -
129	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
130	Quercus alba	White Oak	10	10	Good	Save	0	$ -
131	Quercus rubra	Red Oak	22	22	Good	Save	0	$ -
132	Quercus alba	White Oak	14	14	Good	Save	0	$ -
133	Quercus alba	White Oak	11	11	Good	Save	0	$ -
134	Quercus alba	White Oak	14	14	Good	Save	0	$ -
135	Acer rubrum	Red Maple	24	24	Good	Save	0	$ -
136	Tilia	Basswood	15	15	Good	Save	0	$ -
137	Quercus alba	White Oak	18	18	Good	Save	0	$ -
138	Acer rubrum	Red Maple	16	16	Good	Save	0	$ -
139	Acer rubrum	Red Maple	(2) 12,18	30	Good	Save	0	$ -
140	Acer rubrum	Red Maple	16	16	Good	Save	0	$ -
141	Acer rubrum	Red Maple	18	18	Good	Save	0	$ -
142	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
143	Acer rubrum	Red Maple	20	20	Good	Save	0	$ -
144	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
145	Populus deltoides	Cottonwood	14	14	Good	Save	0	$ -
146	Populus deltoides	Cottonwood	11	11	Good	Save	0	$ -
147	Acer rubrum	Red Maple	18	18	Good	Save	0	$ -
148	Acer rubrum	Red Maple	30	30	Good	Save	0	$ -
149	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
150	Ulmus	Elm	12	12	Good	Save	0	$ -
151	Acer rubrum	Red Maple	(4) 4,6,8,10	18	Good	Save	0	$ -
152	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
153	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
154	Carya glabra	Pignut Hickory	14	14	Good	remove	2	$ 800
155	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
156	Quercus rubra	Red Oak	(3) 16	48	Good	remove	6	$ 2,400
157	Quercus rubra	Red Oak	8	8	Good	remove	1	$ 400
158	Quercus rubra	Red Oak	14	14	Good	remove	2	$ 800
159	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
160	Prunis serotina	Black Cherry	22	22	Good	remove	3	$ 1,200
161	Quercus rubra	Red Oak	12	12	Good	remove	2	$ 800
162	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
163	Tilia	Basswood	9	9	Good	remove	1	$ 400
164	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
165	Carya ovata	Shagbark Hickory	16	16	Good	remove	1	$ 400
166	Acer rubrum	Red Maple	20	20	Good	remove	2	$ 800
167	Tilia	Basswood	(2) 10	20	Good	Save	0	$ -
168	Tilia	Basswood	16	16	Good	Save	0	$ -
169	Acer rubrum	Red Maple	16	16	Good	Save	0	$ -
170	Acer rubrum	Red Maple	22	22	Good	Save	0	$ -
171	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
172	Tilia	Basswood	(2) 4,10	10	Good	Save	0	$ -
173	Carya glabra	Pignut Hickory	(2) 8,12	20	Good	Save	0	$ -
174	Carya glabra	Pignut Hickory	8	8	Good	Save	0	$ -
175	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
176	Tilia	Basswood	8	8	Good	remove	1	$ 400
177	Tilia	Basswood	8	8	Good	remove	1	$ 400
178	Tilia	Basswood	(2) 11	22	Good	remove	3	$ 1,200
179	Tilia	Basswood	(6) 4-16	46	Good	remove	6	$ 2,400
180	Tilia	Basswood	(5) 5-8	20	Good	remove	2	$ 800
181	Tilia	Basswood	8	8	Good	Save	0	$ -
182	Tilia	Basswood	15	15	Good	remove	2	$ 800
183	Tilia	Basswood	10	10	Good	Save	0	$ -
184	Tilia	Basswood	14	14	Good	remove	2	$ 800
185	Tilia	Basswood	9	9	Good	Save	0	$ -
186	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
187	Tilia	Basswood	(2) 9,14	23	Good	Save	0	$ -
188	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
189	Sassafras albidum	Sassafrass	8	8	Good	Save	0	$ -
190	Tilia	Basswood	16	16	Good	Save	0	$ -
191	Sassafras albidum	Sassafrass	9	9	Good	remove	1	$ 400
192	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
193	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
194	Populus deltoides	Cottonwood	22	22	Good	remove	3	$ 1,200
195	Tilia	Basswood	(2) 9	18	Good	remove	2	$ 800
196	Populus deltoides	Cottonwood	16	16	Good	remove	2	$ 800
197	Populus deltoides	Cottonwood	18	18	Good	remove	2	$ 800
198	Quercus rubra	Red Oak	(4) 14,18,20,20	72	Good	remove	9	$ 3,600
199	Acer rubrum	Red Maple	12	12	Good	remove	2	$ 800
200	Quercus rubra	Red Oak	8	8	Good	remove	1	$ 400

Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition	Status	Replacement Trees	Value
201	Tilia	Basswood	13	13	Good	remove	2	$ 800
202	Tilia	Basswood	(4) 6,7,7,8	8	Good	remove	1	$ 400
203	Quercus rubra	Red Oak	9	9	Good	remove	1	$ 400
204	Tilia	Basswood	14	14	Good	remove	2	$ 800
205	Tilia	Basswood	12	12	Good	remove	2	$ 800
206	Populus deltoides	Cottonwood	14	14	Good	remove	2	$ 800
207	Tilia	Basswood	18	18	Good	remove	2	$ 800
208	Tilia	Basswood	18	18	Good	remove	2	$ 800
209	Tilia	Basswood	16	16	Good	remove	2	$ 800
210	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
211	Quercus rubra	Red Oak	(2) 16	32	Good	remove	5	$ 2,000
212	Tilia	Basswood	(2) 9,10	19	Good	Save	0	$ -
213	Tilia	Basswood	9	9	Good	remove	1	$ 400
214	Quercus rubra	Red Oak	13	13	Good	remove	2	$ 800
215	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
216	Acer rubrum	Red Maple	(3) 12,12,20	44	Good	remove	6	$ 2,400
217	Acer rubrum	Red Maple	20	20	Good	remove	2	$ 800
218	Acer rubrum	Red Maple	(2) 24,36	60	Good	Save	0	$ -
219	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
220	Quercus rubra	Red Oak	8	8	Good	remove	1	$ 400
221	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
222	Prunis serotina	Black Cherry	14	14	Good	remove	2	$ 800
223	Tilia	Basswood	(4) 3,9,12,12	33	Good	remove	5	$ 2,000
224	Tilia	Basswood	11	11	Good	remove	1	$ 400
225	Tilia	Basswood	12	12	Good	remove	2	$ 800
226	Quercus rubra	Red Oak	12	12	Poor	remove	2	$ 800
227	Tilia	Basswood	10	10	Good	remove	1	$ 400
228	Tilia	Basswood	16	16	Good	remove	2	$ 800
229	Tilia	Basswood	11	11	Good	remove	1	$ 400
230	Populus	Poplar	8	8	Good	remove	1	$ 400
231	Tilia	Basswood	16	16	Good	remove	2	$ 800
232	Tilia	Basswood	10	10	Good	remove	1	$ 400
233	Acer rubrum	Red Maple	9	9	Good	remove	1	$ 400
234	Populus deltoides	Cottonwood	16	16	Good	remove	2	$ 800
235	Quercus rubra	Red Oak	(2) 18	36	Good	remove	5	$ 2,000
236	Quercus rubra	Red Oak	(3) 14	42	Good	remove	6	$ 2,400
237	Populus	Poplar	14	14	Good	remove	2	$ 800
238	Acer rubrum	Red Maple	(3) 6,8,8	16	Good	remove	2	$ 800
239	Acer rubrum	Red Maple	14	14	Good	remove	2	$ 800
240	Quercus rubra	Red Oak	14	14	Good	remove	2	$ 800
241	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
242	Quercus rubra	Red Oak	14	14	Good	remove	2	$ 800
243	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
244	Tilia	Basswood	10	10	Fair	remove	1	$ 400
245	Tilia	Basswood	11	11	Good	remove	1	$ 400
246	Tilia	Basswood	9	9	Good	remove	1	$ 400
247	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
248	Tilia	Basswood	9	9	Good	remove	1	$ 400
249	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
250	Tilia	Basswood	(2) 16,18	34	Good	remove	5	$ 2,000
251	Populus	Poplar	14	14	Good	Save	0	$ -
252	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
253	Quercus rubra	Red Oak	11	11	Good	remove	1	$ 400
254	Quercus rubra	Red Oak	(2) 16	32	Good	remove	5	$ 2,000
255	Tilia	Basswood	14	14	Good	remove	2	$ 800
256	Tilia	Basswood	12	12	Good	remove	2	$ 800
257	Tilia	Basswood	10	10	Good	remove	1	$ 400
258	Populus deltoides	Cottonwood	16	16	Good	remove	2	$ 800
259	Acer rubrum	Red Maple	11	11	Good	Save	0	$ -
260	Populus deltoides	Cottonwood	22	22	Good	Save	0	$ -
261	Tilia	Basswood	9	9	Good	Save	0	$ -
262	Tilia	Basswood	12	12	Good	Save	0	$ -
263	Populus deltoides	Cottonwood	16	16	Good	remove	2	$ 800
264	Populus deltoides	Cottonwood	12	12	Good	remove	2	$ 800
265	Populus	Poplar	15	15	Good	remove	2	$ 800
266	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
267	Populus deltoides	Cottonwood	30	30	Good	Save	0	$ -
268	Tilia	Basswood	11	11	Good	Save	0	$ -
269	Tilia	Basswood	(2) 14,18	32	Good	Save	0	$ -
270	Tilia	Basswood	8	8	Good	Save	0	$ -
271	Quercus rubra	Red Oak	(2) 8,20	28	Good	Save	0	$ -
272	Olneya tesota	Ironwood	11	11	Fair	Save	0	$ -
273	Tilia	Basswood	8	8	Good	Save	0	$ -
274	Tilia	Basswood	18	18	Good	Save	0	$ -
275	Olneya tesota	Ironwood	9	9	Good	remove	1	$ 400
276	Prunis serotina	Black Cherry	14	14	Good	remove	2	$ 800
277	Acer rubrum	Red Maple	20	20	Good	Save	0	$ -
278	Acer rubrum	Red Maple	8	8	Good	remove	1	$ 400
279	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800
280	Sassafras albidum	Sassafrass	10	10	Good	remove	1	$ 400
281	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
282	Sassafras albidum	Sassafrass	9	9	Good	remove	1	$ 400
283	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
284	Sassafras albidum	Sassafrass	9	9	Good	remove	1	$ 400
285	Tilia	Basswood	16	16	Good	remove	2	$ 800
286	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
287	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
288	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
289	Sassafras albidum	Sassafrass	9	9	Good	remove	1	$ 400
290	Sassafras albidum	Sassafrass	11	11	Good	remove	1	$ 400
291	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
292	Sassafras albidum	Sassafrass	9	9	Good	remove	1	$ 400
293	Sassafras albidum	Sassafrass	8	8	Good	remove	1	$ 400
294	Tilia	Basswood	14	14	Good	remove	2	$ 800
295	Tilia	Basswood	16	16	Good	remove	2	$ 800
296	Tilia	Basswood	8	8	Good	remove	1	$ 400
297	Populus	Poplar	9	9	Poor	remove	1	$ 400
298	Tilia	Basswood	9	9	Good	remove	1	$ 400
299	Tilia	Basswood	8	8	Good	remove	1	$ 400
300	Quercus rubra	Red Oak	18	18	Good	remove	2	$ 800

Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition	Status	Replacement Trees	Value
301	Acer rubrum	Red Maple	8	8	Good	remove	1	$ 400
302	Tilia	Basswood	18	18	Good	Save	0	$ -
303	Acer rubrum	Red Maple	(2) 6,9	9	Good	Save	0	$ -
304	Acer rubrum	Red Maple	20	20	Good	Save	0	$ -
305	Tilia	Basswood	20	20	Good	Save	0	$ -
306	Quercus rubra	Red Oak	9	9	Good	Save	0	$ -
307	Acer rubrum	Red Maple	8	8	Good	remove	1	$ 400
308	Quercus rubra	Red Oak	8	8	Good	remove	1	$ 400
309	Tilia	Basswood	18	18	Good	remove	2	$ 800
310	Quercus rubra	Red Oak	22	22	Good	remove	3	$ 1,200
311	Acer rubrum	Red Maple	(2) 5,9	9	Good	remove	1	$ 400
312	Quercus rubra	Red Oak	14	14	Good	remove	2	$ 800
313	Tilia	Basswood	11	11	Good	remove	1	$ 400
314	Quercus rubra	Red Oak	15	15	Good	remove	2	$ 800
315	Tilia	Basswood	11	11	Good	remove	1	$ 400
316	Tilia	Basswood	12	12	Good	remove	2	$ 800
317	Prunis serotina	Black Cherry	18	18	Good	remove	2	$ 800
318	Quercus rubra	Red Oak	20	20	Good	remove	2	$ 800
319	Tilia	Basswood	(2) 9	18	Good	remove	2	$ 800
320	Tilia	Basswood	8	8	Good	remove	1	$ 400
321	Tilia	Basswood	16	16	Good	remove	2	$ 800
322	Tilia	Basswood	11	11	Good	remove	1	$ 400
323	Tilia	Basswood	16	16	Good	remove	2	$ 800
324	Quercus rubra	Red Oak	11	11	Good	remove	1	$ 400
325	Tilia	Basswood	9	9	Good	remove	1	$ 400
326	Tilia	Basswood	9	9	Good	remove	1	$ 400
327	Tilia	Basswood	(3) 8,9,11	28	Fair	Save	0	$ -
328	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
329	Quercus rubra	Red Oak	(2) 18	36	Good	Save	0	$ -
330	Carya glabra	Pignut Hickory	14	14	Good	Save	0	$ -
331	Sassafras albidum	Sassafrass	8	8	Good	Save	0	$ -
332	Sassafras albidum	Sassafrass	9	9	Good	Save	0	$ -
333	Tilia	Basswood	14	14	Good	Save	0	$ -
334	Tilia	Basswood	16	16	Good	remove	2	$ 800
335	Tilia	Basswood	(2) 9	18	Good	remove	2	$ 800
336	Tilia	Basswood	18	18	Good	remove	2	$ 800
337	Quercus rubra	Red Oak	(2) 14	28	Good	remove	4	$ 1,600
338	Tilia	Basswood	(2) 10,24	34	Good	Save	0	$ -
339	Tilia	Basswood	16	16	Good	Save	0	$ -
340	Carya glabra	Pignut Hickory	9	9	Good	Save	0	$ -
341	Tilia	Basswood	(3) 11,9,16	36	Good	remove	5	$ 2,000
342	Acer negundo	Box Elder	(2) 9,16	25	Good	remove	4	$ 1,600
343	Quercus rubra	Red Oak	16	16	Good	remove	2	$ 800
344	Acer rubrum	Red Maple	28	28	Good	remove	3	$ 1,200
345	Juniperus virginiana	Red Cedar	14	14	Good	remove	2	$ 800
346	Juniperus virginiana	Red Cedar	18	18	Good	remove	2	$ 800
347	Picea pungens	Blue Spruce	14	14	Good	Save	0	$ -
348	Pyrus calleryana	Bradford Pear	10	10	Good	remove	1	$ 400
349	Picea pungens	Blue Spruce	11	11	Good	remove	1	$ 400
350	Tilia	Basswood	32	32	Good	remove	4	$ 1,600
351	Quercus rubra	Red Oak	24	24	Good	remove	3	$ 1,200
352	Ulmus	Elm	14	14	Good	remove	2	$ 800
353	Acer rubrum	Red Maple	(2) 30,36	66	Good	remove	9	$ 3,600
354	Ulmus	Elm	10	10	Good	remove	1	$ 400
355	Tilia	Basswood	16	16	Good	remove	2	$ 800
356	Tilia	Basswood	(2) 7,16	16	Good	remove	2	$ 800
357	Populus deltoides	Cottonwood	32	32	Good	remove	4	$ 1,600
358	Ulmus	Elm	9	9	Good	remove	1	$ 400
359	Acer rubrum	Red Maple	(2) 10,42	52	Good	remove	7	$ 2,800
360	Quercus rubra	Red Oak	22	22	Good	remove	3	$ 1,200
361	Populus deltoides	Cottonwood	36	36	Good	Save	0	$ -
362	Tilia	Basswood	9	9	Good	Save	0	$ -
363	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
364	Picea pungens	Blue Spruce	14	14	Good	remove	2	$ 800
365	Picea pungens	Blue Spruce	9	9	Good	remove	1	$ 400
366	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
367	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
368	Tilia	Basswood	(3) 11	33	Good	Save	0	$ -
369	Tilia	Basswood	(2) 11,26	37	Good	Save	0	$ -
370	Tilia	Basswood	8	8	Good	Save	0	$ -
371	Olneya tesota	Ironwood	8	8	Good	Save	0	$ -
372	Tilia	Basswood	12	12	Good	Save	0	$ -
373	Quercus rubra	Red Oak	26	26	Good	Save	0	$ -
374	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
375	Olneya tesota	Ironwood	8	8	Good	Save	0	$ -
376	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
377	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
378	Tilia	Basswood	(4) 5,12,8,14	39	Good	Save	0	$ -
379	Prunis serotina	Black Cherry	14	14	Good	Save	0	$ -
380	Quercus rubra	Red Oak	22	22	Good	Save	0	$ -
381	Prunis serotina	Black Cherry	11	11	Good	Save	0	$ -
382	Prunis serotina	Black Cherry	10	10	Good	Save	0	$ -
383	Tilia	Basswood	9	9	Good	Save	0	$ -
384	Quercus alba	White Oak	26	26	Good	Save	0	$ -
385	Quercus rubra	Red Oak	8	8	Good	Save	0	$ -
386	Tilia	Basswood	(2) 12	24	Good	Save	0	$ -
387	Tilia	Basswood	(2) 8,17	25	Good	Save	0	$ -
388	Tilia	Basswood	9	9	Good	Save	0	$ -
389	Tilia	Basswood	18	18	Good	Save	0	$ -
390	Tilia	Basswood	8	8	Good	Save	0	$ -
391	Tilia	Basswood	14	14	Good	Save	0	$ -
392	Tilia	Basswood	20	20	Good	Save	0	$ -
393	Quercus rubra	Red Oak	8	8	Good	Save	0	$ -
394	Quercus alba	White Oak	16	16	Good	Save	0	$ -
395	Tilia	Basswood	9	9	Good	remove	1	$ 400
396	Tilia	Basswood	9	9	Good	remove	1	$ 400
397	Tilia	Basswood	14	14	Good	remove	2	$ 800
398	Tilia	Basswood	16	16	Good	remove	2	$ 800
399	Quercus alba	White Oak	10	10	Good	remove	1	$ 400
400	Tilia	Basswood	10	10	Good	Save	0	$ -

Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition	Status	Replacement Trees	Value
401	Tilia	Basswood	9	9	Good	Save	0	$ -
402	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
403	Quercus rubra	Red Oak	14	14	Good	Save	0	$ -
404	Tilia	Basswood	10	10	Good	Save	0	$ -
405	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
406	Tilia	Basswood	13	13	Good	Save	0	$ -
407	Sassafras albidum	Sassafrass	11	11	Good	Save	0	$ -
408	Sassafras albidum	Sassafrass	9	9	Good	Save	0	$ -
409	Sassafras albidum	Sassafrass	9	9	Good	Save	0	$ -
410	Sassafras albidum	Sassafrass	10	10	Good	Save	0	$ -
411	Acer rubrum	Red Maple	11	11	Good	Save	0	$ -
412	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
413	Sassafras albidum	Sassafrass	10	10	Good	Save	0	$ -
414	Sassafras albidum	Sassafrass	10	10	Good	Save	0	$ -
415	Sassafras albidum	Sassafrass	11	11	Good	Save	0	$ -
416	Quercus rubra	Red Oak	15	15	Good	Save	0	$ -
417	Tilia	Basswood	8	8	Good	Save	0	$ -
418	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
419	Tilia	Basswood	10	10	Good	Save	0	$ -
420	Tilia	Basswood	8	8	Good	Save	0	$ -
421	Tilia	Basswood	10	10	Good	Save	0	$ -
422	Quercus rubra	Red Oak	13	13	Good	Save	0	$ -
423	Acer saccharum	Sugar Maple	40	40	Good	Save	0	$ -
424	Quercus rubra	Red Oak	36	36	Good	Save	0	$ -
425	Quercus rubra	Red Oak	8	8	Good	Save	0	$ -
426	Tilia	Basswood	14	14	Good	Save	0	$ -
427	Tilia	Basswood	12	12	Good	Save	0	$ -
428	Tilia	Basswood	9	9	Good	Save	0	$ -
429	Ulmus	Elm	16	16	Good	Save	0	$ -
430	Malus	Apple	16	16	Good	Save	0	$ -
431	Carya glabra	Pignut Hickory	8	8	Good	Save	0	$ -
432	Tilia	Basswood	15	15	Good	Save	0	$ -
433	Acer saccharum	Sugar Maple	16	16	Good	Save	0	$ -
434	Acer saccharum	Sugar Maple	11	11	Good	Save	0	$ -
435	Tilia	Basswood	20	20	Good	Save	0	$ -
436	Acer rubrum	Red Maple	(3) 12,16,16	44	Good	Save	0	$ -
437	Acer rubrum	Red Maple	16	16	Good	Save	0	$ -
438	Acer saccharum	Sugar Maple	12	12	Good	Save	0	$ -
439	Tilia	Basswood	16	16	Good	Save	0	$ -
440	Acer saccharum	Sugar Maple	(3) 4,12,12	28	Good	Save	0	$ -
441	Tilia	Basswood	12	12	Good	Save	0	$ -
442	Tilia	Basswood	10	10	Good	Save	0	$ -
443	Acer rubrum	Red Maple	14	14	Good	Save	0	$ -
444	Tilia	Basswood	20	20	Good	Save	0	$ -
445	Quercus rubra	Red Oak	9	9	Good	Save	0	$ -
446	Tilia	Basswood	12	12	Good	Save	0	$ -
447	Tilia	Basswood	8	8	Good	Save	0	$ -
448	Quercus rubra	Red Oak	8	8	Good	Save	0	$ -
449	Quercus rubra	Red Oak	18	18	Good	Save	0	$ -
450	Populus deltoids	Cottonwood	16	16	Good	Save	0	$ -
451	Populus deltoids	Cottonwood	10	10	Good	Save	0	$ -
452	Acer rubrum	Red Maple	12	12	Good	Save	0	$ -
453	Tilia	Basswood	10	10	Good	Save	0	$ -
454	Quercus rubra	Red Oak	(2) 10	20	Good	Save	0	$ -

Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition	Status	Replacement Trees	Value
455	Tilia	Basswood	11	11	Good	Save	0	$ -
456	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
457	Quercus rubra	Red Oak	(2) 16,18	34	Good	Save	0	$ -
458	Quercus rubra	Red Oak	(2) 10,24	34	Good	Save	0	$ -
459	Tilia	Basswood	16	16	Good	Save	0	$ -
460	Acer rubrum	Red Maple	(2) 8,12	20	Good	Save	0	$ -
461	Tilia	Basswood	12	12	Good	Save	0	$ -
462	Quercus rubra	Red Oak	26	26	Good	Save	0	$ -
463	Tilia	Basswood	12	12	Good	Save	0	$ -
464	Quercus alba	White Oak	15	15	Good	Save	0	$ -
465	Tilia	Basswood	15	15	Good	Save	0	$ -
466	Tilia	Basswood	11	11	Fair	Save	0	$ -
467	Olneya tesota	Ironwood	12	12	Good	Save	0	$ -
468	Tilia	Basswood	20	20	Good	Save	0	$ -
469	Quercus rubra	Red Oak	20	20	Good	Save	0	$ -
470	Quercus rubra	Red Oak	8	8	Good	Save	0	$ -
471	Prunis serotina	Black Cherry	12	12	Good	Save	0	$ -
472	Quercus rubra	Red Oak	30	30	Good	Save	0	$ -
473	Quercus rubra	Red Oak	26	26	Good	Save	0	$ -
474	Acer rubrum	Red Maple	8	8	Good	Save	0	$ -
475	Tilia	Basswood	14	14	Good	Save	0	$ -
476	Acer rubrum	Red Maple	9	9	Good	Save	0	$ -
477	Tilia	Basswood	16	16	Good	Save	0	$ -
478	Prunis serotina	Black Cherry	18	18	Good	Save	0	$ -
479	Carya glabra	Pignut Hickory	(2) 12	24	Good	Save	0	$ -
480	Quercus rubra	Red Oak	16	16	Good	Save	0	$ -
481	Tilia	Basswood	9	9	Good	Save	0	$ -
						219	438	$ 175,200

Replacement Tree Requirements

Removed D.B.H.	Replacement Ratio	Removed Quantity	Replacement Quantity
8 < 11	1	**81**	**81**
>11 < 20	2	**107**	**214**
> 20 < 29	3	**12**	**36**
> 30	4	**4**	**16**
Multi >30 > 44	5	**6**	**30**
Multi >44 > 52	6	**6**	**36**
Multi >52 > 60	7	**1**	**7**
Multi >60 > 67	8	**0**	**0**
Multi >67 > 75	9	**2**	**18**
		219	**438**

Scenic Pines Estates Tree Replacement Summary	Quantity	Percent
Trees Tagged 8" DBH and greater	481	
Trees Saved	262	54%
Trees Removed	219	46%
Saved Critical Root Zone		
Impact Tree Replacements	59	
2-1/2" Replacement Trees Required	497	
Replacement Plantings Credit	88.6	
Total Tree Fund Trees	408.4	
Value at $400/Tree (Novi fund rate)	$ 163,360	

Saved trees with impact to critical root zone

Tag	Scientific Name	Common Name	DBH(s)	Multi Adjust	Condition
118	Tilia	Basswood	11	11	Good
119	Tilia	Basswood	20	20	Good
121	Tilia	Basswood	12	12	Good
125	Quercus rubra	Red Oak	16	16	Good
129	Quercus rubra	Red Oak	14	14	Good
130	Quercus alba	White Oak	10	10	Good
131	Quercus rubra	Red Oak	22	22	Good
153	Quercus rubra	Red Oak	16	16	Good
154	Carya glabra	Pignut Hickory	14	14	Good
164	Quercus rubra	Red Oak	20	20	Good
165	Carya ovata	Shagbark Hickory	16	16	Good
166	Acer rubrum	Red Maple	20	20	Good
175	Quercus rubra	Red Oak	18	18	Good
185	Tilia	Basswood	9	9	Good
186	Quercus rubra	Red Oak	18	18	Good
189	Sassafras albidum	Sassafrass	8	8	Good
190	Tilia	Basswood	16	16	Good
218	Acer rubrum	Red Maple	(2) 24,36	60	Good
251	Populus	Poplar	14	14	Good
271	Quercus rubra	Red Oak	(2) 8,20	28	Good
333	Tilia	Basswood	14	14	Good
361	Populus deltoides	Cottonwood	36	36	Good
362	Tilia	Basswood	9	9	Good
363	Quercus rubra	Red Oak	14	14	Good
480	Quercus rubra	Red Oak	16	16	Good

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

TREE LIST & TREE CALCULATIONS

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054579
LICENSED PROFESSIONAL ENGINEER

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 15 30
1" = 30 FEET
JOB NO. 180905
SHEET NO.
7
SHEET 7 OF 38

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WETLAND & BUFFER TABLE

NAME	IMPACT NO.	AREA ONSITE		IMPACT AREA		CUT/FILL (CYD)	TYPE	ONSITE BUFFER AREA(SQ FT)
		SQUARE FEET	ACREAGE	SQUARE FEET	ACREAGE			
A	4	6098	0.1400	218	0.0050	20 CYD–FILL	PERMANENT–BUFFER	4510
B	N/A							5150
C	1	55757	1.2800	3315	0.0760	602 CYD–FILL	PERMANENT–WETLAND	41575
	2			2842	0.0650	800 CYD–FILL	PERMANENT–BUFFER	
	3			2422	0.0560	704 CYD–FILL	PERMANENT–BUFFER	
	5			131	0.0030	5 CYD–FILL	PERMANENT–BUFFER	
	6			44	0.0010	0 CYD–C/F	TEMPORARY–BUFFER	

TOTAL WETLAND IMPACT = 3315 Sq. Ft.=>0.076 AC.=>602 CYD FILL

TOTAL BUFFER IMPACT = (A) 218 Sq.Ft.=>0.005 AC.=>20 CYD FILL
(C) 2842 Sq. Ft.=>0.065 AC.=> 800 CYD. FILL
2422 Sq. Ft.=>0.056 AC.=> 704 CYD. FILL
131 Sq. Ft.=>0.003 AC.=>5 CYD. FILL
44 Sq. Ft.=>0.001 AC.=>0 CYD. FILL
TOTAL BUFFER IMPACT =5657 Sq. Ft.=>0.130 AC.=>1,529 CYD FILL

BUFFER WETLAND RESTORATION WETLAND NOTE:

TEMPORARY IMPACTS TO WETLAND BUFFERS SHALL BE RESTORED TO PER CONSTRUCTION CONDITIONS USING SAME PLANTINGS AND MATERIALS.

NORTH

40' 0 20' 40' 80' 160'

(IN FEET)
1 inch = 40' ft.

SOUTH ¼ CORNER SECTION 3 T1N, R8E

S2° 36' 17"E 470.60'

WETLAND "B" ONSITE BUFFER AREA= 5150 SQ FT

WETLAND "B" 0.22 AC.

25' WETLAND BUFFER

N36° 25' 09"E 250.44'

WETLAND "C" 0.74 AC.

TREE FENCE

PROPOSED PERIMETER SILT FENCE\LIMITS OF EARTH DISTRUPTION

WETLAND BUFFER TEMPORARY DISTURBANCE AREA 44 SF, 0.001 AC.

#6

WETLAND "C" ONSITE BUFFER AREA= 41575 SQ FT

S34° 12' 58"E 230.00'

WETLAND BUFFER PERMANENT DISTURBANCE AREA 2,422 SQ. FT. (0.056 AC.)

#3

WETLAND BUFFER PERMANENT DISTURBANCE AREA 2842 SQ. FT. (0.065 AC.)

#2

EDGE OF WATER

S11° 16' 59"W 225.48'

WETLAND "C" ONSITE BUFFER AREA= 41575 SQ FT

CITY OF NOVI REGULATED WOODLINE

PROPOSED PERIMETER SILT FENCE\LIMITS OF EARTH DISTRUPTION

#1

WETLAND BUFFER PERMANENT DISTURBANCE AREA 315 SQ. FT. (0.076 AC.)

WETLAND BUFFER PERMANENT DISTURBANCE AREA 131 SF, 0.003 AC.

#5

CITY OF NOVI REGULATED WOODLINE

WETLAND "C" 0.54 AC.

WETLAND "A" 0.002 AC.

636.73' N2° 42' 10"W

S87° 55' 47"W 637.25'

FND IRON ROD SOUTHWEST ¼ CORNER SECTION 3 T1N, R8E

50–22–03–377–013 ROBERT JR. HARRIS 209 HENNING ST. NOVI, MI 48377

50–22–03–377–014 RICHARD GUNTHER 211 HENNING ST. NOVI, MI 48377

50–22–03–377–011 TODD & LOIS NEFF 217 HENNING ST. NOVI, MI 48377

50–22–03–377–007 CONNIE GUMMO 207 HENNING ST. NOVI, MI 48377

50–22–03–3 KEVIN & KRI 205 HENNING NOVI, MI 483

50–MAR 203 NOV

HYD FG=934.15

EX GV&W

EX SAN MH RIM=935.60
S 8" VCP INV=928.81
N 8" VCP INV=928.59

EX 2" GAS MAIN

HENNING (50' WIDE R.O.W.)

EX LIGHT POLE

EX SAN MH RIM=937.22
W 8" VCP INV=929.70
N 8" VCP INV=929.62

50–22–03–351–010 LEVY, TRUST 148 HENNING ST. NOVI, MI 48377

50–22–03–376–007 JILL LEVY, TRUST 208 HENNING ST. NOVI, MI 48377

50–22–03–376–003 BONNIE KEEP 214 HENNING ST. NOVI, MI 48377

50–22–03–376–004 ANN STRINGER SMITH 226 HENNING ST. NOVI, MI 48377

FND IRON ROD

S79° 05' 29"E 367.64'

EX SAN MH RIM=936.11
E 8" VCP INV=930.41

50–22–03–376–008 GERALD D & DEBRA COOPER 155 BURTINGTON ST. NOVI, MI 48377

HENNING ST. (50' WIDE R.O.W.)

EX GV&W RIM=937.37

EX 8" W

SAN MH RIM=938.41
N 8" VCP INV=925.62
S 8" VCP INV=925.63

EX GV&W RIM=938.15

HYD ARROW FG=940.32

EX WS SHUTOFF RIM=938.10

EX HYD FG FG=937.87

50–22–03–351–007 TRACY GALLOWAY 204 BURTINGTON ST. NOVI, MI 48377

WELL RIM=933.85

49.76' N2° 42' 10"W

POST

CITY OF NOVI REGULATED WOODLINE

POWER CORE

WETLAND "A" ONSITE BUFFER AREA= 4510 SQ FT

N2° 50' 00"E 150.00'

WETLAND BUFFER PERMANENT DISTURBANCE AREA 218 SF, 0.005 AC.

#4

WETLAND "A" 0.14 AC.

S87° 17' 50"E 150.00'

WETLAND "A"

150.00' N2° 42' 10"W

PROPOSED PERIMETER SILT FENCE\LIMITS OF EARTH DISTRUPTION

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The UMLOR Group
LAND DEVELOPMENT SERVICES

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TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

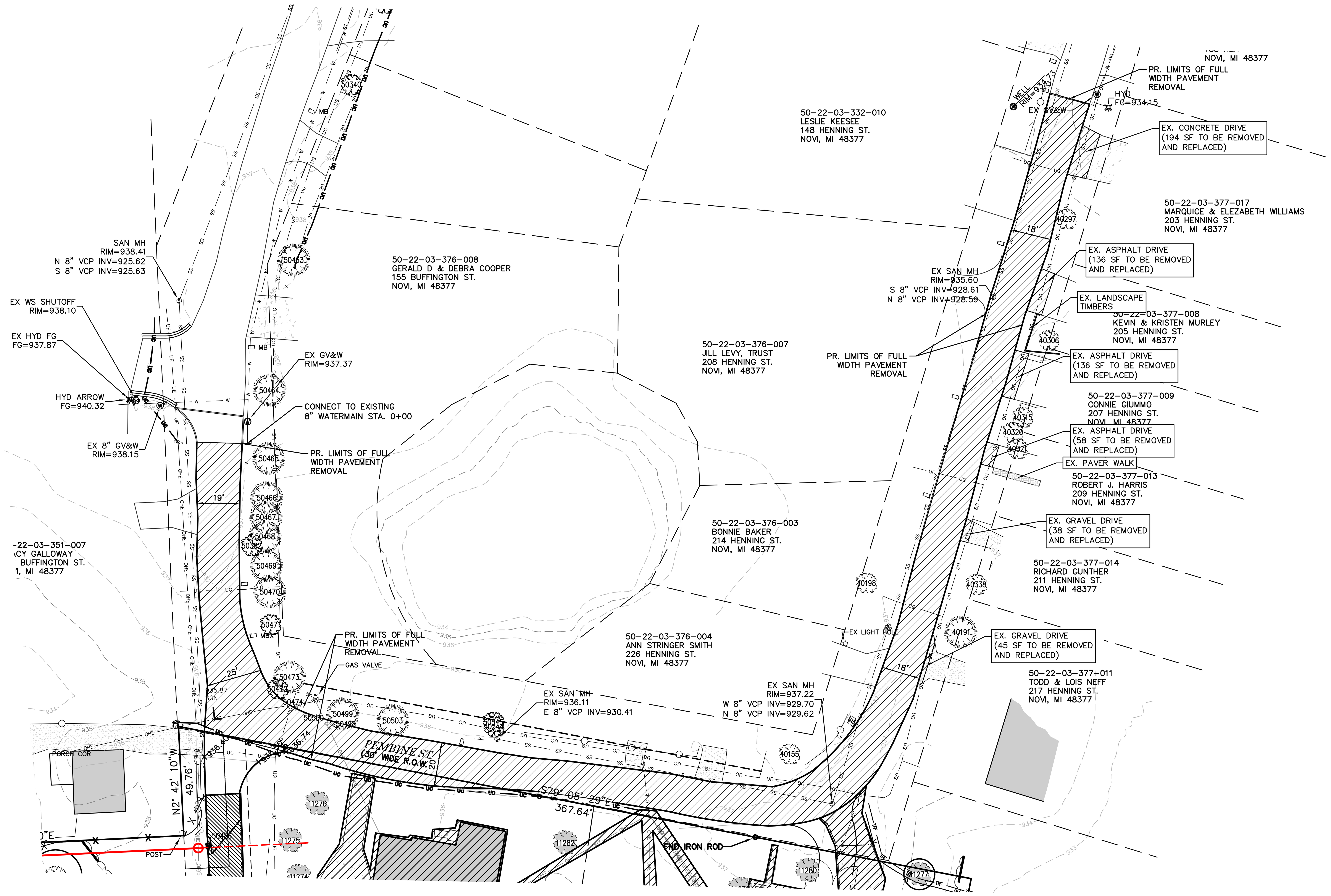
WETLANDS IMPACT PLAN

DATE: 11–27–2019

REVISIONS
PER CITY 03–24–2020
PER CITY 01–18–2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 8
SHEET 8 OF 38

STATE OF MICHIGAN
WES LEE
O'UMLOR
ENGINEER
6201054571
LICENSED PROFESSIONAL ENGINEER



NORTH

30' 0 15' 30' 60' 120'
(IN FEET)
1 inch = 30' ft.

DEMO LEGEND

SYMBOL	DESCRIPTION
(tree symbol)	EX TREE REMOVAL
(circle)	TREE CRITICAL ROOT ZONE
(hatch)	WETLAND BUFFER DISTURBANCE AREA
(cross hatch)	WETLAND DISTURBANCE AREA (TEMPORARY)
(hatch)	REMOVE

REMOVAL QUANTITIES FOR OFFSITE WATERMAIN

CHIP AND SEAL PAVEMENT	13656 SF
ASPHALT DRIVE	330 SF
GRAVEL DRIVE	83 SF
CONCRETE DRIVE	194 SF

NOTE:

CONTRACTOR SHALL ADJUST MAIN AS NEEDED TO SAVE EXISTING TREES ALONG BUFFINGTON./PEMBINE/HENNING ST.

CONTRACTOR SHALL REPAIR/REPLACE ANY PAVING, LANDSCAPING, GRADING, MAILBOXES, ETC. TO THERE ORIGINAL CONDITION OR BETTER.

LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
	CLEAN OUT		SIGN	— ST — ST —	EX STORM
E	ELEC. RISER		2 POLE SIGN	— SS — SS —	EX SANITARY
	FIRE HYDRANT		MAILBOX	— W — W —	EX WM
E.T.	ELEC. TRANSFORMER	○	POST	— OHE — OHE —	ELEC OVERHEAD
	GUY ANCHOR	E	ELECTRICAL RISER	— UE — UE —	UNDERGROUND ELECTRIC
D	STM. MANHOLE	T	TELEPHONE RISER	— UG — UG —	GAS
S	SAN. MANHOLE	C	COMMUNICATIONS RISER		FENCE
	VENT		ELECTRICAL METER	— x — x — x —	SILT FENCE
WV	WATER STOP BOX		EXISTING FLAG POLE	— OHF — OHF —	EX FIBER OH
W	GATE VALVE	GEN	EXISTING GENERATOR		EX GUARDRAIL
	SPEAKER BOX		EXISTING SIGNAL POLE	— — — —	EX WETLAND BUFFER
	POWER POLE	G	EXISTING GAS METER		EX GRAVEL
	SINGLE LIGHT POLE	●	SET IRON		EX ASPHALT
	DOUBLE LIGHT POLE	◎	FOUND IRON		EX CONCRETE
	ROUND CATCH BASIN	(R)	RECORDED DISTANCE	85	REGULATED TREE
□	SQUARE CATCH BASIN	(M)	MEASURED DISTANCE		
SB 1	SOIL BORE LOCATION				

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OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

OFFSITE DEMOLITION PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054579
LICENSED PROFESSIONAL ENGINEER

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 15 30
1" = 30 FEET
JOB NO. 180905
SHEET NO.
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NORTH

40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

NOTE:
COMPACTED SAND BACKFILL (MDOT SAND CLASS 2) SHALL BE PROVIDED FOR ALL UTILITIES WITHIN THE INFLUENCE OF PAVED AREAS.

PR. UTILITY LEGEND

SYMBOL	DESCRIPTION
	PR. STORM SEWER
	PR. SANITARY SEWER
	PR. WATER MAIN
652	PR. CONTOURS
X	PR. LIMITS DISTURBANCE
	PR. WATER VALVE
	PR. HYDRANT
	PR. FLOW DIRECTION
200	PR. SANITARY STRUCTURE NUMBER
100	PR. STORM STRUCTURE NUMBER
GV1	PR. WATER VALVE/HYDRANT NUMBER

SEE SHEET 11 FOR OVERALL EASEMENT PLAN

SEE SHEET 19 FOR OVERALL STORM SEWER PLAN

SEE SHEETS 20 & 21 FOR STORM SEWER PROFILES

UTILITY QUANTITIES

SANITARY SEWER

8" PVC SDR 26 SANITARY PIPE	1122 LF
6" PVC SDR 23.5 SANITARY LEAD	1009 LF
4" SDR11 SANITARY FORCEMAIN	84 LF
4'ø SANITARY MANHOLE	8 EA
DUPLEX PUMPING STATION	1 EA
VALVE VAULT BOX	1 EA

WATER MAIN

8" D.I. CL 54 WATER MAIN	1680 LF
6" D.I. CL54 HYD LEAD	53 LF
1" "K" COPPER WATER LEAD	1316 LF
HYDRANT & ASSEMBLY	5 EA
GATE VALVE & WELL	5 EA

STORM SEWER

15" CLIV RCP	123 LF
12" CLIV RCP	278 LF
8" SDR 26 PVC	763 LF
2'ø MANHOLE	8 EA
2'ø CATCH BASIN	1 EA
4'ø STREET INLET	1 EA
4'ø CATCH BASIN	2 EA
4'ø MANHOLE	3 EA
4'ø YARD INLET	1 EA
6'ø MANHOLE	1 EA
7'ø CATCH BASIN	1 EA
WATER QUALITY STR	2 EA
15" CLIV RCP END SECTION	1 EA
12" CLIV RCP END SECTION	3 EA

PAVING

6"x30" INTEGRAL CURB & GUTTER	58 LF
3"x18" MOUNTABLE CURB & GUTTER	1823 LF
5E1, 1.5" 165#/SY WEARING COURSE	3056 SY
HMA 3C, 2.5" 275#/SY LEVELING COURSE	3056 SY
8" 21AA COMPACTED AGGREGATE BASE	3492 SY
HMA 5E1, 2" 165#/SY WEARING COURSE	105 SY
HMA 4C, 2.5" 275#/SY LEVELING COURSE	105 SY
HMA 3C, 2.5" 275#/SY LEVELING COURSE	105 SY
8" 21AA COMPACTED AGGREGATE BASE	111 SY

REMOVE EX PLUG & CONNECT TO WATER MAIN
EX SAN MH RIM=935.60 INV=928.81 228.59
335 LF 8" D.I. CL54 WM (BEND TO TIE)
EX 50' WIDE R/W
EX LIGHT POLE
EX 2" GAS MAIN
EX SAN MH RIM=937.22 W 8" VCP INV=929.70 N 8" VCP INV=929.62 PR SW 4" INV=931.00
CONNECT TO EX SANITARY MH
PR. 45° BEND
18 LF 8" D.I. CL54 WM (BEND TO BEND)
PR. 22.5° & 11.25° BENDS
PR. SANITARY PUMP STATION
PR. 4" SCH 40 PVC STORM LEAD (TYP.)
EX 50' WIDE R/W
69 LF 8" D.I. CL54 (VALVE TO BEND)
PR. 8" D.I. CL54 TEE
EX SAN MH RIM=936.11 E 8" VCP INV=930.41
40 LF 8" D.I. CL54 WM (TEE TO VALVE)
REPAIR EX. ROADWAY AFTER WATER MAIN INSTALL PER CITY REQUIREMENTS
PR. 22.5° & 11.25° BENDS
12 LF 8" D.I. CL54 WM (BEND TO BEND)
PR. 45° BEND
115 LF 8" D.I. CL54 WM (TIE TO BEND)
CONNECT TO EX WATER MAIN
EX 2" GAS MAIN
SAN MH RIM=938.41 VCP INV=925.62 VCP INV=925.63
EX 50' WIDE R/W
EX 8" WM
129 LF 8" D.I. CL54 WM (VALVE TO BEND)
EX 50' WIDE R/W
86' of 8" SAN
144' of 8" SAN
87' of 8" SAN
115' of 8" SAN
255 LF 8" D.I. CL54 WM (TEE TO BEND)
142 LF 8" D.I. CL54 WM (BEND TO TEE)
16 LF 8" D.I. CL54 WM (BEND TO BEND)
60' of 12" STM
12' of 15" STM
INSTALL:
19-LF 6" D.I. CL54 WM
1-EA 8"x6" D.I. CL54 TEE
1-HYD & ASSEMBLY
1-6" D.I. CL54 GV & BOX
PR. (2)-4" SCH 40 PVC STORM LEAD (TYP.)
PR. 4" SCH 40 PVC STORM LEAD (TYP.)
DETENTION BASIN
PR. GUY ANCHOR
PR. UTILITY POLE
EX GRAVEL DRIVE
EXISTING UTILITY POLE BENCHMARK SET E FACE EL=933.91
25' WETLAND BUFFER
WETLAND "A" 0.14 AC.
16.07'
EDGE OF WATER
PST
WETLAND "B" 0.22 AC.
REGIONAL DETENTION BASIN EASEMENT
WETLAND "C" 0.74 AC.
INSTALL:
7-LF 6" D.I. CL54 WM
1-EA 8"x6" D.I. CL54 REDUCER
1-HYD & ASSEMBLY
1-6" D.I. CL54 GV & BOX
120 LF 8" D.I. CL-54 VALVE TO HYD
22 LF 8" D.I. CL-54 TEE TO VALVE
PR. WATER LEADS FOR UNITS 4-7 SHALL BE INSTALLED A MINIMUM OF 18" BELOW THE PR. SUBSURFACE DETENTION (TYPICAL)
PR. (2)-4" SCH 40 PVC STORM LEAD (TYP.)
INSTALL:
(90° INSTALLATION)
6-LF 6" D.I. CL54 WM
1-EA 8"x6" D.I. CL54 TEE
1-HYD & ASSEMBLY
1-6" D.I. CL54 GV & BOX
40' of 8" STM
10' of 8" STM
329' of 8" SAN
PR. 22' DMP
SUBSURFACE DETENTION
146' LF 8" D.I. CL54 WM (TEE TO BEND)
8 LF 8" D.I. CL-54 TEE TO VALVE
116' of 8" SAN
46' of 12" STM
27' of 12" STM
15' of 12" STM
6" of 12" STM
14 LF 8" D.I. CL54 BEND TO TEE
248' of 8" SAN
PR. 4" INCH CURB
PR. 11.25° BEND
15 LF 8" D.I. CL54 WM (BEND TO TEE)
120 LF 8" D.I. CL54 WM (VALVE TO BEND)
NOBLE TRAIL (PRIVATE DRIVE)
PRISTINE LANE (PRIVATE DRIVE)
INSTALL:
8-LF 6" D.I. CL54 WM
1-EA 8"x6" D.I. CL54 REDUCER
1-HYD & ASSEMBLY
1-6" D.I. CL54 GV & BOX
PR. (2)-4" SCH 40 PVC STORM LEAD (TYP.)
WETLAND "C" 0.54 AC.
WETLAND "A" 0.002 AC.

SANITARY NOTES:
1. ALL PUBLIC SANITARY SEWERS SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALL SANITARY SEWER MAINS SHALL BE MINIMUM 8" PVC SDR 26 @ 0.40% MIN. SLOPE
3. ALL SANITARY SEWER LEADS SHALL BE MINIMUM 6" PVC SDR 23.5 @ 2.0% MIN. SLOPE..
4. ALL SANITARY SEWER LEADS SHALL BE A MINIMUM DEPTH OF 5' UNDER THE INFLUENCE OF PAVEMENT.
5. ALL SANITARY SEWER LEADS SHALL BE MINIMUM DEPTH OF 10' BELOW THE FINISHED GRADE OF EACH UNIT TO PROVIDE FOR GRAVITY DISCHARGE FROM BASEMENTS.
6. ALL MATERIALS SHALL CONFORM TO THE CITY OF NOVI STANDARDS AND SPECIFICATIONS.
7. A VARIABLE WIDTH ACCESS EASEMENT SHALL BE PROVIDED ALONG ALL PRIVATE ROADWAYS.
8. PROVIDE A TESTING BULKHEAD IMMEDIATELY UPSTREAM OF THE SANITARY CONNECTION POINT.

WATER MAIN NOTES:
1. ALL PUBLIC WATER MAINS AND\OR SERVICES SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALLWATER MAINS SHALL BE 8" DUCTILE IRON CLASS 54.
3. ALL WATER SERVICES SHALL BE 1" "K" COPPER OR HDPE DR9 WITH TRACE WIRE. CURB STOPS TO BE PROVIDED 1' BEHIND PR. WALKS TYPICAL.
4. ALL WATER MAINS SHALL BE INSTALLED WITH 5'-6" MINIMUM COVER.
5. 18" MINIMUM SEPARATION SHALL BE PROVIDED BETWEEN WATER MAINS AND\OR SERVICE LEADS AND ALL OTHER UTILITIES.
6. ALL MATERIALS SHALL CONFORM TO THE CITY OF NOVI STANDARDS AND SPECIFICATIONS.
7. A VARIABLE WIDTH ACCESS EASEMENT SHALL BE PROVIDED ALONG ALL PRIVATE ROADWAYS.
8. ALL HYDRANTS SHALL BE PLACED A MINIMUM OF 7 FEET BEHIND BACK OF CURB.
9. ALL HYDRANTS MUST BE INSTALLED AND OPERATIONAL PRIOR TO BEGINNING BUILDING CONSTRUCTION.

NOTE:
ALL PROPOSED 4" SCH 40 PVC STORM LEADS SHALL BE SLOPED A MINIMUM OF 1%

STATE OF MICHIGAN
WES LEE O'UMLOR
ENGINEER
#2101045479
LICENSED PROFESSIONAL ENGINEER

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7125 ORCHARD LAKE ROAD
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GENERAL DEVELOPMENT PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021

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P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 10
SHEET 10 OF 38

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES GD'S\180905-GENERAL DEVELOPMENT PLAN.DWG

NORTH

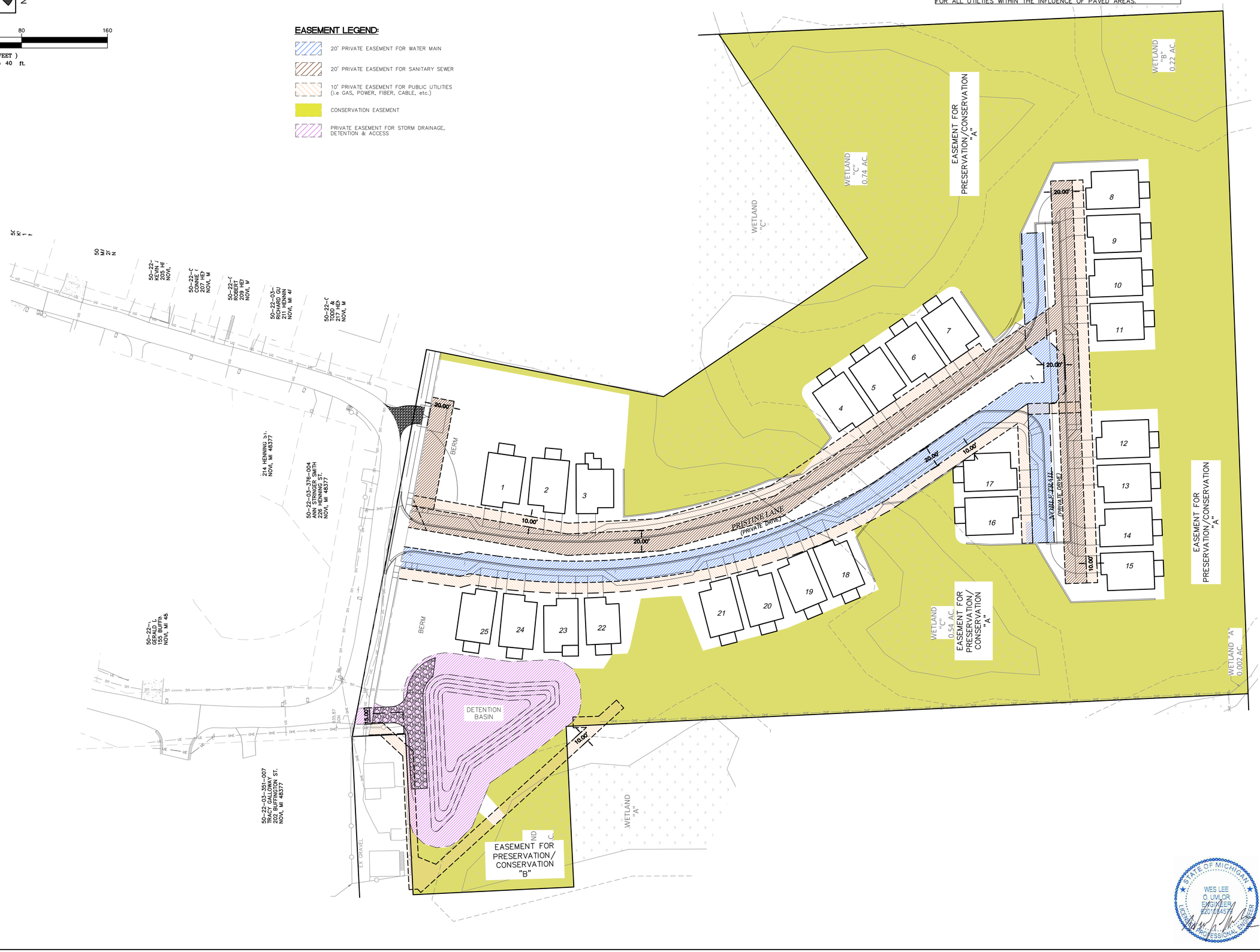
40 0 20 40 80 160

(IN FEET)
1 inch = 40 ft.

EASEMENT LEGEND:

- 20' PRIVATE EASEMENT FOR WATER MAIN
- 20' PRIVATE EASEMENT FOR SANITARY SEWER
- 10' PRIVATE EASEMENT FOR PUBLIC UTILITIES (i.e GAS, POWER, FIBER, CABLE, etc.)
- CONSERVATION EASEMENT
- PRIVATE EASEMENT FOR STORM DRAINAGE, DETENTION & ACCESS

NOTE:
COMPACTED SAND BACKFILL (MDOT SAND CLASS 2) SHALL BE PROVIDED FOR ALL UTILITIES WITHIN THE INFLUENCE OF PAVED AREAS.



THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

EASEMENT PLAN

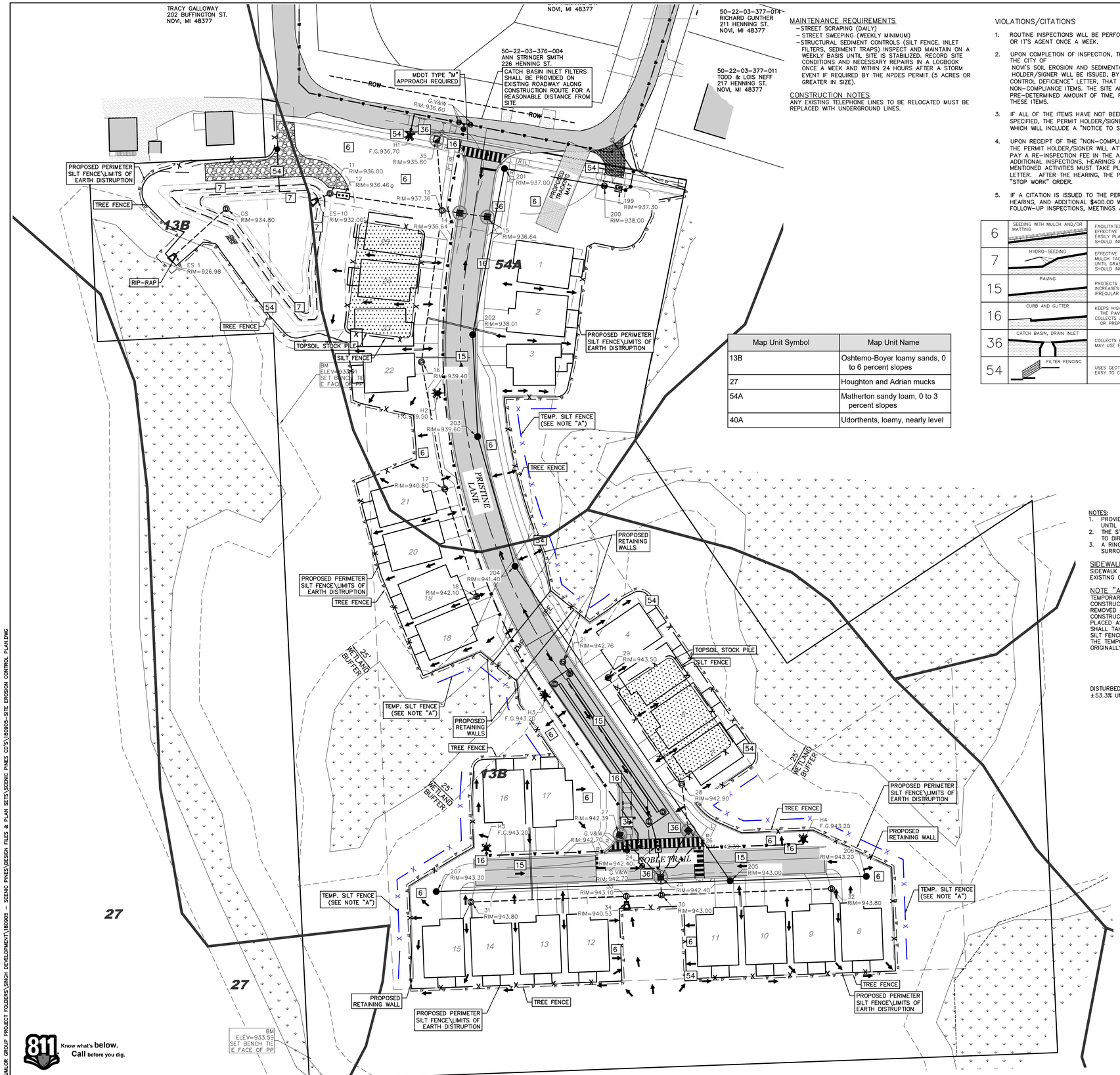
DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 11
SHEET 11 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054579
LICENSED PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CITY\180905-GENERAL DEVELOPMENT PLAN.DWG



Map Unit Symbol	Map Unit Name
13B	Oshtemo-Boyer loamy sands, 0 to 6 percent slopes
27	Houghton and Adrian mucks
54A	Matherton sandy loam, 0 to 3 percent slopes
40A	Udorthents, loamy, nearly level

MAINTENANCE REQUIREMENTS
- STREET SCRAPING (DAILY)
- STREET SWEEPING (WEEKLY MINIMUM)
- STRUCTURAL SEDIMENT CONTROLS (SILT FENCE, INLET FILTERS, SEDIMENT TRAPS) INSPECT AND MAINTAIN ON A WEEKLY BASIS UNTIL SITE IS STABILIZED. RECORD SITE CONDITIONS AND NECESSARY REPAIRS IN A LOGBOOK ONCE A WEEK AND WITHIN 24 HOURS AFTER A STORM EVENT IF REQUIRED BY THE NPDES PERMIT (5 ACRES OR GREATER IN SIZE).

CONSTRUCTION NOTES
ANY EXISTING TELEPHONE LINES TO BE RELOCATED MUST BE REPLACED WITH UNDERGROUND LINES.

VIOLATIONS/CITATIONS

1. ROUTINE INSPECTIONS WILL BE PERFORMED ON YOUR PROJECT BY THE CITY OF NOVI OR IT'S AGENT ONCE A WEEK.
2. UPON COMPLETION OF INSPECTION, THE SITE IS FOUND NOT IN COMPLIANCE WITH THE CITY OF NOVI'S SOIL EROSION AND SEDIMENTATION CONTROL ORDINANCE, THEN THE PERMIT HOLDER/SIGNER WILL BE ISSUED, BY HAND, MAIL OR FAX, A "NOTICE OF EROSION CONTROL DEFICIENCE" LETTER, THAT WILL INCLUDE ALL CURRENT AND PERTINENT NON-COMPLIANCE ITEMS. THE TIME AND/OR DEVELOPMENT WILL HAVE PRE-DETERMINED AMOUNT OF TIME, FROM THE DATE OF THE "NOTICE" TO RECTIFY THESE ITEMS.
3. IF ALL OF THE ITEMS HAVE NOT BEEN ADDRESSED AFTER THE ELAPSED TIME SPECIFIED, THE PERMIT HOLDER/SIGNER WILL RECEIVE A "NON-COMPLIANCE" LETTER, WHICH WILL INCLUDE A "NOTICE TO SHOW CAUSE."
4. UPON RECEIPT OF THE "NON-COMPLIANCE" LETTER AND "NOTICE TO SHOW CAUSE," THE PERMIT HOLDER/SIGNER WILL ATTEND A SHOW CAUSE HEARING AS WELL AS PAY A RE-INSPECTION FEE IN THE AMOUNT OF $250.00 TO THE CITY OF NOVI FOR ADDITIONAL INSPECTIONS, HEARINGS AND/OR REPORT FOLLOW-UP. THE BEFORE MENTIONED ACTIVITIES MUST TAKE PLACE WITHIN 24 HOURS UPON RECEIPT OF THE LETTER. AFTER THE HEARING, THE PROJECT/DEVELOPMENT MAY BE ISSUED A "STOP WORK" ORDER.
5. IF A CITATION IS ISSUED TO THE PERMIT HOLDER/SIGNER AFTER THE SHOW CAUSE HEARING, AND ADDITIONAL $400.00 WILL BE PAID TO THE CITY OF NOVI, FOR FOLLOW-UP INSPECTIONS, MEETINGS AND OTHER EXPENSES INCURRED.SILT FENCE

6	SEEDING W/LCH AND/OR MATTING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED
7	HYDRO-SEEDING	EFFECTIVE ON LARGE AREAS MULCH TACKING AGENT USED TO PROVIDE IMMEDIATE PROTECTION UNTIL GRASS IS ROOTED SHOULD INCLUDE PREPARED TOPSOIL BED
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF VOLUME AND VELOCITY IRREGULAR SURFACE WILL HELP SLOPE VELOCITY
16	CURB AND GUTTER	KEEPS HIGH VELOCITY RUNOFF ON PAVED AREAS FROM LEAVING THE PAVED SURFACE COLLECTS AND CONDUCTS RUNOFF TO ENCLOSED DRAINAGE SYSTEM OR PREPARED DRAINAGEWAY
36	CATCH BASIN, DRAIN INLET	COLLECTS HIGH VELOCITY CONCENTRATED RUNOFF MAY USE FILTER CLOTH OVER INLET
54	FILTER FENCING	USES GEOTEXTILE FABRIC AND POSTS OR POLES EASY TO CONSTRUCT AND LOCATE AS NECESSARY

NOTES:
1. PROVIDE FILTER ON STANDPIPE OUTLET STRUCTURE UNTIL SITE IS STABILIZED, THEN REMOVE.
2. THE STORM WATER BASIN WILL BE STABILIZED PRIOR TO DIRECTING FLOW TO BASIN.
3. A RING OF SILT FENCE WILL BE INSTALLED SURROUNDING ANY STOCKPILE MATERIAL.

SIDEWALK NOTE:
SIDEWALK WITHIN RIGHT-OF-WAY SHALL MATCH EXISTING GRADE AT BOTH ENDS OF PROJECT AREA.

NOTE "A":
TEMPORARY SILT FENCE TO BE INSTALLED FOR CONSTRUCTION OF RETAINING WALLS & SHALL BE REMOVED AFTER COMPLETION OF RETAINING WALL CONSTRUCTION. PERMANENT SILT FENCE SHALL BE PLACED AS SHOWN. NO ADDITIONAL TREE REMOVAL SHALL TAKE PLACE FOR INSTALLATION OF TEMPORARY SILT FENCE AND NO GRADING SHALL BE DONE BETWEEN THE TEMPORARY SILT FENCE & SILT FENCE AS ORIGINALLY PROPOSED.

DISTURBED AREA ±3.93 ACRES
±53.3% UNDISTURBED

LOCATION MAP
1"=4000'

NORTH
40' 0 20' 40' 80' 160'
(IN FEET)
1 inch = 40' ft.

NOTES:
IF DEWATERING IS ENCOUNTERED DURING CONSTRUCTION A DEWATERING PLAN MUST BE SUBMITTED TO THE ENGINEERING DIVISION FOR REVIEW AND APPROVAL.

IT IS THE DEVELOPER'S RESPONSIBILITY TO GRADE AND STABILIZE DISTURBANCES DUE TO THE INSTALLATION OF PUBLIC UTILITIES.

CATCH BASIN INLET FILTERS SHALL BE INSTALLED ON EXISTING ROADWAYS ALONG CONSTRUCTION ROUTE FOR A REASONABLE DISTANCE FROM SITE.

STREET SWEEPING AND DUST CONTROL ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE DONE AS NEEDED OR DIRECTED BY THE ENGINEER AND\OR CITY STAFF.

VEGETATION SHALL BE ESTABLISHED WITHIN 5 DAYS OF FINAL GRADE, OR WHENEVER DISTURBED AREAS WILL REMAIN UNCHANGED FOR 30 DAYS OR GREATER. 3-4" OF TOPSOIL WILL BE USED WHERE VEGITATION IS REQUIRED.

DIVERSION BERMS OR TERRACING SHALL BE IMPLEMENTED WHERE NECESSARY OR DIRECTED BY THE ENGINEER AND\OR COUNTY STAFF.

CONTRACTOR SHALL OBTAIN SOIL EROSION PERMIT PRIOR TO ANY CONSTRUCTION.

ALL GRADING, EROSION, AND SEDIMENT CONTROL AND RELATED WORK UNDERTAKEN ON THIS SITE SHALL BE IN ACCORDANCE WITH LOCAL JURISDICTION.

CONTRACTOR SHALL MAINTAIN ALL SOIL EROSION CONTROL MEASURES. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY J&M SILT FENCE. SURROUNDING PAVED AREAS SHALL BE POWER BROOMED AS NECESSARY TO REMOVE MUD TRACKING FROM THE SITE.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MATCHING EXISTING FACILITIES TO AVOID ANY ABRUPT OR APPARENT CHANGES IN GRADES OR CROSS SLOPES, LOW SPOTS, OR HAZARDOUS CONDITIONS.

GRADING AT THE BOUNDARIES SHALL BE DONE SO AS NOT TO OBSTRUCT THE RUNOFF OF STORM WATER FROM ADJACENT PROPERTIES.

SOD AND HYDROSEEDING SHALL BE DONE IN ACCORDANCE WITH THE LANDSCAPING PLAN. ALL OTHER DISTURBED AREAS SHALL BE TOPSOILED, HYDROSEEDED, FERTILIZED AND MULCHED.

THE CONTRACTOR IS REQUIRED TO HAVE A COPY OF THE CERTIFIED PLAN AT THE CONSTRUCTION SITE.

ALL SOIL EROSION CONTROL PRACTICES TO BE INSTALLED PRIOR TO ANY MAJOR SOIL DISTURBANCE, OR IN THEIR PROPER SEQUENCE AND MAINTAINED FOR ONE YEAR AFTER COMPLETION OF THE APPROVED PLAN OR UNTIL SUCH MEASURES ARE PERMANENTLY STABILIZED AS DETERMINED BY THE TOWNSHIP ENGINEER.

PERMANENT VEGETATION TO BE SEEDED ON ALL EXPOSED AREAS WITHIN TEN (10) DAYS AFTER FINAL GRADING. MULCH TO BE USED AS NECESSARY FOR PROTECTION UNTIL SEEDING IS ESTABLISHED.

IMMEDIATELY FOLLOWING INITIAL DISTURBANCE OR ROUGH GRADING, ALL CRITICAL AREAS SUBJECT TO EROSION (I.E., STEEP SLOPES) WILL RECEIVE APPROPRIATE VEGETATIVE COVER AS STATED IN THE CONSTRUCTION SEQUENCE.

DURING CONSTRUCTION, ANY ADDITIONAL CONTROL MEASURES AS DEEMED NECESSARY TO PREVENT EROSION OR CONTROL SEDIMENT BEYOND THOSE MEASURES SHOWN ON THE APPROVED PLANS SHALL BE INSTALLED OR EMPLOYED AT THE DIRECTION OF THE ENGINEER.

SLOPES STEEPER THAN 1V:6H SHALL BE STABILIZED WITH EROSION CONTROL BLANKET.

INSTALLATION OF SILT FENCE OR TREE PROTECTION FENCE SHALL NOT OCCUR PRIOR TO THE INITIAL CITY PRE-CONSTRUCTION MEETING. WHEN NATURAL FEATURES EXIST ON THE SITE, INSPECTION OF STAKING MAY BE REQUIRED PRIOR TO INSTALLATION OF THE FENCING.

SEQUENCE OF CONSTRUCTION FOR SOIL EROSION CONTROL

1. ATTEND AN PRE-CONSTRUCTION MEETING AT CITY OF NOVI OFFICE ALONG WITH THE APPROPRIATE CITY OF NOVI STAFF.
2. INSTALL SILTATION FENCE, OUTLET FILTERS, AND CONSTRUCTION ACCESS ROAD AS SHOWN ON THE SOIL EROSIONCONTROL PLAN.
3. STRIP AND STOCKPILE TOPSOIL.
4. CONSTRUCT DETENTION BASIN, UNDERGROUND DETENTION & CMP ARCH PIPE CULVERT AND INSTALL STORM SEWER PIPE, STRUCTURES AND SOIL STABILIZATION WITHIN SEDIMENT BASIN. (PERMANENT)
5. MASS GRADE AS REQUIRED.
6. INSTALL SANITARY SEWERS AND WATER MAINS.
7. COMPLETE STORM SEWER INSTALLATION; IMMEDIATELY INSTALL STONE FILTERS ON ALL CATCH BASINS AND INLETS. (TEMPORARY)
8. INSTALL ALL PUBLIC UTILITIES COMPLETE (GAS, ELECTRIC, TELEPHONE, AND CABLE TV).
9. INSTALL ALL PAVEMENT.
10. INSTALL SILTATION FENCE ALONG ROADSIDES WHERE YARDS SLOPE TOWARD ROADS. (TEMPORARY)
11. REPAIR AND/OR REPLACE ALL LOW POINT CATCH BASIN FILTERS AS NEEDED.(TEMPORARY)
12. FINISH GRADE, REDISTRIBUTE TOP SOIL, AND ESTABLISH VEGETATION ON ALL DISTURBED GROUND AREAS. COMPLETE LANDSCAPING. PRIOR TO INDIVIDUAL LOT DEVELOPMENT, ALL AREAS BETWEEN SIDEWALKS AND ROADS NEED TO BE PERMANENTLY STABILIZED.
13. CLEAN PAVEMENT AND STORM SEWERS OF ALL SEDIMENT.
14. REMOVE TEMPORARY SOIL EROSION CONTROL MEASURES AFTER PERMANENT VEGETATION HAS BEEN ESTABLISHED.
15. IT IS THE RESPONSIBILITY OF THE DEVELOPER TO INSURE THAT ALL SOIL EROSION CONTROL MEASURES ARE INSTALLED AND MAINTAINED.
16. CITY OF NOVI OR ITS AGENT SHALL INSPECT ALL SOIL EROSION CONTROL MEASURES. UPON THEIR DIRECTION, ADDITIONAL MEASURES SHALL BE CONSTRUCTED OR MAINTENANCE WORK SHALL BE PERFORMED TO ASSURE PROPER EROSION AND SEDIMENTATION CONTROL. REMOVAL OF CONTROL MEASURES MAY ONLY TAKE PLACE ONE ENTIRE SITE IS FULLY STABILIZED.
17. DUST MUST BE CONTROLLED AT ALL TIMES.
18. ALL MUD TRACKED ON PUBLIC ROADS AND INTERIOR ROADS SHALL BE REMOVED DAILY.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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LAND DEVELOPMENT SERVICES

SECTION 3 | TOWN 1 NORTH, RANGE 8 EAST | CITY OF NOVI | OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

SITE EROSION CONTROL PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 12
SHEET 12 OF 38

STATE OF MICHIGAN
WES LEE UMLOR
ENGINEER
#2101045757
LICENSED PROFESSIONAL ENGINEER

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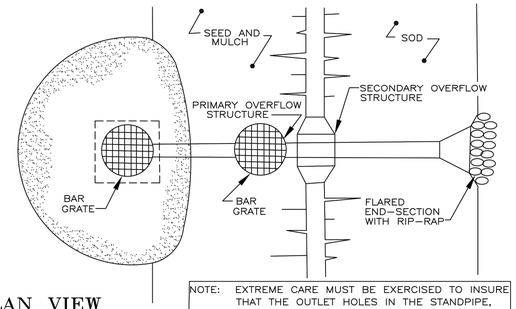
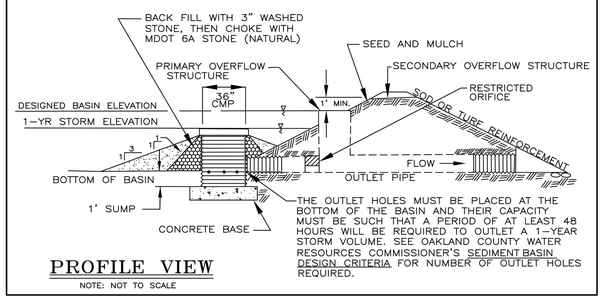
TEMPORARY DETENTION BASIN OUTLET STONE FILTER (SO-2)



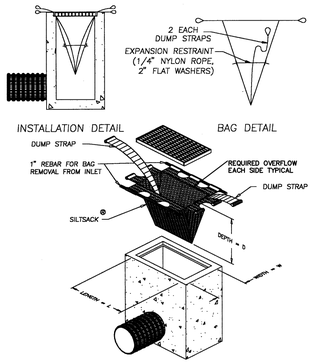
PLAN VIEW

NOTE: EXTREME CARE MUST BE EXERCISED TO INSURE THAT THE OUTLET HOLES IN THE STANDPIPE, DO NOT BECOME CLOGGED WITH SEDIMENT.



PROFILE VIEW

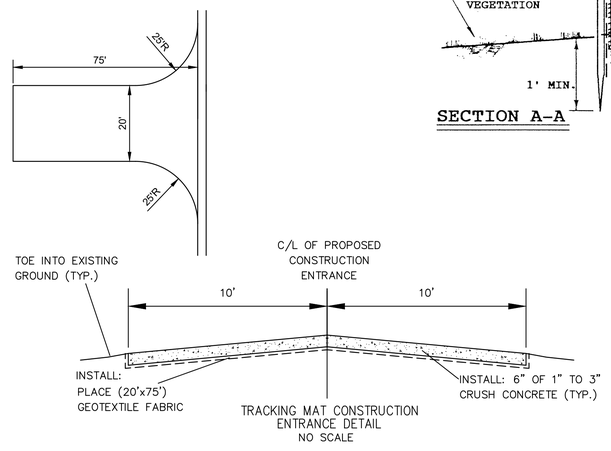
NOTE: NOT TO SCALE



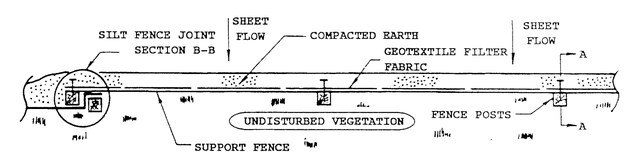
CATCH BASIN SILT SACK #36

HI-FLOW SILTSACK
(For areas of moderate to heavy precipitation and run-off)

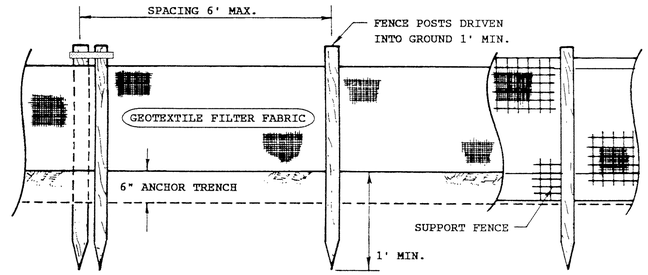
PROPERTIES	TEST METHOD	UNITS
GRAB TENSILE STRENGTH	ASTM D-4632	265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632	20%
PUNCTURE	ASTM D-4833	135 LBS
MULLEN BURST	ASTM D-3786	420 PSI
TRAPEZOID TEAR	ASTM D-4533	45 LBS
UV RESISTANCE	ASTM D-4355	50%
APPARENT OPENING SIZE	ASTM D-4751	20 US SIEVE
FLOW RATE	ASTM D-4491	200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491	1.5 SEC -1



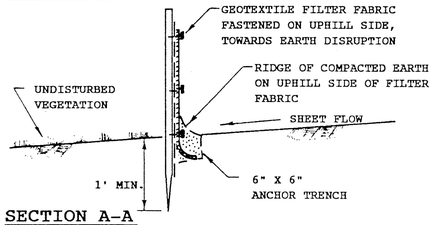
TRACKING MAT CONSTRUCTION ENTRANCE DETAIL
NO SCALE



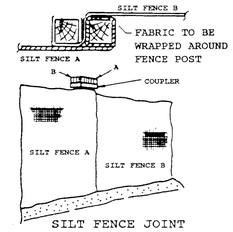
PLAN VIEW



FRONT VIEW



SECTION A-A



SECTION B-B

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SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

EROSION CONTROL DETAILS

DATE: 11-27-2019

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PER CITY 01-18-2021

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CK BY: SDT/MY
P.M. SA
SCALE 0 NO SCALE
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SHEET 13 OF 38

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
#2101034571
LICENSED PROFESSIONAL ENGINEER

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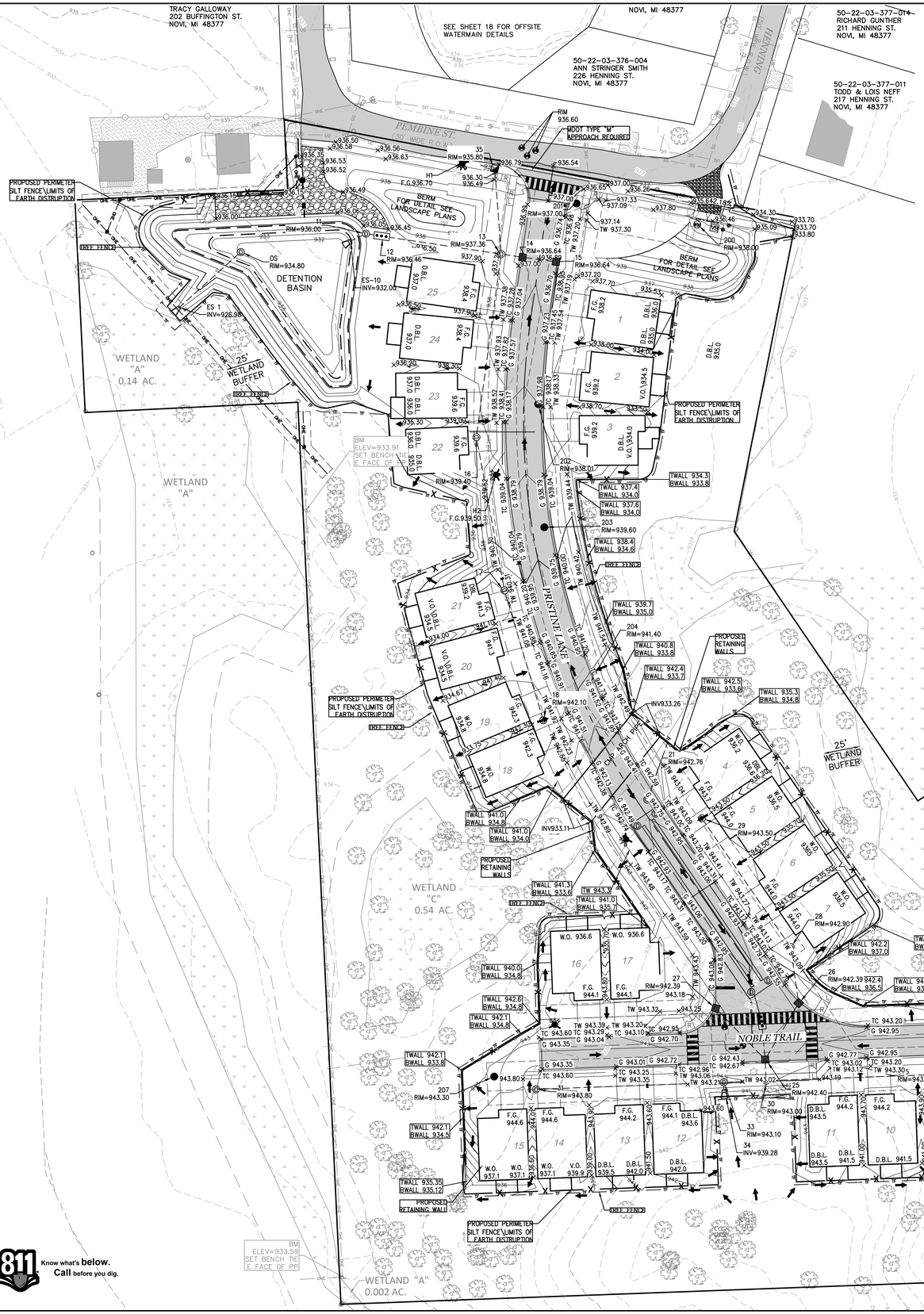


LEGEND

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
656.5	EX. SPOT ELEVATION	OHC OHC	EX. OVERHEAD CABLE
652	EX. CONTOUR	OHF	EX. OVERHEAD FIBER
	EX. ℄ DITCH	OHE OHE	EX. OVERHEAD ELECTRIC
	EX. GRAVEL	UC UC	EX. UNDERGROUND CABLE
W	EX. WATER MAIN	C	EX. COMMUNICATION RISER
W	EX. WATER VALVE	CH	EX. COMMUNICATION HANDHOLE
W	EX. HYDRANT		EX. UTILITY POLE
W	EX. WATER MANHOLE		EX. GUY ANCHOR
W	EX. WATER METER		EX. LIGHT POLE
ST ST	EX. STORM SEWER		EX. GROUND LIGHT
S	EX. STORM INLET/CATCH BASIN		EX. SINGLE POLE SIGN
S	EX. ROUND STORM CATCH BASIN	MB	EX. MAILBOX
S	EX. STORM MANHOLE	U	EX. UNKNOWN MANHOLE
	EX. STORM END SECTION		EX. SECTION LINE
SS SS	EX. SANITARY SEWER		EX. PARCELS
S	EX. SANITARY MANHOLE		EX. EASEMENT
	EX. CLEAN OUT		EX. CENTERLINE
	EX. SANITARY VENT		EX. WETLAND LIMITS
UG UG	EX. UNDERGROUND GAS		EX. CURB/PAVEMENT
G	EX. GAS VALVE		EX. FENCE
G	EX. GAS METER		SECTION CORNER
UT UT	EX. UNDERGROUND TELEPHONE		POST
T	EX. TELEPHONE MANHOLE		BOLLARD
T	EX. TELEPHONE RISER	(R)	RECORDED BEARING
TH	EX. TELEPHONE HANDHOLE	(M)	MEASURED BEARING
UE UE	EX. UNDERGROUND ELECTRIC		EX. TREE
E	EX. ELECTRIC MANHOLE		
E	EX. ELECTRIC RISER		EX. MEDIA MARKER
EH	EX. ELECTRIC HANDHOLE		EX. COMM. MARKER
ET	EX. ELECTRIC TRANSFORMER		EX. TELE. MARKER
	EX. GENERATOR		EX. FIBER MARKER
	EX. WATER MARKER		
	EX. GAS MARKER		

PR. UTILITY LEGEND

SYMBOL	DESCRIPTION
	PR. STORM SEWER
936	PR. CONTOURS
X	PR. LIMITS DISTURBANCE
	PR. WATER VALVE
	PR. HYDRANT
	PR. FLOW DIRECTION
R*	A.D.A RAMP
L*	LANDING
TC	TOP OF CURB
GU	GUTTER

NORTH

40' 0 20' 40' 80' 160'

(IN FEET)
1 inch = 40' ft.

SIDEWALK NOTE:
SIDEWALK WITHIN RIGHT-OF-WAY OF PEMBINE, HENNING, BUFFINGTON ST SHALL MATCH EXISTING GRADE AT BOTH ENDS OF PROJECT AREA.

GRADING NOTES:

1. PRISTINE LANE GRADING SHALL MATCH ELEVATIONS AT PEMBINE ST.
2. WETLAND BUFFERS IMPACTED BY CONSTRUCTION SHALL BE RESTORED WITH THE WETLAND EDGE SEED MIX SPECIFIED ON LANDSCAPE SHEET L-2 OR APPROPRIATE ALTERNATE.
3. TEMPORARY STOCKPILING OF MATERIAL IS NOT ANTICIPATED, IF NEEDED, STOCKPILES WILL BE PLACED AT PERMANENT BERM LOCATIONS AND TEMPORARY SILT FENCE SHALL BE INSTALLED SURROUNDING ANY STOCKPILE AREA.
4. ALL SLOPES STEEPER THAN 1V:6H SHALL BE STABILIZED WITH EROSION BLANKET.
5. ALL CULVERT END SECTIONS MUST BE PROVIDED WITH GROUTED RIPRAP IN ACCORDANCE WITH CITY SPECIFICATIONS.
6. INSTALLATION OF SILT FENCING AND TREE FENCING SHALL NOT OCCUR PRIOR TO THE INITIAL CITY PRE-CONSTRUCTION MEETING.
7. RETAINING WALLS SHALL BE PER DETAILS PROVIDED BY WALL ENGINEER.
8. IT IS THE DEVELOPER'S RESPONSIBILITY TO GRADE AND STABILIZE DISTURBANCES DUE TO THE INSTALLATION OF PUBLIC UTILITIES
9. ALL WORK WITHIN THE RIGHT-OF-WAY OF BUFFINGTON/PEMBINE/HENNING STREETS SHALL MEET OR EXCEED CITY OF NOVI SPECIFICATIONS.
10. WHERE THE WATERMAIN IS LOCATED IN THE CENTER OF THE ROAD (ALONG PEMBINE STREET) OR REQUIRES WORK IN BOTH SIDES OF THE ROAD, THE CONTRACTOR SHALL REPLACE THE PAVEMENT FROM EDGE TO EDGE. ALONG BUFFINGTON AND HENNING STREETS WHERE THE TRENCH ONLY AFFECTS ONE SIDE OF THE ROAD CONTRACTOR SHALL REPLACE FROM CENTERLINE TO EDGE OF EXISTING PAVEMENT.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

SITE GRADING PLAN

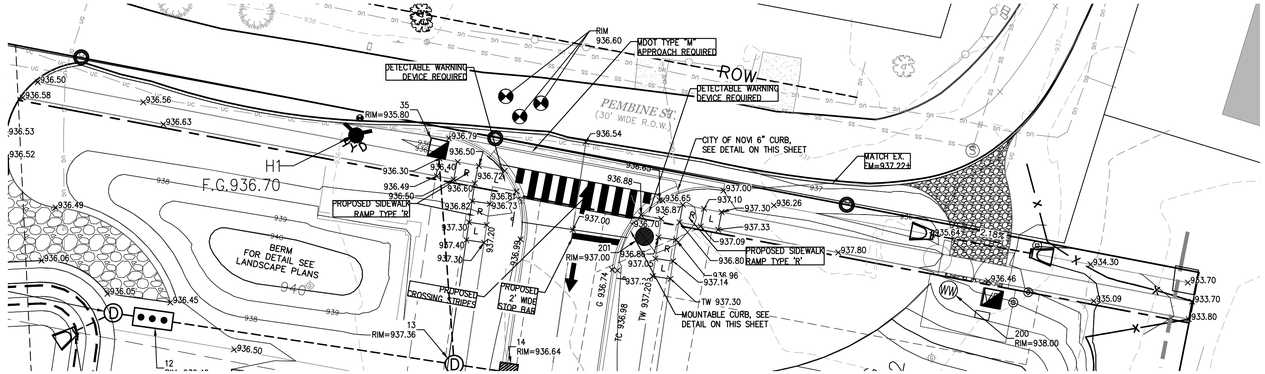
DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 14
SHEET 14 OF 38

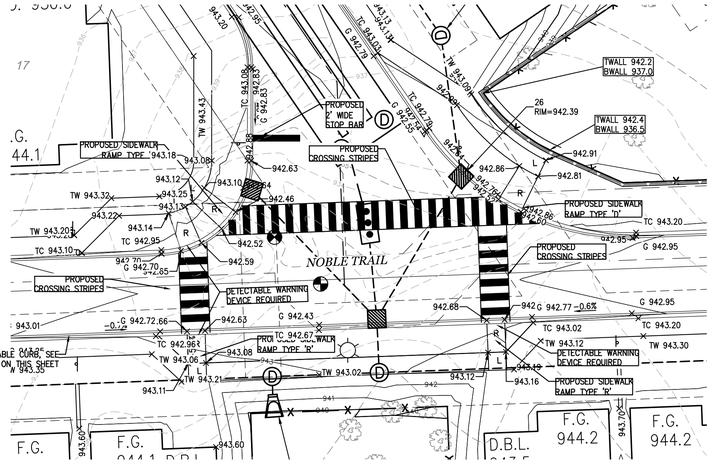
STATE OF MICHIGAN
WES LEE O UMLOR
ENGINEER
6201054572
LICENSED PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-SITE GRADING PLAN.DWG



INTERSECTION –PRISTINE LN. & PEMBINE ST.

SCALE: 1"=20'

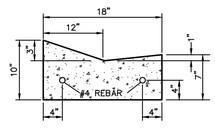


INTERSECTION – PRISTINE LN. & NOBLE TR.

SCALE: 1"=20'

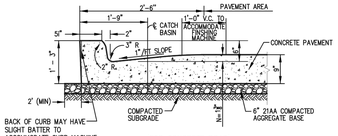
PAVING

6"X30" INTEGRAL CURB & GUTTER	58 LF
3"X18" MOUNTABLE CURB & GUTTER	1823 LF
5E1, 1.5" 165#/SY WEARING COURSE	3056 SY
HMA 3C, 2.5" 275#/SY LEVELING COURSE	3056 SY
8" 21AA COMPACTED AGGREGATE BASE	3492 SY
HMA 5E1, 2" 165#/SY WEARING COURSE	105 SY
HMA 4C, 2.5" 275#/SY LEVELING COURSE	105 SY
HMA 3C, 2.5" 275#/SY LEVELING COURSE	105 SY
8" 21AA COMPACTED AGGREGATE BASE	111 SY



MOUNTABLE CONCRETE CURB & GUTTER DETAIL

NO SCALE



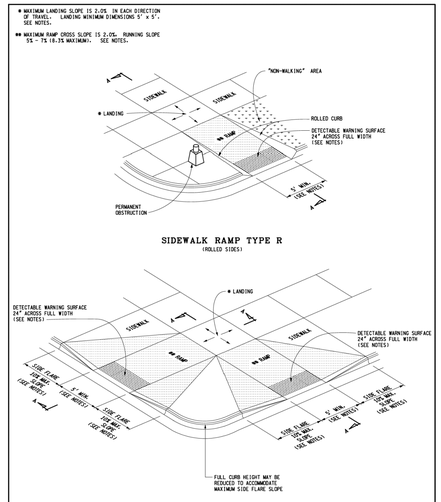
(FOR CONCRETE ROAD)

6" INTEGRAL CURB & GUTTER

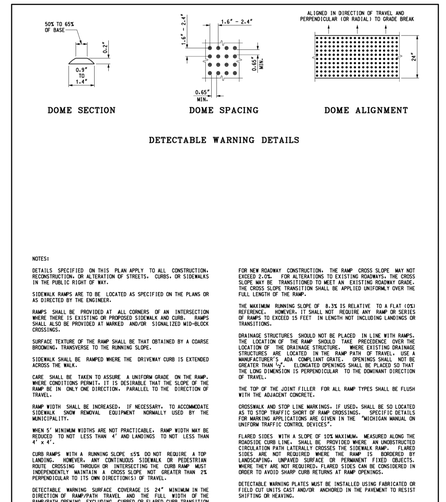
M.D.O.T. TYPE 'C'

DETAIL - 3D

NOT TO SCALE



MDOT	DEPARTMENT DIRECTOR: Kirk T. Steudle	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR	
PREPARED BY: DESIGN DIVISION	APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES	SIDEWALK RAMP AND DETECTABLE WARNING DETAILS	
DRAWN BY: R.L.T.	APPROVED BY: DIRECTOR, BUREAU OF DEVELOPMENT		
CHECKED BY: R.T.F.		T.R.N.A. APPROVAL: 12-11-2017 PLAN DATE	R-28-J SHEET 1 OF 7



NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION: RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4'x4'.

CURB RAMPS WITH A RUNNING SLOPE ≤5% DO NOT REQUIRE A TOP LANDING. HOWEVER, ANY CONTINUOUS SIDEWALK OR PEDESTRIAN ROUTE CROSSING THROUGH OR INTERSECTING THE CURB RAMP MUST INDEPENDENTLY MAINTAIN A CROSS SLOPE NOT GREATER THAN 2% PERPENDICULAR TO ITS OWN DIRECTION(S) OF TRAVEL.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 3" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE SHALL BE DESIGNED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH NOT INCLUDING LANDINGS OR TRANSITIONS.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURED PEDESTRIAN GRATE. OPENINGS SHALL BE NO MORE THAN ½" WIDE. ELONGATED OPENINGS SHALL BE ORIENTED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS, WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR WEAVING.

MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR			
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS			
T.R.N.A. APPROVAL	12-11-2017 PLAN DATE	R-28-J	SHEET 7 OF 7

NORTH

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ENTRANCE AND INTERSECTION GRADING AND DETAILS

DATE: 11-27-2019

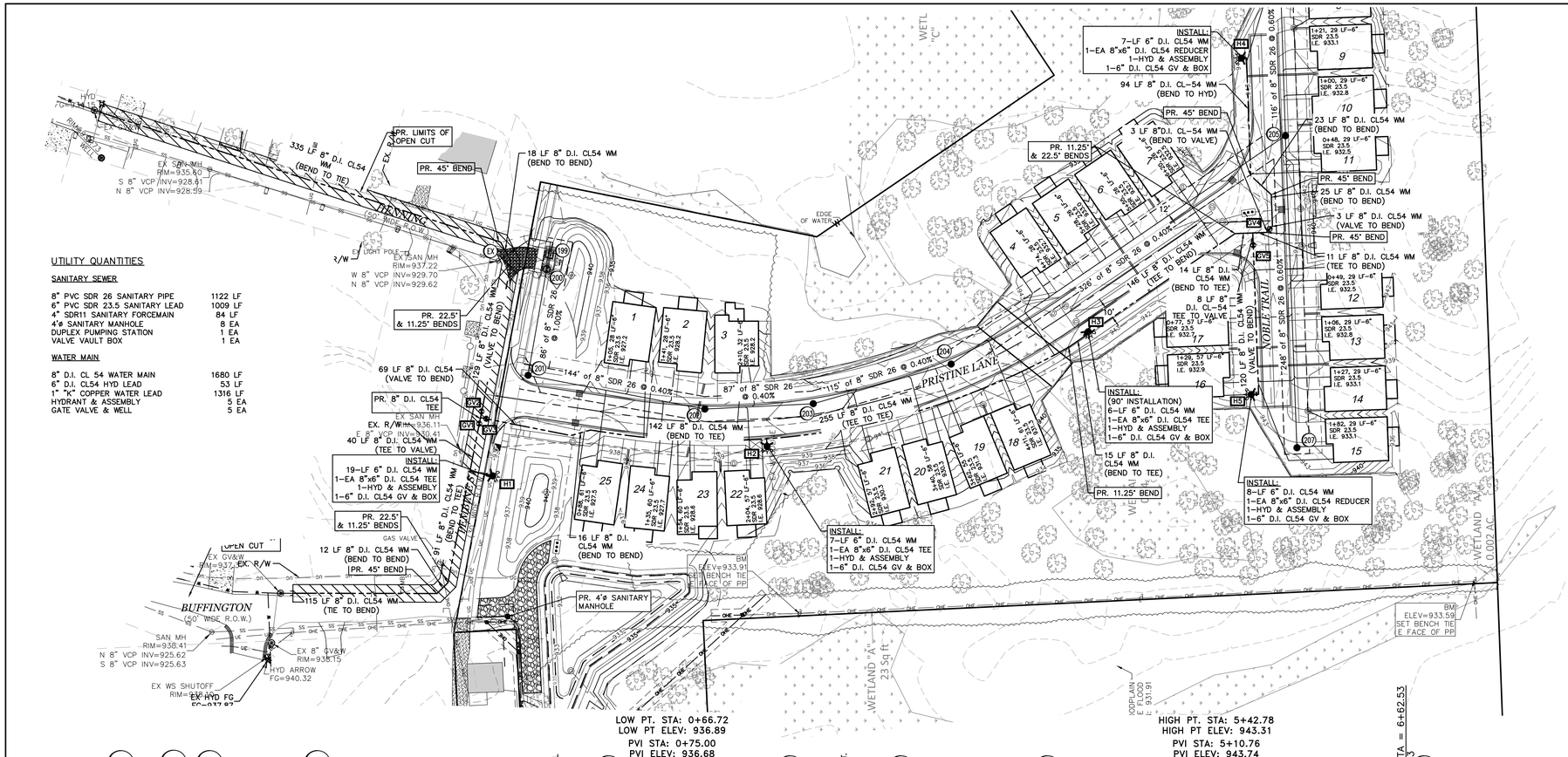
REVISIONS:
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 10 20
1" = 20 FEET
JOB NO. 180905
SHEET NO. 15

SHEET 15 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#220105457
LICENSED PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-SITE GRADING PLAN.DWG



UTILITY QUANTITIES

SANITARY SEWER

8" PVC SDR 26 SANITARY PIPE	1122 LF
6" PVC SDR 23.5 SANITARY LEAD	1009 LF
4" SDR11 SANITARY FORCEMAIN	84 LF
4'ø SANITARY MANHOLE	8 EA
DUPLEX PUMPING STATION	1 EA
VALVE VAULT BOX	1 EA

WATER MAIN

8" D.I. CL 54 WATER MAIN	1680 LF
6" D.I. CL54 HYD LEAD	53 LF
1" "K" COPPER WATER LEAD	1316 LF
HYDRANT & ASSEMBLY	5 EA
GATE VALVE & WELL	5 EA

NOTE:
COMPACTED SAND BACKFILL (MDOT SAND CLASS 2) SHALL BE PROVIDED FOR ALL UTILITIES WITHIN THE INFLUENCE OF PAVED AREAS.

SEE SHEET 11 FOR OVERALL EASEMENT PLAN

SEE SHEET 17 FOR SANITARY & WATER PROFILES FOR NOBLE TRAIL

SEE SHEET 18 FOR WATER PROFILES FOR BUFFINGTON, PEMBINE ST & HENNING

SEE SHEET 19 FOR OVERALL STORM SEWER PLAN

SEE SHEETS 20 & 21 FOR STORM SEWER PROFILES

SANITARY BASIS OF DESIGN

Connection to existing 8" PVC sanitary sewer along Henning St.

NUMBER OF UNITS

= 25 UNITS TOTAL

POPULATION

= 2.38 PEOPLE/UNIT X 25
= 59.5 PEOPLE

AVERAGE FLOW

= 59.5 PEOPLE X 100 GAL/CAP/DAY
= 5950 GAL/DAY
= 0.00893 CFS

PEAK FACTOR

= 18+(SQRT(P/1000))/(4+SQRT(P/1000))
= 4

PEAK FLOW

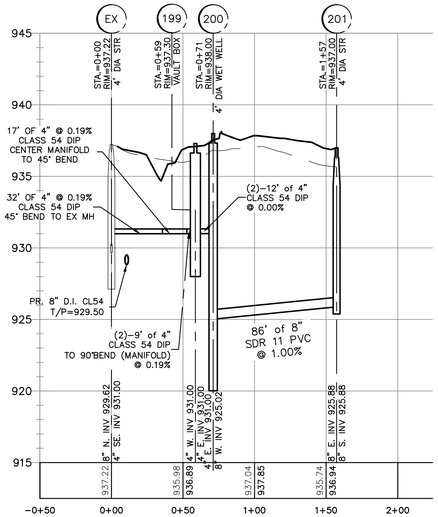
= PEAK FACTOR x AVERAGE FLOW
= 0.036 cfs

(CAPACITY OF A 8" PIPE @ 0.40% IS 0.76 CFS)
THEREFORE PIPE CAPACITY IS SUFFICIENT

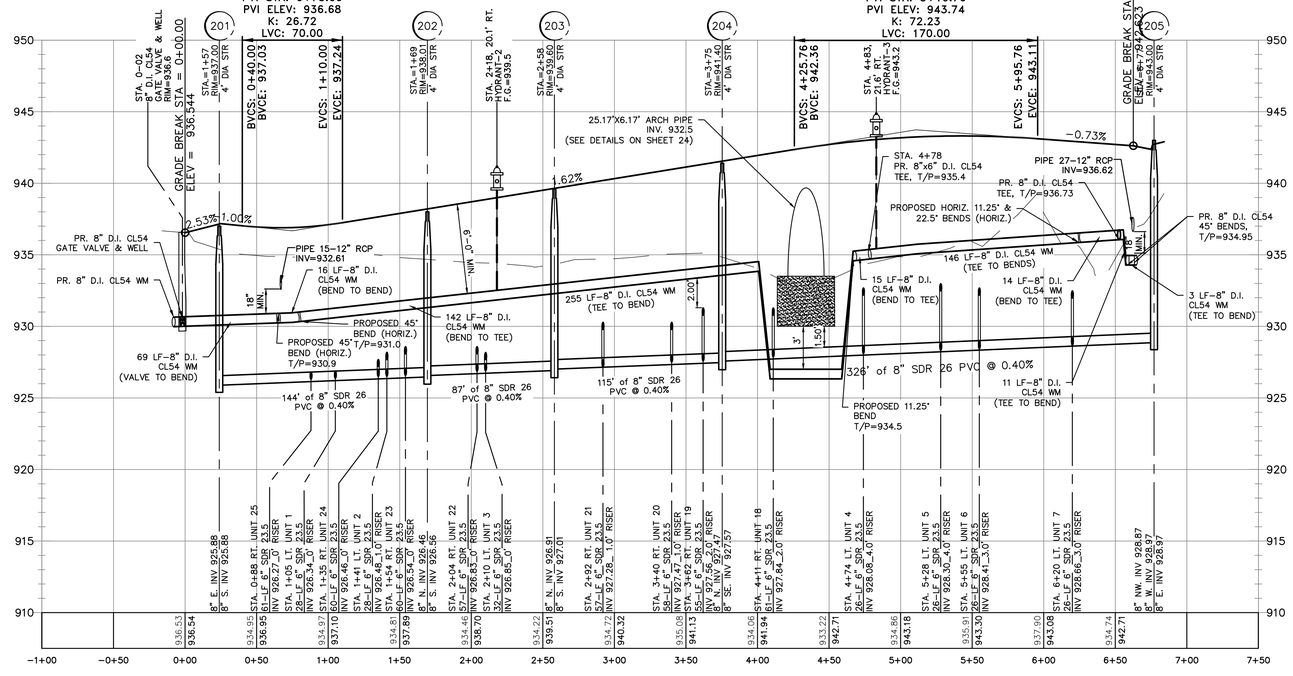
SANITARY NOTES:
1. ALL PUBLIC SANITARY SEWERS SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALL SANITARY SEWER MAINS SHALL BE MINIMUM 8" PVC SDR 26 @ 0.40% MIN. SLOPE
3. ALL SANITARY SEWER LEADS SHALL BE MINIMUM 6" PVC SDR 23.5 @ 2.0% MIN. SLOPE..
4. ALL SANITARY SEWER LEADS SHALL BE A MINIMUM DEPTH OF 5' UNDER THE INFLUENCE OF PAVEMENT.
5. ALL SANITARY SEWER LEADS SHALL BE MINIMUM DEPTH OF 10' BELOW THE FINISHED GRADE OF EACH UNIT TO PROVIDE FOR GRAVITY DISCHARGE FROM BASEMENTS.
6. ALL MATERIALS SHALL CONFORM TO THE CITY OF NOVI STANDARDS AND SPECIFICATIONS.
7. A 27' WIDE ACCESS EASMENT SHALL BE PROVIDED ALONG ALL PR. ROADWAYS.
8. PROVIDE A TESTING BULKHEAD IMMEDIATELY UPSTREAM OF THE SANITARY CONNECTION POINT.

WATER MAIN NOTES:
1. ALL PUBLIC WATER MAINS AND\OR SERVICES SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALLWATER MAINS SHALL BE 8" DUCTILE IRON CLASS 54.
3. ALL WATER SERVICES SHALL BE 1" 'K' COPPER OR HDPE DR9 WITH TRACE WIRE. CURB STOPS TO BE PROVIDED 1' BEHIND PR. WALKS TYPICAL.
4. ALL WATER MAINS SHALL BE INSTALLED WITH 5'-6" MINIMUM COVER.
5. 18" MINIMUM SEPARATION SHALL BE PROVIDED BETWEEN WATER MAINS AND\OR SERVICE LEADS AND ALL OTHER UTILITIES.
6. ALL MATERIALS SHALL CONFORM TO THE CITY OF NOVI STANDARDS AND SPECIFICATIONS.
7. A 27' WIDE ACCESS EASMENT SHALL BE PROVIDED ALONG ALL PR. ROADWAYS.
8. ALL HYDRANTS SHALL BE PLACED A MINIMUM OF 7 FEET BEHIND BACK OF CURB.
9. ALL HYDRANTSMUST BE INSTALLED AND OPERATIONAL PRIOR TO BEGINNING BUILDING CONSTRUCTION.

NOTE:
ALL PROPOSED 4" SCH 40 PVC STORM LEADS SHALL BE SLOPED A MINIMUM OF 1%



EX-201
1"=50' HORIZ.
1"=5' VERT.



PRISTINE LANE
1"=50' HORIZ.
1"=5' VERT.

PR. UTILITY LEGEND

SYMBOL	DESCRIPTION
	PR. STORM SEWER
	PR. SANITARY SEWER
	PR. WATER MAIN
652	PR. CONTOURS
X	PR. LIMITS DISTURBANCE
	PR. WATER VALVE
	PR. HYDRANT
	PR. FLOW DIRECTION
200	PR. SANITARY STRUCTURE NUMBER
100	PR. STORM STRUCTURE NUMBER
GV1	PR. WATER VALVE/HYDRANT NUMBER

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201045579
LICENSED PROFESSIONAL ENGINEER

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

PRISTINE LANE – ROAD, SANITARY, & WATERMAIN PLAN & PROFILE

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 10-12-2020
PER CITY 01-18-2021
PER CITY 10-06-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 25 50
1" = 50 FEET
JOB NO. 180905
SHEET NO. 16
SHEET 16 OF 38

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-ROAD-SANITARY-WATERMAIN PLAN & PROFILE.DWG

UTILITY QUANTITIES

SANITARY SEWER

8" PVC SDR 26 SANITARY PIPE	1122 LF
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4" SDR11 SANITARY FORCEMAIN	84 LF
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DUPLEX PUMPING STATION	1 EA
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HYDRANT & ASSEMBLY	5 EA
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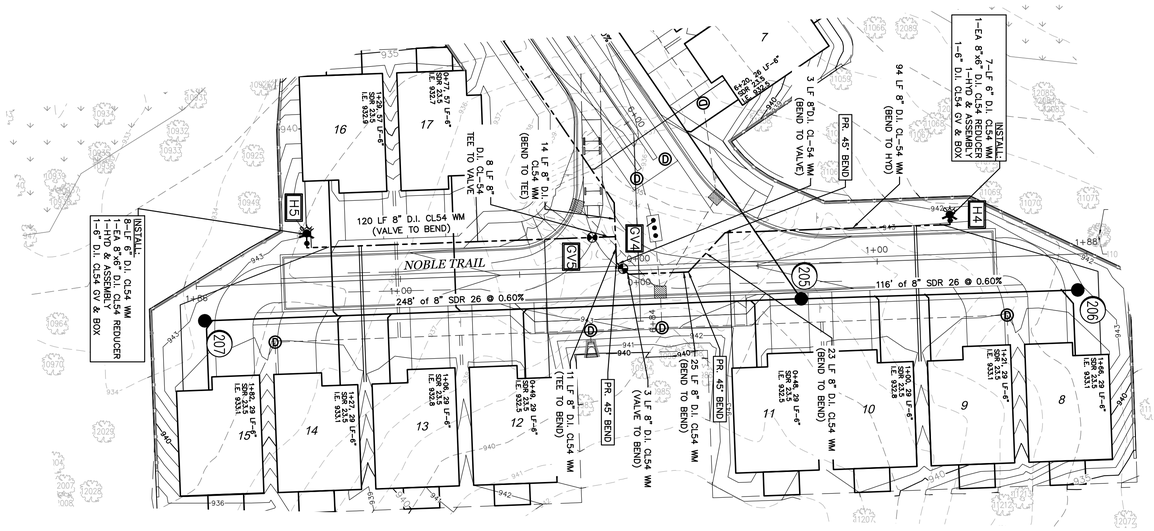

NORTH

30' 0 15' 30' 60' 120'

(IN FEET)
1 inch = 30' ft.

NOTE:
COMPACTED SAND BACKFILL (MDOT SAND CLASS 2) SHALL BE PROVIDED FOR ALL UTILITIES WITHIN THE INFLUENCE OF PAVED AREAS.

SANITARY NOTES:
1. ALL PUBLIC SANITARY SEWERS SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALL SANITARY SEWER MAINS SHALL BE MINIMUM 8" PVC SDR 26 @ 0.40% MIN. SLOPE
3. ALL SANITARY SEWER LEADS SHALL BE MINIMUM 6" PVC SDR 23.5 @ 2.0% MIN. SLOPE.
4. ALL SANITARY SEWER LEADS SHALL BE A MINIMUM DEPTH OF 5' UNDER THE INFLUENCE OF PAVEMENT.
5. ALL SANITARY SEWER LEADS SHALL BE MINIMUM DEPTH OF 10' BELOW THE FINISHED GRADE OF EACH UNIT TO PROVIDE FOR GRAVITY DISCHARGE FROM BASEMENTS.
6. ALL MATERIALS SHALL CONFORM TO THE CITY OF NOVI STANDARDS AND SPECIFICATIONS.
7. A 28' WIDE ACCESS EASMENT SHALL BE PROVIDED ALONG ALL PR. ROADWAYS.
8. PROVIDE A TESTING BULKHEAD IMMEDIATELY UPSTREAM OF THE SANITARY CONNECTION POINT.

WATER MAIN NOTES:
1. ALL PUBLIC WATER MAINS AND\OR SERVICES OUTSIDE OF EXISTING RIGHT OF WAY SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALL WATER MAINS SHALL BE 8" DUCTILE IRON CLASS 54.
3. ALL WATER SERVICES SHALL BE 1" 'K' COPPER OR HDPE DR9 WITH TRACE WIRE. CURB STOPS TO BE PROVIDED 1' BEHIND PR. WALKS TYPICAL.
4. ALL WATER MAINS SHALL BE INSTALLED WITH 5'-6" MINIMUM COVER.
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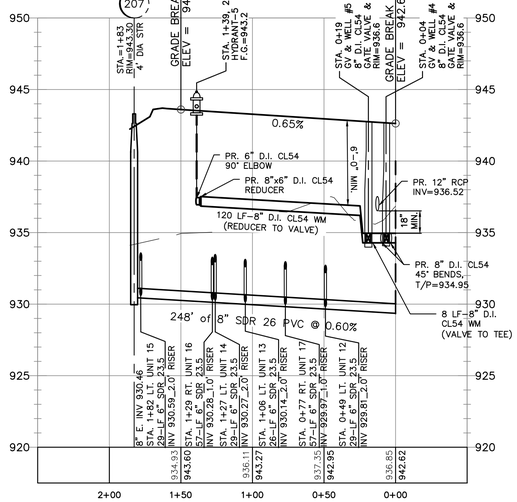
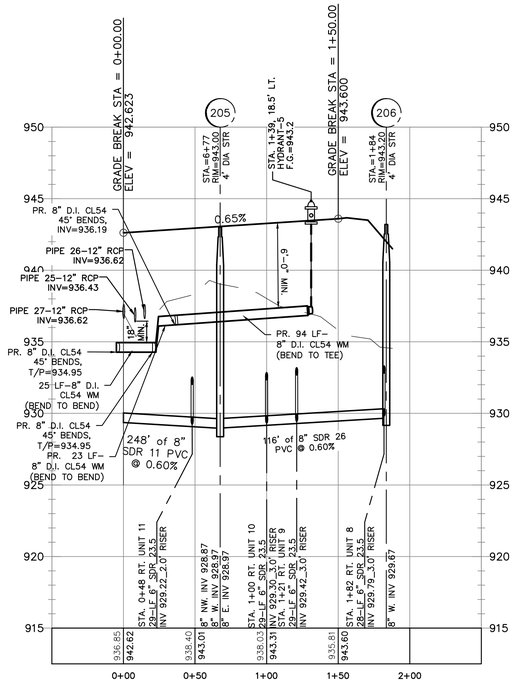


NOBLE TRAIL LEFT
1"=50' HORIZ.
1"=5' VERT.



NOBLE TRAIL RIGHT
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	PR. SANITARY SEWER
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STATE OF MICHIGAN
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ENGINEER
6201054579
REGISTERED PROFESSIONAL ENGINEER

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OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
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SHEET 17 OF 38

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NORTH

30' 0 15' 30' 60' 120'

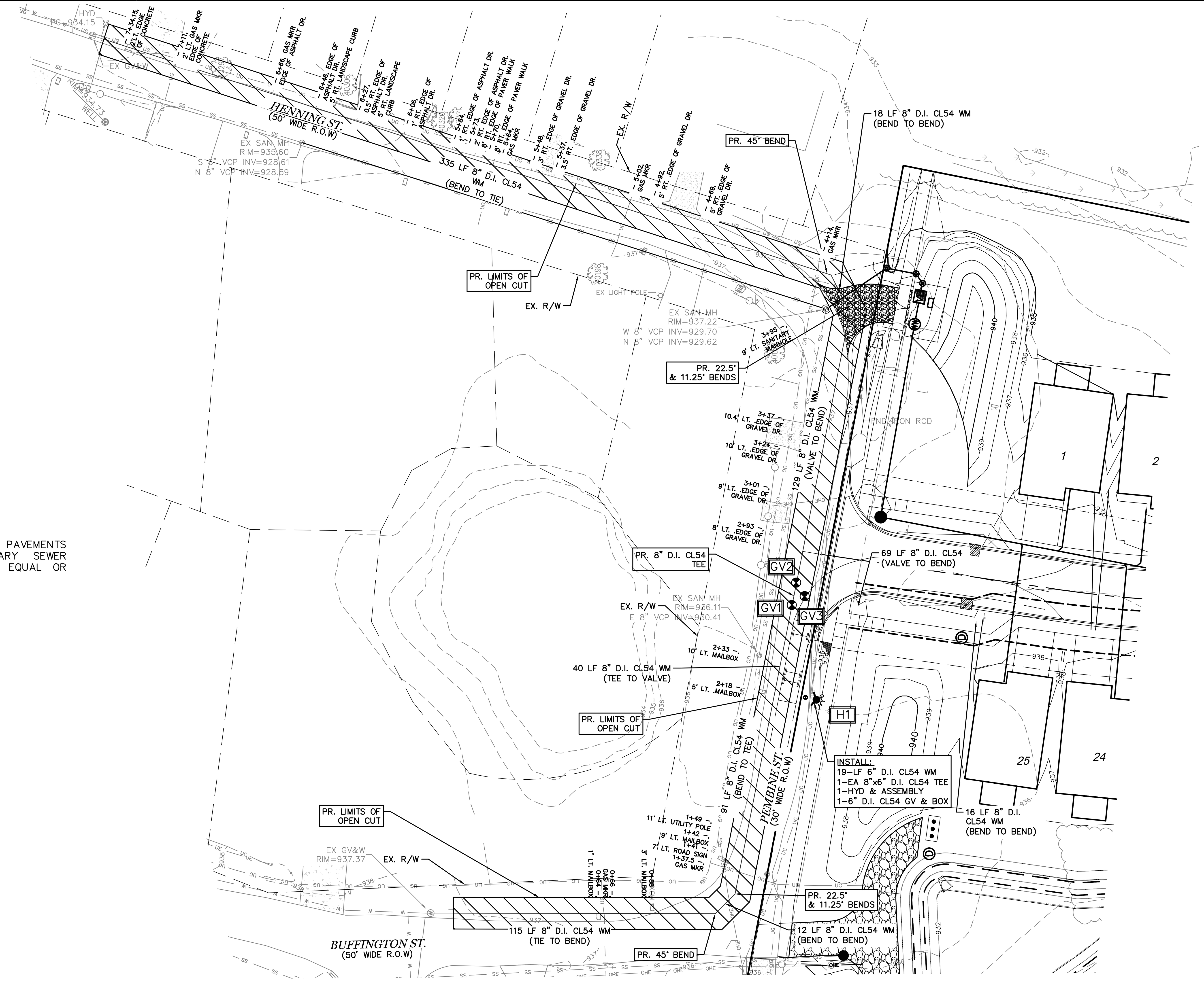
(IN FEET)
1 inch = 30' ft.

UTILITY QUANTITIES

WATER MAIN

8" D.I. CL 54 WATER MAIN	1680 LF
6" D.I. CL54 HYD LEAD	53 LF
1" "K" COPPER WATER LEAD	1316 LF
HYDRANT & ASSEMBLY	5 EA
GATE VALVE & WELL	5 EA

NOTE:
THE FULL WIDTH OF BUFFINGTON, HENNING AND PEMBINE PAVEMENTS ADJACENT TO PROPOSED WATER MAIN AND SANITARY SEWER CONSTRUCTION SHALL BE REMOVED AND RESTORED TO EQUAL OR BETTER THAN PRECONSTRUCTION CONDITIONS.



NOTE:
COMPACTED SAND BACKFILL (MDOT SAND CLASS 2) SHALL BE PROVIDED FOR ALL UTILTIES WITHIN THE INFLUENCE OF PAVED AREAS.

WATER MAIN NOTES:
1. ALL PUBLIC WATER MAINS AND\OR SERVICES SHALL BE LOCATED WITHIN A 20' WIDE DEDICATED EASEMENT.
2. ALLWATER MAINS SHALL BE 8" DUCTILE IRON CLASS 54.
3. ALL WATER SERVICES SHALL BE 1" 'K' COPPER OR HDPE DR9 WITH TRACE WIRE. CURB STOPS TO BE PROVIDED 1' BEHIND PR. WALKS TYPICAL.
4. ALL WATER MAINS SHALL BE INSTALLED WITH 5'-6" MINIMUM COVER.
5. 18" MINIMUM SEPARATION SHALL BE PROVIDED BETWEEN WATER MAINS AND\OR SERVICE LEADS AND ALL OTHER UTILITIES.
6. ALL MATERIALS SHALL CONFORM TO THE CITY OF NOVI STANDARDS AND SPECIFICATIONS.
7. A 28' WIDE ACCESS EASEMENT SHALL BE PROVIDED ALONG ALL PR. ROADWAYS.
8. ALL HYDRANTS SHALL BE PLACED A MINIMUM OF 7 FEET BEHIND BACK OF CURB.
9. ALL HYDRANTSMUST BE INSTALLED AND OPERATIONAL PRIOR TO BEGINNING BUILDING CONSTRUCTION.

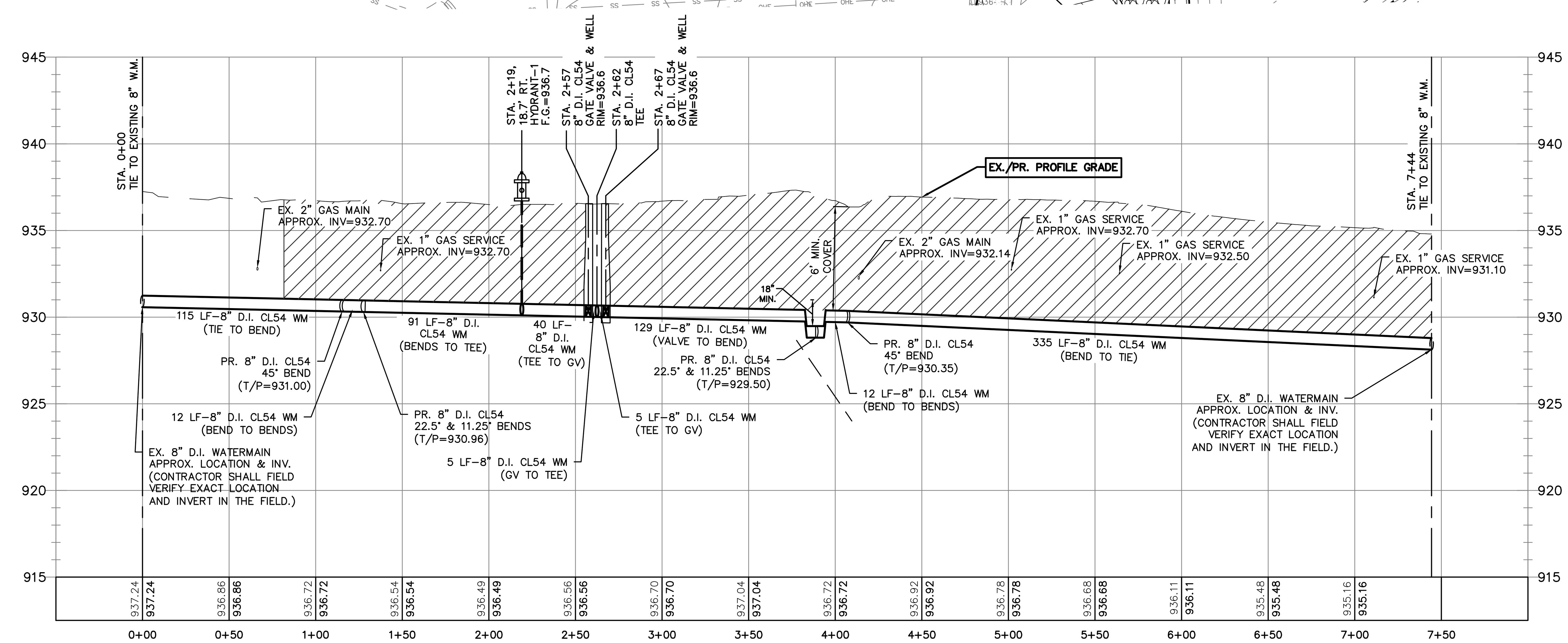
SEE SHEET 11 FOR OVERALL EASEMENT PLAN

SEE SHEET 16 FOR SANITARY & WATER PROFILES FOR PRISTINE LANE

SEE SHEET 17 FOR SANITARY & WATER PROFILES FOR NOBLE TRAIL

SEE SHEET 19 FOR OVERALL STORM SEWER PLAN

SEE SHEETS 20 & 21 FOR STORM SEWER PROFILES



PROPOSED WATER MAIN
1"=50' HORIZ.
1"=5' VERT.

PR. UTILITY LEGEND

SYMBOL	DESCRIPTION
— — — —	PR. STORM SEWER
———	PR. SANITARY SEWER
—— — ——	PR. WATER MAIN
—652—	PR. CONTOURS
—X—	PR. LIMITS DISTURBANCE
	PR. WATER VALVE
	PR. HYDRANT
→	PR. FLOW DIRECTION
200	PR. SANITARY STRUCTURE NUMBER
100	PR. STORM STRUCTURE NUMBER
GV1	PR. WATER VALVE/HYDRANT NUMBER

STATE OF MICHIGAN
WES LEE O. UMLOR ENGINEER 6201054579
LICENSED PROFESSIONAL ENGINEER

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

BUFFINGTON-PEMBINE-HENNING ST. WATERMAIN PLAN & PROFILE

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 25 50
1" = 50 FEET
JOB NO. 180905
SHEET NO.
18

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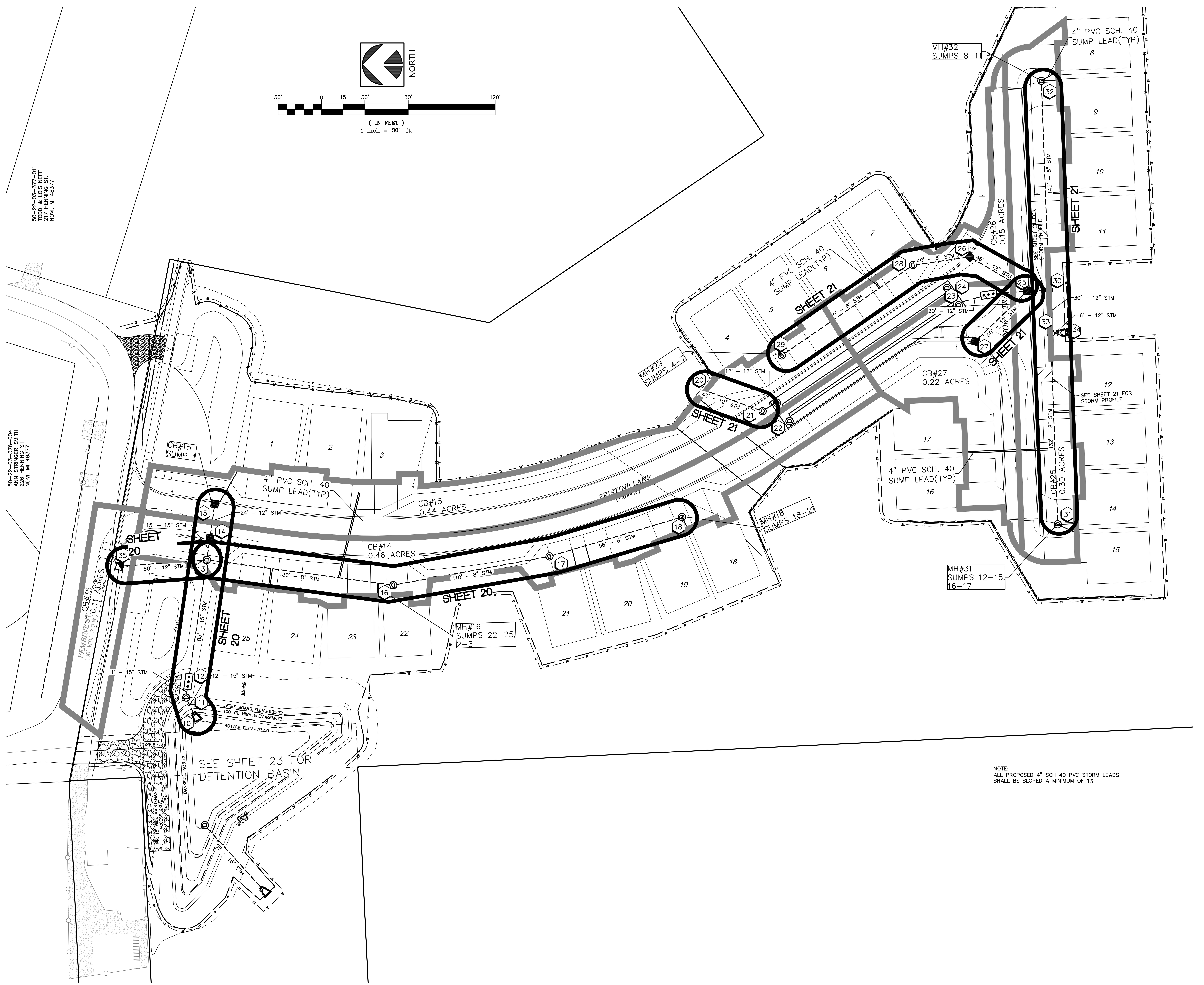

NOTE:
ALL PROPOSED 4" SCH 40 PVC STORM LEADS
SHALL BE SLOPED A MINIMUM OF 1%

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

811®

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

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7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

OVERALL STORM SEWER PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054577
LICENSED PROFESSIONAL ENGINEER

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 15 30
1" = 30 FEET
JOB NO. 180905
SHEET NO.
19
SHEET 19 OF 38

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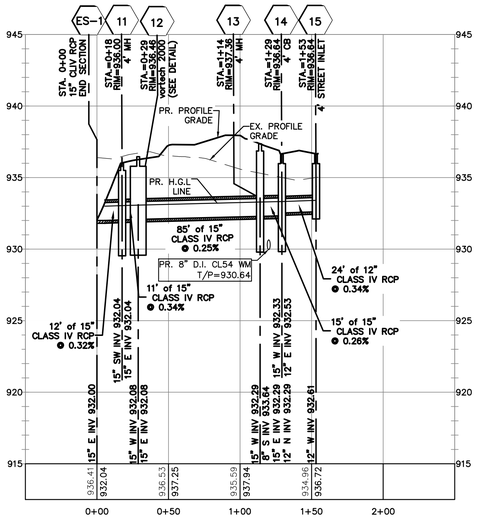
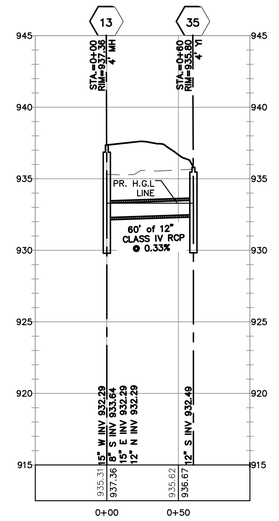


ES10–CB15
1"=50' HORIZ.
1"=5" VERT.



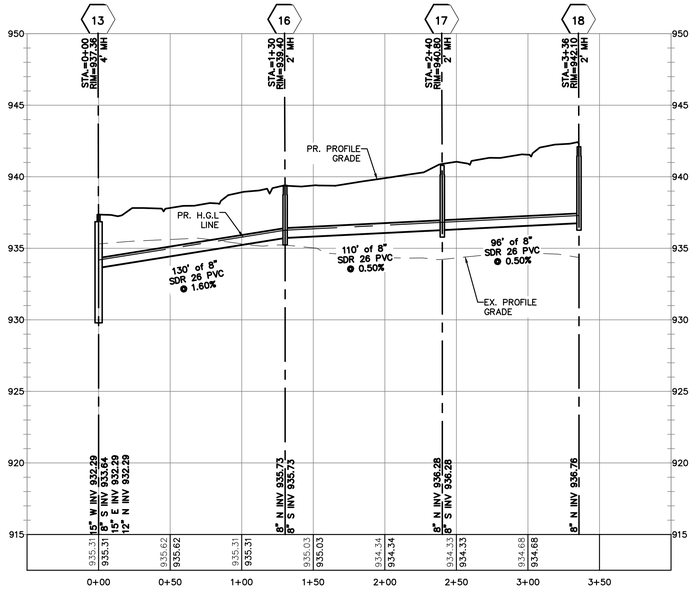
MH13 – IN35
1"=50' HORIZ.
1"=5" VERT.

NOTE:
8" SDR 26 PVC PIPE RECEIVES SUMP LEAD WATER ONLY. NO SURFACE WATER TO ENTER THIS PART OF SYSTEM.

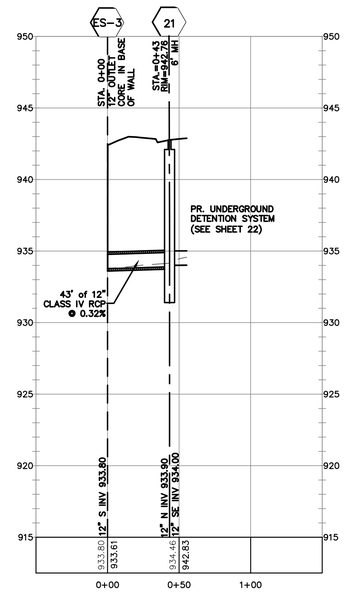
STORM QUANTITIES

STORM SEWER

15" CLIV RCP	123 LF
12" CLIV RCP	278 LF
8" SDR 26 PVC	763 LF
2'ø MANHOLE	8 EA
2'ø CATCH BASIN	1 EA
4'ø STREET INLET	1 EA
4'ø CATCH BASIN	2 EA
4'ø MANHOLE	3 EA
4'ø YARD INLET	1 EA
6'ø MANHOLE	1 EA
7'ø CATCH BASIN	1 EA
WATER QUALITY STR	2 EA
15" CLIV RCP END SECTION	1 EA
12" CLIV RCP END SECTION	3 EA



MH 13 – MH 18
1"=50' HORIZ.
1"=5" VERT.



ES3 – UGD
1"=50' HORIZ.
1"=5" VERT.

UTILITY CROSSING TABLE:

#1 – SANITARY/STORM
8" STM B/P: 937.55
8" SAN T/P: 929.29
CLEARANCE = 8.26'

#2 – SANITARY/STORM
12" STM B/P: 936.85
8" SAN T/P: 929.89
CLEARANCE = 6.96'

#3 – WTR/SANITARY
8" WM B/P: 935.79
8" SAN T/P: 930.44
CLEARANCE = 5.35'

#4 – WTR/STORM
12" STM B/P: 936.52
8" WM T/P: 934.95
CLEARANCE = 1.57'

#5 – WTR/STORM
12" STM B/P: 936.50
8" WM T/P: 934.95
CLEARANCE = 1.55'

#6 – WTR/STORM
12" STM B/P: 936.45
8" WM T/P: 934.95
CLEARANCE = 1.50'

#7 – WTR/STORM
18" STM B/P: 936.25
8" WM T/P: 934.75
CLEARANCE = 1.50'

#8 – WTR/STORM
12" STM B/P: 936.54
8" WM T/P: 934.95
CLEARANCE = 1.59'

#9 – WTR/STORM
15" STM B/P: 932.11
8" WM T/P: 930.61
CLEARANCE = 1.50'

#10 – SAN/WTR
4" SAN B/P: 931.00
8" WM T/P: 929.50
CLEARANCE = 1.5'

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SCENIC PINES

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SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

STORM SEWER PROFILES

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 25 50
1" = 50 FEET
JOB NO. 180905
SHEET NO.
20
SHEET 20 OF 38

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
6201044579
REGISTERED PROFESSIONAL ENGINEER

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8" SAN T/P: 929.29
CLEARANCE = 8.26'

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8" WM B/P: 935.79
8" SAN T/P: 930.44
CLEARANCE = 5.35'

#4 – WTR/STORM
12" STM B/P: 936.52
8" WM T/P: 934.95
CLEARANCE = 1.57'

#5 – WTR/STORM
12" STM B/P: 936.50
8" WM T/P: 934.95
CLEARANCE = 1.55'

#6 – WTR/STORM
12" STM B/P: 936.45
8" WM T/P: 934.95
CLEARANCE = 1.50'

#7 – WTR/STORM
18" STM B/P: 936.25
8" WM T/P: 934.75
CLEARANCE = 1.50'

#8 – WTR/STORM
12" STM B/P: 936.54
8" WM T/P: 934.95
CLEARANCE = 1.59'

#9 – WTR/STORM
15" STM B/P: 932.11
8" WM T/P: 930.61
CLEARANCE = 1.50'

#10 – SAN/WTR
4" SAN B/P: 931.00
8" WM T/P: 929.50
CLEARANCE = 1.5'

STORM QUANTITIES

STORM SEWER

15" CLIV RCP	123 LF
12" CLIV RCP	278 LF
8" SDR 26 PVC	763 LF
2'ø MANHOLE	8 EA
2'ø CATCH BASIN	1 EA
4'ø STREET INLET	1 EA
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WATER QUALITY STR	2 EA
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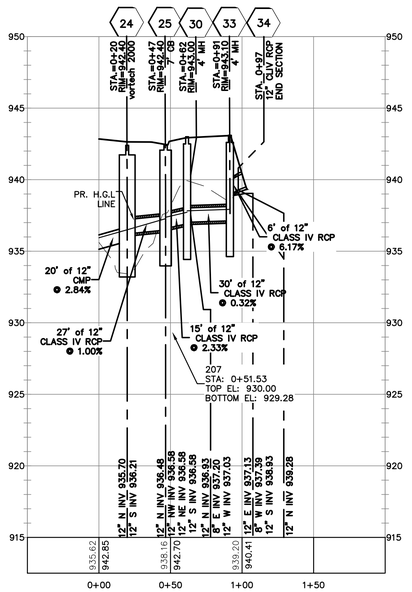
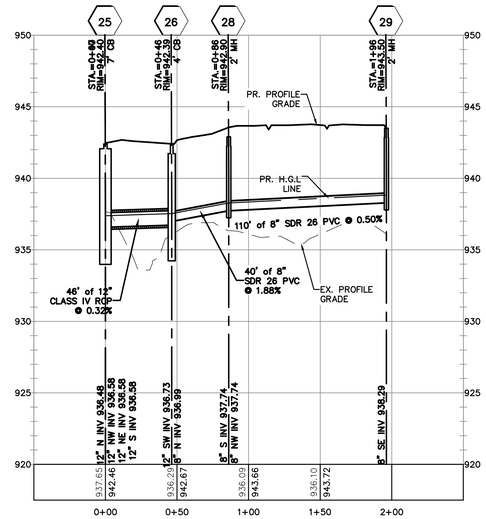
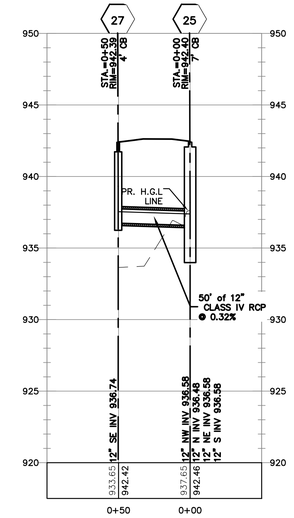


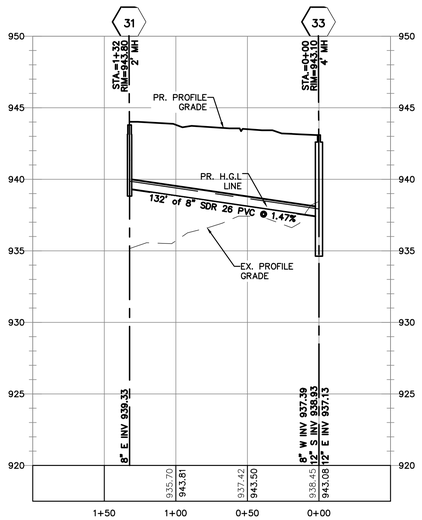
STM 24 – STM 34
1"=50' HORIZ.
1"=5" VERT.



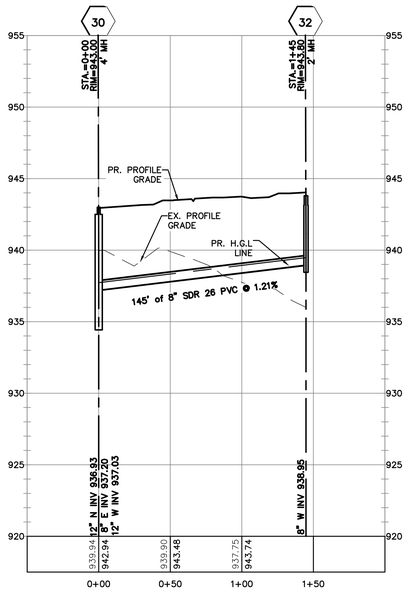
STM 25 – SM 29
1"=50' HORIZ.
1"=5" VERT.



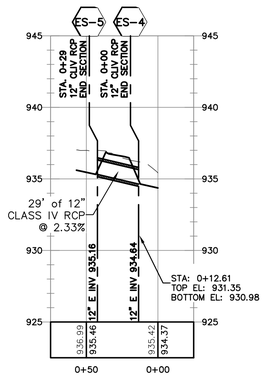
STM25 – STM 26
1"=50' HORIZ.
1"=5' VERT.



STM33 – STM 31
1"=50' HORIZ.
1"=5" VERT.



STM 33 – STM 31 (1)
1"=50' HORIZ.
1"=5" VERT.



STM 36–37
1"=50' HORIZ.
1"=5' VERT.

NOTE:
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The UMLOR Group
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CLIENT:
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7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

STORM SEWER PROFILES

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
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DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 25 50
1" = 50 FEET
JOB NO. 180905
SHEET NO. 21
SHEET 21 OF 38

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
6201045751
LICENSED PROFESSIONAL ENGINEER

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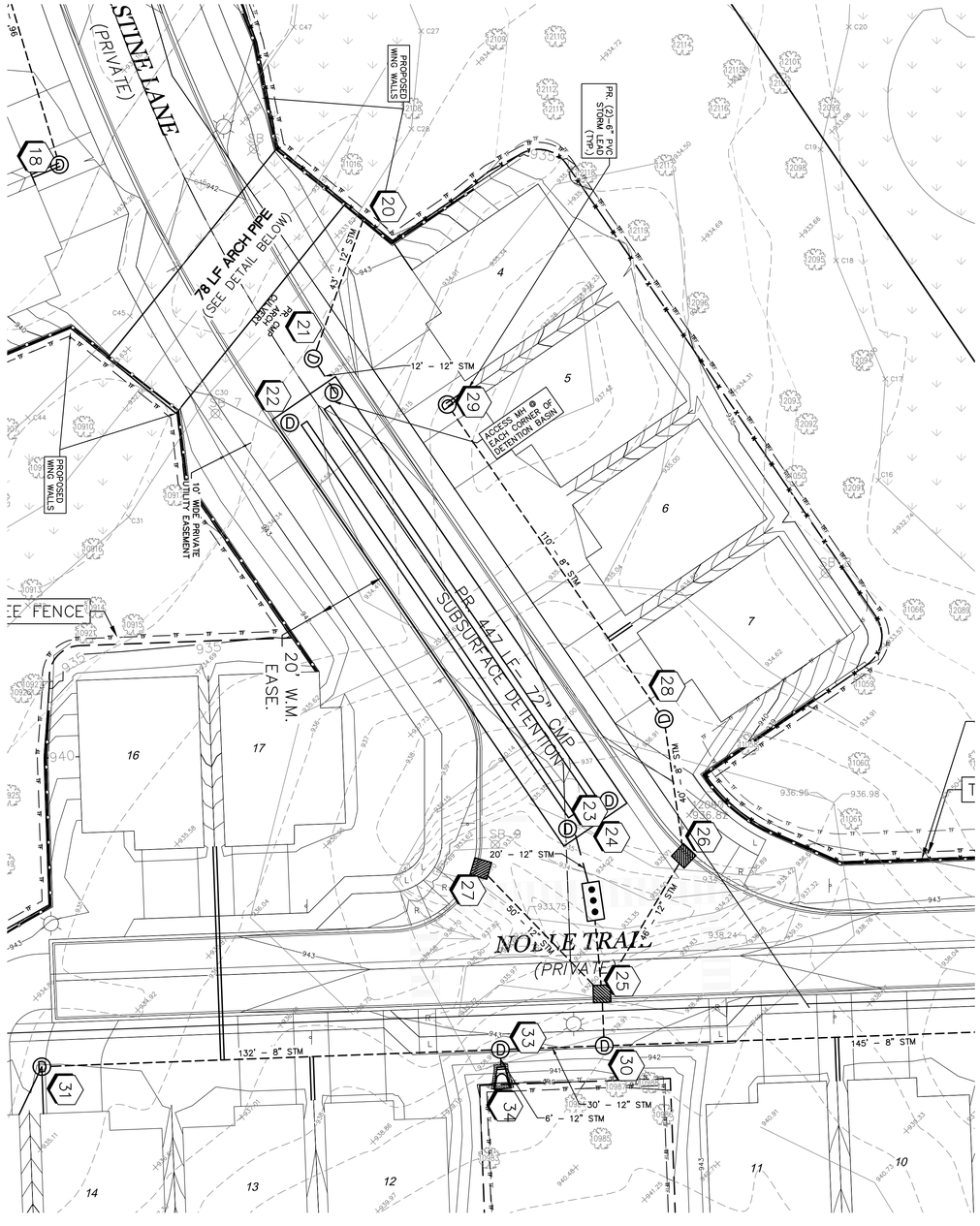
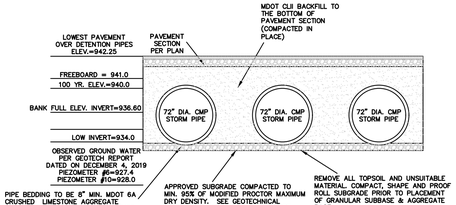
SCENIC PINES

SINGLE FAMILY RESIDENTIAL
STORM WATER MANAGEMENT PLAN
PEMBINE ROAD, CITY OF NOVI, OAKLAND COUNTY



UNDERGROUND DETENTION PLAN
SCALE: 1"=20'

NOTE:
PER CITY OF NOVI UNDERGROUND DETENTION REQUIREMENTS CONTRACTOR SHALL PROVIDE A MINIMUM 0.10% SLOPE FOR THE (3) THREE RUNS OF 72" DETENTION PIPE. SEE STANDARD STORM DETAILS FOR UNDERGROUND DETENTION PROFILE.



SUBSURFACE DETENTION DETAIL

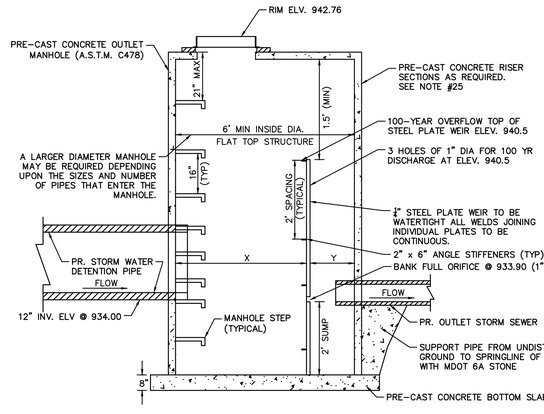
City of Novi - Scenic Pines				
AREA 2 WEIGHTED 'C' CALCULATIONS				
	Type	Area (SF)	Runoff Coefficient 'C'	C x A
Total Drainage Area 'A'	Non Improved Outlet	54,198	0.2	
Proposed Impervious Area	Roofs, Patios, Drive, Walks	25,718	0.95	24,432
Proposed Impervious Area	Streets and Walks	15,172	0.95	14,413
Proposed Pervous Area		13,308	0.35	4,658
Sum (C x A)				43,503
Weighted 'CW'=sum(C x A) /A =		**0.80**	Use	

Oakland County Drain Commission Method	
Gravity Outlet to Wetlands	
Time of Concentration T(min) =	20
Existing Coefficient C =	0.2
Proposed Coefficient C =	0.80
Area 2 A(acres) =	1.24

Frequency of Storm	Rainfall Intensity I (In/Hr)	Allowable Outflow Qa(cfs)	Maximum Outflow Qo(cfs/acre)	Storage Time Equation T(min)	Storage Volume Equation Vs(Ft3/(AxC))	Storage Volume V(FT3)
1 Year	1.60	0.25	0.25	79.10	2494	2482
5 Year	3.22	0.25	0.25	122.73	6005	5976
10 Year	3.89	0.25	0.25	137.29	7514	**7479**
25 Year	4.78	0.25	0.25	154.88	9563	9519
50 Year	5.44	0.25	0.25	167.02	11121	11069
100 Year	6.11	0.25	0.25	178.44	12694	**12634**

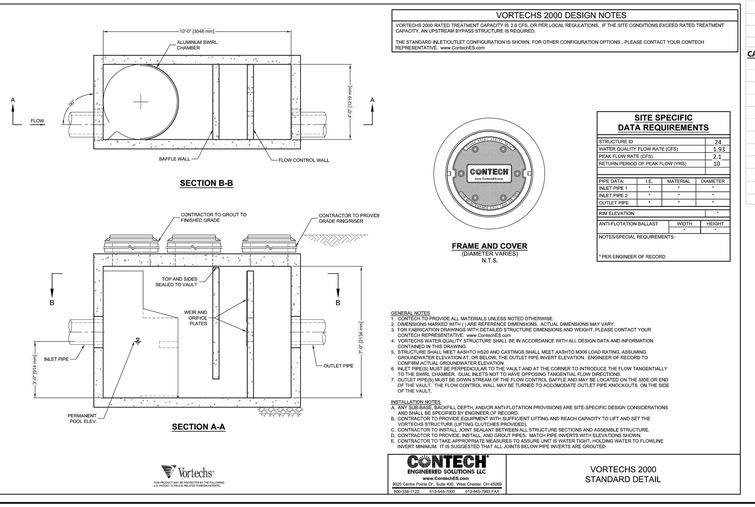
Subsurface Detention Calculation:		
72" Dia. CMP Area =	28.26	Sq-ft/Lft
Length Required =	447	Lft
3 runs =	149	Lft/run

Mechanical Pre-treatment Calculation:		
Q = C x I x A :Q=0.80x(97/(T+30))x1.24	1.93	CFS
Use Vortech Model 2000 rated at 2.8-cfs		



PROFILE VIEW – SECTION – A-A
(WEIR PLATE)

TYPICAL UNDERGROUND DETENTION AND OUTLET MANHOLE DETAILS



20' 0 10' 20' 40' 80'

(IN FEET)
1 inch = 20' ft.

STORM WATER DETENTION CALCULATION									
Area 2									
TOTAL AREA	=	1.24							
Cavg	=	0.80							
Qa	=	0.2xA	=	0.20 x 1.24 ACRES	=	0.248	cfs		
Qo	=	Qa/(AxC)	=	.248/(1.24x.80)	=	0.25	cfs/acre		
T100	=	Sqrt (10312.5 / Qo)+25			=	178.44	minutes		
Vs100	=	16500 x T100 / (T100+25) - 40 x Qo x T100			=	12693.92	cf/acre		
Vt100	=	Vs100 x A x C			=	12634.45	cft		
Z100	=	940.00			=	940.00			
Zout	=	934.00			=	934.00			
BANK FULL CALCULATIONS									
Vbf	=	5160 x A x C			=	5135.826	cft		
Zbf	=	area = 11.74 sft x 447 lf			=	936.60	ft		
OUTLET HOLE SIZING - "BANK FULL" DISCHARGE									
BANKFULL SHOULD DISCHARGE WITHIN 36 TO 48 HOURS									
Qbf	=	Vbf/144000			=	0.035665	cfs		
havg	=	2/3 (Zbf-Zout)			=	1.7342	ft		
Aout	=	Qbf / (0.62 x Sqrt(2gh))			=	0.005443			
1" DIA HOLE= 0.0054 Sqft									
Aout / .0054					=	1.008022			
Check bank full release time									
A(act)					=	0.0055	sft		
Qbf	=	(A x 0.62 x sqrt(2*32.2*h))			=	0.0360	cfs		
Tbf	=	Vbf/(Qbf x 3600)			=	39.68169	hrs		
OUTLET HOLES SIZING - "100 YR DISCHARGE"									
Q100	=	Qa			=	0.248	cfs		
havg	=	2/3 (Z100-Zout)			=	4.002	ft		
A	=	Q100/(0.62 x sqrt(64.4 x h))			=	0.024916	sf		
1" dia hole					=	0.0055	sft		
Aout	=	A/0.0055			=	4.530184		use	3
Check 100 YR release rate not to exceed allowable release rate									
A(act)					=	0.0165	sft		
Q100	=	(A x 0.62 x sqrt(2*32.2*h))			=	0.164232	cfs		
Q100+Qbf	=	(0.164+0.036)			=	0.2002	cfs	<	0.248

OVERFLOW WEIR SIZING				
Size of Overflow Manhole=			=	**6** ft
% of Manhole that can be used as a weir			=	50 %
Calculated length of weir			=	6
Drainage Area, A			=	1.24 ac
C-Factor, C			=	0.80
(From Pipe Flow Calculations)				
Longest Tc from Pipe Calcs			=	21.93 min
Sum of all flow into Basin			=	4.06 cfs
Volume of Basin	=		=	12634 ft^3
Storage elevation			=	940 ft
Freeboard Elevation			=	941 ft
Time to fill basin			=	51.87 min
I = 175 / (T+25)			=	1.77 In / hr
Qexp= CIA			=	1.76 cfs
Qweir= (3.33Lh^1.5				
Calculate how high the water will rise above the Overflow Structure to pass the expected flow.				
h=			=	0.20 ft
Elevation of Water during Overflow Conditions =			=	0.20 ft

DETERMINE WIDTH OF OVERFLOW SPILLWAYS FOR DETENTION BASIN FOR 100-YEAR

Acreage Trib to Overflow (on + offsite):	1.24 ac
Composite run off coefficient: (From Pipe Flow Calculations)	0.80
Longest time of flow to basin:	21.93 min
Sum of all Flow into Basin	4.06 cfs
Volume of the Detention Basin =	12,634 cf
Time to fill basin = V/b-prov/Flow into Basin	51.87 min.
I = 275/(T + 25)	3.58 In / hr
Qexp=CIA=	**3.56** cfs

CAPACITY OF 6 FOOT DIAMETER MANHOLE
$Q = C*L*H^{3/2}$

C =	3.33
L =	6.00 ft
H =	1.00 ft
Qprov =	**19.98** cfs

Size Spillway
Sufficient capacity exists in the overflow Man Hole
Provide minimum 6 feet wide overflow spillway

CAPACITY OF THE 12" DETENTION BASIN OUTLET PIPE

Orifice Formula, Q = 0.625*A*sqrt(64.4*H)

Qexp 100-year	3.56	cfs
Outlet Size =	12	in
Invert Elevation =	934.00	ft
Springline EL. =	934.50	ft
H =	5.5	ft
Area Req'd = A =	0.30	sf
Area of Outlet Used	0.79	sf
Diameter Req'd =	12.00	in
Use	**12.000**	**in Dia Outlet**

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3 | TOWN 1 NORTH, RANGE 8 EAST | CITY OF NOVI | OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

UNDERGROUND DETENTION STORMWATER MANAGEMENT PLAN AND DETAILS

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

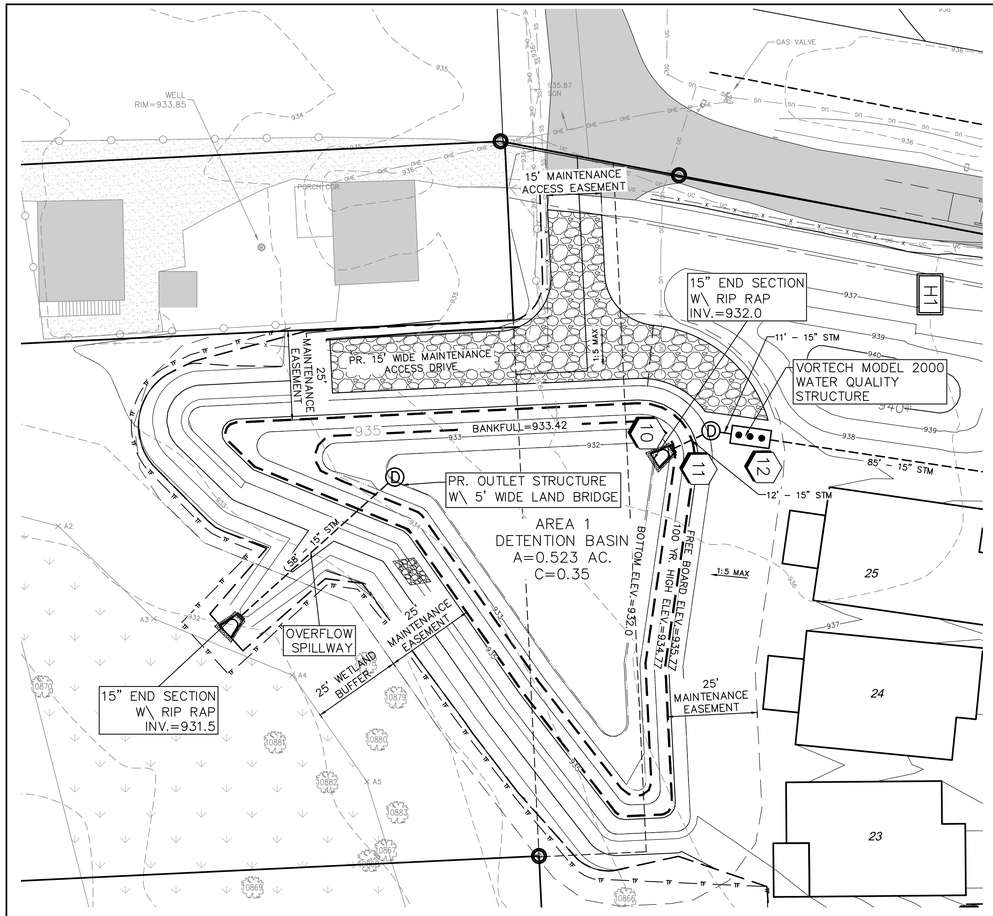
DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 AS NOTED
JOB NO. 180905
SHEET NO. **22**
SHEET 22 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201045479
PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-STORM SEWER PLAN & PROFILE.DWG

SCENIC PINES

SINGLE FAMILY RESIDENTIAL
STORM WATER MANAGEMENT PLAN
PEMBINE ROAD, CITY OF NOVI, OAKLAND COUNTY



City of Novi - Scenic Pines				
AREA 1 WEIGHTED 'C' CALCULATIONS				
	Type	**Area (SF)**	**Runoff Coefficient 'C'**	**C x A**
Total Drainage Area 'A'	Non Improved Outlet	77,101	0.2	
Proposed Impervious Area	Roofs, Patios, Drive, Walks	20,207	0.95	19,197
Proposed Impervious Area	Streets and Walks	20,302	0.95	19,287
Proposed Pervious Area		36,592	0.35	12,807
Sum (C x A)				51,291
Weighted 'Cw'=sum(C x A) /A	=	**0.67**	Use	

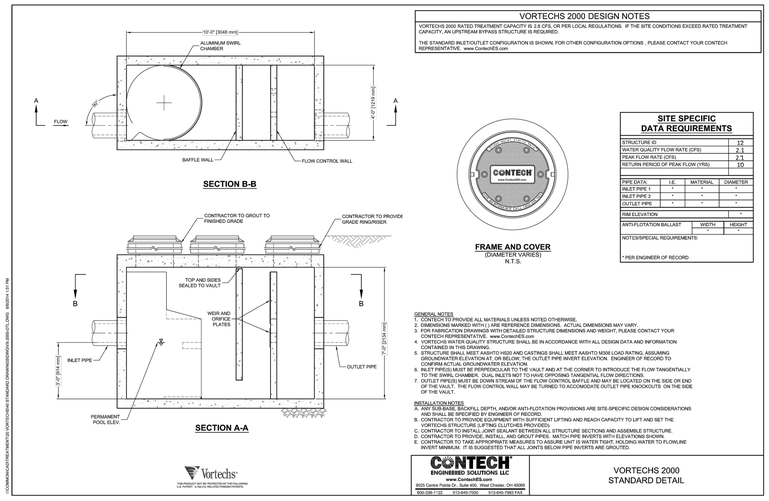
CITY OF NOVI		
Oakland County Drain Commission Method		
Gravity Outlet to Wetlands		
Time of Concentration T(min) =	20	
Existing Coefficient C =	0.2	
Proposed Coefficient C =	0.67	
Area 1 A(acres) =	1.77	

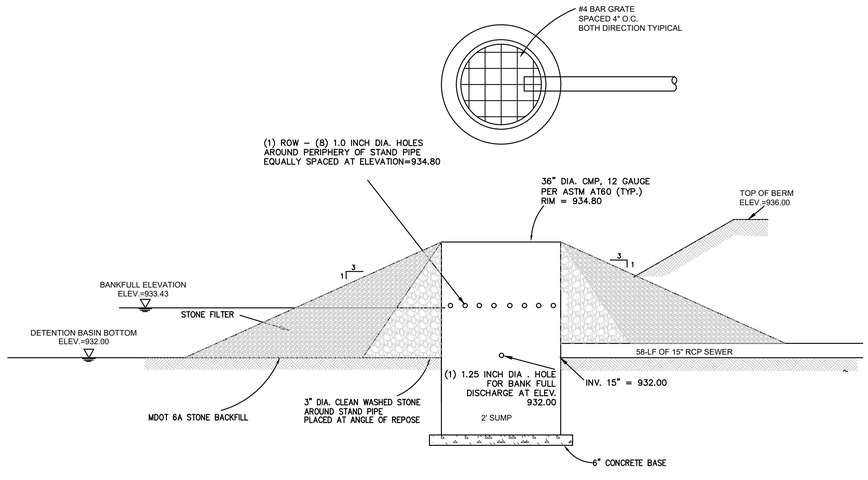
Frequency of Storm	**Rainfall Intensity I (In/Hr)**	**Allowable Outflow Qa(cfs)**	**Maximum Outflow Qo(cfs/acre)**	**Storage Time Equation T(min)**	**Storage Volume Equation Vs(Ft3/(AxC))**	**Storage Volume V(FT3)**
1 Year	1.60	0.35	0.30	69.77	2341	2757
5 Year	3.22	0.35	0.30	109.49	5766	6789
10 Year	3.89	0.35	0.30	122.74	7247	**8533**
25 Year	4.78	0.35	0.30	138.76	9262	10906
50 Year	5.44	0.35	0.30	149.81	10796	12712
100 Year	6.11	0.35	0.30	160.21	12346	**14537**

Mechanical Pre-treatment Calculation:			
Q = C x I x A =	Q=0.68x(97/(T+30))x1.71	2.28	CFS
Use Vortech Model 2000 rated at 2.8-cfs			

Bankfull	
Vbf=5160xAxC	6075.779535
BF Elev=	933.43
Elev.100YR=	934.80

Storage Analysis				
	Elevation	Area (sf)	Ave. Area (sf)	Cumulative Volume (cft)
	932	3,121	0	0
	933	4,474	3,798	3,798
	934	6,011	5,243	9,040
	935	7,663	6,837	15,877
Xtop =	936	9,460	8,562	24,439





OUTLET STRUCTURE DETAIL
NO SCALE

STORM WATER DETENTION CALCULATION

Area 1

TOTAL AREA	=	1.77				
Cavg	=	0.67				
Qa	=	0.20xA	=	0.20x 1.71 ACRES	=	0.354 cfs
Qo	=	Qa/(AxC)	=	.43/(1.71x.68)	=	0.300643 cfs/acre
T100	=	Sqrt (10312.5 / Qo)+-25			=	160.2066 minutes
Vs100	=	16500 x T100 / (T100+25) - 40 x Qo x T100			=	12346.16 cft/acre
Vt100	=	Vs100 x A x C			=	14537.31 cft
Z100	=	935 - ((15877 - 14331)/(15877-9040))			=	934.80

BANK FULL CALCULATIONS

Vbf	=	5160 x A x C			=	6075.78 cft
Zbf	=	934-((9040-5973)/(9040-3798))			=	933.43
Zout	=	932			=	932

STANDPIPE OUTLET HOLE SIZING - "BANK FULL" DISCHARGE

BANKFULL SHOULD DISCHARGE WITHIN 36 TO 48 HOURS

Qbf	=	Vbf/144000			=	0.042193 cfs
havg	=	2/3 (Zbf-Zout)			=	0.956864 ft
Aout	=	Qbf / (0.62 x Sqrt(2gh))			=	0.008869
1.25" DIA HOLE= 0.008 Sqft					=	0.008 sft
Aout / .008					=	1.083652 1
Check bank full release time						
A(act)					=	0.008 sft
Qbf	=	(A x 0.62 x sqrt(2*32.2*h))			=	0.038936 cfs
Tbf	=	Vbf/(Qbf x 3600)			=	43.34607 hrs

STANDPIPE OUTLET HOLES SIZING - "100 YR DISCHARGE"

Q100	=	Qa			=	0.354 cfs
havg	=	2/3 (Z100-Zout)			=	1.870304 ft
A	=	Q100/(0.62 x sqrt(64.4 x h))			=	0.052025 sf
1" dia hole					=	0.0055 sft
Aout	=	A/0.0055			=	9.459102 8
Check 100 YR release rate not to exceed allowable release rate						
A(act)					=	0.044 sft
Q100	=	(A x 0.62 x sqrt(2*32.2*h))			=	0.299394 cfs
Q100+Qbf	=	(0.298+0.039)			=	0.33833 cfs 0.354

OVERFLOW WEIR SIZING

Size of Overflow Manhole=					=	**3 ft**
% of Manhole that can be used as a weir					=	100 %
Calculated length of weir=		L=			=	9.42 ft
Drainage Area, A		=			=	1.77 ac
C-Factor, C		=			=	0.67
(From Pipe Flow Calculations)						
Longest Tc from Pipe Calcs		=			=	25.00 min
Sum of all flow into Basin		=			=	3.17 cfs
Volume of Basin		=			=	14537 ft^3
Storage elevation		=			=	934.77 ft
Freeboard Elevation		=			=	935.77 ft
Time to fill basin		=			=	76.43 min
I = 175 / (T+25)		=			=	1.38 In / hr
Qexp = C*I*A		=			=	1.63 cfs
Qweir = 3.33*(L')($h^{3/2}$)						
Calculate how high the water will rise above the Overflow Structure to pass the expected flow,						
hs=					=	0.14 ft
Elevation of Water during Overflow Conditions =					=	0.14 ft

DETERMINE WIDTH OF OVERFLOW SPILLWAYS FOR DETENTION BASIN FOR 100-YEAR

Acreage Trib to Overflow (on + offsite):	1.77	ac
Composite run off coefficient:	0.67	
(From Pipe Flow Calculations)		
Longest time of flow to basin:	25.00	min
Sum of all Flow into Basin	3.17	cfs
Volume of the Detention Basin =	14,537	cf
Time to Fill basin = Vfb-prov/Flow into Basin	76.43	min.
I = 275/(T + 25)	2.71	In / hr
Qexp=CIA=	**3.19**	cfs

CAPACITY OF 3 FOOT DIAMETER MANHOLE

Q = C*L*$H^{3/2}$

C =	3.33
L =	9.42 ft
H =	1.00 ft
Qprov =	**31.38** cfs

Size Spillway

Sufficient capacity exists in the overflow Man Hole
Provide minimum 3 feet wide overflow spillway

CAPACITY OF THE 12" DETENTION BASIN OUTLET PIPE

Orifice Formula, Q = 0.625*A*sqrt(64.4*H)

Qexp 100-year	3.19	cfs
Outlet Size =	15	in
Invert Elevation =	932.00	ft
Springline EL. =	932.50	ft
H =	2.30	ft
Area Req'd = A =	0.42	sf
Area of Outlet Used	1.23	sf
Diameter Req'd =	15.00	in
Use	**15.000**	**in Dia Outlet**

NORTH

20' 0 10' 20' 40' 80'

(IN FEET)
1 inch = 20' ft.

The UMLOR Group — LAND DEVELOPMENT SERVICES

SECTION 3 — TOWN 1 NORTH, RANGE 8 EAST — CITY OF NOVI — OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

DETENTION BASIN – STORMWATER MANAGEMENT PLAN

DATE: 11–27–2019

REVISIONS
PER CITY 03–24–2020
PER CITY 01–18–2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 — AS NOTED
JOB NO. 180905
SHEET NO. **23**
SHEET 23 OF 38

STATE OF MICHIGAN
WES LEE O UMLOR
ENGINEER
#2101045479
LICENSED PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 – SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-STORM SEWER PLAN & PROFILE.DWG

SCENIC PINES

SINGLE FAMILY RESIDENTIAL
STORM WATER MANAGEMENT PLAN
PEMBINE ROAD, CITY OF NOVI, OAKLAND COUNTY

NORTH

20' 0 10' 20' 40' 80'

(IN FEET)
1 inch = 20' ft.

I - GENERAL

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - ALL STANDARDS REFER TO LATEST EDITION UNLESS OTHERWISE NOTED.

1.1.1 ASTM B-864 "STANDARD SPECIFICATION FOR CORRUGATED ALUMINUM BOX CULVERTS" (AASHTO DESIGNATION M-219).

1.1.2 AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES - SECTION 12 DIVISION I - DESIGN.

1.1.3 AASHTO STANDARD SPECIFICATION FOR HIGHWAY BRIDGES - SECTION 26DIVISION II - CONSTRUCTION.

1.2 DEFINITIONS

1.2.1 OWNER - IN THESE SPECIFICATIONS THE WORD "OWNER" SHALL MEAN CONTECH Engineered Solutions, LLC.

1.2.2 ENGINEER - IN THESE SPECIFICATIONS THE WORD "ENGINEER" SHALL MEAN THE ENGINEER OF RECORD OR OWNER'S DESIGNATED ENGINEERING REPRESENTATIVE.

1.2.3 MANUFACTURER - IN THESE SPECIFICATIONS THE WORD "MANUFACTURER" SHALL MEAN CONTECH ENGINEERED SOLUTIONS, LLC 800-338-1122 Winchester.

1.2.4 CONTRACTOR - IN THESE SPECIFICATIONS THE WORD "CONTRACTOR" SHALL MEAN THE FIRM OR CORPORATION UNDERTAKING THE EXECUTION OF ANY INSTALLATION WORK UNDER THE TERMS OF THESE SPECIFICATIONS.

1.2.5 APPROVED - IN THESE SPECIFICATIONS THE WORD "APPROVED" SHALL REFER TO THE APPROVAL OF THE ENGINEER OR HIS DESIGNATED REPRESENTATIVE.

1.2.6 AS DIRECTED - IN THESE SPECIFICATIONS THE WORDS "AS DIRECTED" SHALL REFER TO THE DIRECTIONS TO THE CONTRACTOR FROM THE OWNER OR HIS DESIGNATED REPRESENTATIVE.

2.0 GENERAL CONDITIONS

2.1 THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIAL AND EQUIPMENT AND PERFORM ALL WORK AND SERVICES EXCEPT THOSE SET OUT AND FURNISHED BY THE OWNER, NECESSARY TO COMPLETE IN A SATISFACTORY MANNER THE SITE PREPARATION, EXCAVATION, FILLING, COMPACTION, GRADING AS SHOWN ON THE PLANS AND AS DESCRIBED THEREIN. THIS WORK SHALL CONSIST OF ALL MOBILIZATION CLEARING AND GRADING, GRUBBING, STRIPPING, REMOVAL OF EXISTING MATERIAL UNLESS OTHERWISE STATED, PREPARATION OF THE LAND TO BE FILLED, FILLING OF THE LAND, SPREADING AND COMPACTION OF THE FILL AND ALL SUBSIDIARY WORK NECESSARY TO COMPLETE THE GRADING OF THE CUT AND FILL AREAS TO CONFORM WITH THE LINES, GRADES, SLOPES, AND SPECIFICATIONS. THIS WORK IS TO BE ACCOMPLISHED UNDER THE OBSERVATION OF THE OWNER OR HIS DESIGNATED REPRESENTATIVE.

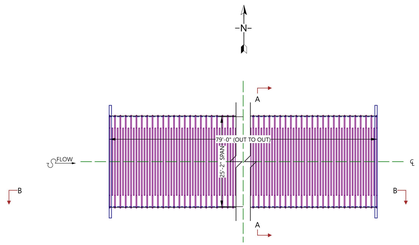
2.2 PRIOR TO BIDDING THE WORK, THE CONTRACTOR SHALL EXAMINE, INVESTIGATE AND INSPECT THE CONSTRUCTION SITE AS TO THE NATURE AND LOCATION OF THE WORK, AND THE GENERAL AND LOCAL CONDITIONS AT THE CONSTRUCTION SITE, INCLUDING WITHOUT LIMITATION, THE CHARACTER OF SURFACE OR SUBSURFACE CONDITIONS AND OBSTACLES TO BE ENCOUNTERED ON AND AROUND THE CONSTRUCTION SITE AND SHALL MAKE SUCH ADDITIONAL INVESTIGATION AS HE MAY DEEM NECESSARY FOR THE PLANNING AND PROPER EXECUTION OF THE WORK.

IF CONDITIONS OTHER THAN THOSE INDICATED ARE DISCOVERED BY THE CONTRACTOR, THE OWNER SHALL BE NOTIFIED IMMEDIATELY. THE MATERIAL WHICH THE CONTRACTOR BELIEVES TO BE A CHANGED CONDITION SHALL NOT BE DISTURBED SO THAT THE OWNER CAN INVESTIGATE THE CONDITION.

2.3 THE CONSTRUCTION SHALL BE PERFORMED UNDER THE DIRECTION OF THE ENGINEER.

2.4 ALL ASPECTS OF THE STRUCTURE DESIGN AND SITE LAYOUT INCLUDING FOUNDATIONS, BACKFILL, END TREATMENTS AND NECESSARY SCOUR CONSIDERATION SHALL BE PERFORMED BY THE ENGINEER.

ANY INSTALLATION GUIDANCE PROVIDED HEREIN SHALL BE ENDORSED BY THE ENGINEER OR SUPERSEDED BY THE ENGINEER'S PLANS AND SPECIFICATIONS.



BRIDGE PLAN

TYPE VI CROWN RIBS (TYP.) @ 9" O.C.
TYPE VI HAUNCH RIBS (TYP.) @ 18" O.C.

PRELIMINARY
NOT FOR CONSTRUCTION

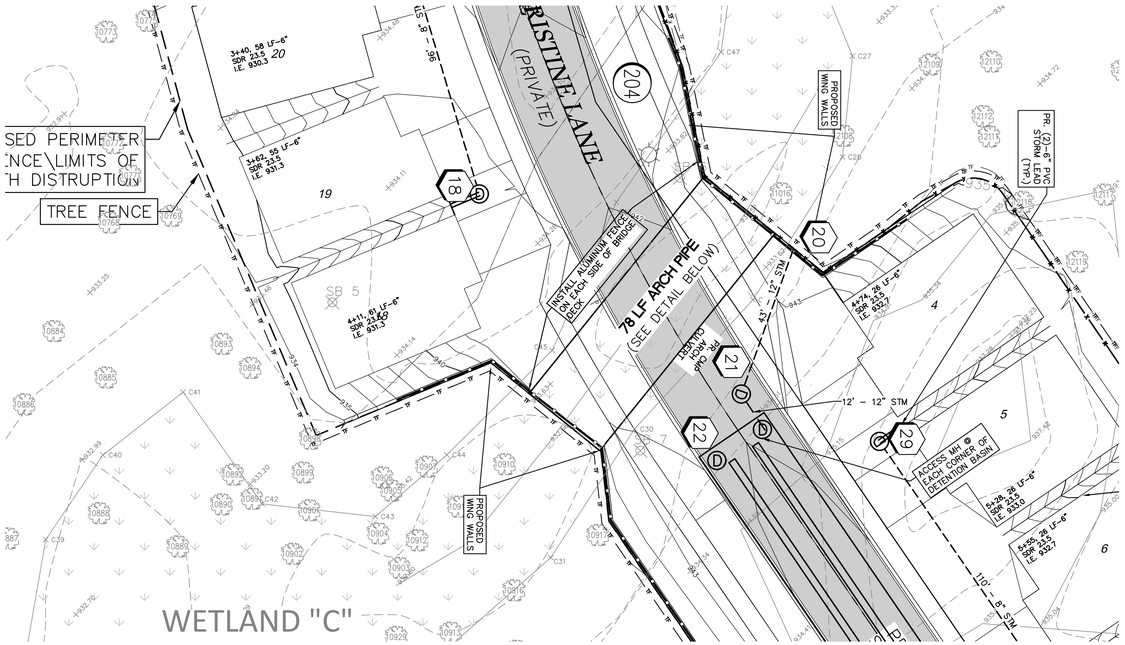
MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

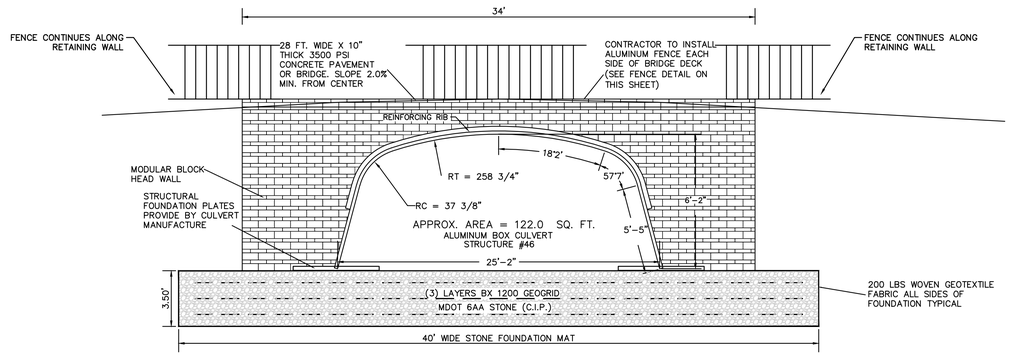
PROPOSAL
DRAWING

ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.:	Seq No:	Date:
6164035525	925	12/3/2019
Designed:		Drawn:
Checked:		Approved:
Sheet No.:	1 OF 8	



ARCH PIPE CULVERT PLAN
SCALE: 1"=20'



ARCH PIPE CROSS SECTION
NO SCALE

Post Size	
36" Tall	2" x 2" x 5 1/2'
42" Tall	2" x 2" x 6'
48" Tall	2" x 2" x 6 1/2'
60" Tall	2" x 2" x 7 1/2'

COURTYARD
MINIMALIST FENCE SYSTEMS

CourtYard® Aluminum Fence

Scale: 3/32" : 1"	Approved By: F.S.B.	Drawn By: J.D.S.
Date: 8/08/06		Revised:
0230 (3-Rail Flat Top)		
As Shown: 6' x 48" 0230		Drawing Number: 0230

ALUMINUM FENCE DETAIL
NO SCALE

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ARCH PIPE BRIDGE PLAN AND DETAILS

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 05-14-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 AS NOTED
JOB NO. 180905
SHEET NO. **24**
SHEET 24 OF 38

STATE OF MICHIGAN
WES LEE
O'UMLOR
ENGINEER
#2201045572
LICENSED PROFESSIONAL ENGINEER

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II - ALUMINUM BOX CULVERT
1.0 GENERAL
1.1 Manufacturer shall fabricate the aluminum box culvert as shown on the plans. Fabrication shall conform to the requirements of ASTM B-864 and shall consist of plates, ribs, and appurtenant items.

Plate thickness, rib spacing, end treatment and type of invert and foundation shall be as indicated on the plans. All manufacturing processes including corrugating, punching, curving and required galvanizing shall be performed within the United States of America.

1.2 The contractor shall verify all field dimensions and conditions prior to ordering materials.

2.0 DIMENSIONS
Designation: ALBC 82-R1
Span: 25'-2"
Rise: 6'-2"
Min. Cover: 2'9"
Max. Cover: 4'-0"
Loading: HL-93

2.1 The proposed structure shall be an ALUMINUM BOX CULVERT with the following dimensions:

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan unless otherwise noted.

3.0 ASSEMBLY AND INSTALLATION
3.1 Bolts and nuts shall conform to the requirements of ASTM A-307 or ASTM A-449. The box culvert shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The box culvert shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.5 Bedding shall provide a minimum of 4,000 psf bearing capacity. Foundation details for bearing capacity less than 4,000 psf shall be approved by the Engineer.

3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloading and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

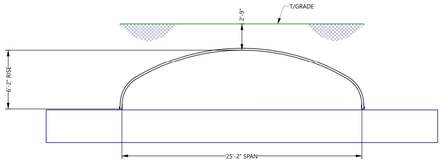
When installed on a full invert or on flexible footing pads, assembly of the invert or footing pads shall start at the downstream end. Circumferential seam laps shall shingle over the top of the downstream plates as assembly progresses upstream. Whether the box culvert is installed on a concrete footing, full metal invert, or flexible footing pad, assembly of the structure shell shall start at the upstream end. Downstream rings of plates shall be assembled outside of the upstream rings. (Circumferential seams are shingled downstream when viewed from the inside of the shell).

3.7 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5 or A-3 modified to be more select than AASHTO M-145. See the information at the right of this sheet.

Backfill must be placed symmetrically on each side of the structure in 6 to 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180

3.8 Construction loads that exceed highway load limits are not allowed to cross the structure without approval from the Engineer.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer.



CROSS SECTION A-A

NOTES
•MEASUREMENTS ARE TO THE INSIDE CRESTS OF THE CORRUGATION
•DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES

PRELIMINARY
NOT FOR CONSTRUCTION

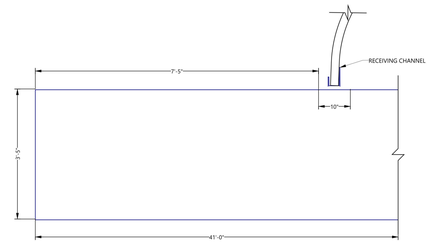
MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.:	Seq No.:	Date:
6164035525	925	12/3/2019
Designed:		Drawn:
Checked:		Approved:
Sheet No.:	2 OF 8	



TYPICAL FOOTING DETAIL

NOTES
• FOOTING DIMENSIONS AND DETAILS SHOWN ARE CONCEPTUAL ONLY
• FINAL DIMENSIONS & DETAILS TO BE FURNISHED BY THE PROJECT ENGINEERS
• FOUNDATION REINFORCING TO BE DETERMINED

PRELIMINARY
NOT FOR CONSTRUCTION

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If discrepancies between the supplied information upon which the drawing is based and actual field conditions are encountered as the work progresses, these discrepancies must be reported to CONTECH immediately for re-evaluation of the design. CONTECH also expressly disclaims any liability for design based on missing, incomplete or inaccurate information supplied by others.

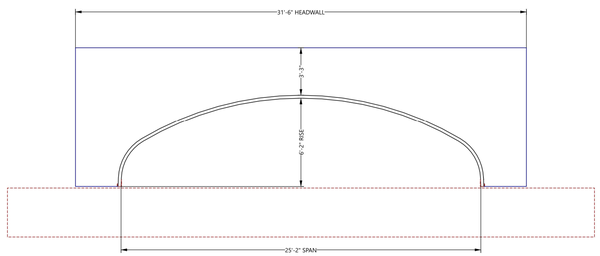
MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.:	Seq No.:	Date:
6164035525	925	12/3/2019
Designed:		Drawn:
Checked:		Approved:
Sheet No.:	3 OF 8	



INLET END ELEVATION

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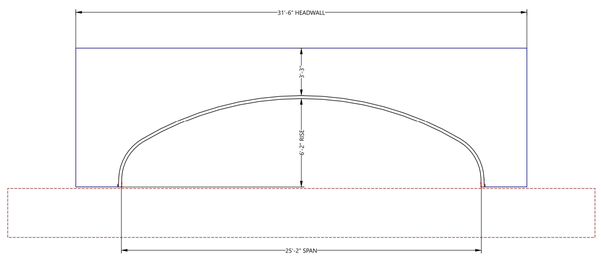
CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.:	Seq No.:	Date:
6164035525	925	12/3/2019
Designed:		Drawn:
Checked:		Approved:
Sheet No.:	4 OF 8	



OUTLET END ELEVATION

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MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL
DRAWING

ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.:	Seq No.:	Date:
6164035525	925	12/3/2019
Designed:		Drawn:
Checked:		Approved:
Sheet No.:	5 OF 8	

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ARCH PIPE DETAILS

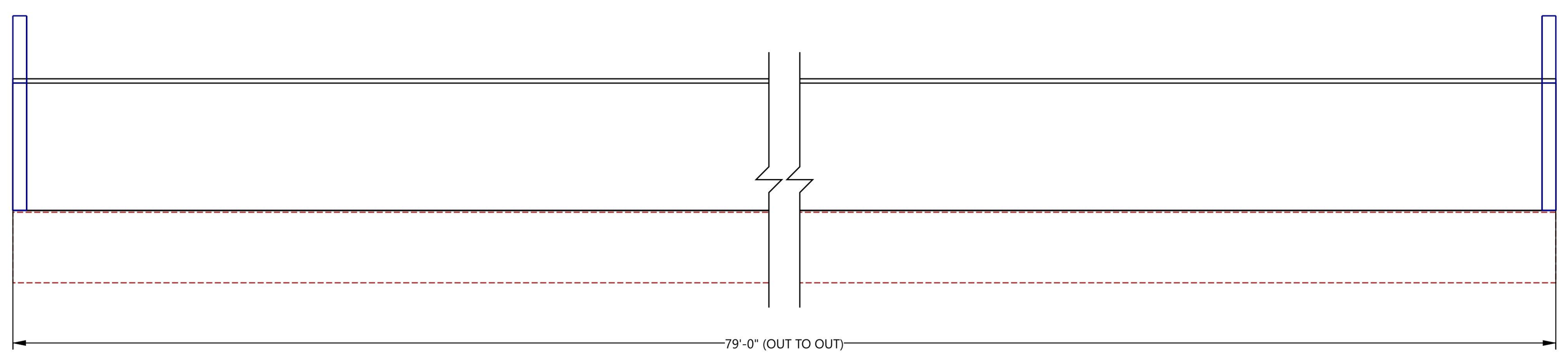
DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 05-14-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 AS NOTED
JOB NO. 180905
SHEET NO. 25
SHEET 25 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054579
PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-STORM SEWER PLAN & PROFILE.DWG



PROFILE SECTION B-B

PRELIMINARY
NOT FOR CONSTRUCTION

MARK	DATE	REVISION DESCRIPTION	BY

CONTECH ENGINEERED SOLUTIONS
9025 Centre Pointe Dr., Suite 400, West Chester, OH 4506
800-338-1122 513-645-7000 513-645-7993 FAX

PROPOSAL DRAWING

ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.: 6164035525 | Seq. No.: 925 | Date: 12/3/2019
Designed: | Drawn:
Checked: | Approved:
Sheet No.: 6 OF 8

SPECIFICATIONS FOR MANUFACTURE AND INSTALLATION OF CONTECH® ALUMINUM BOX CULVERT #1-87

I - GENERAL

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to latest edition unless otherwise noted.

1.1.1 ASTM B-864 "Standard Specification for Corrugated Aluminum Box Culverts" (AASHTO Designation M-219).

1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12 Division I - Design.

1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction.

1.2 DEFINITIONS

1.2.1 Owner - In these specifications the word "Owner" shall mean OWNER

1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering representative.

1.2.3 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH ENGINEERED SOLUTIONS 800-338-1122 REP

1.2.4 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.

1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated representative.

1.2.6 As Directed - In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

2.1 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated representative.

2.2 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition.

2.3 The construction shall be performed under the direction of the Engineer.

2.4 All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer.

Any installation guidance provided herein shall be endorsed by the Engineer or superseded by the Engineer's plans and specifications.

II - ALUMINUM BOX CULVERT

1.0 GENERAL

1.1 Manufacturer shall fabricate the aluminum box culvert as shown on the plans. Fabrication shall conform to the requirements of ASTM B-864 and shall consist of plates, ribs, and appurtenant items.

Plate thickness, rib spacing, end treatment and type of invert and foundation shall be as indicated on the plans. All manufacturing processes including corrugating, punching, curving and required galvanizing shall be performed within the United States of America.

1.2 The contractor shall verify all field dimensions and conditions prior to ordering materials.

2.0 DIMENSIONS

2.1 The proposed structure shall be an ALUMINUM BOX CULVERT with the following dimensions:

Span: 25'-2"	Rise: 6'-2"	Loading: HL-93
Haunch Gage: 0.125	Crown Gage: 0.125	Min. Cover: 2'9"
Haunch Rib Type: TYPE VI	Crown Rib Type: TYPE VI	Max. Cover: 4'-0"
Haunch Rib Spacing: 18"	Crown Rib Spacing: 9"	

2.2 All plan dimensions on the contract drawings are measured in a true horizontal plan unless otherwise noted.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A-307 or ASTM A-449. The box culvert shall be assembled in accordance with the plate layout drawings provided by the manufacturer and per the manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The box culvert shall be installed in accordance with the plans and specifications, the manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Bedding preparation is critical to both structure performance and service life. The bed should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.5 Bedding shall provide a minimum of 4,000 psf bearing capacity. Foundation details for bearing capacity less than 4,000 psf shall be approved by the Engineer.

3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloading and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

When installed on a full invert or on flexible footing pads, assembly of the invert or footing pads shall start at the downstream end. Circumferential seam laps shall shingle over the top of the downstream plates as assembly progresses upstream. Whether the box culvert is installed on a concrete footing, full metal invert, or flexible footing pad, assembly of the structure shell shall start at the upstream end. Downstream rings of plates shall be assembled outside of the upstream rings. (Circumferential seams are shingled downstream when viewed from the inside of the shell).

3.7 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5 or A-3 modified to be more select than AASHTO M-145. See the information at the right of this sheet.

Backfill must be placed symmetrically on each side of the structure in 6 to 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180

3.8 Construction loads that exceed highway load limits are not allowed to cross the structure without approval from the Engineer.

Normal highway traffic is not allowed to cross the structure until the structure has been backfilled and paved. If the road is unpaved, cover allowance to accommodate rutting shall be as directed by the Engineer.

GROUP CLASSIFICATION	A-1	A-3	A-2-4	A-2-5
Sieve Analysis Percent Passing				
No. 10 (2.000 mm)		----	----	----
No. 40 (0.425 mm)	50 max.	51 max.	----	----
No. 100 (0.150 mm)	----	----	50 max.	50 max.
No. 200 (0.075 mm)	25 max.	10 max.	20 max.	20 max.
Atterberg Limits for Fraction Passing No., 40 (0.425 mm)				
Liquid Limits	----	----	40 max.	41 max.
Plasticity Index	6 max.	Non Plastic	10 max.	10 max.
Usual Materials	Stone Fragment, Gravel and Sand	Sand	Silty or Clayey Gravel and Sand	

NOTE: Atterberg Limits are modified to provide material that are primarily granular

PRELIMINARY
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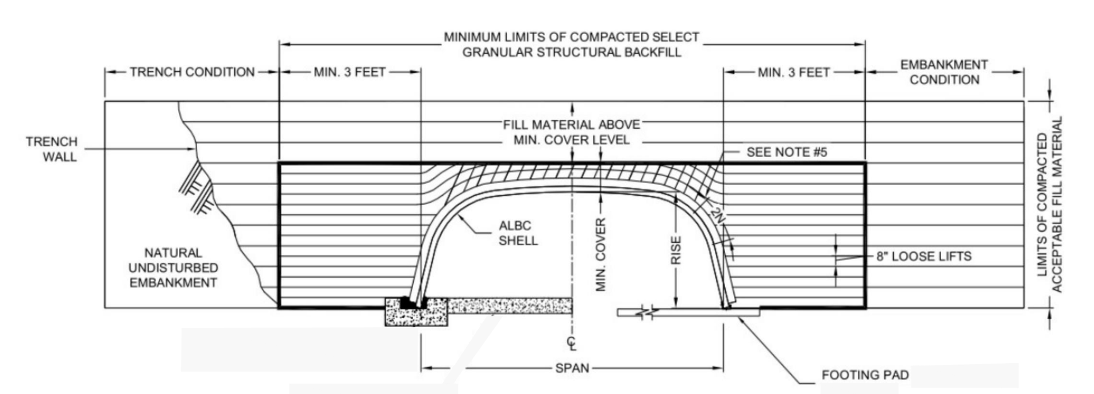
ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.: 6164035525 | Seq. No.: 925 | Date: 12/3/2019
Sheet No.: 7 OF 8



SECTION

SELECT GRANULAR STRUCTURAL BACKFILL LIMITS.

INITIAL LIFTS OVER THE CROWN OF STRUCTURE AS INDICATED BY SHADED AREA TO BE COMPACTED TO REQUIRED DENSITY WITH HAND OPERATED EQUIPMENT OR WITH LIGHTWEIGHT(D-4 OR LIGHTER) EQUIPMENT.

NOTES:

1. TRENCH WIDTH OTHER THAN 3 FEET SHALL BE BY DIRECTION OF THE ENGINEER.
2. ALL SELECT GRANULAR BACKFILL TO BE PLACED IN A BALANCED FASHION IN THIN LIFTS (8" LOOSE TYPICALLY) AND COMPACTED TO 90 PERCENT DENSITY PER AASHTO T-180.
3. COMPLETE AND REGULAR MONITORING OF THE ALUMINUM BOX CULVERT STRUCTURE IS NECESSARY DURING THE ENTIRE BACKFILL PROCESS TO AT LEAST THE MINIMUM COVER LEVEL.
4. PREVENT DISTORTION OF SHAPE AS NECESSARY BY VARYING COMPACTION METHODS AND EQUIPMENT.
5. PLACE SELECT GRANULAR BACKFILL IN RADIAL LIFTS 2N (APPROXIMATELY 2 LIFTS) ABOVE THE HAUNCH RADIUS CHANGE.

ADDITIONAL SELECT GRANULAR STRUCTURAL BACKFILL NOTES:

SATISFACTORY BACKFILL MATERIAL, PROPER PLACEMENT, AND COMPACTION ARE KEY FACTORS IN OBTAINING MAXIMUM STRENGTH AND STABILITY.

THE BACKFILL MATERIAL SHOULD BE FREE OF ROCKS, FROZEN LUMPS, AND FOREIGN MATERIAL THAT COULD CAUSE HARD SPOTS OR DECOMPOSE TO CREATE VOIDS. BACKFILL MATERIAL SHOULD BE WELL GRADED GRANULAR MATERIAL THAT MEETS THE REQUIREMENTS OF AASHTO M-145 FOR SOIL CLASSIFICATIONS A-1, A-2-4, A-2-5, OR A-3 MODIFIED.

SEE THE STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION TABLE ON THIS SHEET. BACKFILL MUST BE PLACED SYMMETRICALLY ON EACH SIDE OF THE STRUCTURE IN 8" LOOSE LIFTS. EACH LIFT IS TO BE COMPACTED TO A MINIMUM OF 90% DENSITY PER AASHTO T-180.

A HIGH PERCENTAGE OF SILT OR FINE SAND IN THE NATIVE SOILS SUGGESTS THE NEED FOR A WELL GRADED GRANULAR BACKFILL MATERIAL TO PREVENT SOIL MIGRATION. IF THE PROPOSED BACKFILL IS NOT A WELL-GRADED MATERIAL, A NON-WOVEN GEOTEXTILE FILTER FABRIC SHALL BE PLACED BETWEEN THE SELECT BACKFILL AND THE IN SITU MATERIAL.

DURING BACKFILL, ONLY LIGHTWEIGHT TRACKED VEHICLES (D-4 OR LIGHTER) SHOULD BE NEAR THE STRUCTURE AS FILL PROGRESSES ABOVE THE CROWN AND TO THE FINISHED GRADE. THE ENGINEER AND CONTRACTOR ARE CAUTIONED THAT THE MINIMUM COVER MAY NEED TO BE INCREASED TO HANDLE TEMPORARY CONSTRUCTION VEHICLE LOADS (HEAVIER THAN D-4).

STRUCTURAL PLATE BACKFILL GROUP CLASSIFICATION, REFERENCE AASHTO M-145

GROUP CLASSIFICATION	A-1-a	A-1-b	A-2-4	A-2-5	A-3
Sieve Analysis Percent Passing					
No. 10 (2.000 mm)	50 max.	----	----	----	----
No. 40 (0.425 mm)	30 max.	50 max.	----	----	51 max.*
No. 200 (0.075 mm)	15 max.	25 max.	35 max.	35 max.	10 max.
Atterberg Limits for Fraction Passing No. 40 (0.425 mm)					
Liquid Limits	----	----	40 max.	41 min.	----
Plasticity Index	6 max.	6 max.	10 max.	10 max.	Non Plastic
Usual Materials	Stone Fragment, Gravel and Sand		Silty or Clayey Gravel and Sand		Coarse Sand

*Modified from M-145.

Fine beach sands, windblown sands, stream deposited sands, etc., exhibiting fine, rounded particles and typically Classified by AASHTO M-145 as A-3 materials should not be used.

Reference the most current version of ASTM D2487, Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System), for comparable soil groups.

1.0 STANDARDS AND DEFINITIONS

1.1 STANDARDS - All standards refer to the current ASTM/AASHTO edition unless otherwise noted.

1.1.1 ASTM B864 "Standard Specification for Corrugated Aluminum Box Culverts" (AASHTO Designation M-219).

1.1.2 AASHTO Standard Specification for Highway Bridges - Section 12 Division I - Design, AASHTO LRFD Bridge Design Specifications Section 12.

1.1.3 AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction, AASHTO LRFD Bridge Construction Specifications - Section 26. ASTM B789, Standard Practice for Installing Corrugated Aluminum Structural Plate Pipe.

1.2 DEFINITIONS

1.2.1 Owner - In these specifications the word "Owner" shall mean ############.

1.2.2 Engineer - In these specifications the word "Engineer" shall mean the Engineer of Record or Owner's designated engineering representative.

1.2.3 Manufacturer - In these specifications the word "Manufacturer" shall mean CONTECH ENGINEERED SOLUTIONS 800-338-1122 ##########.

1.2.4 Contractor - In these specifications the word "Contractor" shall mean the firm or corporation undertaking the execution of any installation work under the terms of these specifications.

1.2.5 Approved - In these specifications the word "approved" shall refer to the approval of the Engineer or his designated representative.

1.2.6 As Directed - In these specifications the words "as directed" shall refer to the directions to the Contractor from the Owner or his designated representative.

2.0 GENERAL CONDITIONS

2.1 Any installation guidance provided herein shall be endorsed by the engineer; discrepancies herein are governed by the Engineer's plans and specifications.

2.2 The Contractor shall furnish all labor, material and equipment and perform all work and services except those set out and furnished by the Owner, necessary to complete in a satisfactory manner the site preparation, excavation, filling, compaction, grading as shown on the plans and as described therein. This work shall consist of all mobilization clearing and grading, grubbing, stripping, removal of existing material unless otherwise stated, preparation of the land to be filled, filling of the land, spreading and compaction of the fill, and all subsidiary work necessary to complete the grading of the cut and fill areas to conform with the lines, grades, slopes, and specifications. This work is to be accomplished under the observation of the Owner or his designated representative.

2.3 Prior to bidding the work, the Contractor shall examine, investigate and inspect the construction site as to the nature and location of the work, and the general and local conditions at the construction site, including without limitation, the character of surface or subsurface conditions and obstacles to be encountered on and around the construction site and shall make such additional investigation as he may deem necessary for the planning and proper execution of the work.

If conditions other than those indicated are discovered by the Contractor, the Owner shall be notified immediately. The material which the Contractor believes to be a changed condition shall not be disturbed so that the owner can investigate the condition.

2.4 The construction shall be performed under the direction of the Engineer.

2.5 All aspects of the structure design and site layout including foundations, backfill, end treatments and necessary scour consideration shall be performed by the Engineer.

3.0 ASSEMBLY AND INSTALLATION

3.1 Bolts and nuts shall conform to the requirements of ASTM A307 and/or ASTM A449. The box culvert structure shall be assembled in accordance with the plate layout drawings provided by the Manufacturer and per the Manufacturer's recommendations.

Bolts shall be tightened using an applied torque of between 100 and 150 ft.-lbs.

3.2 The box culvert structure shall be installed in accordance with the plans and specifications, the Manufacturer's recommendations, and AASHTO Standard Specification for Highway Bridges - Section 26 Division II - Construction/AASHTO LRFD Bridge Construction Specifications - Section 26.

3.3 Trench excavation shall be made in embankment material that is structurally adequate. The trench width shall be shown on the plans. Poor quality in situ embankment material must be removed and replaced with suitable backfill as directed by the Engineer.

3.4 Aluminum Box Culvert designs require a minimum allowable soil-bearing pressure of 4,000 psf. Lower bearing capacities may be accommodated with a site specific design for an aluminum foundation or a concrete footing.

If the Engineer determines the natural foundation is inadequate to support the structure's backfill, the poor material shall be excavated, removed and replaced to a suitable depth with competent material. The specific depth of excavation required may be reduced by utilizing a geosynthetic reinforced foundation as designed by a qualified geotechnical engineer. For additional information contact your local Contech representative.

3.5 A metal or concrete footing is required. When a metal foundation is used, the soil bedding requires a minimum of 6 inches of loose granular material with a maximum particle size of one half the corrugation depth. The proper width of the bedding material required shall conform to the project plans and specifications.

Bedding preparation is critical to both structure performance and service life. The bedding should be constructed to uniform line and grade to avoid distortions that may create undesirable stresses in the structure and/or rapid deterioration of the roadway. The bed should be free of rock formations, protruding stones, frozen lumps, roots, and other foreign matter that may cause unequal settlement.

3.6 The structure shall be assembled in accordance with the Manufacturer's instructions. All plates shall be unloaded and handled with reasonable care. Plates shall not be rolled or dragged over gravel rock and shall be prevented from striking rock or other hard objects during placement in trench or on bedding.

When installed on a full invert or on flexible footing pads, assembly of the invert or footing pads shall start at the downstream end. Circumferential seam laps shall shingle over the top of the downstream plates as assembly progresses upstream. Whether the box culvert is installed on a concrete footing, full metal invert, or flexible footing pad, assembly of the structure shell shall start at the upstream end. Downstream rings of plates shall be assembled outside of the upstream rings (Circumferential seams are shingled downstream when viewed from the inside of the shell).

3.7 The structure shall be backfilled using clean well graded granular material that meets the requirements for soil classifications A-1, A-2-4, A-2-5, or A-3 modified per AASHTO M-145. See the structural plate backfill group classification table on this sheet.

Backfill must be placed symmetrically on each side of the structure in 8 inch loose lifts. Each lift shall be compacted to a minimum of 90 percent density per AASHTO T-180.

3.8 Standard highway loads that meet the permissible design load limits for an Aluminum Box Culvert are not allowed on the structure until it is backfilled completely and pavement is in place.

The addition of temporary soil for heavy construction loads is not feasible or permissible for Aluminum Box Culverts. By design, these structures are limited in the range of permissible fill heights and live loads.

Heavy construction loads that exceed that of the particular highway live load design limits are not allowed on Aluminum Box Culverts without approval from the Engineer.

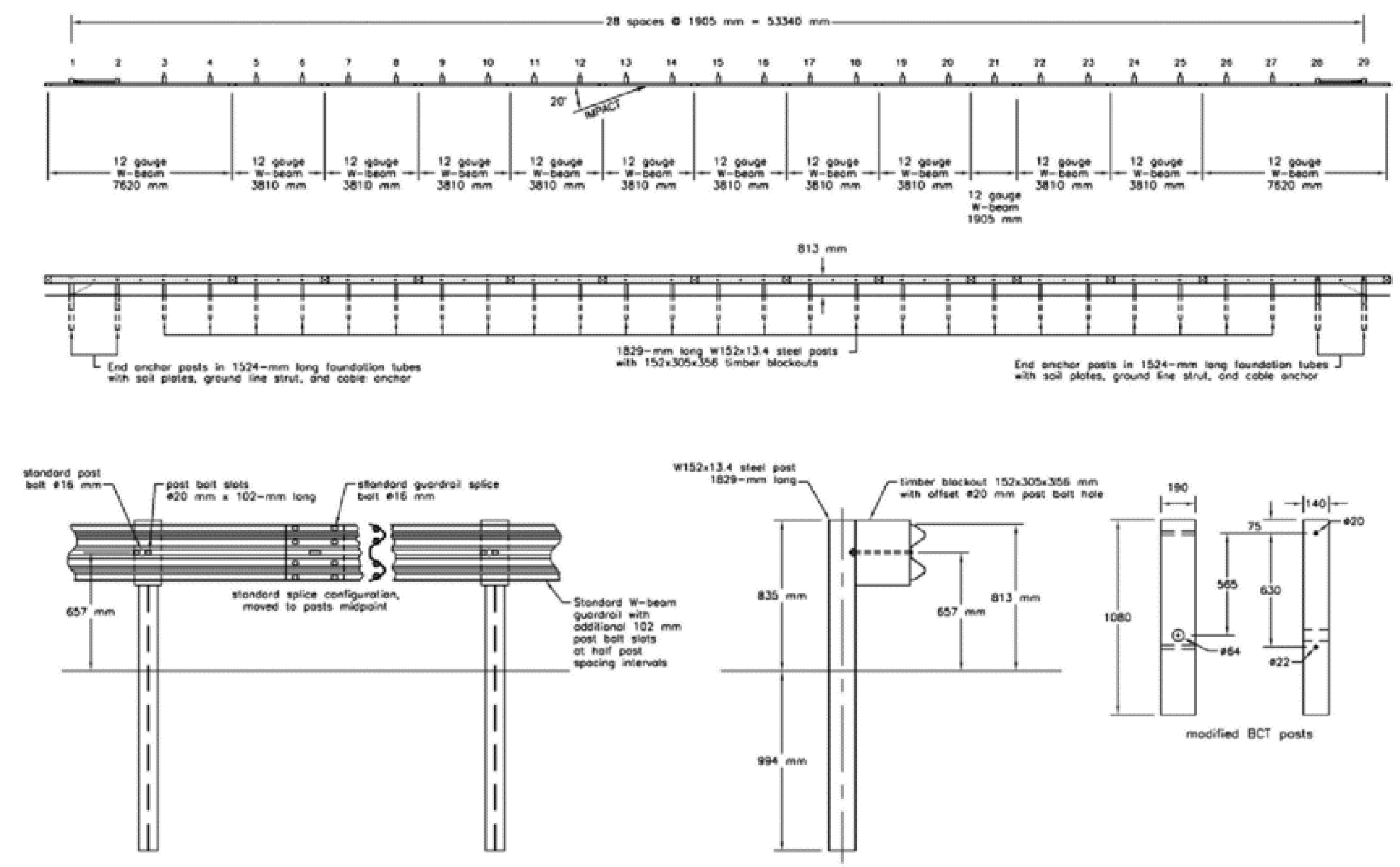
3.9 If an aluminum headwall and/or wingwall system is specified, the select granular structural backfill limits shall extend past the deadman anchor system. Contact the Engineer if stiff material or rock is encountered where the wingwalls and deadmen are to be installed.

STRUCTURES 1-87

PRELIMINARY
NOT FOR CONSTRUCTION

ALBC #82 - 25'-2" X 6'-2"
SCENIC PINES ESTATES SUBDIVISION
WETLAND CROSSING ON PEMBINE ROAD
NOVI, MI

Project No.: 6164035525 | Seq. No.: 925 | Date: 12/3/2019
Sheet No.: 8 OF 8



GUARD RAIL DETAIL
NO SCALE

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ARCH PIPE DETAILS CONTINUED

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 05-14-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE AS NOTED
JOB NO. 180905
SHEET NO. 26
SHEET 26 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
LICENSED PROFESSIONAL ENGINEER

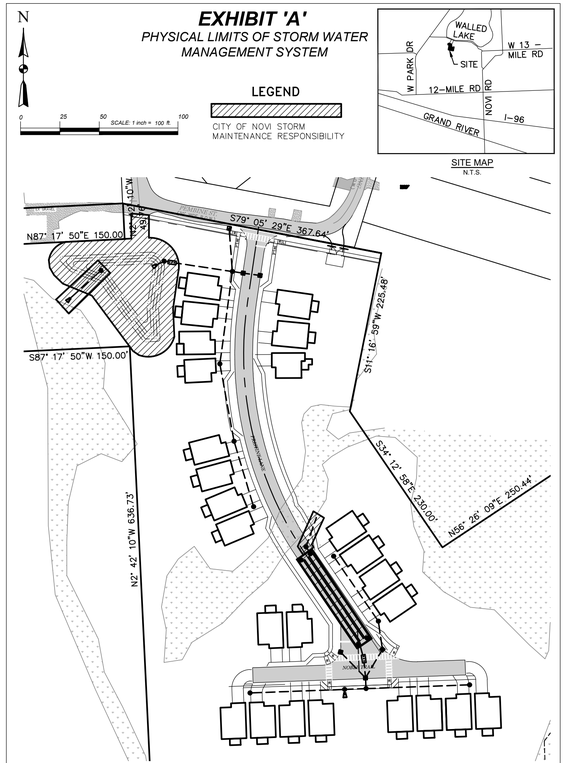
M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 -- SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-STORM SEWER PLAN & PROFILE.DWG

SCENIC PINES

SINGLE FAMILY RESIDENTIAL
STORM WATER MANAGEMENT PLAN
PEMBINE ROAD, CITY OF NOVI, OAKLAND COUNTY

EXHIBIT 'A'

PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM



CONDOMINIUM PARCEL:
PART OF THE S.W. ¼ CORNER OF SECTION 3, T1N., R8E., CITY OF NOVI, OAKLAND COUNTY, MICHIGAN. BEGINNING AT A POINT S.87°55'47"W. 642.40 FEET, FROM THE SOUTH ¼ CORNER OF SAID SECTION 3; THENCE S.87°55'47"W. 637.25 FEET; THENCE N.02°42'10"W. 636.73 FEET; THENCE S.87° 17' 50"W. 150.00 FEET; THENCE N.02°42'10"W. 150.00 FEET; THENCE N.87°17'50"E. 150.00 FEET; THENCE N.02°42'10"W. 49.76 FEET TO SOUTHWEST CORNER OF "LAKEWOODS SUBDIVISION"; THENCE S.79°05'29"E. 367.64 FEET; THENCE S.11° 16' 59"W. 225.48 FEET; THENCE S.34°12'58"E. 230.00 FEET; THENCE N.56°26'09"E. 250.44 FEET; THENCE S.02°36'17"E. 470.60 FEET TO A POINT OF BEGINNING. CONTAINING 9.44 ACRES. SIDEWELL # 22-03-378-007

Property Information: Scenic Pines Development Pembine Rd Oakland County, MI	PROPERTY OWNER: Singh Development, LLC 7125 Orchard Lake Rd, Bloomfield Hills, MI 48322	Engineer: The Umlor Group 49287 West Road Wixom, MI 48393 Phone: (248) 437-7803 Fax: (866) 690-4307	DATE: 11/23/2019 SHEET 1 OF 1

EXHIBIT B - STORM WATER MANAGEMENT SYSTEM LONG-TERM MAINTENANCE PLAN

CITY OF NOVI DPS PERMIT NO. :
CITY OF NOVI DPS PLAN REVIEW NO.:

A. Physical Limits of the Storm Water Maintenance System
The storm water management system (SWMS) subject to this long-term maintenance plan (Plan) is depicted on Exhibit A to the permit and includes without limitation the storm sewers, catch basins, manholes, inlets, water quality structures, swales, buffer strip, spillways, forebay, detention basin, subsurface detention, outlet control structure and the outlet pipe that conveys flow from the detention basin to the natural drainage course to the XXXX. For the purposes of this plan, this storm water management system (SWMS) and all of its components as shown in Exhibit A is referred to as "Scenic Pines Final Planned Development", Pembine Road, City of Novi, Oakland County MI.

B. Time Frame for Long-Term Maintenance Responsibility
Singh Development, LLC is responsible for maintaining the "Scenic Pines Final Planned Development", Pembine Road, City of Novi, Oakland County MI., including complying with applicable requirements of the local or City of Novi soil erosion and sedimentation control program until City of Novi releases the construction permit. Long-term maintenance responsibility for the "Scenic Pines Final Planned Development", Pembine Road, City of Novi, Oakland County MI., commences when defined by the maintenance permit issued by the County. Long-term maintenance continues in perpetuity.

C. Manner of Insuring Maintenance Responsibility
City of Novi has assumed responsibility for long-term maintenance of "Scenic Pines Final Planned Development", Pembine Road, City of Novi, Oakland County MI. The resolution by which the City of Novi has assumed maintenance responsibility is attached to the permit as Exhibit C. Singh Development, LLC through a maintenance agreement with Canton Township, has agreed to perform the maintenance activities required by this plan. City of Novi retains the right to enter the property and perform the necessary maintenance of the "Scenic Pines Final Planned Development", Pembine Road, City of Novi, Oakland County MI. If Singh Development, LLC fails to perform the required maintenance activities, To ensure that the "Scenic Pines Final Planned Development", Pembine Road, City of Novi, Oakland County MI. is maintained in perpetuity, the map of the physical limits of the storm water management system (Exhibit A), this plan (Exhibit B), the resolution attached as Exhibit C, and the maintenance agreement between the City of Novi and the property owner(s) will be recorded with the Wayne County Register of Deeds. Upon recording, a copy of the recorded documents will be provided to the County.

D. Long-Term Maintenance Plan and Schedule
Table 1 identifies the maintenance activities to be perform, organized by category (monitoring /inspections, preventative maintenance and remedial actions). While performing maintenance, chemicals should not be applied to the forebay, detention basin, buffer strip or watercourses. Table 1 also identifies site-specific work needed to ensure that the storm water management system functions properly as designed.

TABLE 1
STORM WATER MANAGEMENT SYSTEM LONG-TERM MAINTENANCE SCHEDULE

MAINTENANCE ACTIVITIES	SYSTEM COMPONENTS: Catch Basins, Inlets & Storm Sewers	Channels & Vegetated Swales	Inlets To Pretreatment Systems	Subsurface Detention Basins	Open Detention Basins & Retention Basins	Flow Restrictors, Overflow Structures & Outlets Pipes	Emergency Spillways	Riprap	Pavement Areas	Manufactured Treatment Units	FREQUENCY
Monitoring /Inspection											
Inspect for sediment accumulation **/clogging of stone filter	X	X	X	X	X	X	X			X	Annually
Inspect for floatables, dead vegetation and debris	X	X	X	X	X	X	X		X	X	Annually and after major events
Inspect for erosion and integrity of bank and berms		X	X	X	X		X	X		X	Annually and after major events
Inspect all components during wet weather and compare to as-built plans	X	X	X	X	X	X	X	X	X	X	Annually
Monitoring planting/vegetation		X		X	X		X			X	2 times per year
Ensure means of access for maintenance remain clear/open	X	X	X	X	X	X	X	X	X	X	Annually
Preventative Maintenance											
Mowing		X			X	X		X			Up to 2 times/year, select areas only*
Remove accumulated sediment		X	X		X	X	X			X	As needed**
Remove floatables, dead vegetation and debris		X	X	X	X	X	X			X	As needed
Replace or wash/reuse stone riser filters							X	X	X		Every 3 years; more frequently as needed***
Remove invasive plant species		X			X	X				X	Annually
As Specified (e.g. recommendations by Manufacture)										X	As needed
Remedial Actions											
Repair/stabilize areas of erosion		X			X	X		X	X		As needed
Replaced dead plantings, bushes, trees		X		X	X	X					As needed
Reseed bare areas		X			X	X					As needed
Structural repairs	X		X				X	X	X	X	As needed
Make adjustments/repairs to ensure proper functioning	X	X	X	X	X	X	X	X	X	X	As needed

Notes:
*Not to exceed the length allowed by local community ordinance.
**Forebays, open detention basins, and retention basin to be cleaned whenever sediment accumulates to a depth of 6-12 inches or if sediment resuspension is observed.
***Replace stone if it cannot be adequately cleaned.

Property Information: Scenic Pines Development Pembine Rd Oakland County, MI	PROPERTY OWNER: Singh Development, LLC 7125 Orchard Lake Rd, Bloomfield Hills, MI 48322	Engineer: The Umlor Group 49287 West Road Wixom, MI 48393 Phone: (248) 437-7803 Fax: (866) 690-4307	DATE: 11/23/2019 SHEET 1 OF 1

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES
CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

STORM WATER MAINTENANCE EXIBIT

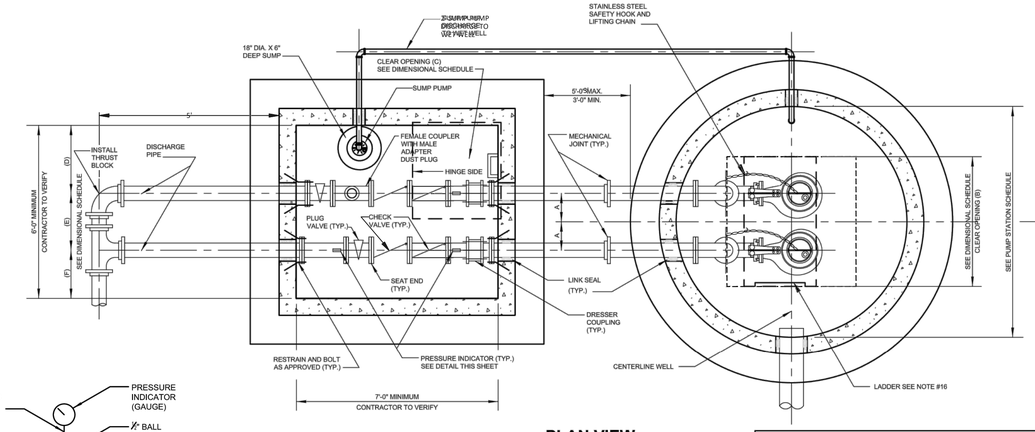
DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

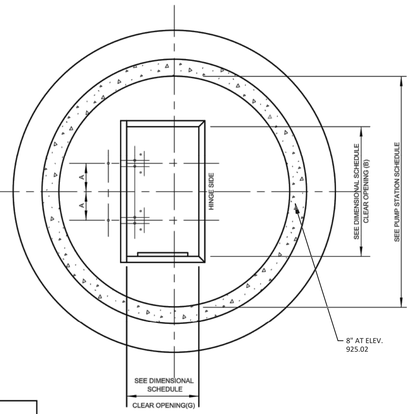
DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 AS NOTED
JOB NO. 180905
SHEET NO. 27
SHEET 27 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201045479
PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-STORM SEWER PLAN & PROFILE.DWG



PLAN VIEW
BASE ELEVATION



PLAN VIEW
GRADE ELEVATION

PUMP STATION SCHEDULE	
NUMBER OF PUMPS	2
WET WELL DIAMETER	6'
TOP OF WET WELL VALVE BOX ELEV.	938.00
GRAVITY INLET INVERT	925.02
GRAVITY INLET PIPE DIAMETER	8"
TOP OF BASE ELEV.	920.00
DISCHARGE PIPE DIAMETER	2.5" TO 4"
DISCHARGE PIPE CENTERLINE ELEV.	920.65
HIGH WATER ALARM SIGNAL ELEV.	924.75
LEAD PUMP ON ELEV.	923.25
LAG PUMP ON ELEV.	924.00
PUMPS OFF ELEV.	922.25
EMERGENCY OFF ELEV.	921.25
CAPACITY (EACH)	28 GPM
TOTAL DYNAMIC HEAD	12'
MOTOR H.P. (3-PHASE)	0.7
MOTOR R.P.M.	3450
MANUFACTURER	HOMA
MODEL NUMBER/IMPELLER	GRP 10/3 FM
SUMP PUMP MANUFACTURER	A-MT (GORMAN-RUPP)
SUMP PUMP MODEL NUMBER	5792-95

SANITARY BASIS OF DESIGN

Connection to existing 8" PVC sanitary sewer along Henning St.

NUMBER OF UNITS
= 25 UNITS TOTAL

POPULATION
= 2.38 PEOPLE/UNIT X 25
= 59.5 PEOPLE

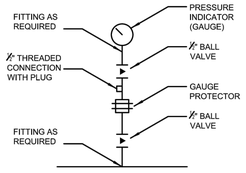
AVERAGE FLOW
= 60 PEOPLE X 100 GAL/CAP/DAY
= 5950 GAL/DAY
= 0.00893 CFS

PEAK FACTOR
= 18+(SQRT(P/1000))/(4+SQRT(P/1000))
= 4

PEAK FLOW
= PEAK FACTOR x AVERAGE FLOW
= 0.036 cfs

(CAPACITY OF A 8" PIPE @ 0.40% IS 0.76 CFS)
THEREFORE PIPE CAPACITY IS SUFFICIENT

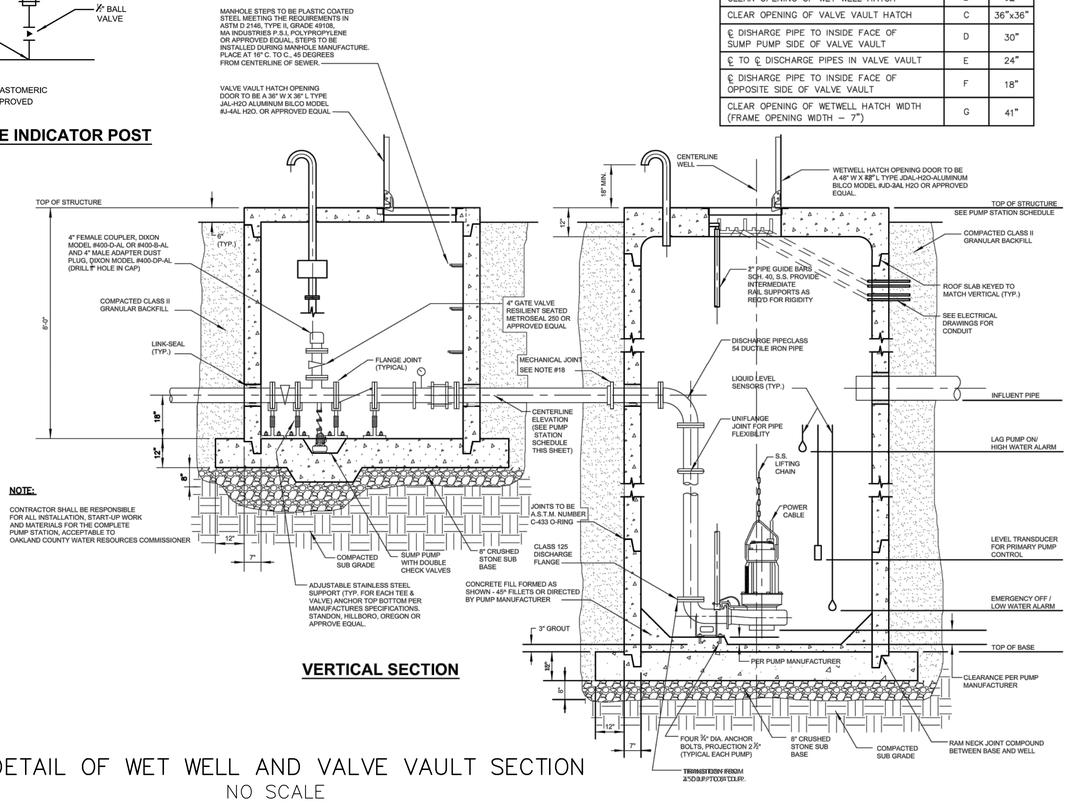
SITES=25 UNITS X 350 G.P.D = 8750 G.P.D.
=G.P.D. / 1440 = 6.08 G.P.M x Peaking factor =
USE 26 G.P.M PUMP



NOTES:
1. GAUGE PROTECTOR: ELASTOMERIC
2. PIPING ¾" EXCEPT AS APPROVED

PRESSURE INDICATOR POST

DIMENSIONAL SCHEDULE		
℄ DISCHARGE PIPE TO ℄ OF WET WELL	A	12"
CLEAR OPENING OF WET WELL HATCH	B	48"
CLEAR OPENING OF VALVE VAULT HATCH	C	36"x36"
℄ DISHARGE PIPE TO INSIDE FACE OF SUMP PUMP SIDE OF VALVE VAULT	D	30"
℄ TO ℄ DISCHARGE PIPES IN VALVE VAULT	E	24"
℄ DISHARGE PIPE TO INSIDE FACE OF OPPOSITE SIDE OF VALVE VAULT	F	18"
CLEAR OPENING OF WETWELL HATCH WIDTH (FRAME OPENING WIDTH – 7")	G	41"

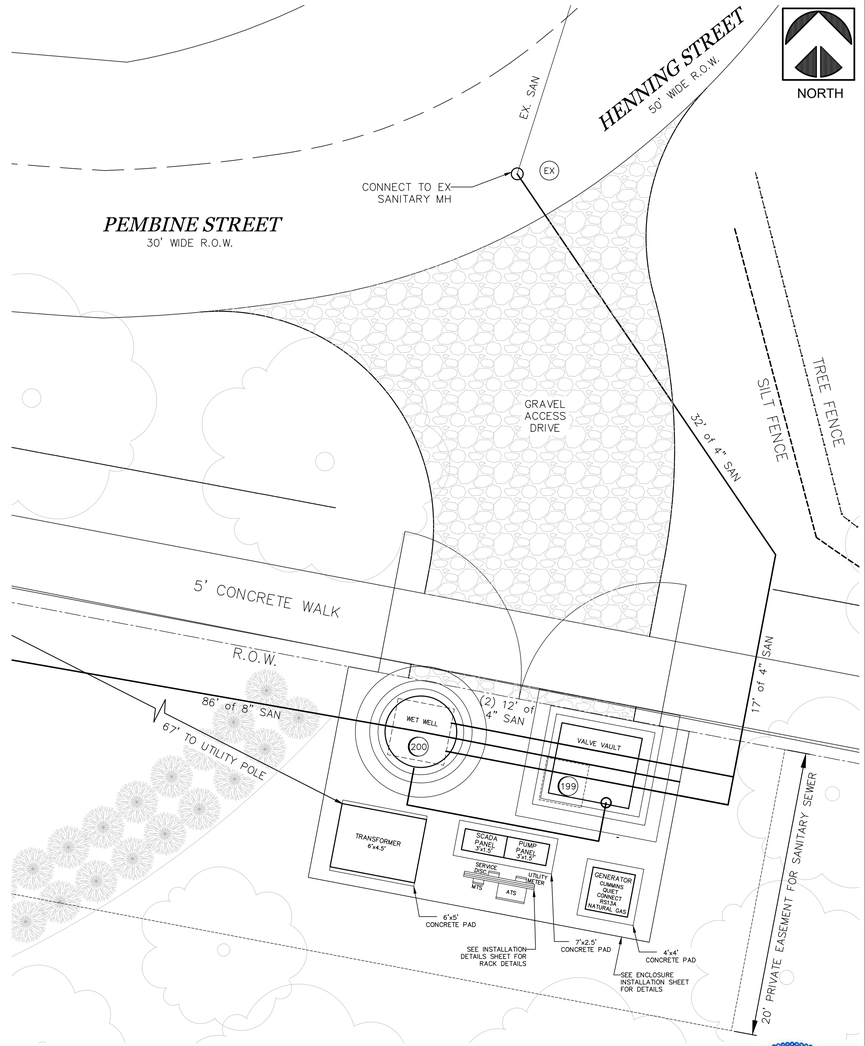


VERTICAL SECTION

DETAIL OF WET WELL AND VALVE VAULT SECTION
NO SCALE

GENERAL NOTES:

1. CONTRACTOR SHALL FURNISH LOCKS (WHICH MEET OAKLAND COUNTY WATER RESOURCES COMMISSIONER REQUIREMENTS) WITH ONE MASTER KEY FOR THE EQUIPMENT ENCLOSURE, SAFETY SWITCHES AND HATCHES (INCLUDE GENERATOR).
2. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BEFORE FABRICATION OF EQUIPMENT AND STRUCTURES.
3. ACCESS COVER, ANCHOR BOLTS, AND PUMP LOCATION IN WET WELL SHALL BE CONFIRMED WITH APPROVED SHOP DRAWINGS PRIOR TO CONSTRUCTION.
4. PIPING SHALL BE PAINTED PER OAKLAND COUNTY WATER RESOURCES COMMISSIONER SPECIFICATIONS. (EPOXY COATED PIPE AND PVC PIPE SHALL NOT BE PAINTED)
5. SEAL ALL PIPE AND CONDUIT OPENINGS WITH NON-SHRINK GROUT UNLESS OTHERWISE SHOWN OR SPECIFIED.
6. DO NOT LOCATE LIQUID LEVEL SENSORS OR EMERGENCY FLOATS NEAR INFLUENT STREAM.
7. POWER METER ENCLOSURE SHALL BE FURNISHED BY DETROIT EDISON CO. AND INSTALLED BY CONTRACTOR.
8. PRECAST VALVE VAULT AND PUMP STATION WET WELL SHALL BE PROVIDED WITH REINFORCING STEEL TO MEET H-20 LIVE LOADS AND DEAD LOADS AS INDUCED BY STRUCTURE DEPTH. THE STRUCTURAL DIMENSIONS SHOWN SUCH AS WALL THICKNESS ARE FOR GUIDANCE ONLY. WET WELL SHALL BE A MINIMUM OF C76 CLASS IV CONCRETE.
9. STRUCTURE MANUFACTURER'S SHOP DRAWING SUBMITTAL SHOULD INCLUDE STRUCTURAL AND BUOYANCY CALCULATIONS BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MICHIGAN
10. TWO INSTALLED PRESSURE INDICATORS ARE REQUIRED ON PUMP SIDE OF VALVES. IN ADDITION ONE INSTALLED PRESSURE GAUGE ON DOWNSTREAM END OF VALVE IS REQUIRED.
11. CONTRACTOR SHALL SUPPLY SPARE IMPELLER AND OTHER PARTS AS INDICATED IN SPECIFICATIONS.
12. CONTRACTOR SHALL PLACE WET WELL AND VALVE VAULT VENTS SUCH THAT THEY DO NOT FACE THE CONTROL PANEL.
13. ALL PIPE OPENINGS IN CAST STRUCTURES ARE TO BE CAST IN PLACE OR CORED. BREAK-OUTS WITH SLEDGEHAMMERS OR JACK HAMMERS IN THE FIELD WILL NOT BE ALLOWED.
14. SEE SPECIFICATIONS FOR SUMP PUMP INFORMATION: SUMP PUMP DISCHARGE PIPING SHALL BE 2" HDPE SDR 11 AND INCLUDE TWO (2) CHECK VALVES FOLLOWED BY ONE (1) BALL VALVE.
15. LADDER SPECIFICATION:
    A. FIBERGLASS LADDER AS MANUFACTURED BY IMCO OR APPROVED EQUAL
    B. LADDER RUNGS @16"O.C.
    C. ATTACH TO WET WELL WITH STANDOFF CLIPS AS REQUIRED
16. PUMPS SHALL BE EXPLOSION PROOF, SEE SPECIFICATIONS.
17. THE JOINT NEEDS TO BE RESTRAINED BY ONE OF THE FOLLOWING APPROVED METHODS:
    A. RESTRAIN JOINT TO WETWELL & VALVE VAULT STRUCTURE WALLS
    B. USE MECHANICAL JOINT RESTRAINT OR FIELD-LOCK GASKET
18. MUST INCREASE FROM A 2.5" D.I.P. TO A 4" D.I.P. AFTER THE PUMPS AND BEFORE THE WETWELL.
19. FLANGE JOINTS MUST BE USED IN WET WELL AND VALVE VAULT.
20. ONSITE EMERGENCY GENERATOR SHALL BE INSTALLED OF SUFFICIENT SIZE TO OPERATE ALL COMPONENTS OF PUMP STATION.
21. DETAILS AND INSTALLATION OF PUMP AND PLUMBING WITHIN THE WET WELL WELL BE AS REQUIRED PER THE PUMP MANUFACTURERS SPECIFICATIONS OR AS REQUIRED BY OCWRC.
22. CONTRACTOR SHALL FURNISH SHOP DRAWINGS OF THE COMPLETE PUMP FOR APPROVAL.
23. LIQUID LEVEL SENSORS SHALL BE ON OPPOSITE SIDE OF INFLUENT PIPE, NOT TO BE IMPACTED BY INFLUENT WASTEWATER.
24. CONTRACTOR IS RESPONSIBLE FOR INSTALLATION OF SCADA PANEL. WRC INTEGRATOR WILL TIE INTO WRC SCADA SYSTEM AND PERFORM PLC PROGRAMMING.
25. CONTROLS AND ELECTRICAL EQUIPMENT SHALL MEET WRC STANDARDS AND SPECIFICATIONS.



SITE PLAN OF PROPOSED SANITARY PUMP STATION
SCALE: 1" = 5'

*SEE SHEETS 30 THROUGH 32 FOR PUMP AND SCADA CONTROL PANEL DETAILS.
* SHOP DRAWINGS SHALL PROVIDE CONDUIT ROUTING AS REQUIRED.

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
#2201034571
LICENSED PROFESSIONAL ENGINEER

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

SANITARY PUMP STATION PLAN & DETAILS

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021
PER CITY 10-06-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 -- -- AS NOTED
JOB NO. 180905
SHEET NO. 28
SHEET 28 OF 38

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Performance Curve

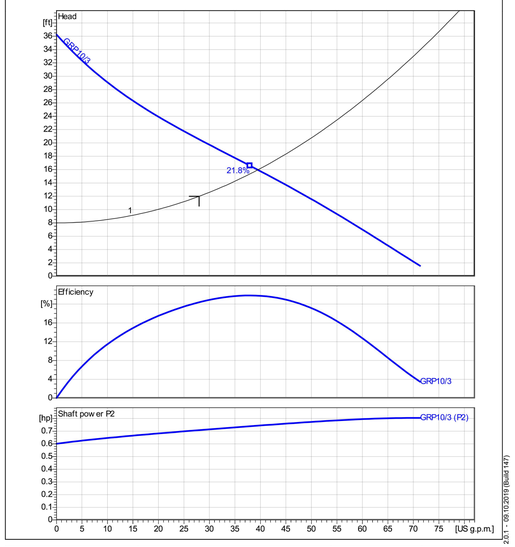
GRP10/3FM

Impeller					
Impeller type: Vane impeller with cutter sys.	Solid size Ø:	Max. Ø: 5⁹/₁₆"	Min. Ø: 3⁹/₁₆"	Sel. Ø: 3⁹/₁₆"	

Operating data				
Speed: **3450 rpm**	Frequency: **60 Hz**	Duty point: **Q =28 US g.p.m. H =12 ft**	Shaft power P2: **0.743 hp**	Discharge port: **2" M**

Power data referred to: Water [100%] ; 68°F; 62.322lb/ft³; 1.0818E-5ft²/s

Testnorm: **HI Standard Sect. 11.6.5.4**



Project	Project no.:	Created by:	Page: 2	Date: 3/4/2021

2.0.1 - 09.10.2019 (Build 147)

DETAIL OF DUPLEX GRINDER PUMP CURVE DATA

NO SCALE

Dimensions

GRP10/3FM

Wet well installation with coupling 2Z-1Z (GRP10...21)
Dimensions in mm [inch], letters see table

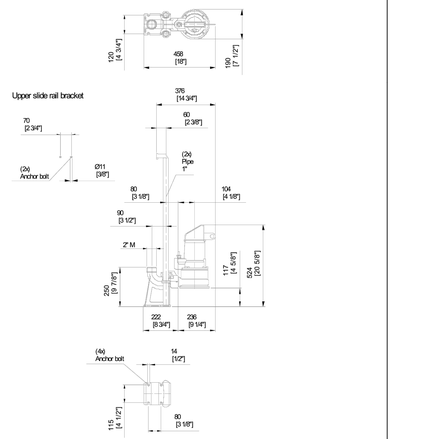


Table Dimensions (inch)

Project	Project no.:	Created by:	Page: 3	Date: 3/4/2021

2.0.1 - 09.10.2019 (Build 147)

DETAIL OF DUPLEX GRINDER PUMP

NO SCALE

Technical Data

GRP10/3FM

Operating data					
Flow	**28 US g.p.m.**	**l/S g.p.m.**	**Head**	**12 ft**	**ft**
Shaft power P2	**0.7**	**hp**	**Static head**	**8**	**ft**
Pump efficiency	**21.8**	**%**	**Required pump NPSH**		**ft**
Pumpe type	Single pump		No. of pumps	1	
Fluid	Wastewater		Temperature	68	°F
Density	62.31	lb/ft³	Kin. viscosity	1.077E-5	ft²/s

Pump					
Pump Code	GRP10/3FM		Speed	3450	rpm
Suction port			Head Max.	36.3	ft
Discharge port	2" M		Head Min.	1.6	ft
Impeller type	Vane impeller with cutter sys		Flow Max.	71.3	US g.p.m.
Solid size	inch		Pump efficiency max.	21.8	%
Impeller Ø	3.74	inch	Required rated power max. P2	0.8	hp

Motor					
Motor design	Submersible motor		Insulation class	H	
Motor name	AM120TM.1,6/2/3		Degree of protection	IP 68	
Frequency	60	Hz	Temperature class	T4	
Rated power P1	1.1	hp	NEMA code	F	
Rated power P2	0.8	hp	Explosion protection	Class I, Div. 1, Grp. C&D	
Rated speed	3450	rpm	Efficiency at % rated power 100%	75.0	%
Rated voltage	230 / 460 V	3~	Efficiency at % rated power 75%		%
Rated current	3.2 / 1,6	A	Efficiency at % rated power 50%		%
Starting current, direct starting	25.0 / 12,5	A	cos phi at % rated power 100%	0.64	
Starting current, star-delta		A	cos phi at % rated power 75%		
Starting mode	Directly		cos phi at % rated power 50%		
Power cable	7X1,5		Control cable		
Type of power cable	NSSHÖU-J		Type of control cable		
Cable length	32.809 ft		Service factor	1.15	
Shaft seal	Mechanical seal on medium side		SiC / SiC		
	Shaft seal (motor side)		Nitrile Rubber		
Bearing	Lower Bearing		Double row angular ball bearing		
	Upper Bearing		Deep Groove Ball Bearing		
Remarks					

Materials / Weight			
Motor housing	Cast Iron ASTM A48;Cl.40B	Motor shaft	AISI 430 F Stainless Steel
Pump housing	Cast Iron ASTM A48;Cl.40B	Bolts	AISI 304 Stainless Steel
Motor bearing cover	Cast Iron ASTM A48;Cl.40B	O-Rings	Nitrile Rubber
Impeller	Cast Iron ASTM A48;Cl.40B		
Cutting system	Hardened Stainless Stell HRC55		
Weight aggregat	55.115 lb		

Project	Project no.:	Created by:	Page: 4	Date: 3/4/2021

2.0.1 - 09.10.2019 (Build 147)

DETAIL OF DUPLEX GRINDER PUMP TECHNICAL DATA

NO SCALE

H_x - Elevation @ Pump OFF

Elevation @ Pump OFF(H_x)	=	$D(1+2.3F_D)$
D=Inlet Diameter (ft)	=	0.67 ft
g=gravity	=	32.2 ft/s^2
V=Velocity (ft/s)	=	2.57 ft/s
F_D= Hydraulic Froude Number	=	$V/(gD^{0.5})$
F_D	=	0.097751376
H_x	=	0.82 ft
H_x(DESIGN VALUE)	=	2.25 ft

H_{Min} - Elevation @ Lead Pump ON

Elevation @ Pump ON(H_m)	=	V_{min}/A
V_{min}=Minimum storage volume	=	T_{min}*Q out/4 gallons
A=Cross section area of wet well	=	28.27 ft^2
D=Diameter of wet well (ft)	=	6 ft
T_{min}=Min cycle time btw pump starts	=	2 min
Q out	=	28 gpm
V_{min}	=	14 gallons
H_m	=	0.5 ft

H_{Lag} - Elevation @ Lag Pump ON

Min Elevation @ Second Pump ON(H_{Lag})	=	8 in
Elevation @ Second Pump ON(H_{Lag})	=	0.75 ft

H_{Alr} - High Water Level Alarm

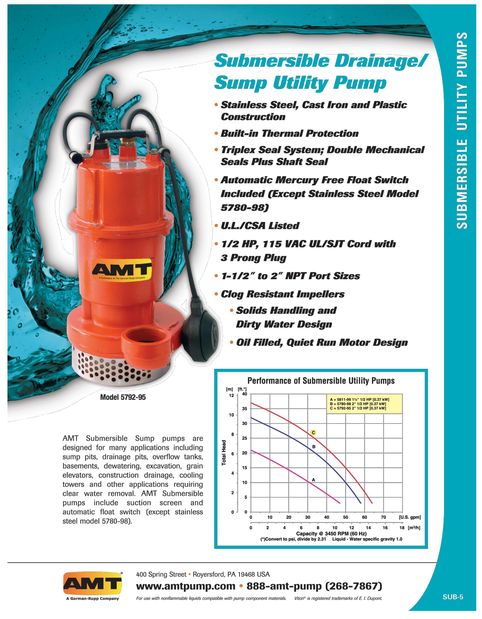
Elevation @ high level alarm ON(H_{Alr})	=	9 in
Elevation @ high level alarm ON(H_{Alr})	=	0.75 ft

AVERAGE FLOW TOTAL	=	4.13 G.P.M
PEAK FLOW TOTAL	=	23073.45 G.P.D OR 16.02 G.P.M
WET WELL SIZE (SEC. 42 .62 OF TEN STATE STANDARDS)		
FILL TIME NOT TO EXCEED 30 MIN. BASED ON AVERAGE FLOW		
(30 MIN. X 16.02 G.P.M = 480.6 G.P.M OR 64.25 CFT)		
Radius (r)	=	3 ft
Min Volume Required (V)	=	64.25 cft
WET WELL SIZING:	=	$(r)^2$ (3.14) h = V
solve for height (h)	=	2.27 , use 2.5 ft

Total Dynamic Head(TDH)

Force Main Length(ft) (L)	=	68 ft
Quantity of flow (Q)	=	28 G.P.M
Diameter of outlet pipe (D)	=	4 in.
C=Hazen Williams friction coefficient	=	80
Head loss due to friction(h_f)	=	0.12 ft
$h_f = L*10.5*(Q\C)^{1.85}*(D)^{-4.87}$		
K = K coefficient (unitless)	=	4.3
v = velocity of fluid in pipe (ft/s)=(Q/A)	=	2.57 ft/s
g = gravity	=	32.2 ft/s^2
h_m = minor headloss (ft)	=	0.44 ft
$h_m = Sum(K) * (V^2 / 2g)$		
Static head=(H)	=	11 ft
TDH = Total Dynamic Head (ft) = $H+h_m+h_f$	=	11.56 ft
TDH = Total Dynamic Head (ft)	~	**12.00** ft

BASIS OF DESIGN FOR DUPLEX LIQUID LEVEL CONTROL SETTINGS



AMT Submersible Sump pumps are designed for many applications including sump pits, drainage pits, overflow tanks, basements, dewatering, excavation, grain elevators, construction drainage, cooling towers and other applications requiring clear water removal. AMT Submersible pumps include suction screen and automatic float switch (except stainless steel model 5780-98).

AMT A Gorman-Rupp Company

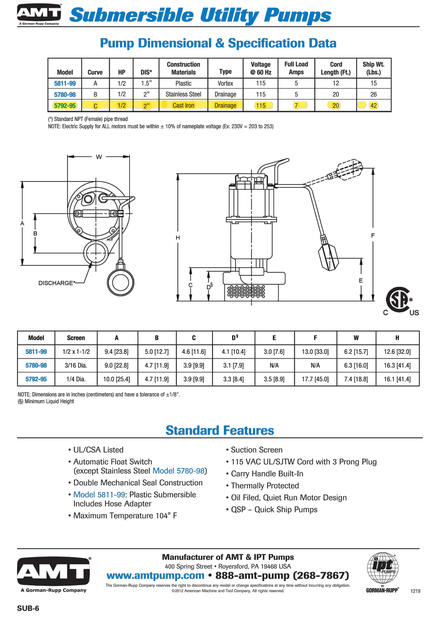
400 Spring Street • Royersford, PA 19468 USA

www.amtpump.com • 888-amt-pump (268-7867)

For use with nonflammable liquids compatible with pump component materials. Viton® is registered trademarks of E. I. Dupont.

DETAIL OF AIR RELEASE VALVE

NO SCALE



SECTION 3 TOWN 1 NORTH, RANGE 8 EAST

CITY OF NOVI

OAKLAND COUNTY, MICHIGAN

SCENIC PINES

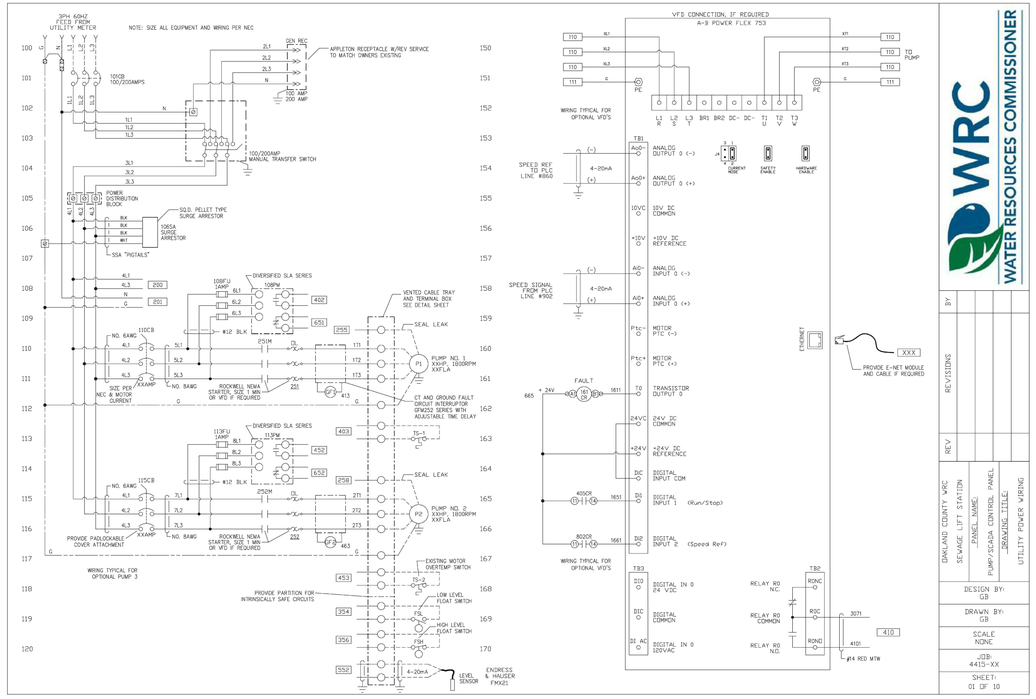
CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

PUMP DETAILS

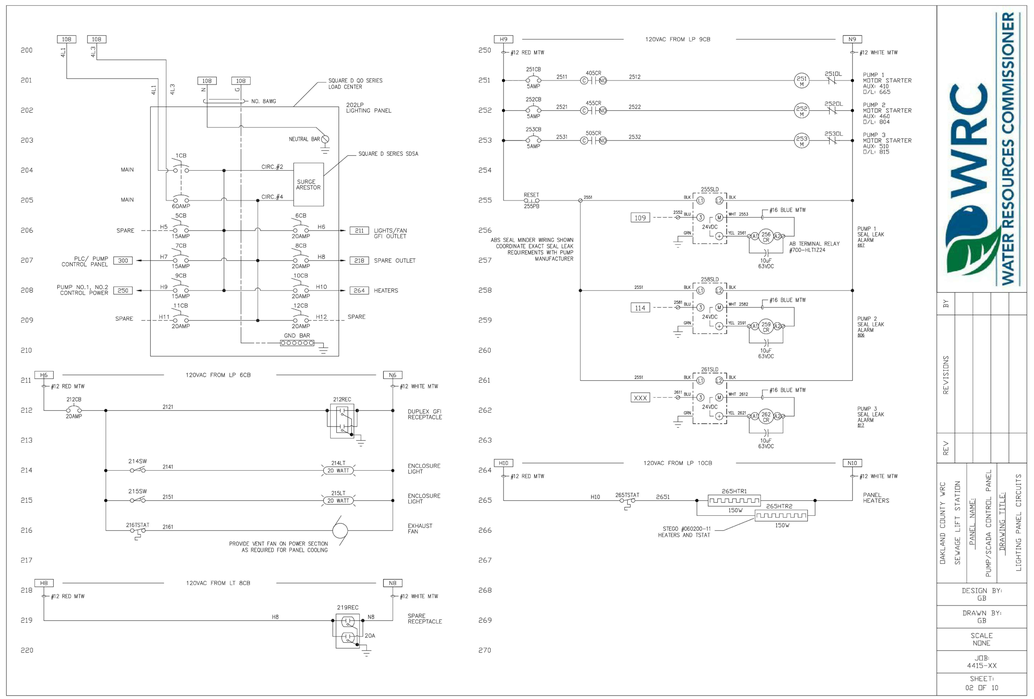
DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021
PER CITY 10-06-2021

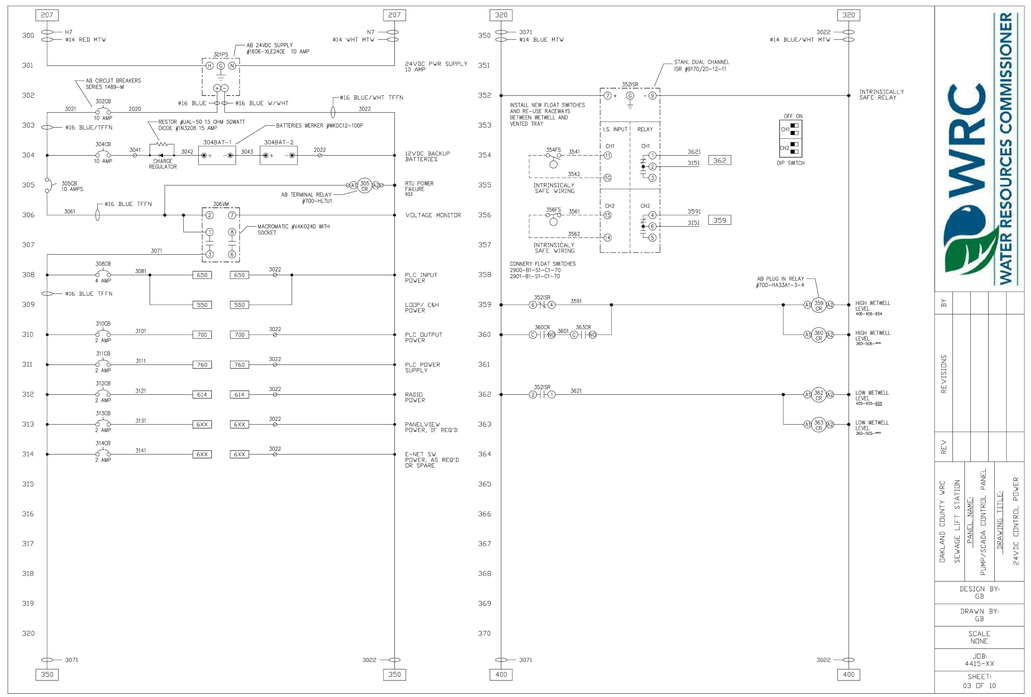
DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 — — AS NOTED
JOB NO. 180905
SHEET NO. 29
SHEET 29 OF 38



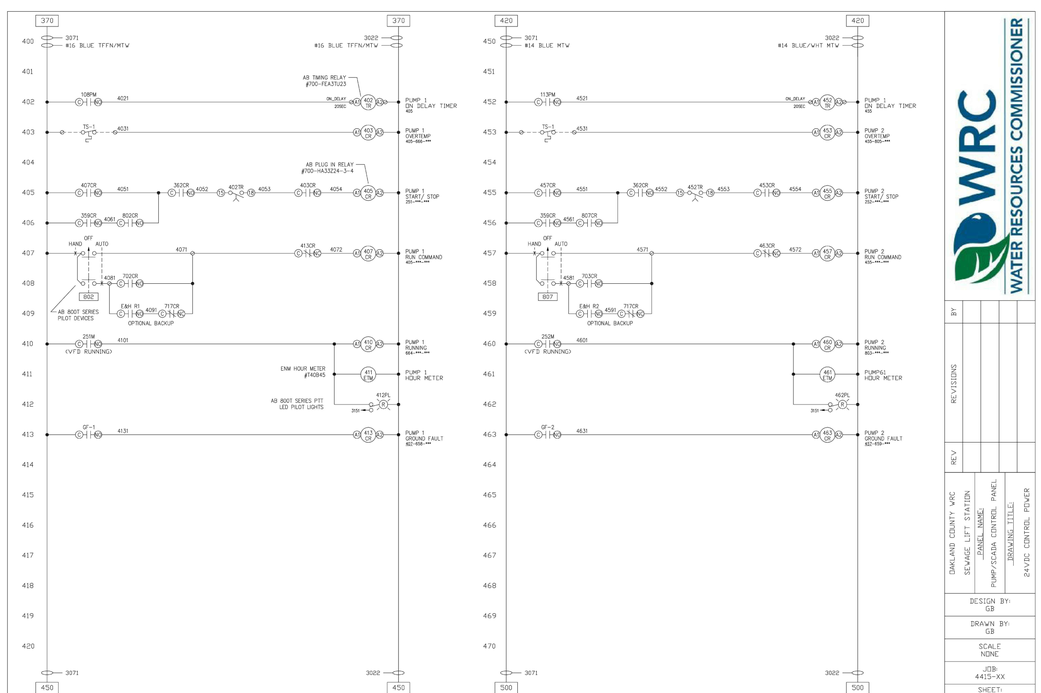
DETAIL OF UTILITY POWER WIRING
NO SCALE



DETAIL OF LIGHTING PANEL CIRCUITS
NO SCALE



DETAIL OF 24VDC CONTROL POWER
NO SCALE



DETAIL OF 24VDC CONTROL POWER
NO SCALE

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

WRC PUMP-SCADA CONTROL PANEL DIAGRAM-1

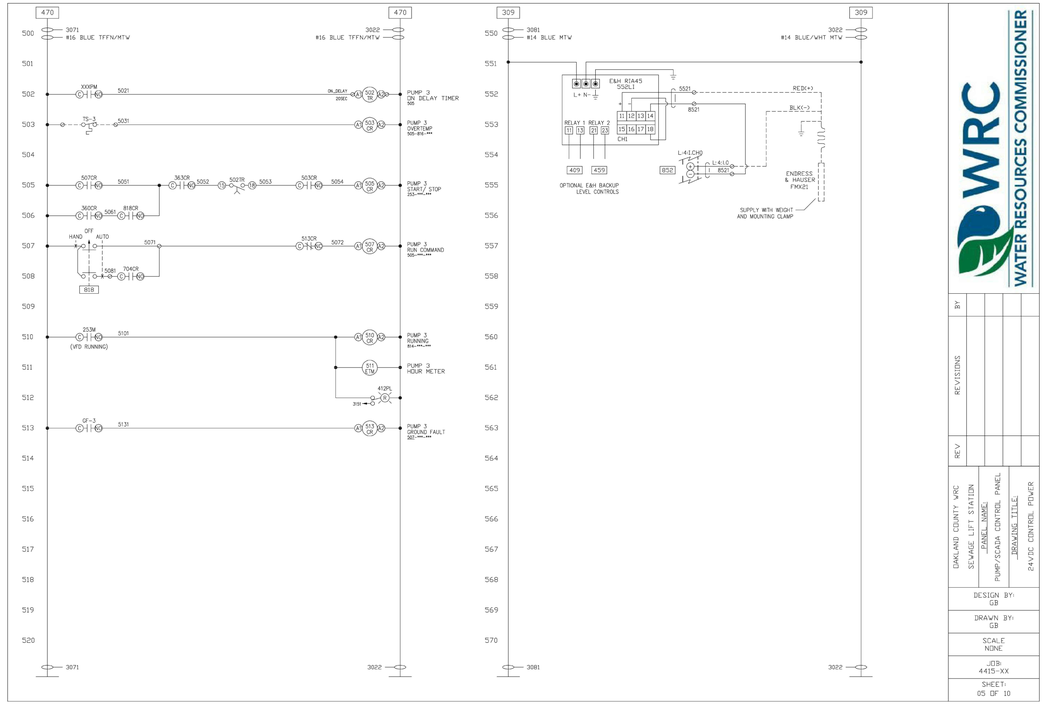
DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021
PER CITY 10-06-2021

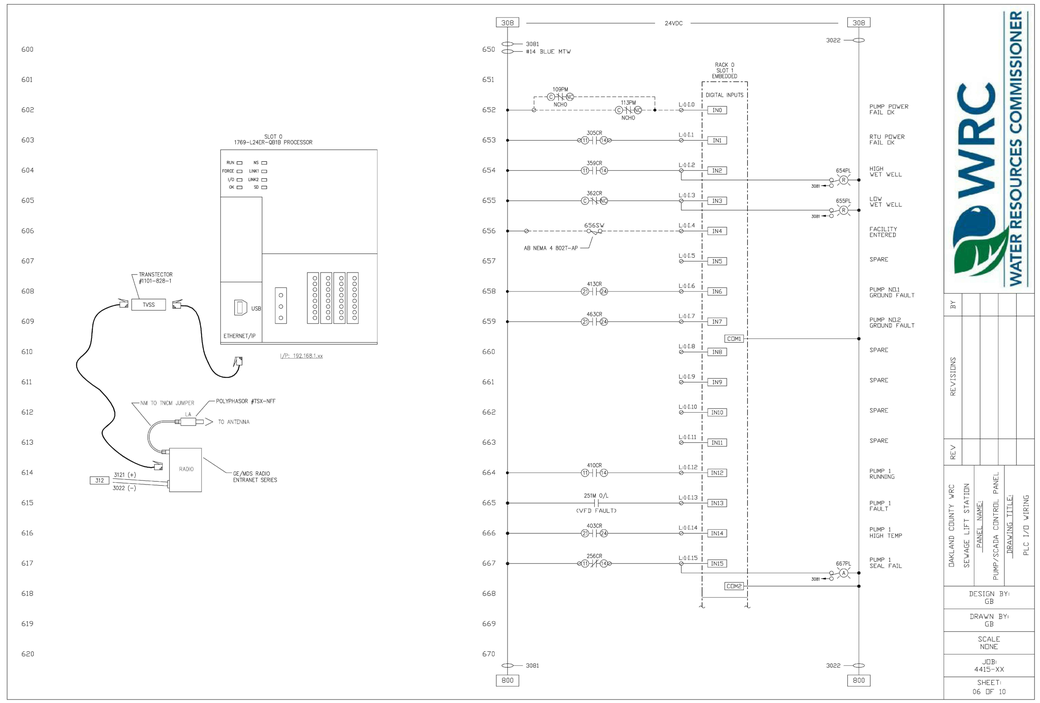
DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 AS NOTED
JOB NO. 180905
SHEET NO. **30**
SHEET 30 OF 38

WES LEE O. UMLOR #2101054571 LICENSED PROFESSIONAL ENGINEER STATE OF MICHIGAN

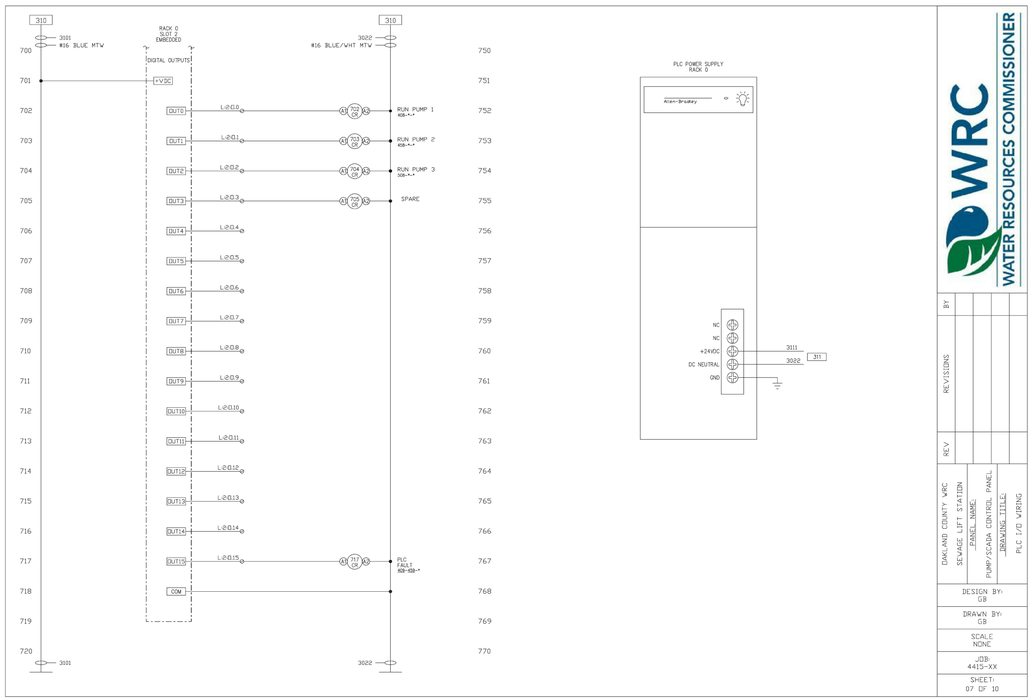
M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-PUMP STATION.DWG



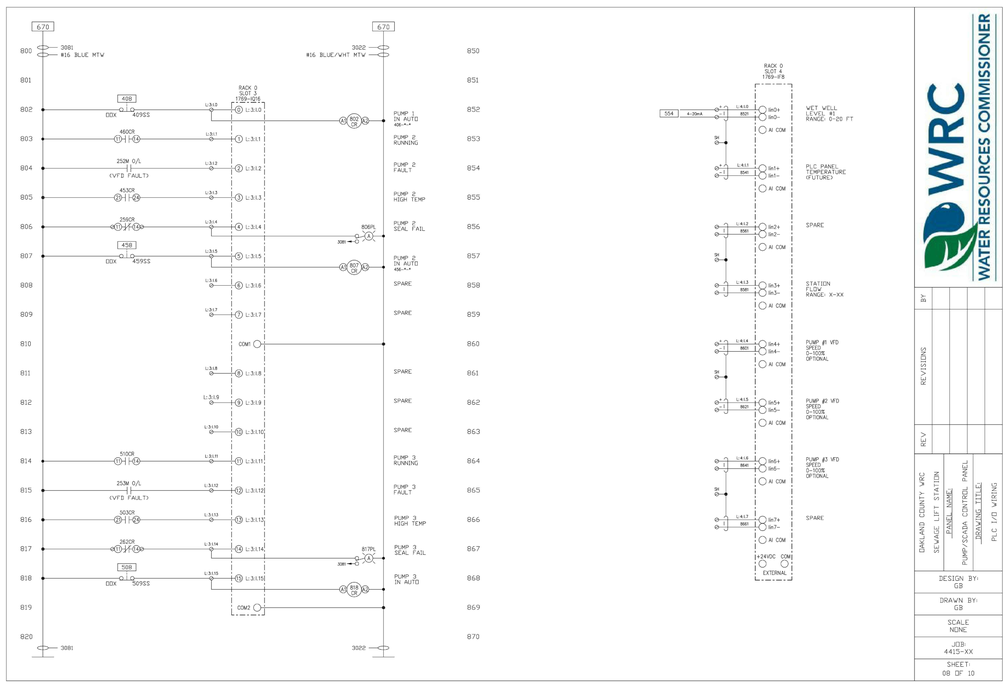
DETAIL OF 24VDC CONTROL POWER
NO SCALE



DETAIL OF PLC I/O WIRING
NO SCALE



DETAIL OF PLC I/O WIRING
NO SCALE



DETAIL OF PLC I/O WIRING
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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

WRC PUMP-SCADA CONTROL PANEL DIAGRAM-2

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021
PER CITY 10-06-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 AS NOTED
JOB NO. 180905
SHEET NO. **31**
SHEET 31 OF 38

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
#2201054571
LICENSED PROFESSIONAL ENGINEER

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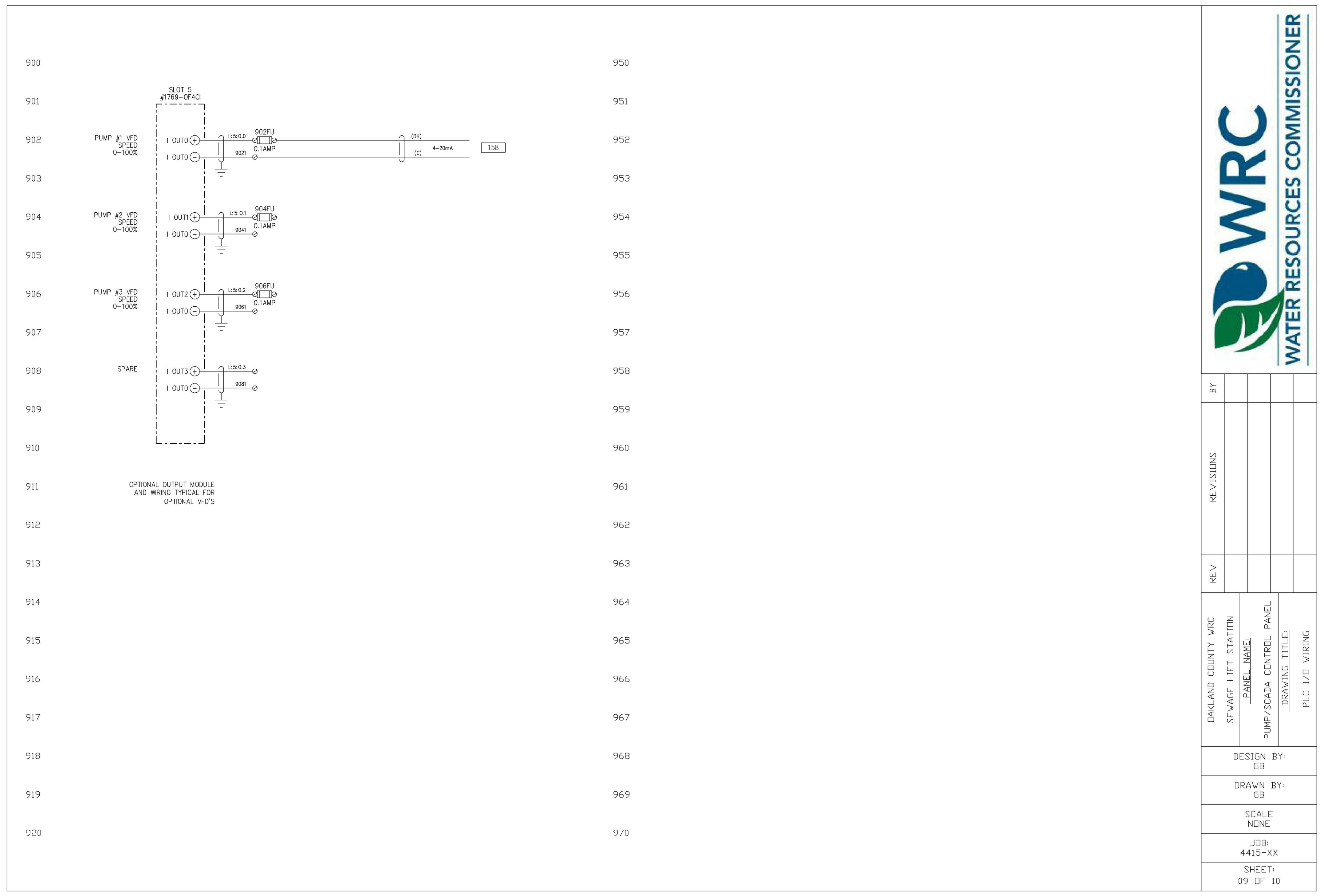
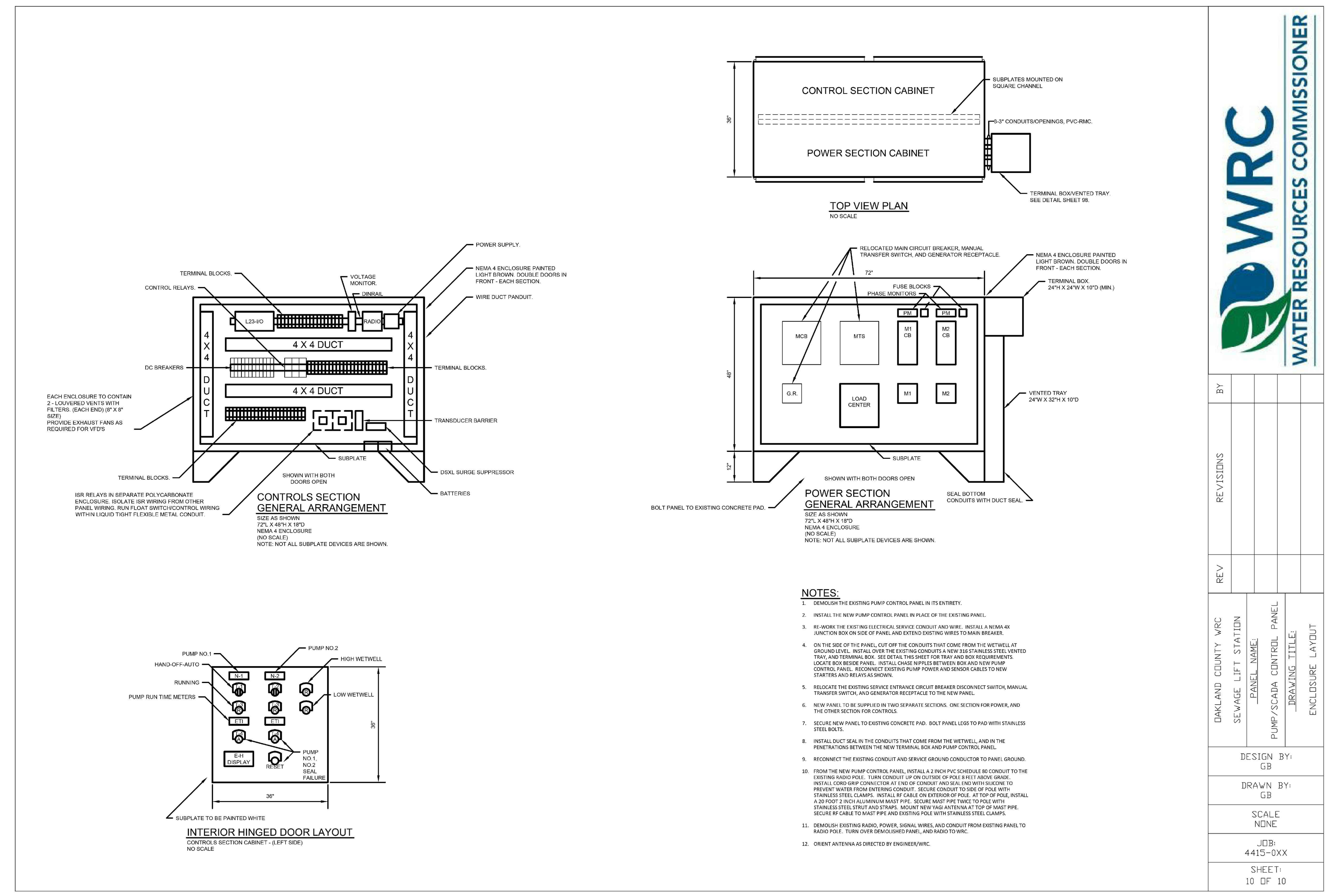


DETAIL OF PLC I/O WIRING
NO SCALE



DETAIL OF ENCLOSURE LAYOUT
NO SCALE

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

WRC PUMP-SCADA CONTROL PANEL DIAGRAM-3

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021
PER CITY 10-06-2021

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201034577
LICENSED PROFESSIONAL ENGINEER

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0
AS NOTED
JOB NO. 180905
SHEET NO.
32
SHEET 32 OF 38

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LOT NO	FGL	Lead inv elv @ Prprty	Lead Sta along CL of Rd	Lead inv elv @ Riser	Total Lead length	Dia of SL"	Dia of SM(Main)"	Cover b/w SL&SM(ft)	Inv elv of SL @ SM	Pr inv elv of SM@SL	Depth of Risers	Lead Slope	Dpth of Lead @ Prop
1	938.20	927.20	STA. 1+05 PRISTINE	926.34	28.00	6.00	8.00	0.13	926.34	926.21	0.00	3.08%	11
2	939.20	928.20	STA. 1+41 PRISTINE	927.64	28.00	6.00	8.00	0.13	926.48	926.35	1.16	2.00%	11
3	939.20	928.20	STA. 2+10 PRISTINE	926.86	32.00	6.00	8.00	0.13	926.85	926.72	0.01	4.20%	11
4	943.70	932.70	STA. 4+74 PRISTINE	932.18	26.00	6.00	8.00	0.13	928.08	927.95	4.10	2.00%	11
5	944.00	933.00	STA. 5+28 PRISTINE	932.48	26.00	6.00	8.00	0.13	928.30	928.17	4.18	2.00%	11
6	944.00	933.00	STA. 5+55 PRISTINE	932.48	26.00	6.00	8.00	0.13	928.41	928.28	4.07	2.00%	11
7	944.00	933.00	STA. 6+20 PRISTINE	932.48	26.00	6.00	8.00	0.13	928.66	928.53	3.82	2.00%	11
8	944.60	933.60	STA. 1+82 NOBLE RIGHT	933.04	28.00	6.00	8.00	0.13	929.56	929.42	3.48	2.00%	11
9	944.60	933.60	STA. 1+21 NOBLE RIGHT	933.02	29.00	6.00	8.00	0.13	929.31	929.18	3.71	2.00%	11
10	944.20	933.20	STA. 1+00 NOBLE RIGHT	932.62	29.00	6.00	8.00	0.13	929.23	929.10	3.39	2.00%	11
11	944.20	933.20	STA. 0+48 NOBLE RIGHT	932.62	29.00	6.00	8.00	0.13	929.18	929.05	3.44	2.00%	11
12	944.10	933.10	STA. 0+49 NOBLE LEFT	932.52	29.00	6.00	8.00	0.13	929.58	929.44	2.94	2.00%	11
13	944.20	933.20	STA. 1+06 NOBLE LEFT	932.62	29.00	6.00	8.00	0.13	929.80	929.67	2.82	2.00%	11
14	944.60	933.60	STA. 1+27 NOBLE LEFT	933.02	29.00	6.00	8.00	0.13	929.89	929.75	3.13	2.00%	11
15	944.60	933.60	STA. 1+82 NOBLE LEFT	933.02	29.00	6.00	8.00	0.13	930.10	929.97	2.92	2.00%	11
16	944.10	933.10	STA. 1+29 NOBLE LEFT	931.96	57.00	6.00	8.00	0.13	929.89	929.76	2.07	2.00%	11
17	944.10	933.10	STA. 0+77 NOBLE LEFT	931.96	57.00	6.00	8.00	0.13	929.69	929.55	2.27	2.00%	11
18	942.30	931.30	STA. 4+11 PRISTINE	930.08	61.00	6.00	8.00	0.13	927.84	927.71	2.24	2.00%	11
19	942.30	931.30	STA. 3+62 PRISTINE	930.20	55.00	6.00	8.00	0.13	927.56	927.42	2.64	2.00%	11
20	941.30	930.30	STA. 3+40 PRISTINE	929.14	58.00	6.00	8.00	0.13	927.47	927.33	1.67	2.00%	11
21	941.30	930.30	STA. 2+92 PRISTINE	929.16	57.00	6.00	8.00	0.13	927.28	927.15	1.88	2.00%	11
22	939.60	928.60	STA. 2+04 PRISTINE	926.83	57.00	6.00	8.00	0.13	926.83	926.69	0.01	3.10%	11
23	939.60	928.60	STA. 1+54 PRISTINE	926.54	60.00	6.00	8.00	0.13	926.54	926.41	0.00	3.44%	11
24	938.40	927.70	STA. 1+35 PRISTINE	926.50	60.00	6.00	8.00	0.13	926.46	926.32	0.04	2.00%	10.7
25	938.40	927.50	STA. 0+88 PRISTINE	926.28	61.00	6.00	8.00	0.13	926.27	926.13	0.01	2.00%	10.9

SANITARY LEADS TABLE
NO SCALE

SANITARY SEWER STRUCTURE TABLE						
Number	Type	Size (Dia)	RIM ELV	INV IN	INV OUT	Frame & Cover
207	SAN MH	4		-	929.96	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
206	SAN MH	4	943.20	-	929.43	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
205	SAN MH	4	943.00	928.97	928.87	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
204	SAN MH	4	941.60	927.57	927.47	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
203	SAN MH	4	939.61	927.01	926.91	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
202	SAN MH	4	938.50	926.56	926.46	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
201	SAN MH	4	937.00	925.88	925.88	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
200	WET WELL	4	937.70	925.02	931.00	EJIW. #1040-1 ZPT FRAME WITH 1040 AGS
199	VALVE VAULT BOX	8' X 7'	-	931.00	931.00	

SANITARY STRUCTURE TABLE
NO SCALE

Xing No	LOT No	Lead I.E @ Prop	Lead I.E @ Storm	Lead Prp to Strm	T/P Lead	Storm Inv elev	Strm Dia	Strm B/Pipe	Clearance
1	25	927.50	927.14	18.00	927.77	932.49	8.00	932.35	4.58
2	24	927.70	927.46	12.00	928.09	932.82	8.00	932.68	4.59
3	23	928.60	928.24	18.00	928.87	933.00	8.00	932.86	3.99
4	22	928.60	928.30	15.00	928.93	933.30	8.00	933.16	4.22
5	21	930.30	929.92	19.00	930.55	933.77	8.00	933.63	3.08
6	20	930.30	929.92	19.00	930.55	934.01	8.00	933.87	3.32
7	19	931.30	930.96	17.00	931.59	934.14	8.00	934.00	2.41
8	5	933.00	932.72	14.00	933.35	938.16	8.00	938.02	4.67
9	6	933.00	932.84	8.00	933.47	938.02	8.00	937.88	4.40
10	7	933.00	932.84	8.00	933.47	937.80	8.00	937.66	4.19
11	9	933.60	933.24	18.00	933.87	938.55	8.00	938.41	4.54
12	10	933.20	932.84	18.00	933.47	938.29	8.00	938.15	4.68
13	11	933.10	932.74	18.00	933.37	937.66	8.00	937.52	4.15
14	12	933.10	932.72	19.00	933.35	937.80	8.00	937.66	4.31
15	13	933.20	932.82	19.00	933.45	938.64	8.00	938.50	5.05
16	14	933.60	933.22	19.00	933.85	938.95	8.00	938.81	4.96

SANITARY LEADS & STORM CROSSING TABLE
NO SCALE

UTILITY CROSSING TABLE:

#1 – SANITARY/STORM
8" STM B/P: 937.55
8" SAN T/P: 929.29
CLEARANCE = 8.26'

#2 – SANITARY/STORM
12" STM B/P: 936.85
8" SAN T/P: 929.89
CLEARANCE = 6.96'

#3 – WTR/SANITARY
8" WM B/P: 935.79
8" SAN T/P: 930.44
CLEARANCE = 5.35'

#4 – WTR/STORM
12" STM B/P: 936.52
8" WM T/P: 934.95
CLEARANCE = 1.57'

#5 – WTR/STORM
12" STM B/P: 936.50
8" WM T/P: 934.95
CLEARANCE = 1.55'

#6 – WTR/STORM
12" STM B/P: 936.45
8" WM T/P: 934.95
CLEARANCE = 1.50'

#7 – WTR/STORM
18" STM B/P: 936.25
8" WM T/P: 934.75
CLEARANCE = 1.50'

#8 – WTR/STORM
12" STM B/P: 936.54
8" WM T/P: 934.95
CLEARANCE = 1.59'

#9 – WTR/STORM
15" STM B/P: 932.11
8" WM T/P: 930.61
CLEARANCE = 1.50'

#10 – SAN/WTR
4" SAN B/P: 931.00
8" WM T/P: 929.50
CLEARANCE = 1.5'

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

SANITARY STRUCTURE AND LEAD SCHEDULES

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE AS NOTED
JOB NO. 180905
SHEET NO. 33
SHEET 33 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054571
LICENSED PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-STORM&SANITARY SCHEDULES.DWG

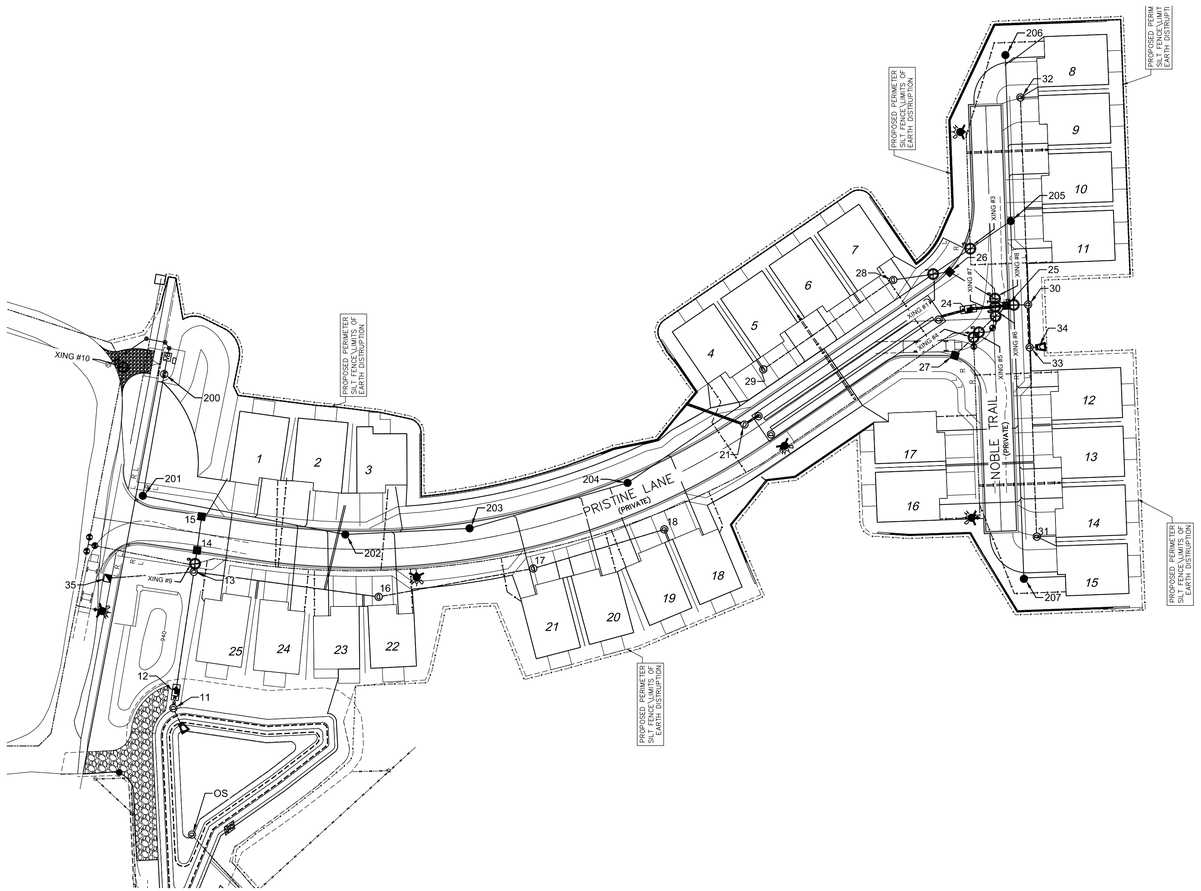
STORM SEWER CALCULATIONS: 15-Nov-2019

PROJECT NAME: SCENIC PINES | I = 175 / t + 25

FROM MH	TO MH	C avg 0.00	AREA Ac	TOTAL AREA	A*C	TOTAL A*C	T min	I in/hr	Q=CIA cfs	Q^{FULL} cfs	PIPE dia	PIPE CLASS	RUN ft	HG SLOPE	FALL in HG	UPST HG ELEV	DWNST HG ELEV	T to DS MH	V AVG fps	V^{FULL} mannings fps	PIPE SLOPE	UPST INV ELEV	DWNST INV ELEV	UPST RIM	UPST RIM TO INV	DWNST RIM TO INV	UPST CVR	DWNST CVR	UPST RIM TO HG	UPST MH CL STM STATION
32	30	0.80	0.1500	0.1500	0.1200	0.1200	**20.00** 21.81	3.89	0.47	1.33	8		145.00	0.15%	0.22	939.48	937.73	1.81	1.34	3.81	1.21%	938.95	937.20	943.80	4.85	5.80	4.04	5.00	4.32	357.00
31	33	0.80	0.2300	0.2300	0.1840	0.1840	20.00 21.07	3.89	0.72	1.47	8		132.00	0.35%	0.46	939.87	937.93	1.07	2.05	4.20	1.47%	939.33	937.39	943.80	4.47	5.71	3.66	4.90	3.93	212.00
34	33	0.80	0.1600	0.1600	0.1280	0.1280	20.00 20.15	3.89	0.50	8.86	12		6	0.02%	0.00	940.08	939.73	0.15	0.63	11.28	6.18%	939.28	938.93	939.28		4.17		3.00		5.67
33	30	0.80	0.0000	0.3900	0.0000	0.3120	21.07	3.80	1.19	2.02	12		30.00	0.11%	0.03	937.93	937.83	0.33	1.51	2.57	0.32%	937.13	937.03	943.10	5.97	5.97	4.81	4.80	5.17	80.00
30	25	0.80	0.0000	0.5400	0.0000	0.4320	21.81 21.93	3.74	1.62	5.44	12		15.00	0.21%	0.03	937.73	937.38	0.12	2.06	6.92	2.33%	936.93	936.58	943.00	6.07	5.82	4.90	4.65	5.27	15.00
27	25	0.80	0.2200	0.2200	0.1760	0.1760	20.00 20.96	3.89	0.68	2.02	12		50.00	0.04%	0.02	937.54	937.38	0.96	0.87	2.57	0.32%	936.74	936.58	942.20	5.46	5.82	4.29	4.65	4.66	50.00
29	28	0.80	0.1500	0.1500	0.1200	0.1200	20.00	3.89	0.47	0.85	8		110.00	0.15%	0.16	938.82	938.27	1.37	1.34	2.45	0.50%	938.29	937.74	943.50	5.21	5.16	4.41	4.36	4.68	110.00
28	26	0.80	0.0000	0.1500	0.0000	0.1200	21.37	3.77	0.45	1.65	8		40.00	0.14%	0.06	938.27	937.53	0.51	1.30	4.72	1.86%	937.74	936.99	942.90	5.16	4.96	4.36	4.15	4.63	40.00
26	25	0.80	0.1500	0.3000	0.1200	0.2400	21.89 21.89	3.73	0.90	2.02	12		46.00	0.06%	0.03	937.53	937.38	0.67	1.14	2.57	0.32%	936.73	936.58	941.95	5.22	5.82	4.06	4.65	4.42	46.00
25	24	0.80	0.3000	1.3600	0.2400	1.0880	21.93	3.73	4.06	6.06	12		27.00	1.30%	0.35	937.28	936.50	0.09	5.17	7.71	2.89%	936.48	935.70	942.40	5.92		4.75		5.12	27.00
24	UD	0.80	0.0000	1.3600	0.0000	1.0880	22.02 **22.06**	3.72	4.05	5.96	12		20.00	1.29%	0.26	936.50 **935.94**	935.94	0.06	5.16	7.59	2.80%	935.70	935.14	-	-	-	-	-	-	-
18	17	0.67	0.1400	0.1400	0.0938	0.0938	20.00	3.89	0.36	0.85	8		96.00	0.09%	0.09	937.29	936.81	1.53	1.05	2.45	0.50%	936.76	936.28	942.10	5.34	4.52	4.53	3.71	4.81	96.00
17	16	0.67	0.0000	0.1400	0.0000	0.0938	21.53	3.76	0.35	0.85	8		110.00	0.09%	0.09	936.81	936.26	1.81	1.01	2.45	0.50%	936.28	935.73	940.80	4.52	3.67	3.71	2.86	3.99	110.00
16	13	0.67	0.2000	0.3400	0.1340	0.2278	23.35 24.26	3.62	0.82	1.53	8		130.00	0.47%	0.61	936.26	934.18	0.92	2.36	4.38	1.60%	935.73	933.65	939.40	3.67	4.04	2.86	3.23	3.14	130.00
35	13	0.67	0.1100	0.1100	0.0737	0.0737	20.00 22.74	3.89	0.29	2.05	12		60.00	0.01%	0.00	933.29	933.29	2.74	0.36	2.61	0.33%	932.49	932.29	935.80	3.31	5.40	2.15	4.24	2.51	60.00
15	14	0.67	0.4400	0.4400	0.2948	0.2948	20.00	3.89	1.15	2.08	12		24.00	0.10%	0.02	933.41	933.33	0.27	1.46	2.65	0.34%	932.61	932.53	936.69	4.08	4.16	2.91	3.00	3.28	24.00
14	13	0.67	0.4600	0.9000	0.3082	0.6030	20.27 20.41	3.87	2.33	3.29	15		15.00	0.13%	0.02	933.33	933.29	0.13	1.90	2.68	0.26%	932.33	932.29	936.69	4.36	5.40	2.93	3.96	3.36	15.00
13	12	0.67	0.0000	1.3500	0.0000	0.9045	24.26	3.55	3.21	3.23	15		85.00	0.25%	0.21	933.29	933.08	0.54	2.62	2.63	0.25%	932.29	932.08	937.69	5.40	4.38	3.96	2.95	4.40	85.00
12	11	0.67	0.0000	1.3500	0.0000	0.9045	24.80	3.51	3.18	3.77	15		11.00	0.24%	0.03	933.08	933.04	0.07	2.59	3.07	0.34%	932.08	932.04	936.46	4.38	4.31	2.95	2.87	3.38	11.00
11	10	0.67	0.0000	1.3500	0.0000	0.9045	24.87 **24.95**	3.51	3.17	3.65	15		12.00	0.24%	0.03	933.04 **933.00**	933.00	0.08	2.59	2.98	0.32%	932.04	932.00	936.35	4.31		2.87		3.31	12.00

STORM SEWER DESIGN CALCULATIONS
NO SCALE

NO	UTILITY XING	ELEVATION	CLEARANCE
1	8" STORM B/P	937.55	8.26'
	8" SANITARY T/P	929.29	
2	12" STORM B/P	936.85	6.96'
	8" SANITARY T/P	929.89	
3	8" WM B/P	935.79	5.35'
	8" SAN T/P	930.44	
4	12" STM B/P	936.52	1.57'
	8" WM T/P	934.95	
5	12" STM B/P	936.50	1.55'
	8" WM T/P	934.95	
6	12" STORM B/P	936.45	1.50'
	8" WM T/P	934.95	
7	18" STORM B/P	936.25	1.50'
	8" WM T/P	934.75	
8	12" STORM B/P	936.54	1.59'
	8" WM T/P	934.95	
9	15" STORM B/P	932.11	1.50'
	8" WM T/P	930.61	
10	4" SANITARY B/P	931.00	1.50'
	8" WM T/P	929.50	



UTILITY CROSSING PLAN
1 inch = 50ft.

Number	Type	Size (Dia)	Sump Depth	RIM ELV	INV IN	INV OUT	Frame & Cover
35	MH	4	2	935.80	932.49	932.29	EJIW 1040 FRAME WITH B COVER
34	END SECTION	0	0	939.28	-	939.28	
33	MH	4	2	943.10	937.39	937.13	EJIW 1040 FRAME WITH B COVER
32	MH	2	0	943.80	-	938.95	EJIW 1040 FRAME WITH B COVER
31	MH	2	0	943.80	-	939.33	EJIW 1040 FRAME WITH B COVER
30	MH	4	2	943.00	937.03	936.93	EJIW 1040 FRAME WITH B COVER
29	MH	2	0	943.50	-	938.29	EJIW 1040 FRAME WITH B COVER
28	MH	2	0	942.90	937.74	937.74	EJIW 1040 FRAME WITH B COVER
27	INLET	4	0	942.20	-	936.74	EJIW No.7045 FRAME WITH M1 COVER
26	CB	4	2	941.95	936.99	936.73	EJIW No.7045 FRAME WITH M1 COVER
25	CB	7	2	942.40	936.58	936.48	EJIW No.7045 FRAME WITH M1 COVER
24	Vortech 2000			942.40	935.70	935.70	
18	MH	2	0	942.10	-	936.76	EJIW 1040 FRAME WITH B COVER
17	MH	2	0	940.80	936.28	936.28	EJIW 1040 FRAME WITH B COVER
16	MH	2	0	939.40	935.73	935.73	EJIW 1040 FRAME WITH B COVER
15	INLET	4	0	936.69	-	932.61	EJIW No.7045 FRAME WITH M1 COVER
14	CB	4	2	936.69	932.53	932.33	EJIW No.7045 FRAME WITH M1 COVER
13	MH	4	2	937.69	932.29	932.29	EJIW 1040 FRAME WITH B COVER
12	MH	V 4000		936.46	932.08	932.08	EJIW 1040 FRAME WITH B COVER
11	MH	4	2	936.35	932.04	932.04	EJIW 1040 FRAME WITH B COVER
ES-1	END SECTION					932.00	
21	MH	6	2	942.76	934.00	933.90	EJIW 1040 FRAME WITH B COVER
ES-3	END SECTION					933.80	

STORM SEWER STRUCTURE TABLE
NO SCALE

NORTH

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

The UMLOR Group — LAND DEVELOPMENT SERVICES

SECTION 3 | TOWN 1 NORTH, RANGE 8 EAST | CITY OF NOVI | OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
27125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

STORM STRUCTURE AND LEAD SCHEDULE

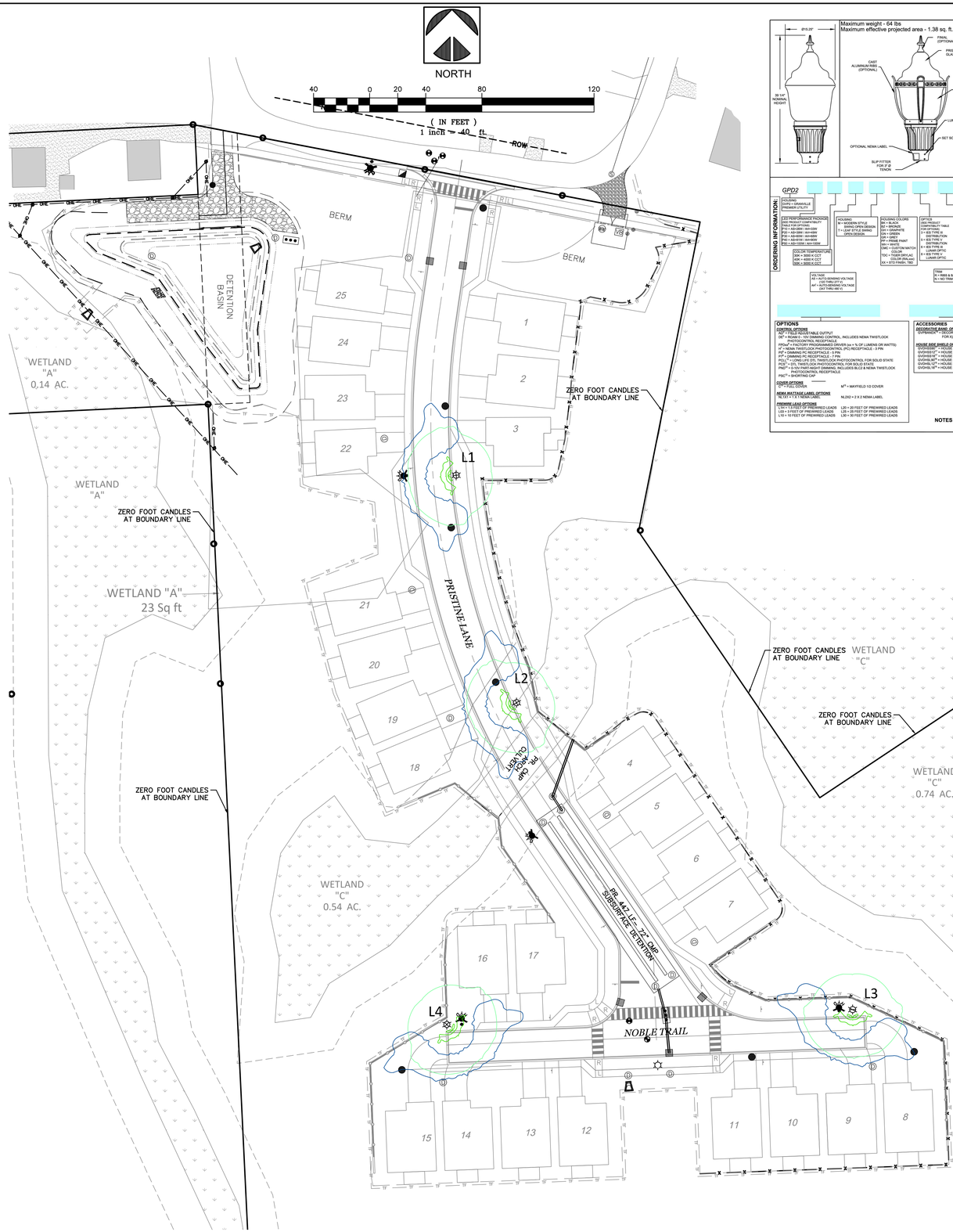
DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE AS NOTED
JOB NO. 180905
SHEET NO. **34**
SHEET 34 OF 38

STATE OF MICHIGAN — WES LEE — O. UMLOR — ENGINEER — 62015457 — LICENSED PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-STORM&SANITARY SCHEDULES.DWG



Performance Data

AS Voltage Option Data

LED Package	Distribution	System Watts	30K (3000K, 70 CRI) Lumens	LPW	B	U	G	40K (4000K, 70 CRI) Lumens	LPW	B	U	G	50K (5000K, 70 CRI) Lumens	LPW	B	U	G
P10	3	26	3,429	132	1	4	3	3,605	139	1	4	3	3,605	139	1	4	3
	5	26	3,309	127	2	4	2	3,479	134	2	4	2	3,479	134	2	4	2
P20	3	39	5,164	132	2	5	3	5,430	139	2	5	3	5,430	139	2	5	3
	5	39	4,983	128	3	4	2	5,240	134	3	4	3	5,240	134	3	4	3
P30	3	60	7,271	121	2	5	4	7,645	127	3	5	4	7,645	127	3	5	4
	5	60	7,016	117	3	5	3	7,377	123	3	5	3	7,377	123	3	5	3
P40	3	81	9,140	113	3	5	4	9,611	119	3	5	5	9,611	119	3	5	5
	5	81	8,820	109	3	5	3	9,274	114	3	5	3	9,274	114	3	5	3
P50	3	100	10,695	107	3	5	5	11,245	112	3	5	5	11,245	112	3	5	5
	5	100	10,320	103	4	5	3	10,851	109	4	5	3	10,851	109	4	5	3

AH Voltage Option Data

LED Package	Distribution	System Watts	30K (3000K, 70 CRI) Lumens	LPW	B	U	G	40K (4000K, 70 CRI) Lumens	LPW	B	U	G	50K (5000K, 70 CRI) Lumens	LPW	B	U	G
P10	3	33	3,429	104	1	4	3	3,605	109	1	4	3	3,605	109	1	4	3
	5	33	3,309	100	2	4	2	3,479	105	2	4	2	3,479	105	2	4	2
P20	3	49	5,164	105	2	5	3	5,430	111	2	5	3	5,430	111	2	5	3
	5	49	4,983	102	3	4	2	5,240	107	3	4	3	5,240	107	3	4	3
P30	3	68	7,271	107	2	5	4	7,645	112	3	5	4	7,645	112	3	5	4
	5	68	7,016	103	3	5	3	7,377	108	3	5	3	7,377	108	3	5	3
P40	3	90	9,140	102	3	5	4	9,611	107	3	5	5	9,611	107	3	5	5
	5	90	8,820	98	3	5	3	9,274	103	3	5	3	9,274	103	3	5	3
P50	3	100	10,695	107	3	5	5	11,245	112	3	5	5	11,245	112	3	5	5
	5	100	10,320	103	4	5	3	10,851	109	4	5	3	10,851	109	4	5	3

FPDxx Data Table (Only Available With AS Option)

FPDxx setting	P10 30K	P10 40K	P10 50K
	Not Available	Not Available	Not Available

FPDxx (AS setting)	Wattage	P20 30K	P20 40K	P20 50K
Standard	39	5,164 / 4,983	5,430 / 5,240	5,430 / 5,240
FP05	38	4,957 / 4,784	5,193 / 5,009	5,193 / 5,009
FP09	36	4,745 / 4,580	4,971 / 4,774	4,971 / 4,774
FP08S	34	4,511 / 4,353	4,701 / 4,537	4,701 / 4,537
FP08D	32	4,233 / 4,085	4,411 / 4,256	4,411 / 4,256
FP07S	30	3,993 / 3,853	4,198 / 4,051	4,198 / 4,051

FPDxx (AS setting)	Wattage	P30 30K	P30 40K	P30 50K
Standard	60	7,271 / 7,016	7,645 / 7,377	7,645 / 7,377
FP09S	57	7,087 / 6,838	7,451 / 7,190	7,451 / 7,190
FP09D	54	6,880 / 6,639	7,234 / 6,980	7,234 / 6,980
FP08S	51	6,651 / 6,418	6,993 / 6,748	6,993 / 6,748
FP08D	48	6,400 / 6,176	6,730 / 6,494	6,730 / 6,494
FP07S	45	6,129 / 5,914	6,444 / 6,218	6,444 / 6,218

FPDxx (AS setting)	Wattage	P40 30K	P40 40K	P40 50K
Standard	81	9,140 / 8,820	9,611 / 9,274	9,611 / 9,274
FP09S	79	8,973 / 8,659	9,435 / 9,103	9,435 / 9,103
FP09D	72	8,567 / 8,268	9,008 / 8,693	9,008 / 8,693
FP08S	68	8,061 / 7,778	8,476 / 8,181	8,476 / 8,181
FP08D	64	7,760 / 7,535	8,201 / 7,913	8,201 / 7,913

FPDxx (AS setting)	Wattage	P50 30K	P50 40K	P50 50K
Standard	100	10,695 / 10,320	11,245 / 10,851	11,245 / 10,851
FP09S	95	10,424 / 10,059	10,960 / 10,576	10,960 / 10,576
FP09D	90	10,120 / 9,765	10,640 / 10,268	10,640 / 10,268
FP08S	85	9,783 / 9,440	10,286 / 9,926	10,286 / 9,926

NOTES

1. Not available with "AO", "DE", "FPDXX", "PCLL", "PCS" or "PND".
2. Not available with cover options "C" or "M".
3. Only use if "N" for Trim and either "C" or "N" for Finial is selected.
4. Not available with "AH", "DE", "P6", "P7", "PCS" or "PND". Refer to instructions on website for details.
5. Not available with "AO", "AH", "PCLL", "PCS", "PSC" or "PND".
6. Refer to the FPDxx Data Table for lumens and wattages options.
7. Photocontrol not included. Not available with options "DE", "P6", "P7", "PSC" or "P7".
8. Photocontrol not included. Not available with options "DE", "H", "FPDXX", "PND" and "P5".
9. Photocontrol not included. Not available with options "DE", "H", "FPDXX" and "P6".
10. Requires "H", "P5", "P7" or "PND". Not available with "AO", "PCS" or "PSC" options.
11. Available with "AS" voltage only. Requires "H", "P5", "P7" or "PND". Not available with "AO", "PCLL" or "PSC" options.
12. Available with "AS" voltage only. Not available with options "AO", "DE", "H", "P5" and "P7".
13. Requires "H", "P5" or "P7" option photocontrol receptacle or "PND" (includes photocontrol receptacle). Not available with "PCLL" or "PCS".
14. Not available with "N" finial option or "M" option.
15. Not available with "N" finial option or "P" option.
16. Field installed. For use with units without factory installed ribs and band. X = Trim/Finial Color.
17. Field installed, for use with Optic "3" or "5" only.
18. Field installed, for use with Optic "6" or "8" only.

Product Compatibility Table

LUMINAIRE, HOUSING & LED PACKAGE CONFIGURATIONS			
LUMINAIRE	HOUSING		LED PACKAGE
GPD2	M	Modern style - Swing open design	P10, P20, P30, P40, P50
	T	Leaf Style - Swing open design	

WATTAGE TABLE		
LED PACKAGE	AS	AH
P10	26W	33W
P20	39W	49W
P30	60W	68W
P40	81W	90W
P50	100W	100W

OPTICS/HOUSING/LED CONFIGURATION		
OPTICS	HOUSING	LED PACKAGE
3	A, C, F, L, S, M, T	P10, P20, P30, P40, P50
5		
6	A, C, F, L, S, M, T	P10, P20, P30, P40
8		

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Average Lumen Ambient Temperature (LAT) Multipliers			
°C	°F	Lumen Multiplier	LED Packages
0	32	1.06	
5	41	1.05	
10	50	1.04	
15	59	1.03	P10, P20, P30, P40, P50
20	68	1.01	
25	77	1.00	
30	86	0.99	
35	95	0.97	
40	104	0.96	

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).
To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Lumen Maintenance (LD (Lens Out of LED Package))							
Hours	0	25,000	36,000	50,000	60,000	75,000	100,000
Factor	1	0.93	0.93	0.92	0.91	0.9	0.89

The italicized data is extrapolated beyond the TM-21 standard.

E = (LM1 x (CU x LAT)+ x LLD)
LM and CU are obtained from published photometry.

Mark Appropriate Box for Trim Option

Housing: Modern (M), Leaf (T)

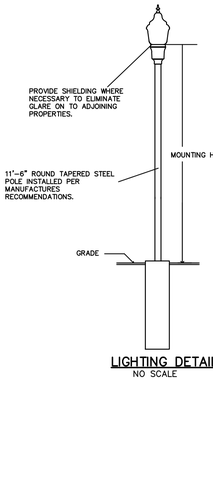
Cover: No Cover, Mayfield Cover (M), Full Cover (C)

Ribs & Bands: Ribs and Band (R), Ribs, Band, and Mayfield Cover (R & M), Ribs, Band, and Full Cover (R & C)

Finial: NONE (N), BALL (B), CLEAR (C), EAGLE (E), FLOWER (F), PAWN (P), CROSS (R), STANDARD (S), ROMAN CROSS (T)

Specifications

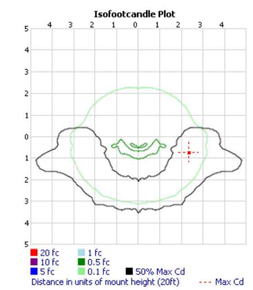
GENERAL DESCRIPTION
The GranVille II LED Utility is designed for ease of maintenance with the plug-in electrical module common to each of the luminaires in Holophane's Utility Luminaire Series. The traditional acorn shaped luminaire, while reminiscent of the 1920's, contains a precision optical system that maximizes post spacings while maintaining uniform illumination.
OPTICAL SYSTEM
The optical system consists of a precisely molded thermal resistant borosilicate glass refractor and top reflector mounted within the decorative aluminum housing. The glass top reflector redirects over 50% of the upward light into the controlling refractor while allowing a soft uplight component to define the traditional acorn shape of the luminaire. Two decorative aluminum covers are available. The lower refractor uses precisely molded prisms to maximize pole spacings while maintaining uniform illuminance. Two refractors are available, Luminaire Optics III and V distributions. Lunar optics shielding is available for asymmetric and symmetric distribution.
LUMINAIRE HOUSING
The luminaire housing, cast of aluminum, provides an enclosure for the plug-in electrical module. Four uniquely designed stainless steel spring clips enclosed in a clear polyvinyl chloride sleeve and adjusted by hex head 1/4-20 bolts securely cradle the prismatic glass refractor. The same 1/4-20 bolts support the decorative rib and banding assembly. The slipfitter will accept a 3" by 2-7/8" to 3-1/8" O.D. tenon.
LUMINAIRE HOUSING / DOOR
Cast of aluminum, the housing opens with minimum use of tools and is retained on a hinge. For units with an E.E.I.-N.E.M.A. twist lock photocell receptacle, the housing contains a "window" to allow light to reach the cell.
ELECTRICAL MODULE
The electrical components are mounted on a aluminum plate that is removable with minimum use of tools. A matching five conductor plug connects to the receptacle in the luminaire housing to complete the wiring. For photoelectric operation, the electrical module is provided with an E.E.I.-N.E.M.A. twist lock photocell receptacle.
DRIVER
AS drivers are programmable dimmable drivers, with 0-10V control leads and AH drivers are dimmable (0-10V) drivers.
FINISH
The luminaire is finished with polyester powder paint to insure maximum durability.
WARRANTY
Limited warranty located at http://www.acuitybrands.com/resources/terms-and-conditions.
NOTE
Luminaire is CSA listed for Wet Locations.
Luminaire housing is IP55 rated. Optical chamber is IP66 rated.
Specification subject to change without notice.



LIGHTING DETAIL
NO SCALE

NOTE:
SITE LIGHTING WILL OPERATE FROM DUSK UNTIL DAWN.

ADDITIONAL EQUIPMENT:
(4) ROUND TAPERED STEEL POLES –
MOUNTING HEIGHT = ±11'-6"
PROPOSED POLE SHALL MEET 100 MPH WINDS RATING



Numeric Summary				
Project: All Projects				
Label		Max	Min	Avg	Ave/Min
GRADE		3.4	0.1	1.0	1.0/0.1

Luminaire Schedule				
Project: All Projects				
Symbol	Qty	Mounting Height	Arrangement	Description
	4	11'-6"	SINGLE POLE	GDP2 P20 50K AS 6 N,LED PKG. 20, 39W, 4000K CCT, AS, M, BK, 5, N, S, BK

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

PHOTOMETRIC PLAN

DATE: 11-27-2019

REVISIONS:
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. 35
SHEET 35 OF 38

M:\ UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES 03'S\180905-PHOTOMETRIC PLAN.DWG

TRACY GALLOWAY
202 BUFFINGTON ST.
NOVI, MI 48377

NOVI, MI 48377

50-22-03-376-004
ANN STRINGER SMITH
226 HENNING ST.
NOVI, MI 48377

50-22-03-377-014
RICHARD GUNTHER
211 HENNING ST.
NOVI, MI 48377

50-22-03-377-011
TODD & LOIS NEFF
217 HENNING ST.
NOVI, MI 48377

HENNING (60' WIDE R.O.W.)

MDOT TYPE 'M' APPROACH

PEMBINE ST.
(30' WIDE R.O.W.)

PROP CROSS WALK STRIPING (TYP)

TRANSITION FROM MDOT F-4 CURB TO MOUNTABLE CURB (TYP BOTH SIDES)

STREET NAME SIGN (D3-2)

"STOP" SIGN (R1-1)

NO PARKING SIGN (R8-3A)

STOP BAR 24"(TYP)

NO PARKING SIGN (R8-3A)

PRISTINE LANE (PRIVATE)

NO PARKING SIGN (R8-3A)

NO PARKING SIGN (R8-3A)

STOP BAR 24"(TYP)

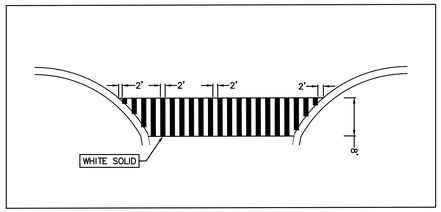
"STOP" SIGN (R1-1)

STREET NAME SIGN (D3-2)

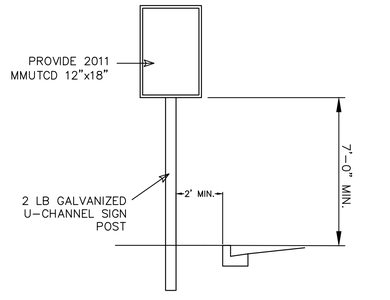
NOBLE TRAIL (PRIVATE)

NO PARKING SIGN (R8-3A)

NO PARKING SIGN (R8-3A)



DETAIL OF CROSSWALK
NO SCALE



SIGN NOTE:
MULTIPLE SIGNS AND/OR SIGNS WITH NOMINAL DIMS GREATER THAN 12"x 18" SHALL BE MOUNTED ON GALVANIZED 3 LB. OR GREATER U-CHANNEL POSTS.

SIGN DETAIL
NO SCALE

NORTH

40' 0 20' 40' 80' 160'

(IN FEET)
1 inch = 40' ft.

LEGEND

SYMBOL	DESCRIPTION
	PR SIGN
	PR CROSS WALK

SIGN TABLE		
SIGN #	SIGN TYPE	REQUIRED
R1-1	STOP (30")	2
D3-2	STREET NAME SIGN	2
R8-3A	NO PARKING (18")	8

NOTE:
1. ALL SIGNS & STRIPING WILL COMPLY WITH CURRENT 2011 MMUTCD STANDARDS
2. ALL TRAFFIC CONTROL SIGNS WILL COMPLY WITH FHWA STANDARD ALPHABET SERIES.
3. ALL TRAFFIC CONTROL SIGNS WILL USE HIGH INTENSITY PRISMATIC (HIP) SHEETING TO MEET FHWA RETRO-REFLECTIVITY REQUIREMENTS
4. CITY OF NOVI HAS NO RESPONSIBILITY TO IMPROVE OR MAINTAIN THE PROVATE STREETS WITHIN OR PROVATE STREETS PROVIDING ACCESS TO THE PROPERTY DESCRIBED IN THIS PLAN.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

TRAFFIC SIGNAGE PLAN

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 20 40
1" = 40 FEET
JOB NO. 180905
SHEET NO. **36**
SHEET 36 OF 38

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
0201045?
LICENSED PROFESSIONAL ENGINEER

M:\UMLOR GROUP PROJECT FOLDERS\SINGH DEVELOPMENT\180905 - SCENIC PINES\DESIGN FILES & PLAN SETS\SCENIC PINES CD'S\180905-TRAFFIC SIGNAGE PLAN.DWG

McDOWELL & ASSOCIATES
Geotechnical, Environmental, & Hydrogeologic Services
21355 Hatcher Avenue • Ferndale, MI 48220
Phone: (248) 399-2066 • Fax: (248) 399-2157

LOG OF SOIL BORING NO. 1
PROJECT Soils Investigation — Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street, Novi, Michigan
JOB NO. 19-040
SURFACE ELEV. 934.7 ± **DATE** 4-18-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Moist brown clayey TOPSOIL with trace of vegetation and fine sand lenses, fill						
A	2	1'3"		3					
UL	3		Stiff moist variegated silty CLAY with traces of sand and pebbles and topsoil markings, fill	4	19.3	126			
	4	2'10"		6			*	(4000)	
	5	3'6"	Compact moist brown silty fine SAND						
B	6			3					
UL	7		Compact wet brown silty fine to medium SAND with trace of gravel	5	16.9	124			
	8	6'8"		6					
C	9			3					
UL	10		Compact wet gray fine SAND with gravel and occasional sand and gravel seams	4					
	11	9'4"		5					
D	12								
UL	13	10'2"	Stiff moist blue silty CLAY with little sand and pebbles	3					
	14		Compact wet gray fine SAND with trace of gravel	5					
E	15	12'4"		7					
UL	16			9					
	17		Stiff moist blue silty CLAY with little sand and pebbles						
	18	16'0"							
	19		Stiff moist blue silty CLAY with wet fine sand seams						
F	20	17'5"		3					
UL	21		Very stiff moist blue silty CLAY with some sand and pebbles and wet fine sand lenses	7					
	22			10					
	23	21'10"	Stiff moist blue silty CLAY with little sand and pebbles						
	24		Notes: 1) Used track rig. 2) Offset boring 14'6" west of stake due to power lines (about 8" tower). 3) Piezometer set at 24'4" with 2'10" stick-up. 4) Added head of water in the augers at 10'.						
G	25			3					
UL		25'6"		5					
				8					

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: * Calibrated Penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	3	FT.	6	INS.
G.W. ENCOUNTERED AT		FT.		INS.
G.W. AFTER COMPLETION	3	FT.	8	INS.
G.W. AFTER	HRS.		FT.	INS.
G.W. VOLUMES	Heavy			

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LOG OF SOIL BORING NO. 2
PROJECT Soils Investigation — Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street, Novi, Michigan
JOB NO. 19-040
SURFACE ELEV. 934.67 **DATE** 4-18-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1	0'7"	Moist brown sandy TOPSOIL, fill						
A	2	1'2"	Moist brown silty CLAY with traces of topsoil, fill	3					
UL	3		Stiff moist variegated silty CLAY with traces of sand and pebbles	5	14.1	133			
	4			6			*	(3000- 6000)	
B	5	4'4"		7					
UL	6		Extremely stiff moist variegated CLAY with silt, some sand and pebbles and fine sand lenses	14	10.5	138			
	7	5'10"		14			*	(9000+)	
C	8			7					
UL	9		Very stiff moist variegated CLAY with silt, little sand and pebbles and wet fine sand seams	10	16.6	133			
	10	8'9"		15			*	(9000+)	
D	11			7					
UL	12		Very stiff moist variegated CLAY with some sand and pebbles and wet fine sand lenses	9					
	13	13'2"		10					
	14								
E	15		Stiff moist blue silty CLAY with little sand and pebbles	2					
UL	16	15'6"		3					
	17			5					
	18								
	19								
	20		Note: Used track rig.						
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: * Calibrated Penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	6	FT.	0	INS.
G.W. ENCOUNTERED AT		FT.		INS.
G.W. AFTER COMPLETION	8	FT.	5	INS.
G.W. AFTER	HRS.		FT.	INS.
G.W. VOLUMES	Heavy			

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LOG OF SOIL BORING NO. 3
PROJECT Soils Investigation — Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street, Novi, Michigan
JOB NO. 19-040
SURFACE ELEV. 934.34 **DATE** 4-18-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1	0'6"	Moist brown sandy TOPSOIL, fill						
A	2		Medium compact moist brown clayey fine SAND with trace of gravel and topsoil markings, fill	2					
UL	3	2'2"		2	17.3	126			
	4		Firm moist brown to dark brown silty CLAY with little vegetation and trace to seams of topsoil	3			*	(2000)	
B	5	3'11"		1					
UL	6		Slightly compact wet gray silty fine SAND with gravel, vegetation and a layer of silty sandy clay at 5'	1	18.8	129		590	
	7	6'2"		2			*	(2000)	
C	8		Firm moist blue silty CLAY with some sand and pebbles, trace of vegetation and wet fine sand seams	2					
UL	9			3	15.6	134			
	10	7'9"		4			*	(2000)	
D	11								
UL	12		Stiff moist blue silty CLAY with some sand and pebbles, little variegated clay streaks and wet fine sand lenses	4	12.7	139			
	13	11'10"		6			*	(4500)	
	14								
E	15		Stiff moist blue silty CLAY with some sand and pebbles	3					
UL	16			5	12.0	139			
	17			8			*	(4500)	
	18	17'3"							
	19		Stiff moist blue silty CLAY with little sand and pebbles						
F	20			4					
UL	21	20'6"		5					
	22			9					
	23		Notes: 1) Used track rig. 2) Offset boring 10' south due to pine tree. 3) Piezometer set at 9'9" with 3'3" stick-up.						
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: * Calibrated Penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	3	FT.	11	INS.
G.W. ENCOUNTERED AT		FT.		INS.
G.W. AFTER COMPLETION	2	FT.	4	INS.
G.W. AFTER	HRS.		FT.	INS.
G.W. VOLUMES	Heavy			

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LOG OF SOIL BORING NO. 4
PROJECT Soils Investigation — Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street, Novi, Michigan
JOB NO. 19-040
SURFACE ELEV. 933.90 **DATE** 4-18-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Moist brown sandy TOPSOIL						
A	2	1'4"		3					
UL	3		Medium compact moist to wet brown gravelly fine to medium SAND with occasional stones	3	15.4	126			
	4	3'11"		4					
B	5			6	13.1	134			
UL	6		Very compact wet brown silty fine to medium SAND with occasional trace of gravel	10			*	(5700)	
	7	6'0"							
C	8		Stiff moist variegated sandy CLAY with some silt, gravel, pebbles and occasional stones	4					
UL	9			7					
	10	9'8"		9					
D	11		Stiff moist blue silty CLAY with some sand and pebbles and wet fine sand lenses	4					
UL	12			7	12.3	138			
	13	12'2"		8			*	(5500)	
	14		Stiff moist blue silty CLAY with little sand and pebbles						
E	15			4					
UL	16	15'6"		5					
	17			8					
	18								
	19								
	20		Note: Used track rig.						
	21								
	22								
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: * Calibrated Penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	2	FT.	0	INS.
G.W. ENCOUNTERED AT	9	FT.	10	INS.
G.W. AFTER COMPLETION	7	FT.	7	INS.
G.W. AFTER	HRS.		FT.	INS.
G.W. VOLUMES	Heavy			

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LOG OF SOIL BORING NO. 5
PROJECT Soils Investigation — Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street, Novi, Michigan
JOB NO. 19-040
SURFACE ELEV. 934.2 **DATE** 4-22-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Moist dark brown clayey TOPSOIL						
A	2	1'3"		3					
UL	3		Stiff moist variegated silty CLAY with sand and pebbles and occasional wet fine sand seams	5	12.3	139			
	4	3'6"		10			*	(7000)	
B	5		Very stiff moist variegated silty CLAY with sand and pebbles and occasional moist fine sand seams	10					
UL	6	6'0"		11	11.5	134			
	7			13			*	(5500)	
C	8		Very stiff moist variegated silty CLAY with sand and pebbles	8					
UL	9			9	10.7	138			
	10	9'6"		13			*	(9000+)	
D	11		Very stiff moist blue silty CLAY with sand and pebbles	9					
UL	12	12'6"		11					
	13			14					
	14		Stiff moist blue silty CLAY with sand and pebbles, wet gravelly sand seams and stones						
E	15			6					
UL	16	15'6"		7					
	17			7					
	18								
	19								
	20								
	21								
	22		Note: Used track rig.						
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: * Calibrated Penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	1	FT.	5	INS.
G.W. ENCOUNTERED AT	12	FT.	6	INS.
G.W. AFTER COMPLETION	8	FT.	3	INS.
G.W. AFTER	HRS.		FT.	INS.
G.W. VOLUMES	Heavy			

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LOG OF SOIL BORING NO. 6
PROJECT Soils Investigation — Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street, Novi, Michigan
JOB NO. 19-040
SURFACE ELEV. 933.7± **DATE** 4-22-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Very moist dark brown clayey TOPSOIL						
A	2	1'3"		2					
UL	3		Firm moist variegated silty CLAY with traces of sand and pebbles and wet fine sand seams	2	20.2	124			
	4	4'4"		3			*	(1500)	
B	5		Very compact wet brown fine SAND with trace of gravel and a layer of silty clay	8					
UL	6	6'0"		11	16.8	--			
	7			14			*	(3500)	
C	8		Very stiff moist brown silty CLAY with sand and pebbles and wet sand and gravel seams	4					
UL	9			7	11.7	138			
	10	9'6"		11			*	(3500)	
D	11			4					
UL	12			8					
	13			10					
	14		Very stiff moist blue silty CLAY with sand and pebbles						
E	15			4					
UL	16	18'6"		7					
	17			11					
	18		Stiff moist blue silty CLAY with sand and pebbles, occasional wet gray sand and gravel seams and occasional stones						
	19								
F	20	20'6"		3					
UL	21			5					
	22			7					
	23		Notes: 1) Offset boring 12' northwest of staked location due to wetlands. 2) Used track rig. 3) Installed 1½" diameter PVC piezometer in boring with screen bottom at 10' and 3' stick-up.						
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: * Calibrated Penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	1	FT.	5	INS.
G.W. ENCOUNTERED AT	4	FT.	4	INS.
G.W. AFTER COMPLETION	10	FT.	2	INS.
G.W. AFTER	HRS.		FT.	INS.
G.W. VOLUMES	Heavy	Cave-in at 10'2"		

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LOG OF SOIL BORING NO. 7
PROJECT Soils Investigation — Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street, Novi, Michigan
JOB NO. 19-040
SURFACE ELEV. 933.6+ **DATE** 4-22-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Moist dark brown clayey TOPSOIL						
A	2	1'5"		1					
UL	3		Compact wet variegated clayey fine SAND with gravel, trace of silt and seams to layers of sandy clay	3	14.0	135			
	4	3'6"		5			*	(2500)	
B	5		Very compact wet brown silty fine to medium SAND with occasional trace of gravel	9					
UL	6	6'0"		9	15.1	129			
	7			11					
C	8		Stiff moist blue silty CLAY with sand and pebbles	2					
UL	9			3	14.4	137		1680	
	10	8'6"		5			*	(2000)	
D	11			2					
UL	12			3	12.0	142		625	
	13		Firm moist blue silty CLAY with sand and pebbles and wet fine sand seams	4			*	(2000)	
	14								
E	15	14'6"	Compact wet gray gravelly SAND	4					
UL	16	15'6"		5					
	17			5					
	18								
	19								
	20								
	21								
	22								
	23		Notes: 1) Offset boring 10' southeast of staked location due to wetlands. 2) Used track rig.						
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS: * Calibrated Penetrometer

Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS

G.W. ENCOUNTERED AT	1	FT.	5	INS.
G.W. ENCOUNTERED AT		FT.		INS.
G.W. AFTER COMPLETION	2	FT.	8	INS.
G.W. AFTER	HRS.		FT.	INS.
G.W. VOLUMES	Heavy			

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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

CONSTRUCTION SITE SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR, NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

SOIL BORE LOGS-1

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 — — —
AS NOTED
JOB NO. 180905
SHEET NO. **37**
SHEET 37 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201054579
PROFESSIONAL ENGINEER

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McDOWELL & ASSOCIATES
Geotechnical, Environmental, & Hydrogeologic Services
21355 Hatcher Avenue • Ferndale, MI 48220
Phone: (248) 399-2066 • Fax: (248) 399-2157

LOG OF SOIL BORING NO. 8
PROJECT Soils Investigation
Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street
Novi, Michigan

JOB NO. 19-040
SURFACE ELEV. 933.9 **DATE** 4-22-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Moist dark brown clayey TOPSOIL						
			1'2"						
A	2		Compact moist to wet variegated clayey fine	3					
UL			SAND with silt and seams of clay	4	16.8	130			
	3			4					
			3'6"						
	4								
B			Firm moist variegated silty CLAY with sand and	4					
UL	5		pebbles and wet gray fine sand seams	5	19.6	125			
	6			7				*	(3500)
			6'0"						
C	7			1					
UL			Soft moist blue silty CLAY with wet fine silt	1	25.6	124			
	8		seams and organics	1					
			8'6"						
	9								
D				2					
UL	10			3	14.1	134			
				4					
	11		Medium compact wet gray gravelly silty SAND						
			with occasional trace to seams of silty clay						
	12								
	13								
			13'6"						
	14								
E				3					
UL	15		Stiff moist blue silty CLAY with sand and	6					
			pebbles	9					
			15'6"						
	16								
	17								
	18								
	19								
	20								
	21								
	22		Note: Used track rig.						
	23								
	24								
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
* Calibrated Penetrometer
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 3 FT. 5 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 4 FT. 0 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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LOG OF SOIL BORING NO. 9
PROJECT Soils Investigation
Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street
Novi, Michigan

JOB NO. 19-040
SURFACE ELEV. 934.0± **DATE** 4-22-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
			0'3"						
	1		Moist dark brown clayey TOPSOIL						
A	2		Very stiff moist variegated silty CLAY with moist	7					
UL			silt seams	9	24.3	120			
	3		2'10"	13				*	(6000)
			Compact wet brown fine SAND with trace of						
	4		3'4" gravel						
B			Stiff moist variegated silty CLAY with sand and	4					
UL	5		pebbles	6	14.2	137			
			5'0"	7				*	(3000- 6000)
	6								
C	7		Stiff moist blue silty CLAY with sand and pebbles	2					
UL			and occasional wet fine sand seams	3	13.4	141			
	8			5				*	(4000)
			8'6"						
	9								
D				4					
UL	10			7					
				9					
	11								
	12								
	13		Stiff moist blue silty CLAY with sand and pebbles						
	14								
E				5					
UL	15			6					
			15'6"	8					
	16								
	17								
	18								
	19								
	20								
	21								
	22								
	23								
	24								
	25								

Notes:
1) Offset boring 16' east of staked location due to large hole filled with water.
2) Used track rig.

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
* Calibrated Penetrometer
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 2 FT. 10 INS.
G.W. ENCOUNTERED AT FT. INS.
G.W. AFTER COMPLETION 6 FT. 0 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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LOG OF SOIL BORING NO. 10
PROJECT Soils Investigation
Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street
Novi, Michigan

JOB NO. 19-040
SURFACE ELEV. 934.2 **DATE** 4/25/2019

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		0'6" Very moist dark brown clayey TOPSOIL						
A	2		Slightly compact wet clayey variegated fine	1					
UL			SAND with some silt and trace of vegetation	2	17.2	128			
	3		2'5"	7					
			Compact wet brown fine SAND with trace of						
	4		vegetation and seams to layers of clayey sand						
B			4'3"	5					
UL	5			12	10.5	139			
			Very stiff moist variegated sandy CLAY with	13				*	(8000)
	6		some sand and pebbles and little silt						
C	7		6'10" Very stiff moist brown silty CLAY with trace of	9					
UL			7'6" sand and pebbles	10					
	8		7'8" Very stiff moist blue silty CLAY with little sand	11					
			and pebbles						
	9								
D				3					
UL	10			3	11.7	141			2295
				7				*	(2500-3000)
	11		Stiff moist blue silty CLAY with some sand and						
			pebbles and seams of wet fine to medium sand						
	12								
	13								
			13'4"						
	14								
E				3					
UL	15		Very stiff moist blue silty CLAY with sand and	7					
			pebbles and wet fine sand streaks	10					
	16								
	17		16'10"						
	18								
	19		Stiff moist blue silty CLAY with little sand and						
F			pebbles	3					
UL	20			5					
			20'6"	5					
	21								
	22								
	23								
	24								
	25								

NOTES:
1) Set piezometer at 10' with 3' stick up.
2) Used track rig.

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
* Calibrated Penetrometer
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 0 FT. 6 INS.
G.W. ENCOUNTERED AT 2 FT. 5 INS.
G.W. AFTER COMPLETION 13 FT. 0 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Medium

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LOG OF SOIL BORING NO. 11
PROJECT Soils Investigation
Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street
Novi, Michigan

JOB NO. 19-040
SURFACE ELEV. 941.0 **DATE** 4-22-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
			0'3"						
	1		Moist dark brown clayey TOPSOIL with vegetation						
A	2			3					
UL			Stiff moist brown silty CLAY with wet brown silt	5	27.7	116			
	3		seams	3				*	(1000-2000)
			4'0"						
	4								
B				6					
UL	5			7	24.4	124			
			Very stiff moist brown silty CLAY	12				*	(6000)
	6								
			6'6"						
C	7			7					
UL				9					
	8			11					
	9								
D				4					
UL	10		Very compact moist to wet brown fine to medium	8	18.4	123			
			SAND with trace of silt	10					
	11								
	12								
			12'6"						
	13								
	14		Very stiff moist blue silty CLAY with sand and						
E			pebbles and occasional stones	8					
UL	15			12					
			15'6"	12					
	16								
	17								
	18								
	19								
	20								
	21								
	22		*NOTE*:						
	23		Installed 1½" diameter PVC piezometer in boring						
	24		with screen bottom at 10' and 3' stick-up.						
	25								

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
* Calibrated Penetrometer
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 2 FT. 0 INS.
G.W. ENCOUNTERED AT 7 FT. 0 INS.
G.W. AFTER COMPLETION 7 FT. 3 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Medium-Heavy

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LOG OF SOIL BORING NO. 12
PROJECT Soils Investigation
Proposed Scenic Pines Estates Subdivision
LOCATION Pembine Street
Novi, Michigan

JOB NO. 19-040
SURFACE ELEV. 934.3 **DATE** 4-22-19

Sample & Type	Depth	Legend	SOIL DESCRIPTION	Penetration Blows for 6"	Moisture %	Natural Wt. P.C.F.	Dry Den Wt. P.C.F.	Unc. Comp. Strength PSF.	Str. %
	1		Moist dark brown clayey TOPSOIL with trace of						
			vegetation						
			1'6"						
A	2			1					
UL			Stiff moist variegated sandy CLAY with moist to	4	23.1	123			
	3		wet brown and gray silt seams	5				*	(3500)
	4		4'0"						
B				3					
UL	5		Compact wet brown silty fine to medium SAND	5	14.6	131			
			with traces of clay and gravel	5					
	6								
			6'6"						
C	7			3					
UL				6	12.3	140			
	8		Stiff moist variegated silty CLAY with sand and	6				*	(5000)
			pebbles and wet brown fine sand seams						
	9								
D			9'6"	3					
UL	10			5					
				5					
	11								
	12		Stiff moist variegated silty CLAY with sand and						
			pebbles and wet brown fine sand seams						
	13								
	14		14'0"						
E				5					
UL	15			9					
				11					
	16								
	17		Very stiff moist blue silty CLAY with sand and						
			pebbles and occasional stones						
	18								
	19								
F				7					
UL	20			8					
			20'6"	11					
	21								
	22								
	23		Note:						
	24		Installed 1½" diameter PVC piezometer in boring						
	25		with screen bottom at 10' and 3' stick-up.						

TYPE OF SAMPLE
D. - DISTURBED
U.L. - UNDIST. LINER
S.T. - SHELBY TUBE
S.S. - SPLIT SPOON
R.C. - ROCK CORE
( ) - PENETROMETER

REMARKS:
* Calibrated Penetrometer
Standard Penetration Test - Driving 2" OD Sampler 1' With 140# Hammer Falling 30": Count Made at 6" Intervals

GROUND WATER OBSERVATIONS
G.W. ENCOUNTERED AT 4 FT. 0 INS.
G.W. ENCOUNTERED AT 7 FT. 0 INS.
G.W. AFTER COMPLETION 3 FT. 6 INS.
G.W. AFTER HRS. FT. INS.
G.W. VOLUMES Heavy

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The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

SOIL BORE LOGS-2

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020
PER CITY 01-18-2021

DR BY: SDT
CK BY: SDT/MY
P.M. SA
SCALE 0 -- -- AS NOTED
JOB NO. 180905
SHEET NO. 38
SHEET 38 OF 38

STATE OF MICHIGAN
WES LEE O. UMLOR
ENGINEER
6201045470
LICENSED PROFESSIONAL ENGINEER

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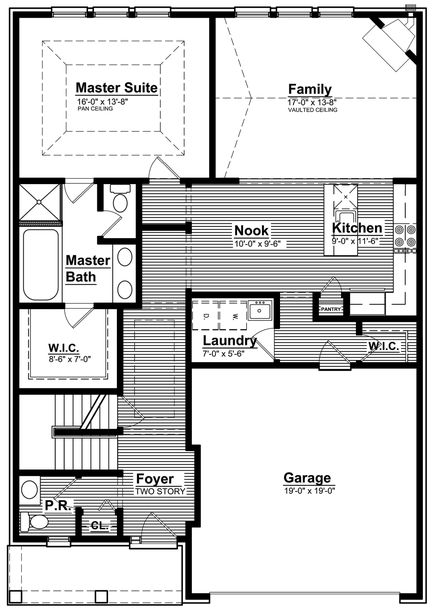
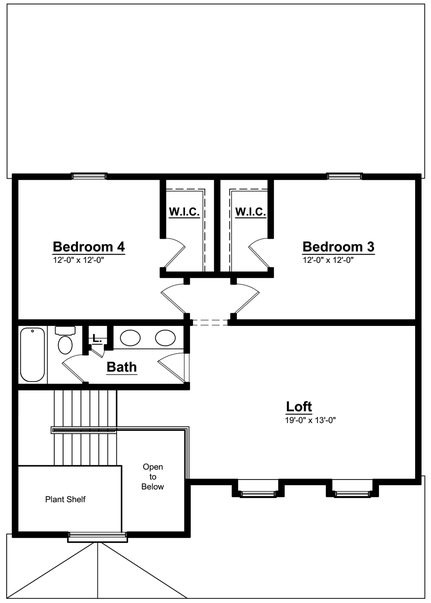


Singh Homes - Scenic Pines of Novi
Two Car Garage - Cape Cod - First Floor
1,295 SF



Singh Homes - Scenic Pines of Novi
Two Car Garage - Cape Cod - Second Floor
805 SF

ELEVATION "A"
BUILDING HEIGHT MAX. 35'

ELEVATION "B"
BUILDING HEIGHT MAX. 35'

ELEVATION "C"
BUILDING HEIGHT MAX. 35'

STATE OF MICHIGAN
WES LEE
O'UMLOR
ENGINEER
#2101045579
LICENSED PROFESSIONAL ENGINEER

The UMLOR Group
LAND DEVELOPMENT SERVICES

SECTION 3
TOWN 1 NORTH, RANGE 8 EAST
CITY OF NOVI
OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT:
SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ARCHITECTURAL SKETCHES

DATE: 11-27-2019

REVISIONS
PER CITY 03-24-2020

DR BY: SDT
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A1
SHEET A1 OF 37

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ELEVATION "2200-A"

BUILDING HEIGHT MAX. 35'

ELEVATION "2300-A"

BUILDING HEIGHT MAX. 35'

ELEVATION "2200-B"

BUILDING HEIGHT MAX. 35'

ELEVATION "2300-B"

BUILDING HEIGHT MAX. 35'

ELEVATION "2200-C"

BUILDING HEIGHT MAX. 35'

ELEVATION "2300-C"

BUILDING HEIGHT MAX. 35'

The UMLOR Group

LAND DEVELOPMENT SERVICES

SECTION 3 | TOWN 1 NORTH, RANGE 8 EAST | CITY OF NOVI | OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ARCHITECTURAL SKETCHES

DATE: 11-27-2019

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DR BY: SDT
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P.M. SA
SCALE 0 -- --
AS NOTED
JOB NO. 180905
SHEET NO.
A2
SHEET A2 OF 37

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
#2001044579
REGISTERED PROFESSIONAL ENGINEER

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ELEVATION "2400-A"

BUILDING HEIGHT MAX. 35'

ELEVATION "2400-B"

BUILDING HEIGHT MAX. 35'

ELEVATION "2400-C"

BUILDING HEIGHT MAX. 35'

The UMLOR Group

LAND DEVELOPMENT SERVICES

SECTION 3

TOWN 1 NORTH, RANGE 8 EAST

CITY OF NOVI

OAKLAND COUNTY, MICHIGAN

SCENIC PINES

CLIENT: SINGH DEVELOPMENT, LLC.
7125 ORCHARD LAKE ROAD
BLOOMFIELD HILLS, MICHIGAN 48322

ARCHITECTURAL SKETCHES

DATE: 11-27-2019

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PER CITY 03-24-2020

DR BY: SDT
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SCALE 0 — — —
AS NOTED
JOB NO. 180905
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SHEET A3 OF 37

STATE OF MICHIGAN
WES LEE
O. UMLOR
ENGINEER
#2101045179
PROFESSIONAL ENGINEER

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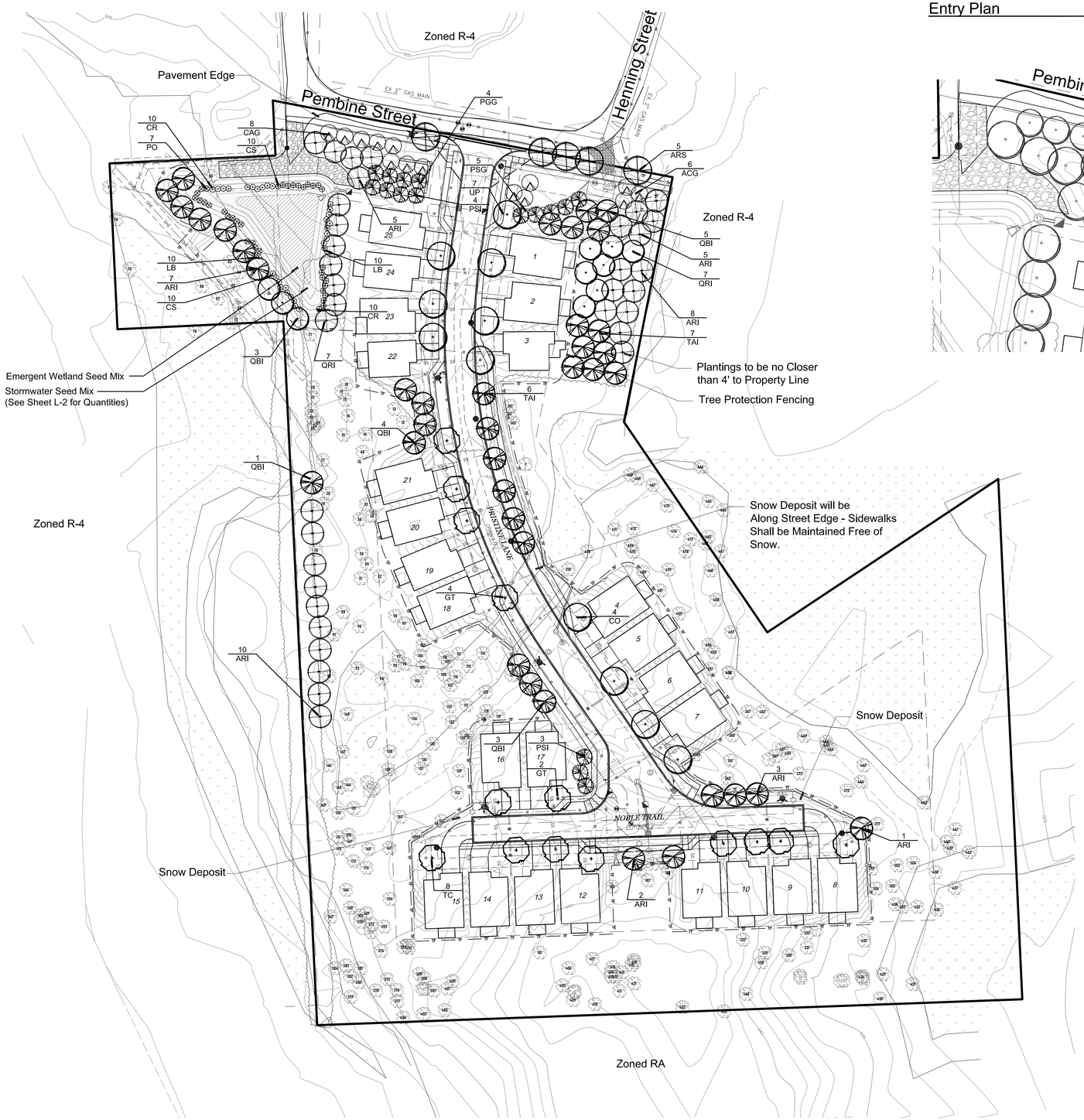
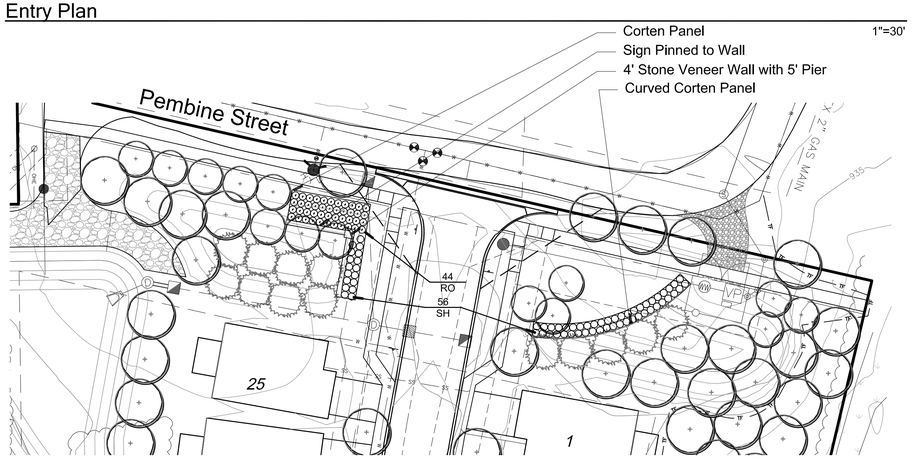


Entry Plan



Landscape Summary

Street Trees	
Unit Trees	25 Units
Trees Required	25 Trees (1 per unit)
Trees Provided	25 Trees
Street Lawn	
Total Street Frontage	367 l.f.
Less Drive Opening	28 l.f.
Net Street Frontage	339 l.f.
Trees Required	9.6 Trees (339 / 35)
Trees Provided	5 Trees
Greenbelt Plantings	
Total Street Frontage	367 l.f.
Less Drive Opening	28 l.f.
Net Street Frontage	339 l.f.
Canopy Trees Required	8.5 Trees (339 / 40)
Canopy Trees Provided	9 Trees
Sub-Canopy Trees Required	13.5 Trees (339 / 25)
Sub-Canopy Trees Provided	14 Trees

Woodland Replacement	
Replacement Required	438 Trees
Total Trees Provided	88.6 Trees
Trees to be Paid into Fund	349.4 Trees
Detention Pond	
High Water Length	415 l.f.
Landscape Required	291 l.f. (415 x 70%)
Landscape Provided	301 l.f. (73%)

LANDSCAPE WAIVERS GRANTED BY THE PLANNING COMMISSION ON 9/25/2019:
3 street trees are planted more than 15 feet behind the curb, and not between the sidewalk and curb.

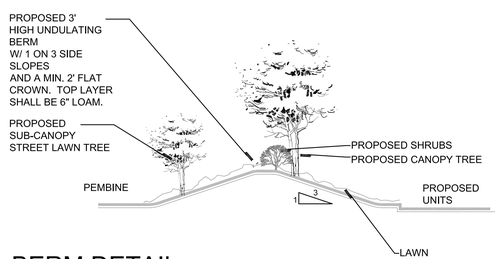
Absence of 3 required street trees along Pembine street frontage that can't be planted due to a lack of space between the sidewalk and road.

Notes:

- Trees Shall be Planted 10' from Utility Structures Including Hydrants
- Snow Shall be Deposited Adjacent to Drives and within the Curb Lawn
- All Utility Boxes Shall be Screen per Detail on Sheet L-2
- Overhead Lines are Not Present
- Phragmites is not Present on the Site.

Plant List

sym.	qty	botanical name	common name	caliper	spacing	root	height	price	total	Species	Genus	Native	Total
Woodland Replacement													
ARI	41	Acer rubrum	Red Maple	2.5"	as shown	B&B		$ 400.00	$ 16,400.00			1	1
QBI	16	Quercus bicolor	Swamp White Oak	2.5"	as shown	B&B		$ 400.00	$ 6,400.00			1	1
QRI	14	Quercus rubra	Red Oak	2.5"	as shown	B&B		$ 400.00	$ 5,600.00			1	1
PSI	7	Pinus strobus	White Pine		as shown	B&B	6'	$ 325.00	$ 2,275.00			1	1
TAI	13	Tilia americana	Basswood	2.5"	as shown	B&B		$ 400.00	$ 5,200.00			1	1
	88.6	Replacments Shown											
Detention Shrubs													
CR	20	Cornus racemosa	Gray Dogwood		as shown		36"	$ 50.00	$ 1,000.00			1	1
CS	20	Cornus stolonifera	Red-osier Dogwood		as shown		36"	$ 50.00	$ 1,000.00			1	1
LB	20	Lindera benzoin	Spicebush		as shown		36"	$ 50.00	$ 1,000.00			1	1
PO	7	Physocarpus opulifolius	Eastern Ninebark		as shown		36"	$ 50.00	$ 350.00			1	1
	67	Shrubs Shown											
Unit and Street Trees													
CO	4	Celtis occidentalis	Northern Hackberry	3.0"	as shown	B&B		$ 400.00	$ 1,600.00	8%	8%	1	1
GT	6	Gleditsia triacanthos var. Inermis	Thornless Honeylocust	3.0"	as shown	B&B		$ 400.00	$ 2,400.00	11%	11%	1	1
TC	8	Tilia cordata 'Greenspire'	Greenspire Linden	3.0"	as shown	B&B		$ 400.00	$ 3,200.00	15%	15%		1
UP	7	Ulmus 'Pricneer'	Pioneer Elm	3.0"	as shown	B&B		$ 400.00	$ 2,800.00	13%	13%		1
	25	Trees Provided											
Street Lawn and Greenbelt													
ACG	6	Amelanchier laevis	Shadblow	2.5"	as shown	B&B		$ 250.00	$ 1,500.00	11%	11%	1	1
ARS	5	Acer rubrum	Red Maple	3.0"	as shown	B&B		$ 400.00	$ 2,000.00	9%	9%	1	1
CAG	8	Cornus alternifolia	Alternative Leaf Dogwood	2.5"	as shown	B&B		$ 250.00	$ 2,000.00	15%	15%	1	1
PSG	9	Pinus strobus	White Pine		as shown	B&B	6'	$ 325.00	$ 2,925.00	17%	17%	1	1
	28	Trees Provided											
General Plantings													
RO	44	Rosa 'Drift'	Drift Rose		as shown		#2	$ 15.00	$ 660.00				1
SH	56	Sporobolus heterolepis	Prairie Dropseed		13" o.c.	cont.	#2	$ 15.00	$ 840.00			1	1
											Total	16	19
Mulch											% Native	84%	
	19	4" Deep Shredded Hardwood Bark Mulch /s.y.						$35	$ 665.00				
	46	Sod /s.y.						$6	$ 276.00				
	732	Seed /s.y. (Lawn)						$3.00	$ 2,196.00				
	851	Seed / s.y. (Detention Pond)						$6.00	$ 5,106.00				
Irrigation									$ 6,000.00				
								Total	**$ 73,393.00**				



BERM DETAIL

HORIZONTAL SCALE: 1"=10'

ALLEN DESIGN
LAND PLANNING / LANDSCAPE ARCHITECTURE
557 CARPENTER • NORTHVILLE, MI 48167
248 467 4668 • Fax 248 349 0559
Email: jca@wideopenwest.com

Seal:

Title:

Landscape Plan

Project:

Scenic Pines
Novi, MI

Prepared for:

Singh Development, LLC
7125 Orchard Lake Road, Suite 200
West Bloomfield, Michigan 48322

Revision:	Issued:
Review	February 22, 2019
Revised	May 24, 2019
Revised	July 16, 2019
Revised	November 25, 2019
Revised	March 23, 2020

Job Number:

19-019

Drawn By:	Checked By:
jca	jca

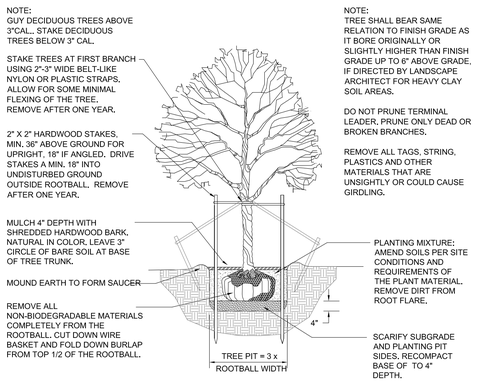
0' 25' 50'

NORTH
1"=50'

Sheet No.

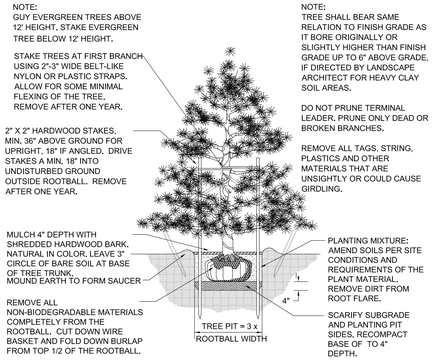
L-1

Know what's below. Call before you dig.



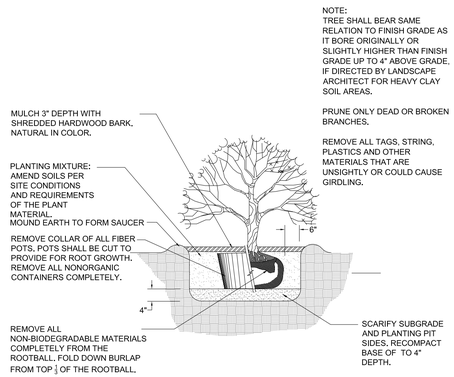
DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE



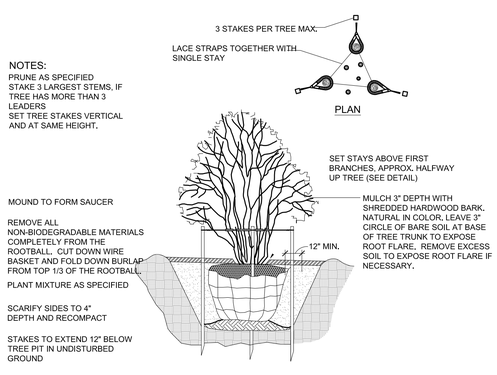
EVERGREEN TREE PLANTING DETAIL

Not to scale



SHRUB PLANTING DETAIL

NOT TO SCALE



MULTI-STEM TREE PLANTING DETAIL

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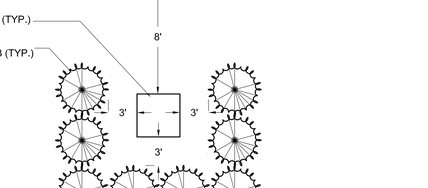
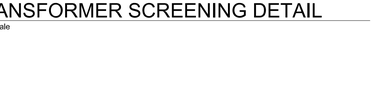


PERENNIAL PLANTING DETAIL

Not to scale

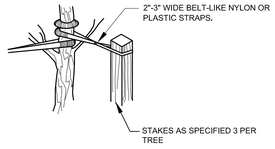


NOTE:
ORIENT STAKING/GUYING TO PREVAILING WINDS, EXCEPT ON SLOPES GREATER THAN 3:1 ORIENT TO SLOPE.

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

STAKING/GUYING LOCATION

GUYING DETAIL



STAKING DETAIL

TREE STAKING DETAIL

Not to scale

TRANSFORMER SCREENING DETAIL

Not to scale

CITY OF NOVI NOTES

1. All landscape islands shall be backfilled with a sand mixture to facilitate drainage.
2. All proposed landscape islands shall be curbed.
3. All landscape areas shall be irrigated.
4. Overhead utility lines and poles to be relocated as directed by utility company of record.
5. Evergreen and canopy trees shall be planted a minimum of 10' from a fire hydrant, and manhole, 15' from overhead wires.
6. All plant material shall be guaranteed for two (2) years after City Approval and shall be installed and maintained according to City of Novi standards. Replace Failing Material within 3 Months of Discovering the Need for Replacement. One cultivation per month shall occur in July-August.
7. All proposed street trees shall be planted a minimum of 4' from both the back of curb and proposed walks.
8. All tree and shrub planting beds shall be mulched with shredded hardwood bark, spread to minimum depth of 4". All lawn area trees shall have a 4' diameter circle of shredded hardwood mulch 3" away from trunk. All perennial, annual and ground cover beds shall receive 2" of dark colored bark mulch as indicated on the plant list. Mulch is to be free from debris and foreign material, and shall contain no pieces of inconsistent size.
9. All Substitutions or Deviations from the Landscape Plan Must be Approved in Writing by the City of Novi Prior to their Installation.

NOTES:
THE APPROXIMATE DATE OF INSTALLATION FOR THE PROPOSED LANDSCAPE WILL BE FALL OR SPRING OF 2020 or 2021.

THE SITE WILL BE MAINTAINED BY THE DEVELOPER IN ACCORDANCE WITH THE STANDARDS SET FORTH IN THE CITY OF NOVI ZONING ORDINANCE. THIS INCLUDES WEEDING AND WATERING AS REQUIRED BY NORMAL MAINTENANCE PRACTICES.

DEVELOPER SHALL BE RESPONSIBLE FOR REPLACING ANY TREES WITHIN UTILITY EASEMENTS THAT ARE DAMAGED THROUGH NORMAL MAINTENANCE OR REPAIRS.

PLANT MATERIALS SHALL BE GUARANTEED FOR 2 YEARS AND SHALL BE MAINTAINED IN ACCORDANCE WITH CITY ORDINANCES. WARRANTY PERIOD BEGINS AT THE TIME OF CITY APPROVAL. WATERING AS NECESSARY SHALL OCCUR DURING THIS WARRANTY PERIOD.

LANDSCAPE NOTES

1. All plants shall be north Midwest American region grown, No. 1 grade plant materials, and shall be true to name, free from physical damage and wind burn.
2. Plants shall be full, well-branched, and in healthy vigorous growing condition.
3. Plants shall be watered before and after planting is complete.
4. All trees must be staked, fertilized and mulched and shall be guaranteed to exhibit a normal growth cycle for at least two (2) full years following City approval.
5. All material shall conform to the guidelines established in the most recent edition of the American Standard for Nursery Stock.
6. Provide clean backfill soil, using material stockpilled on site. Soil shall be screened and free of any debris, foreign material, and stone.
7. "Agriform" tabs or similar slow-release fertilizer shall be added to the planting pits before being backfilled.
8. Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand and 1/3 compost, mixed well and spread to the depth as indicated in planting details.
9. All plantings shall be mulched per planting details located on this sheet.
10. The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
11. No substitutions or changes of location, or plant types shall be made without the approval of the Landscape Architect.
12. The City of Novi's Landscape Architect shall be notified in writing of any discrepancies between the plans and field conditions prior to installation.
13. The Landscape Contractor shall be responsible for maintaining all plant material in a vertical condition throughout the guaranteed period.
14. The Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans and specifications, if requested by owner.
15. Contractor shall be responsible for checking plant quantities to ensure quantities on drawings and plant list are the same. In the event of a discrepancy, the quantities on the plans shall prevail.
16. The Landscape Contractor shall seed and mulch or sod (as indicated on plans) all areas disturbed during construction, throughout the contract limits.
17. A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly on top of all mulching in all planting beds.
18. All landscape areas shall be provided with an underground automatic sprinkler system.
19. Sod shall be two year old "Baron/Cheriadelphi" Kentucky Blue Grass grown in a sod nursery on loam soil.

DETENTION POND SEED NOTES

Site Preparation

Planting may be top of mind, but **preparing your site is critical to success**. Weed seeds are persistent and undesirable species will be a long-term problem if eradication of undesirable and invasive vegetation isn't complete before installation.

Eradicate all existing vegetation
Too much undesirable vegetation may require this course through one or a combination of the following techniques.

- ***Cultivating***
  Avoids the use of chemicals and can be done on a larger scale than smothering, but it often brings up more weed seeds and is labor intensive. Cultivate every 2-3 weeks from early spring through fall to a depth of 4-5 inches using a harrow, spring tooth or rototiller to destroy the roots and weeds. Once most weeds have been eliminated, the depth should be made shallow for several months to create a firm soil bed prior to native seeding.
- ***Herbicide***
  If your site is very large or if there is little or no native vegetation present, herbicides may the most economical and successful option. The number of treatments will depend on the condition of the site. Ag sites may only require one or two treatments directly prior to planting, while old fields might require several treatments throughout an entire season. **Caution: Some herbicides remain persistent long after application. Know the chemical history of your site and always READ THE LABEL and follow manufacturer's instructions when using herbicides.**

Preparing the Seed Bed
A firm and level seed bed relatively free of debris is ideal for proper installation. Pack loose or soft soil with a heavy roller or culti-packer before (and after) installation. A good method for testing soil firmness is to walk over the seed bed. If your footprint sinks more than or inch, the seed bed is too soft. If a no-till drill seeder is being used and the site wasn't cultivated, the seed bed should be firm enough. Removing tree roots and limbs from eliminated trees, other debris (corn stubble) and regrading ruts will make for a smoother planting process as well as limit damage to equipment.

Installation

Seeding Methods
Your planting method depends on the size of your site, condition of the soil, and your budget. Regardless of the method you choose, seed to soil contact and planting depth (no deeper than) are critical factors in growing native seeds. Keep this in mind before, during, and after seeding.

- ***Broadcast***
  Best for areas less than a couple acres and generally the least expensive method, but requires a cultivated and firm seed bed. The native seed mix can be scattered a handful at a time from a bucket or you can use a hand crank seeder to cover more area faster. You can also use an ATV or tractor mounted broadcast spreader.
  To evenly spread seed across the entire site, divide your mix in half and scatter the first half of the seed over the entire area, then scatter the second half perpendicular to the first pass. Further divisions will give you more chances to calibrate your technique and ensure adequate coverage. Consider adding a filler such as cracked corn, vermiculite or a nurse crop of annual rye and seed oats to create more bulk. If it is too windy, wait for the wind to decrease.
  Roll the seed into the top surface of the soil for best results, or lightly rake the seed into the soil surface using an upside-down leaf rake. If the area is too large to rake by hand, use a tractor or truck to pull a light piece of fence or very light drag.

- ***No-Till Native Seed Drill***
  Perfect for larger areas with hard ground or existing vegetation debris, no-till drills cause minimal soil disturbance and do not require tillage before planting. Fewer weed seeds are brought up from the seec bank, but the technique requires the use of herbicide. No-till drills plant into rows by opening a shallow groove in the soil, dropping the seeds, then covering the groove with soil with a rubber packer wheel.
  No-till drills are available to rent from many conservation districts, but proper training or instruction is required to correctly use them. Calibration and depth adjustment vary between mixes and sites and are critical to ensure proper distribution and placement of seed. Many dollars in seed are wasted due to improper use of no-till drills.

- ***Culti-packer and Conservation Seeders***
  Works well for bare, loose soil by firming the seed bed with a culti-packer/roler, dropping the seed, and then packing the soil with another roller to ensure good seed-to-soil contact. These types of machines are becoming more common, and are preferable to a no-till drill when planting into bare, loose soils.

Watering & Irrigation
Watering is not necessary after fall plantings. It's not essential following a spring seeding either, but the seeds may benefit from watering during the first 3 to 6 weeks, especially if no rain has fallen for 7-10 days. If watering is practical for your site and you decide to irrigate, you will need to continue watering periodically to keep the soil from drying out while plant seedlings establish. In a dry spring, quicker establishment may result with supplemental watering.

Maintenance

After you've planted, controlling weeds is the priority for the first three years. The native plants will only grow a few inches the first year; weeds will grow much thicker and taller than the natives and can shade out the native seedlings. A simple, but diligent, maintenance plan will ensure your native planting reaches the best possible outcome.

First Year
Mowing the vegetation to a height of 4-6 inches when it reaches 10-12 inches. If you get a lot of rain, you may have to mow about once a month. Mowing keeps the weeds from shading out the natives, as well as stopping the weeds from producing new seeds. Stop mowing at the end of the growing season. A little weed growth at the end of the year will help protect the seedlings during their first winter.

Hand pulling weeds and herbicide are generally **not recommended** in the first year. You risk harming the sensitive native seedlings. If aggressive weeds, like Canada thistle or reed-canary grass, appear to be a problem you can consider careful herbicide application. Take care not to allow herbicide to contact native vegetation.

Second Year
When the vegetation reaches 12-18 inches, mow it down to 8 inches. Because you're allowing it to grow higher, you should mow fewer times in the second year. You'll see some natives blooming, but it is worth sacrificing the flowers at this stage to achieve better weed control and a more successful native planting in the long term. The natives will persist through mowing and a few will bloom at lower heights in response to repeated mowing.

Hand pulling and spot treatments of herbicide may be needed for some of the common competitive weeds such as spotted knapweed, Canada thistle, burdock, wild parsnip, sweet clover, and Queen Annes lace.

Third Year and Beyond
If the planting is establishing as it should, you should now have enough fuel accumulated to burn on a regular basis. If burning doesn't occur, a thatch layer can accumulate, causing poor growth or plants to die out completely. Burning kills or at least reduces weed growth and stimulates growth of native species.

Early spring burns are most common. Only experienced, trained crews should perform a prescribed burn. Be sure to check your local fire regulations and obtain the appropriate permits. A wide path (10-15 feet) or burn lane should be mowed throughout the growing season around the perimeter of the planting prior to a burn.

After the third year, burning should take place every one to three years. Consider a burn rotation in which a half or third of the area is burned one year and another section the next. This will give ensure that over-wintering butterflies, moths, and nesting birds do not temporarily lose all of their habitat.

Spot treating with herbicide may still be needed if weeds persist, however, once your natives are established, they should require minimal maintenance.

The landscape contractor shall send the City's Landscape Architect, Rick Meader at (rmeader@cityofnovi.org) a photo of the label on the seed bag to confirm that the correct mix is used. Failure to use the specified mix or a substitute not approved by the City may require the area to be re-prepared and re-seeded with the correct mix.

DETENTION POND SEED MIXES

Emergent Seed Mix

Botanical Name	Common Name	PLS Oz/Acre
Boiboschoenus luviatilis	River Bulrush	1.00
Carex comosa	Bristly Sedge	2.50
Carex lacustris	Common Lake Sedge	0.25
Carex lurida	Bottlebrush Sedge	4.00
Carex stricta	Common Tussock Sedge	1.00
Carex vulpinoidea	Brown Fox Sedge	6.00
Eleocharis palustris	Great Spike Rush	1.00
Juncus effusus	Common Rush	1.00
Leersia oryzoides	Rice Cut Grass	3.00
Schoenoplectus acutus	Hardstem Bulrush	2.50
Schoenoplectus americanus	Chairmaker's Rush	3.00
Schoenoplectus tabernaemontani	Softstem Bulrush	6.00
	Total	31.25
Temporary Cover		
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	460.00
Forbs/Shrubs		
Acorus americanus	Sweet Flag	0.50
Alisma spp.	Water Plantain Mix	2.00
Asclepias incarnata	Swamp Milkweed	1.50
Cephalanthus occidentalis	Buttonbush	6.00
Decodon verticillatus	Swamp Loosestrife	0.50
Eutrochium maculatum	Spotted Joe Pye Weed	0.50
Hibiscus spp.	Rosemallow Mix	4.00
Iris virginica	Blue Flag	6.00
Lobelia cardinalis	Cardinal Flower	0.25
Lobelia siphilitica	Great Blue Lobelia	0.25
Lycopus americanus	Common Water Horehound	0.25
Mimulus ringens	Monkey Flower	1.00
Peltandra virginica	Arrow Arum	16.00
Penthorum sedoides	Ditch Stonecrop	0.50
Polygonum spp.	Pinkweed Mix	0.50
Pontederia cordata	Pickerel Weed	10.00
Sagittaria latifolia	Common Arrowhead	2.00
Sparganium eurycarpum	Common Bur Reed	6.00
Verbena hastata	Blue Vervain	1.00
	Total	58.75

Emergent Wetland Seed Mix by Cardno JFNew

3,119 s.f.

34.4 lbs. per Acre Application Rate
2.5 lbs. of Emergent Seed Mix
3"-6" of Topsoil or Wetland Mulch Shall be Placed in this Area. Use Seed Mat.

Stormwater Seed Mix

Botanical Name	Common Name	PLS Oz/Acre
Permanent Grasses/Sedges		
Boiboschoenus luviatilis	River Bulrush	0.25
Carex cristatella	Crested Oval Sedge	2.00
Carex lurida	Bottlebrush Sedge	3.00
Carex vulpinoidea	Brown Fox Sedge	6.00
Elymus virginicus	Virginia Wild Rye	13.50
Glyceria striata	Fowl Manna Grass	1.25
Juncus effusus	Common Rush	2.00
Leersia oryzoides	Rice Cut Grass	1.00
Panicum virgatum	Switch Grass	2.00
Schoenoplectus tabernaemontani	Softstem Bulrush	3.00
Scirpus atrovirens	Dark Green Rush	2.00
Scirpus cyperinus	Wool Grass	1.00
	Total	37.00
Temporary Cover		
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00
	Total	460.00
Forbs		
Alisma spp.	Water Plantain Mix	4.25
Asclepias incarnata	Swamp Milkweed	1.50
Bidens spp.	Bidens Mix	2.00
Helenium autumnale	Sneezeweed	2.00
Iris virginica	Blue Flag	4.00
Lycopus americanus	Common Water Horehound	0.25
Mimulus ringens	Monkey Flower	1.00
Oligoneuron riddelli	Riddell's Goldenrod	0.50
Penthorum sedoides	Ditch Stonecrop	0.50
Polygonum spp.	Pinkweed Mix	4.00
Rudbeckia subtomentosa	Sweet Black-Eyed Susan	1.00
Rudbeckia triloba	Brown-Eyed Susan	1.50
Sagittaria latifolia	Common Arrowhead	1.00
Senna hebecarpa	Wild Senna	1.00
Symphyotrichum novae-angliae	New England Aster	1.50
Thalictrum dasycarpum	Purple Meadow Rue	2.00
	Total	28.00

Stormwater Seed Mix by Cardno JFNew

2,886 s.f.

32.8 lbs. per Acre Application Rate
2.2 lbs. of Storm Water Seed Mix
3"-6" of Topsoil Shall be Placed in this Area.

ALLEN DESIGN
LAND PLANNING / LANDSCAPE ARCHITECTURE
557 CARPENTER • NORTHVILLE, MI 48167
248 467 4668 • Fax 248 349 0559
Email: jca@wideopenwest.com

Seal:

Title:

Landscape Details

Project:

Scenic Pines
Novi, MI

Prepared for:

Singh Development, LLC
7125 Orchard Lake Road, Suite 200
West Bloomfield, Michigan 48322

Revision:	Issued:
Review	February 21, 2019
Revised	May 24, 2019
Revised	July 16, 2019
Revised	November 25, 2019
Revised	March 23, 2020

Job Number:

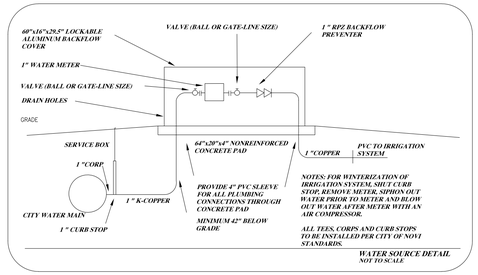
19-019

Drawn By:	Checked By:
jca	jca

Sheet No.

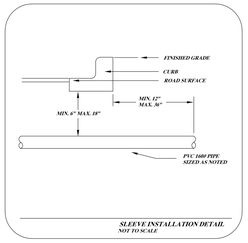
L-2

PIPE SIZE CHART
0–12 GPM = 1" DIAMETER POLYETHYLENE PIPE
12–24 GPM = 1 $\frac{1}{4}$" DIAMETER POLYETHYLENE PIPE
24–30 GPM = 1 1/2" DIAMETER POLYETHYLENE PIPE
30–60 GPM = 2" DIAMETER POLYETHYLENE PIPE

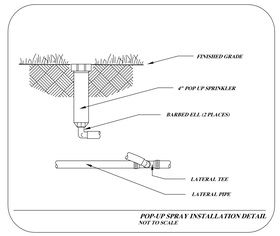


WATER SOURCE DETAIL
NOT TO SCALE

IRRIGATION CONTRACTOR RESPONSIBLE TO COORDINATE INSTALLATION OF WATER MAIN TAP WITH CITY PRIOR TO CONSTRUCTION. ALL PERMITS AND FEES ARE RESPONSIBILITY OF THE IRRIGATION CONTRACTOR. CONTINUE WATER TAP CONSTRUCTION AND CONNECTION TO IRRIGATION SYSTEM PER DETAIL SHOWN.



SLEEVE INSTALLATION DETAIL
NOT TO SCALE



POP-UP SPRAY INSTALLATION DETAIL
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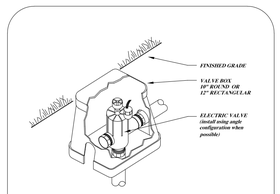

AUTOMATIC VALVE DETAIL
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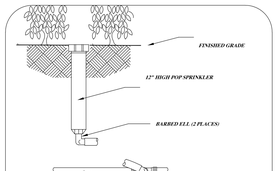
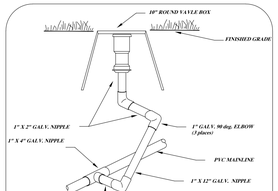
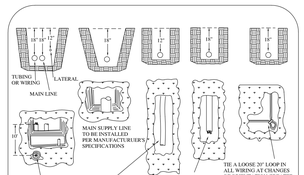


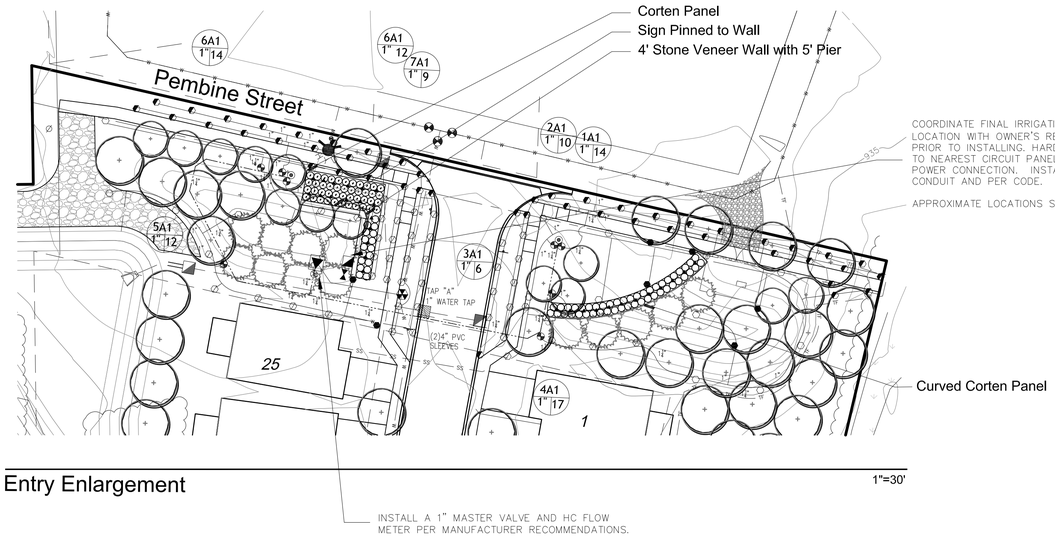
HIGH POP INSTALLATION DETAIL
NOT TO SCALE



QUICK COUPLER DETAIL
NOT TO SCALE



TRENCHING DETAILS
NOT TO SCALE



Entry Enlargement
1"=30'

IRRIGATION LEGEND:
Hunter

	FIXED SPRAY POP–UP (12") ⊟10 Series ■ 12 Series ◻15 Series ◨ Strip Series	PROS–12
▲	FIXED SPRAY POP–UP (12") w/ 2' radius nozzle	PROS–12–CV
⊘ ⬣ ◯ ◐	FIXED SPRAY POP–UP (4") w/ MPR nozzle MP1000 MP2000 MP3000 MPSS530/MPLC(RC)15	PROS–04 PRS30–CV
⊕	ELECTRIC MASTER VALVE – LINE SIZE– with Decoder	ICV–Series
◕	ELECTRIC VALVE –with Decoder	ICV–Series
◉	QUICK COUPLER VALVE	HQ44 RC
◢	CONTROLLER mount along backside of entrance wall	PRO HC
▼	REDUCED PRESSURE ASSEMBLY	FEBCO 825Y100
■	ISOLATION GATE VALVE (LINE SIZE)	
⋈	RAIN SENSOR DEVICE (Install at all controller locations)	SOLAR SYNC (wireless)
⋔	POINT OF CONNECTION TO WATER SOURCE	See note this sheet
	PVC MAINLINE, SDR 26, BE, Size as shown	
	POLYETHYLENE PIPE, 100#, NSF APPROVED, Size as shown	
	PVC SLEEVES – SDR 26 – Size as shown	

WATER REQUIREMENTS: 24 GPM @ 65 PSI
(CONTRACTOR TO VERIFY PSI AVAILABLE ON SITE PRIOR TO SYSTEM INSTALLTION)

VALVE DESIGNATION:
Controller and Station Number
Valve Size
Gallons Per Minute

NOTES:
1. Refer to the specifications for installation details and descriptions, as well as, construction methods which will be accepted.
2. All work shall be in compliance with all local, state, and federal codes and ordinances.
3. All electrical connections shall be made using 3m DBY–6 splice kits.
4. All control wiring downstream of the controller shall be Hunter IDWIRE communication cable UL approved for direct bury.
5. All polyethylene lateral pipe clamps shall be stainless steel worm gear type clamps. Lateral pipes 1–1/2" or larger shall be double clamped.
6. Pipe routing is schematic. All heads are to be field adjusted to within 2' to take into consideration any obstruction. Final head placements are subject to the landscape architects approval.
7. All sprinkler heads shall be mounted on 2 elbow poly swing joints as specified.
8. Contractor to verify final controller location with owner's authorized representative prior to installation.
9. All pipe not sized downstream of control valve is 1".
10. All sleeves shall be PVC SDR 21 (see specifications).
11. Irrigation contractor's point of connection to water source shall be as noted on this sheet.
12. Locate and connect to indicated water source. All pipe installed above grade shall be copper type "M".
13. 120v power to the controller locations should be provided others. Coordinate with owner's representative. Hardwire controller directly to nearest circuit panel. Place all wires in conduit per code.
14. Design pressure does not take into account seasonal supply fluctuations. Periods of drought may cause temporary pressure losses to the city water supply resulting in inadequate irrigation system performance. Irrigation design is based on normal weather conditions and typical municipal water supply abilities.
15. Irrigation contractor shall be responsible for determining and maintaining the irrigation schedule during the project construction and throughout the length of the warranty period.
16. The irrigation schedule shall deliver 1" of precipitation per week +/– natural rainfall quantities for turf grass.
17. Landscape material shall receive adjusted amounts of precipitation to maintain proper plant health.
18. Landscape and turf grass shall be irrigated separately.
19. Rotors and spray zones may not be combined to operate at the same time.

Know what's below. Call before you dig.

ALLEN DESIGN
LAND PLANNING / LANDSCAPE ARCHITECTURE
557 CARPENTER • NORTHVILLE, MI 48167
248 467 4668 • Fax 248 349 0559
Email: jca@wideopenwest.com

Seal:

Title:
Irrigation Plan

Project:
Scenic Pines
Novi, MI

Prepared for:
Singh Development, LLC
7125 Orchard Lake Road, Suite 200
West Bloomfield, Michigan 48322

Revision:	Issued:
Review	March 23, 2020

Job Number:
19-019

Drawn By:	Checked By:
ajb	jca

0' 15' 30'
NORTH
1"=30'

LIQUID ASSETS LLC
IRRIGATION DESIGN & WATER MANAGEMENT

Sheet No.
IR-1

PLANNING COMMISSION
ACTION SUMMARY

CITY OF NOVI
Regular Meeting
September 25, 2019 7:00 PM
Council Chambers | Novi Civic Center
45175 W. Ten Mile (248) 347-0475

CALL TO ORDER
The meeting was called to order at 7:00 PM.

ROLL CALL

Present:	Member Anthony, Member Avdoulos, Member Ferrell, Member Gronachan, Member Lynch, Member Maday
Absent:	Chair Pehrson
Also Present:	Barbara McBeth, City Planner; Sri Komaragiri, Planner; Kate Richardson, Staff Engineer; Rick Meader, Landscape Architect; Thomas Schultz, City Attorney; Pete Hill, Environmental Consultant; Josh Bocks, Traffic Engineering Consultant; Doug Necci, Façade Consultant

APPROVAL OF AGENDA

Motion to approve the September 25, 2019 Planning Commission Agenda. *Motion carried 6-0.*

CONSENT AGENDA - REMOVALS AND APPROVAL

1. **39500 ORCHARD HILLS PLACE JF19-04 – SECTION 9 WAIVER**
   Approval of the request of JFK Investment Company, LLC, for 39500 Orchard Hills Place JSP19-04 for a Section 9 waiver related to an exterior remodel. The subject parcel is located in Section 36, west of Haggerty Road north of Eight Mile Road. It is zoned OSC, Office Service Commercial. The existing building was constructed in 1986, prior to the adoption of the Façade Ordinance. The applicant proposes to update the building facades to replace the existing primary material, EIFS, with a Flat Metal Panel system.

In the matter of request of JFK Investment Company, LLC, for 39500 Orchard Hills Place JSP19-04, motion to approve a Section 9 Façade Waiver to allow an underage of brick (30% required, 7% proposed) and an overage of Flat Metal Panels (50 % maximum allowed, 93% proposed) because bringing the existing building into compliance would represent extreme practical difficulty and would not significantly enhance the appearance of the building. *Motion carried 6-0.*

2. **CROSSPOINTE MEADOWS ACCESSORY BUILDING JSP 19-36**
   Approval at the request of Crosspointe Meadows Church for Preliminary Site Plan with a Section 9 waiver. The subject property is located on the eastside of

Meadowbrook Road, south of Thirteen Mile Road in section 12 . The primary building on the property is a Church. The applicant is proposing to build a 480 square feet storage building in the rear yard, adjacent to the existing dumpster. No other changes to the site plan are proposed.

In the matter of Crosspointe Meadows Church Accessory Building, JSP 15-40, motion to approve the Preliminary Site Plan and a Section 9 Waiver, based on and subject to the following:

a. **To allow the underage of brick on south façade (30% minimum required, 23% proposed) and overage of EIFS on the south façade (25% maximum allowed, 44% proposed) and Trim on the south façade (15% maximum allowed, 33% proposed), because the deviations are a result of the large overhead door which is not regulated by the Ordinance and the plan is consistent with the intent and purpose of the Façade Ordinance, which is hereby granted;**

b. **A waiver to allow a painted island in lieu of a raised end island near the entrance to the storage shed, because the drive is only used for dumpster pick up and lawn maintenance vehicles, which is hereby granted;**

c. **The findings of compliance with Ordinance standards in the staff review letter and the conditions and the items listed in that letter being addressed.**

Motion Carried 6-0.

PUBLIC HEARINGS

1. **GOLLING MASERATI & ALFA ROMEO JZ19-28 WITH REZONING 18.728**

   Public hearing at the request of Dorchen/Martin Associates for Planning Commission's recommendation to City Council for a Planned Rezoning Overlay Concept Plan associated with a Zoning Map amendment, to rezone from NCC (Non-Center Commercial) to B-3 (General Business). The subject property is approximately 5.25 acres and is located on the south side of Grand River Avenue, west of Joseph Drive (Section 24). The applicant is proposing an automobile dealership, a permitted use in the B-3 District, with outdoor space for exclusive sale of new and used automobiles, which is a Special Land Use in the B-3 District.

In the matter of Golling Maserati & Alfa Romeo, JZ19-28, with Zoning Map Amendment 18.728, motion to postpone making a recommendation to the City Council to rezone the subject property from NCC (Non-Center Commercial) to B-3 (General Business) with a Planned Rezoning Overlay Concept Plan. This motion is made for the following reason: the applicant requested that the matter be postponed until the October 30th meeting. ***Motion Carried 6-0.***

1. **SCENIC PINES ESTATES JSP 18-76**

   Public hearing at the request of Singh Development for Preliminary Site Plan With One-Family clustering Option, Site Condominium, Special Land Use, Wetland Permit, Woodland Permit and Stormwater Management Plan Approval. The subject properties are approximately 9.44 acres and are located south of South Lake Drive and south side of Pembine Drive (Section 3). The applicant is proposing to utilize the One-family Cluster Option to develop a site condominium with 25 single family detached homes.

In the matter of Scenic Pines Estates, JSP 18-76, motion to approve the Special Land Use Permit based on and subject to the following:

1. **The proposed use will not cause any detrimental impact on existing thoroughfares *(based on the Traffic review);***
2. **The proposed use will not cause any detrimental impact on the capabilities of public services and facilities*;***
3. **The proposed use is compatible with the natural features and characteristics of the land *(because the applicant is proposing to preserve 53% of qualifying area that includes regulated woodlands and wetlands);***
4. **The proposed use is compatible with adjacent uses of land *(because the subject property is surrounded by single family residential uses. Façade review notes that the proposed elevations portray an overall architectural standard equal or higher than the existing homes in the surrounding neighborhood)*;**
5. **The proposed use is consistent with the goals, objectives, and recommendations of the City's Master Plan for Land Use (because *the development is age-targeted. The proposed floor plans indicate first-floor master);***
6. **The proposed use will promote the use of land in a socially and economically desirable manner;**
7. **The proposed use is (1) listed among the provision of uses requiring special land use review as set forth in the various zoning districts of this Ordinance, and (2) is in harmony with the purposes and conforms to the applicable site design regulations of the zoning district in which it is located;**
8. **The approval shall be subject to the following conditions at that time:**
   a. **The Planning Commission finding that Parcel ID No. 22-03-327-004, mentioned in the notes to the site plan, located on the north side of South Lake Drive, is not part of this development and shall not become or be made part of this development, as it does not comply with Sec. 36-62, Lakefront use standards, of the City Code of Ordinances as relates to lakefront recreational parks;**
   b. **Maintenance and reconstruction of the roads during and after construction, dust maintenance control and the stipulation that the roads be videotaped before and after construction to determine reconstruction requirements;**
   c. **Limit Construction times with respect to elementary school bus schedule;**
   d. **Construction traffic to comply with the City load limits; and**
9. **Final Site Plan shall come back to Planning Commission for Final Approval.**

Motion Carried 6-0.

In the matter of Scenic Pines Estates, JSP 18-76, motion to approve the Preliminary Site Plan with One-family clustering option and the Site Condominium based on and subject to the following:

1. **Planning Commission's finding per Section 3.28.1.B, that in all one-family residential districts, the clustering of one-family dwellings may be permitted, provided that the land consists of an unsubdivided area and the proposed site plan and, that the conventional approach to residential development would destroy the unique environmental significance of the site, and that the use of the cluster option is a desirable course of action to follow based on the following condition.**
   a. **The majority (fifty (50) percent) of the net site area (defined as the area which is delineated by parcel lines, exclusive of rights-of-way as shown on the adopted master plan) is composed of lands that are within jurisdiction of Woodland Protection Ordinance, as amended, Chapter 37 of the Code of Ordinances, or within the jurisdiction of the Wetland and Watercourse Protection Ordinance, as amended, Chapter 12, Article V of the Code of Ordinances, or any combination**

of such lands. The applicant is proposing to permanently preserve up to 53% of qualifying area on site.

2. **Planning Commission approval for reduction of minimum distance between the clusters, based on the finding, subject to conditions listed in Section 3.28.5., that the strict application of the distance in this instance would destroy a natural amenity such as regulated wetlands and woodlands. This is required for the Units 1-2-3 cluster and the Units 22-23-24-25 cluster. A minimum of 85 feet is required, approximately 78 feet is proposed;**
3. **Planning Commission approval of reduction of front building setbacks from the streets as listed in Section 3.28.4.D. A minimum of 30 feet is required from the edge of Private drive, the plans currently propose 25 feet in order to protect regulated woodlands in the back yards; this is based on the following findings listed in Section 3.28.6.C:**
   a. **All the conditions listed in Section 3.28.6.C. from i thru iv are met with the exception as noted below;**
   b. **A Zoning Board of Appeals variance from Section 3.28.6.C.iv.a to allow absence of required berm along the east, west and south property boundaries adjacent to other single-family residential districts;**
4. **Planning Commission waiver for reduction of the minimum distance for opposite-side spacing requirement, Design and Construction Standards Section 11-216(d), for the roadway spacing between Pristine Lane and Henning Street(A minimum of 200 feet is required, 117 feet is proposed, due to estimated low volume of vehicles expected from the proposed development, which is hereby granted;**
5. **A landscape waiver for absence of three required street trees along Pembine Street Frontage , as listed in 5.5.3.E.i.c and LDM 1.d., due to lack of space between the edge of pavement and the future Right-of-way ad conflicts with other required proposed utilities and swales, which is hereby granted;**
6. **A landscape waiver from Section 2.1 of Landscape Design Manual to allow some of the proposed trees to be located outside of the space between the sidewalk and the curb due to conflicts with proposed utilities, which is hereby granted. This waiver is supported as most of the proposed trees are located within 15 feet from the curb, with an exception of three trees;**
7. **Administrative approval from Engineering for variance from Engineering Design Manual Section 7.4.2.C.1 for not meeting the minimum distance of 15 feet from back of curb to outside edge of sidewalk;**
8. **The applicant shall revise the woodland replacement plan at the time of final site plan to avoid the conflict between the proposed tree replacement locations and the existing overhead electric line along the western property boundary;**
9. **The applicant shall obtain necessary approvals from all related outside agencies for the proposed location of storm water pond and related landscape under the existing overhead lines prior to approval of Final site plan;**
10. **Assurance of the permanence of the open space and its continued maintenance shall be submitted for review and approval by the City Attorney at the time of final site plan approval.**
11. **The findings of compliance with Ordinance standards in the staff and consultant review letters, and the conditions and items listed in those letters, as well as all of the terms and conditions of the PRO Agreement as approved, with these items being addressed on the Final Site Plan; and**
12. **The Final Site Plan shall come back to Planning Commission for Final Approval.**

Motion Carried 6-0.

In the matter of Scenic Pines Estates, JSP 18-76, motion to approve the Wetland Permit based on and subject to the findings of compliance with Ordinance standards in the staff and consultant review letters, and the conditions and items listed in those letters being addressed on the Final Site Plan. *Motion Carried 6-0.*

In the matter of Scenic Pines Estates, JSP 18-76, motion to approve the Woodland Permit based on and subject to the findings of compliance with Ordinance standards in the staff and consultant review letters, and the conditions and items listed in those letters being addressed on the Final Site Plan. *Motion Carried 6-0.*

In the matter of Scenic Pines Estates, JSP 18-76, motion to approve the Stormwater Management Plan, based on and subject to the findings of compliance with Ordinance standards in the staff and consultant review letters, and the conditions and items listed in those letters being addressed on the Final Site Plan; and the Final Site Plan must come back to Planning Commission for Final Approval. *Motion Carried 6-0.*

MATTERS FOR CONSIDERATION

1. **APPROVAL OF THE AUGUST 28, 2019 PLANNING COMMISSION MINUTES**

Motion to approve the August 28, 2019 Planning Commission Meeting Minutes. *Motion carried 6-0.*

ADJOURNMENT

The meeting was adjourned at 9:41 PM.

*****Actual language of the motions subject to review.*