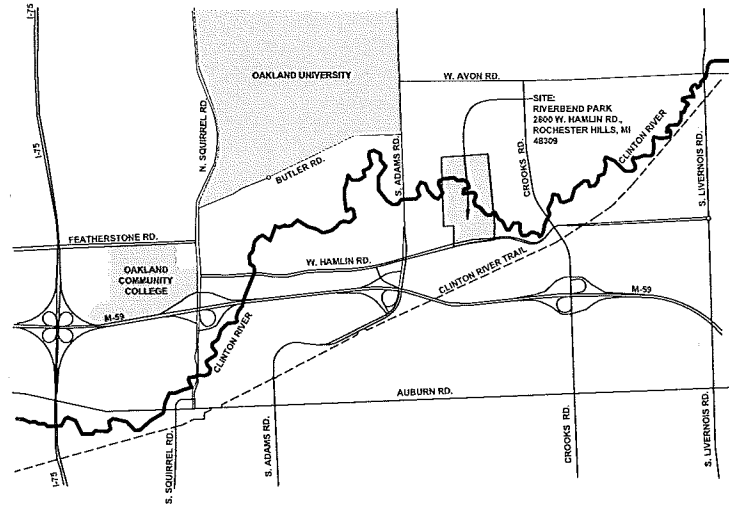


# "Innovation Hills"

Formerly Known As "Riverbend Park  
Rochester Hills MI, Oakland County, Michigan



**LOCATION MAP**  
1" = 3000'

**NOTICE OF STATED AND INTENDED USE FOR DECORATIVE ARCHITECTURAL VIEWING PURPOSES ONLY UNLESS SPECIFICALLY REPRESENTED, IDENTIFIED, OR OTHERWISE SPECIFIED AND DESIGNED AS A "WATERPLAY" FOUNTAIN**

IT IS HEREBY ACKNOWLEDGED, AGREED AND UNDERSTOOD BY SPECIFIER / PURCHASER / OWNER / OPERATOR OF THIS EQUIPMENT AND / OR SYSTEM THAT ITS STATED AND INTENDED USE IS FOR DECORATIVE VIEWING PURPOSES ONLY, AND NOT FOR PUBLIC BATHING, SWIMMING, PUBLIC ENTRY OR PUBLIC RECREATIONAL USE. AS SUCH, NUNEZ DESIGN AND ROMAN FOUNTAINS CORPORATION ASSUMES NO RESPONSIBILITY OR LIABILITY WHATSOEVER FOR PERSONAL INJURY, SICKNESS, ILLNESS, DISEASE, OR OTHER ACCIDENTS WHICH MAY OCCUR AS A RESULT OF THE EQUIPMENT / SYSTEM BEING USED, OPERATED OR OTHERWISE MAINTAINED IN A MANNER INCONSISTENT WITH ITS STATED AND INTENDED PURPOSE. SPECIFIER/ PURCHASER/ OWNER/ OPERATOR IS SOLELY RESPONSIBLE FOR DETERMINING WHETHER ANY SPECIFIC CODES, RULES, REGULATIONS OR GUIDELINES FOR FOUNTAINS APPLY TO THIS PROJECT PRIOR TO CONSTRUCTION, INSTALLATION AND OPERATION AND FOR NOTIFYING THE PUBLIC OF THE STATED AND INTENDED USE AND OPERATION OF THIS DECORATIVE ARCHITECTURAL FOUNTAIN AND FOR LAWFUL ENFORCEMENT THEREOF, INCLUDING POSTING ANY AND ALL SIGNS, NOTICES, WARNINGS, INSTRUCTIONS AND BARRIERS AND PROVIDING PERSONNEL AS NECESSARY TO ENFORCE COMPLIANCE WITH ITS INTENDED USE.

**PROJECT INDEX & SUBMITTALS**

SHEET INDEX	PLAN SUBMITTALS					
	1-9-2016 PARKING LOT BID	8-11-2016 PARKING LOT DESIGN REVIEW	8-11-2016 DESIGN REVIEW	8-21-2016 DESIGN REVIEW	4-17-2017 FINAL SUBMITTAL REVIEW	4-21-2017 FINAL SUBMITTAL
SP - 1.0 COVER	X	X	X	X	X	X
SP - 1.1 Existing Survey & Topography	X	X	X	X	X	X
SP - 1.2 Development Phasing	X	X	X	X	X	X
SP - 1.3 Utilities	X	X	X	X	X	X
SP - 2.0 Parking Lot Demo Plan	X	X	X	X	X	X
SP - 2.1 Parking Lot Layout	X	X	X	X	X	X
SP - 2.2 Parking Lot Grading	X	X	X	X	X	X
<b>SITE / POND</b>						
LA - 1.0 Grading Plan			X	X	X	
LA - 1.1 Pond Grading			X	X	X	
LA - 1.2 Pond Edge Detail			X	X	X	
LA - 1.3 Earth Mound Details			X	X	X	
LA - 1.4 Water Wall Details			X	X	X	
LA - 1.5 Pond Edge Details			X	X	X	
LA - 1.6 Bioswale Spillway			X	X	X	
LA - 1.7 Pond Overlook Plan & Details			X	X	X	
LA - 1.8 Weir Plan & Details			X	X	X	
LA - 1.9 Upper Pond Edge Treatments & Layout			X	X	X	
LA - 2.0 Hardscape Layout Plan & Overview			X	X	X	
LA - 2.1 Hardscape Layout			X	X	X	
LA - 2.2 Hardscape Details			X	X	X	
LA - 2.3 Durlawn			X	X	X	
LA - 2.4 Durlawn			X	X	X	
LA - 3.0 Amenity Plan			X	X	X	
LA - 3.1 Park Amenity Details			X	X	X	
LA - 3.2 Temple Shelter Area Layout			X	X	X	
LA - 3.3 Temple Shelter Construction Details & Recommendations			X	X	X	
LA - 3.4 Proposed Sundial			X	X	X	
LA - 3.5 Crowd Hydrology			X	X	X	
<b>ROMAN FOUNTAINS</b>						
WFN - 1 General Installation Notes			X	X		
WFN - 2 Fountain Equipment List & Performance Criteria			X	X		
WFD - 1 Fountain Equipment Details Sheet			X	X		
WFM - 1 Fountain Mechanical Riser Diagram			X	X		
WFM - 2 Fountain Details			X	X		
WFM - 3 Site Dimensions & Electrical Plan			X	X		
WFM - 4 Fountain Direct Burial Pump Vault Details #1			X	X		
WFM - 5 Fountain Direct Burial Pump Vault Details #2			X	X		
WFI - 1 Typical Electrical Details & Article 680 NEC Requirements			X	X		
WFI - 2 Typical Piping & Penetration Details			X	X		
<b>ENGINEERING</b>						
E - 1.0 Preliminary Engineering			X	X		
E - 1.1 Pond Outlet Control Structures Details			X	X		
E - 1.2 General Construction Notes			X	X		
<b>LANDSCAPING</b>						
LA - 4.0 Pond Landscaping Plan			X			
LA - 4.1 Landscape Seeding Plan			X			
LA - 4.2 Landscape Seed Mixes			X			
LA - 4.3 Overall Landscape Key Plan			X			
LA - 4.4 Bioswale Planting Plan - Area A			X			
LA - 4.5 Bioswale Details			X			
LA - 4.6 Landscape Details - Area B			X			
LA - 4.7 Temple Shelter Landscape Details - Area C			X			
LA - 4.8 Landscaping Planting Details & Specifications			X			

**PROJECT TEAM**

**CLIENT / APPLICANT**  
KEN ELWERT, CPRP  
(DIRECTOR OF PARKS & FORESTRY)  
THE CITY OF ROCHESTER HILLS  
1000 ROCHESTER HILLS DR.,  
ROCHESTER HILLS, MI 48309

**PROJECT LANDSCAPE ARCHITECT / PLANNER**  
NUNEZDESIGN, INC.  
RALPH L. NUNEZ, RLA, CLARB, ASLA, GRP  
249 PARK STREET  
TROY, MICHIGAN 48063  
PHONE: (248) 224-5933



Innovation Hills  
Formerly Known As Riverbend Park  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills

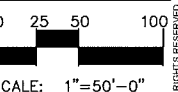
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-841-2552

4-21-17 FINAL SUBMITTAL REVIEW  
8-21-16 DESIGN REVIEW  
8-11-16 PARKING LOT REVISION  
8-21-16 PARKING LOT DESIGN REVIEW  
1-9-16 PARKING LOT BID  
Date: 4/17/2017



LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P. 248. 224. 5933  
nunezdesigninc@gmail.com

Designed / Drawn: RLH / RC  
Checked / Approved: RLH  
Job # 02-02-2017



SHEET:  
SP - 1.0

PROJECT FILE: Riverbend Park LA Package\_04.21.2017.dwg



NOTES:  
 BASE INFORMATION INCLUDING SITE SURVEY,  
 GRADES, CONTOURS, AND EXISTING SPOT PROVIDED  
 BY HUBEL ROTH AND CLARK, 5-19-2016.  
 ADDITIONAL GIS INFORMATION PROVIDED BY THE  
 CITY OF ROCHESTER HILLS.



**NÚÑEZ  
 DESIGN**



**Innovation Hills**  
 Formerly Known As Riverbend Park  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI.  
 48309  
**FILE NUMBER**

**CLIENT:**  
 City of Rochester Hills

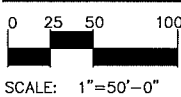
**Ken Elwert**  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

- 5-22-17 FINAL SUBMITTAL REVISION
- 4-21-17 FINAL SUBMITTAL REVIEW
- 3-21-16 DESIGN REVIEW
- 3-11-16 PARKING LOT REVISION
- 3-21-16 PARKING LOT DESIGN REVIEW
- 1-8-16 PARKING LOT BID
- Date: 5/18/2017



**NÚÑEZ  
 DESIGN**  
 LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P. 248. 224. 5933  
 nunezdesigninc@gmail.com

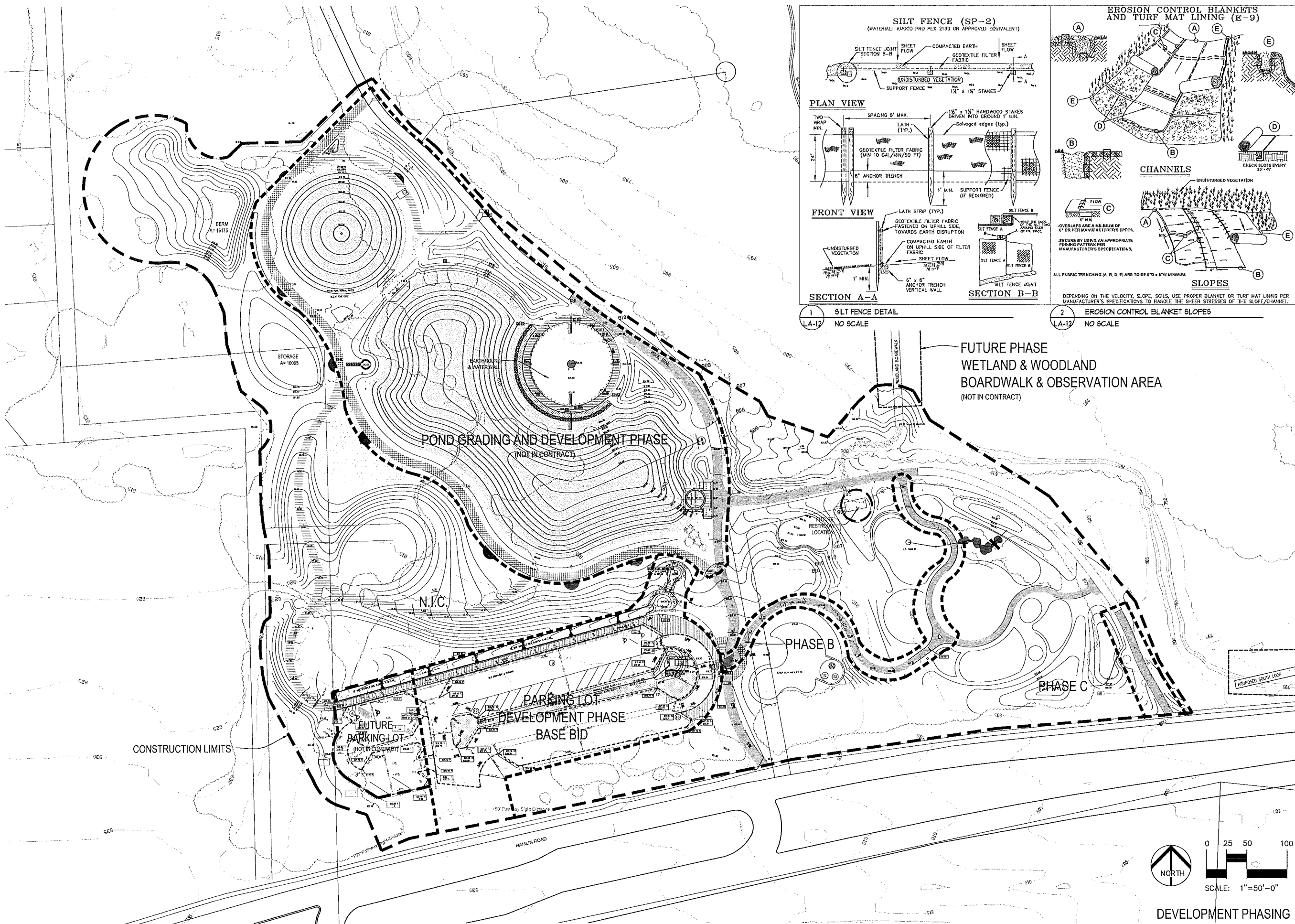
Designed / Drawn: RLN / JRC  
 Checked / Approved: RLN  
 Job # 02-02-2017



EXISTING SITE SURVEY & TOPOGRAPHY

**811.**  
 Know what's below.  
 Call before you dig.  
 SHEET:  
**SP - 1.1**

PROJECT FILE: Riverbend Park REVISED PARKING LOT Package\_03.22.2017.dwg  
 PLANNING FOR THE FUTURE - NOT FOR CONSTRUCTION. ALL RIGHTS RESERVED. This document and the material contained therein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.



**Innovation Hills**  
Formerly Known As "Riverbend Park"  
2800 W. Hamlin Rd.,  
Rochester Hills, MI.  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills

Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

- 5-22-17 FINAL SUBMITTAL REVISION
  - 4-21-17 FINAL SUBMITTAL REVIEW
  - 3-21-16 DESIGN REVIEW
  - 3-11-16 PARKING LOT REVISION
  - 3-21-16 PARKING LOT DESIGN REVIEW
  - 1-16-16 PARKING LOT BID
- Date: 5/18/2017

**NÚÑEZ DESIGN**  
LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P. 248. 224. 5933  
nunezdesigninc@gmail.com

Designed / Drawn: RLN/LBC  
Checked / Approved: RLN  
Job #: 02-02-2017

PLAN SUBMITTED FOR SITE PLAN REVIEW - NOT FOR CONSTRUCTION

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

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

SHEET:  
DEVELOPMENT PHASING SP - 1.2

PROJECT FILE: Riverbend Park REVISED PARKING LOT Package\_05.22.2017.dwg  
COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained herein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.



**NÚÑEZ  
DESIGN**



**Innovation Hills**  
Formerly Known As Riverbend Park  
2800 W. Hamlin Rd.,  
Rochester Hills, MI.  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills

Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

- 5-22-17 FINAL SUBMITTAL REVIEW
  - 4-21-17 FINAL SUBMITTAL REVIEW
  - 3-21-16 DESIGN REVIEW
  - 8-11-16 PARKING LOT REVISION
  - 8-21-16 PARKING LOT DESIGN REVIEW
  - 1-8-16 PARKING LOT BID
- Date: 5/18/2017



LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P. 248. 224. 5933  
nunezdesigninc@gmail.com

Designed / Drawn: RLN / RC  
Checked / Approved: RLN  
Job # 02-02-2017



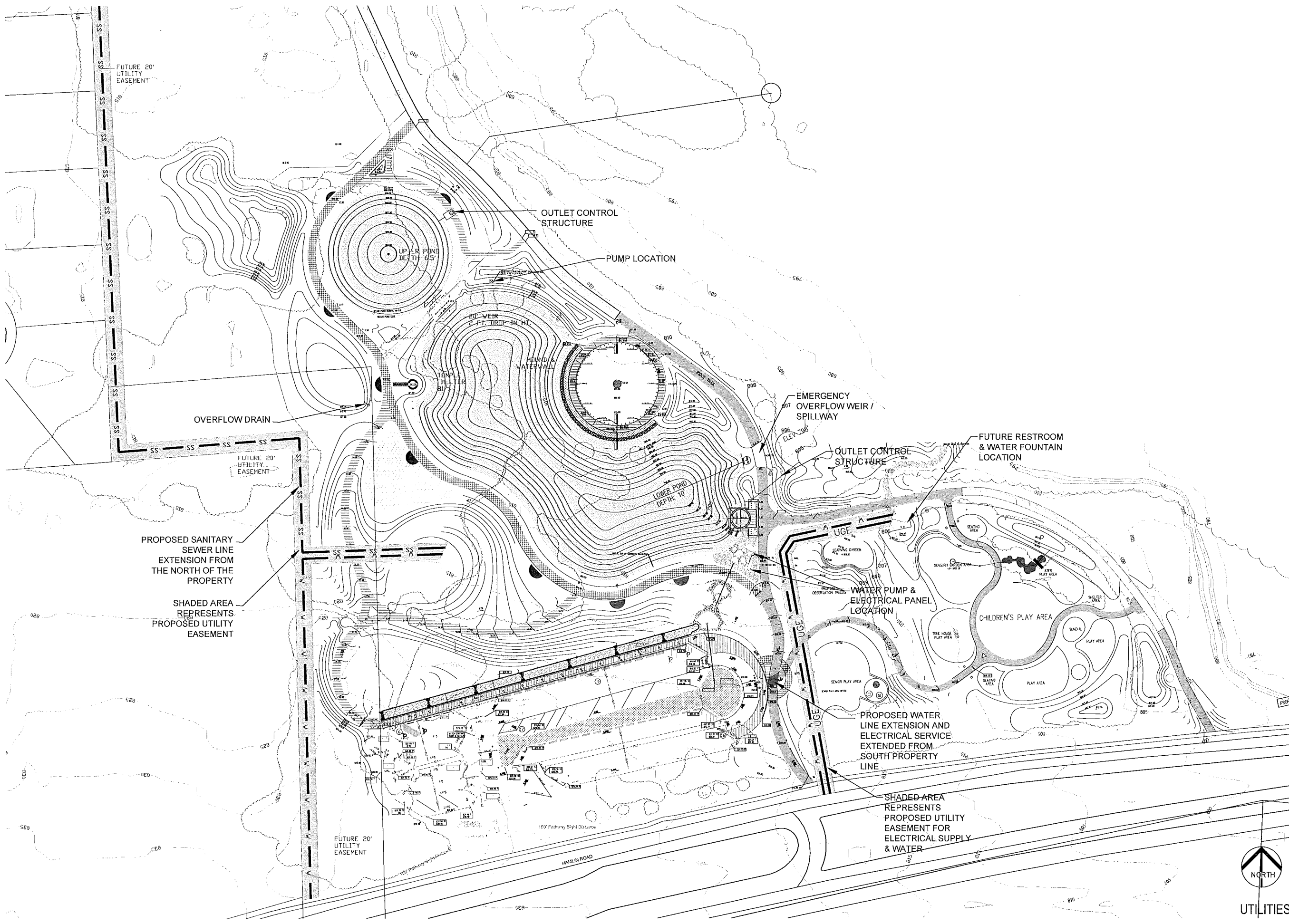
SCALE: 1"=50'-0"



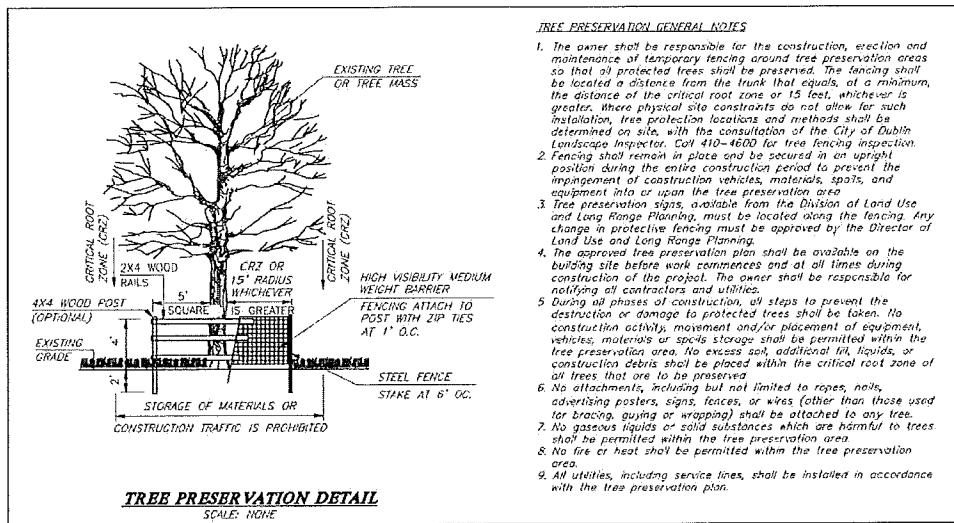
SHEET:



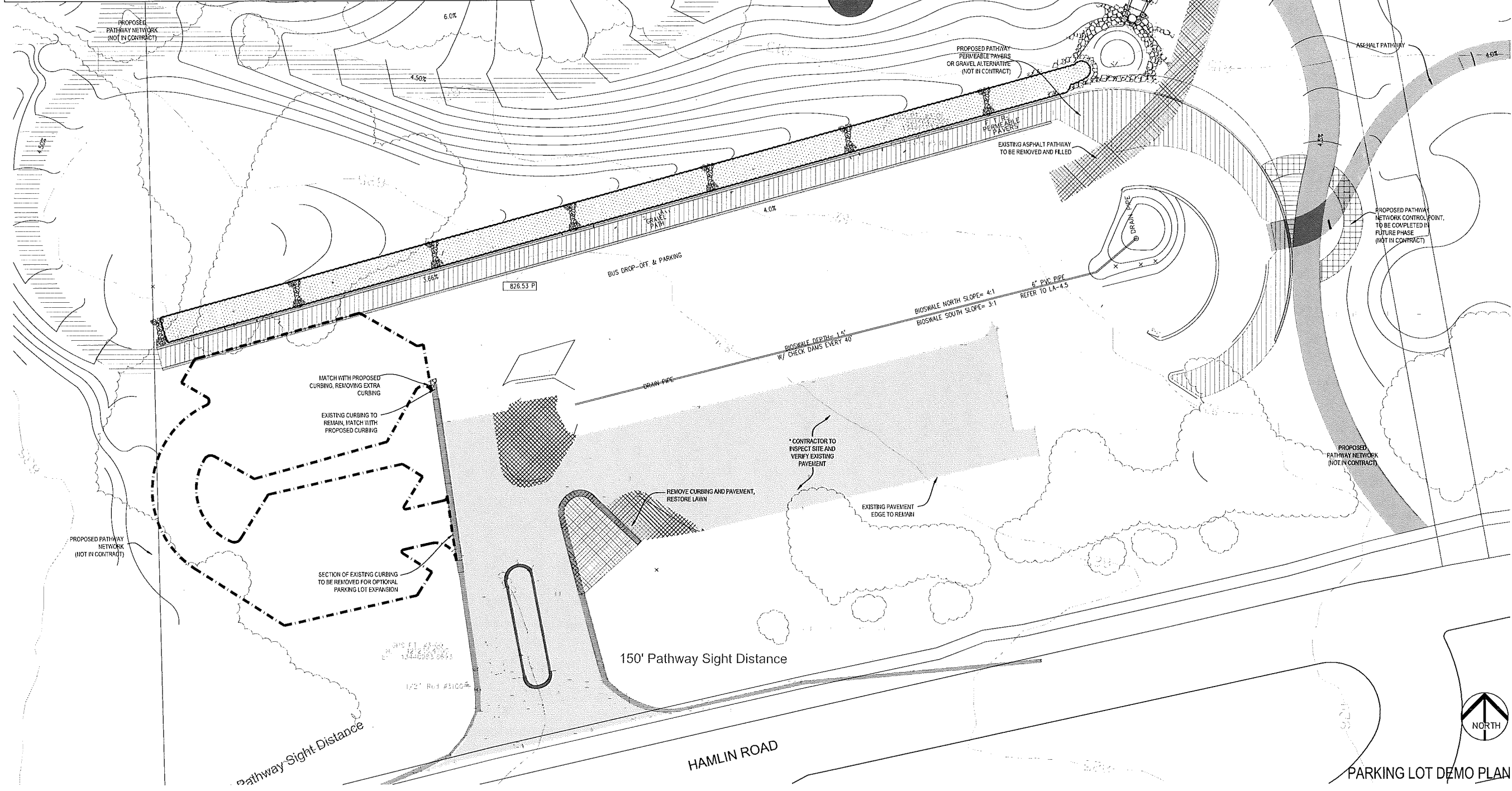
UTILITIES SP - 1.3



COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. THIS DOCUMENT AND THE SUBJECT MATTER HEREIN ARE THE PROPERTY OF NÚÑEZ DESIGN, INC. AND ARE TO BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF NÚÑEZ DESIGN, INC.



- TREE PRESERVATION GENERAL NOTES**
1. The owner shall be responsible for the construction, erection and maintenance of temporary fencing around tree preservation areas so that all protected trees shall be preserved. The fencing shall be located a distance from the trunk that equals, at a minimum, the distance of the critical root zone or 15 feet, whichever is greater. Where physical site constraints do not allow for such installation, tree protection locations and methods shall be determined on site, with the consultation of the City of Dublin Landscape Inspector. Call 410-4600 for tree fencing inspection.
  2. Fencing shall remain in place and be secured in an upright position during the entire construction period to prevent the impingement of construction vehicles, materials, spots, and equipment into or upon the tree preservation area.
  3. Tree preservation signs, available from the Division of Land Use and Long Range Planning, must be located along the fencing. Any change in protective fencing must be approved by the Director of Land Use and Long Range Planning.
  4. The approved tree preservation plan shall be available on the building site before work commences and at all times during construction of the project. The owner shall be responsible for notifying all contractors and utilities.
  5. During all phases of construction, all steps to prevent the destruction or damage to protected trees shall be taken. No construction activity, movement and/or placement of equipment, vehicles, materials or spools storage shall be permitted within the tree preservation area. No excess soil, additional fill, liquids, or construction debris shall be placed within the critical root zone of all trees that are to be preserved.
  6. No attachments, including but not limited to ropes, nails, advertising posters, signs, fences, or wires (other than those used for bracing, guying or wrapping) shall be attached to any tree.
  7. No gaseous liquids or solid substances which are harmful to trees shall be permitted within the tree preservation area.
  8. No fire or heat shall be permitted within the tree preservation area.
  9. All utilities, including service lines, shall be installed in accordance with the tree preservation plan.

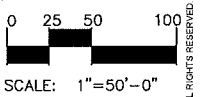


**Innovation Hills**  
Formerly Known As "Riverside Park"  
2800 W. Hamlin Rd.,  
Rochester Hills, MI.  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills  
  
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

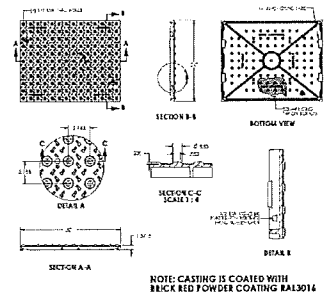
5-22-17 FINAL SUBMITTAL REVIEW  
4-21-17 FINAL SUBMITTAL REVIEW  
3-21-16 DESIGN REVIEW  
3-11-16 PARKING LOT REVISION  
3-21-16 PARKING LOT DESIGN REVIEW  
1-8-16 PARKING LOT BID  
Date: 5/18/2017

**NÚÑEZ DESIGN**  
LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P. 248. 224. 5933  
nunezdesigninc@gmail.com  
Designed / Drawn: RLN / RC  
Checked / Approved: RLN  
Job # 02-02-2017

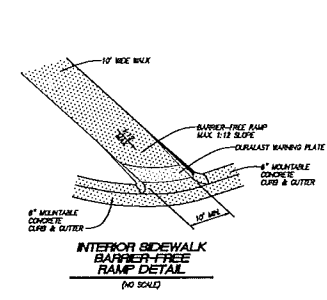


SHEET:  
PARKING LOT DEMO PLAN SP - 2.0

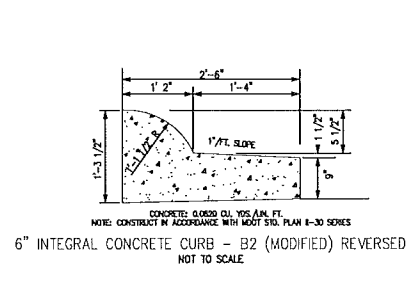
PROJECT FILE: Riverside Park REVISED PARKING LOT PLAN.dwg, 05.22.2017.dwg  
COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. No document or the subject matter contained herein is to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.



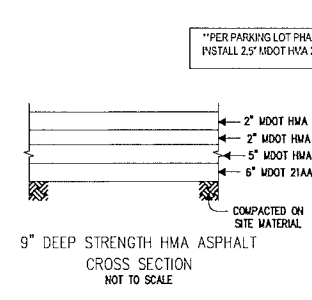
1. SIDEWALK RAMP WARNING PLATE



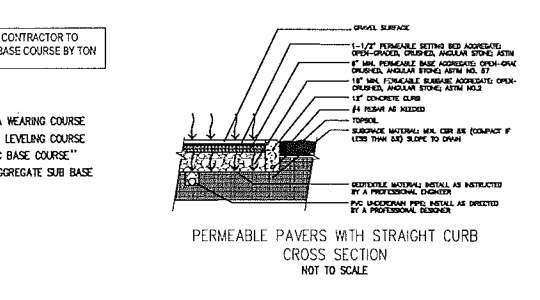
2. BARRIER FREE SIDEWALK DETAIL



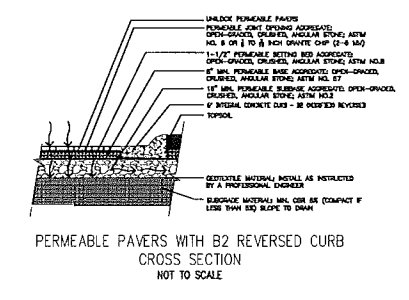
3. INTEGRAL CURB DETAIL



4. SIDEWALK RAMP WARNING PLATE



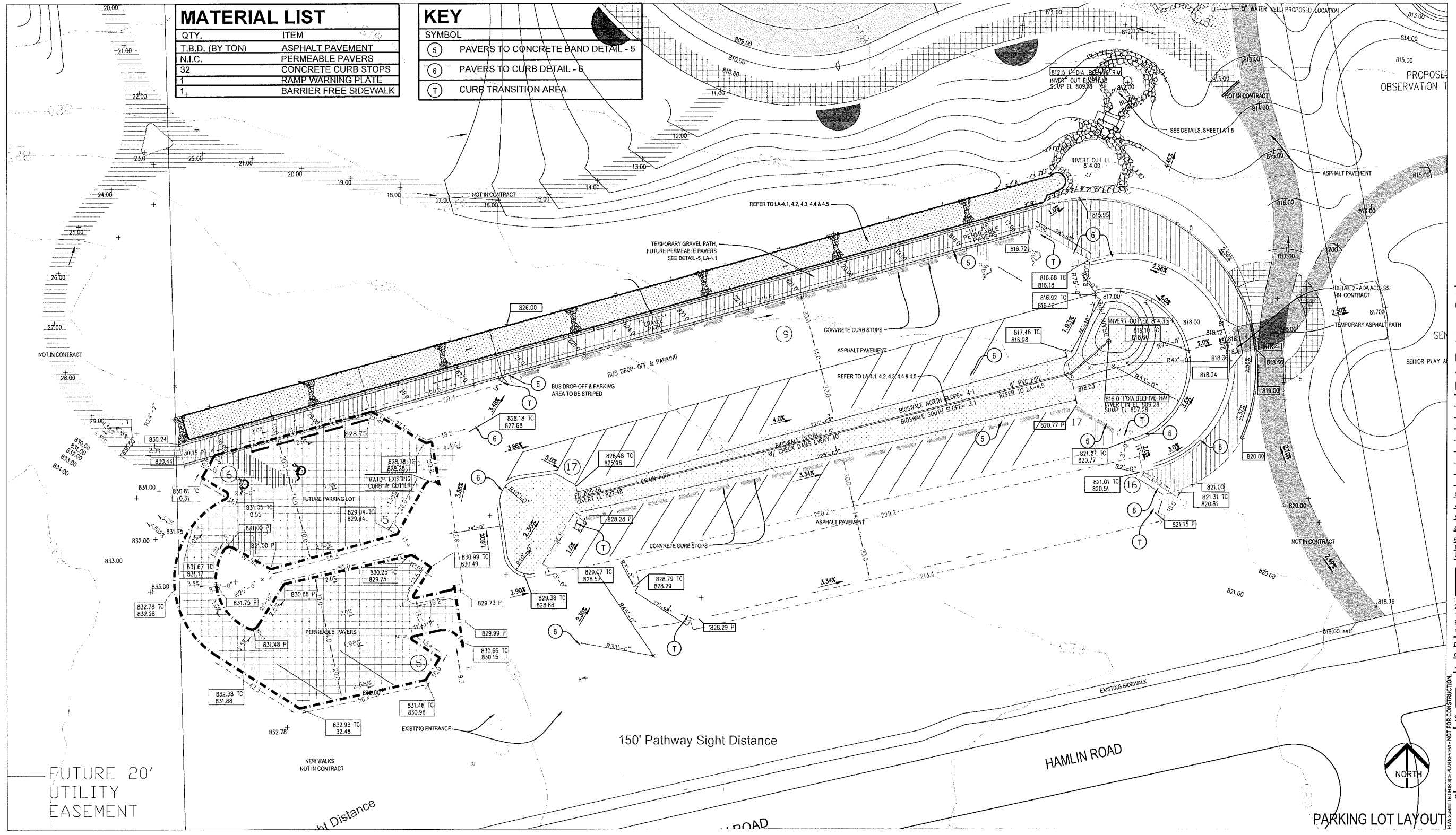
5. PAVERS TO CONCRETE BAND DETAIL



6. PAVERS TO CURB DETAIL

MATERIAL LIST table with columns for QTY., T.B.D. (BY TON), N.I.C., and ITEM.

KEY table with symbols and descriptions for paver details, curb details, and transition areas.



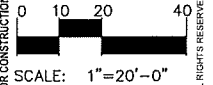
Innovation Hills
Formerly Known As Riverbend Park
2800 W. Hamlin Rd.,
Rochester Hills, MI.
48309
FILE NUMBER

CLIENT:
City of Rochester Hills
Ken Elwert
1000 Rochester Hills Dr.
Rochester Hills, MI
48309
Phone: 248-656-4600

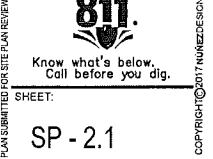
- 5-22-17 FINAL SUBMITTAL REVISION
4-21-17 FINAL SUBMITTAL REVIEW
9-21-16 DESIGN REVIEW
8-11-16 PARKING LOT REVISION
8-21-16 PARKING LOT DESIGN REVIEW
1-8-16 PARKING LOT BID
Date: 5/18/2017



Designed / Drawn: RLN / BC
Checked / Approved: RLN
Job # 02-02-2017



SCALE: 1"=20'-0"





**Innovation Hills**  
 Formerly Known As Riverbend Park  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI,  
 48309  
**FILE NUMBER**

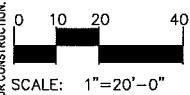
**CLIENT:**  
 City of Rochester Hills

Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

- 5-22-17 FINAL SUBMITTAL REVISION
- 4-21-17 FINAL SUBMITTAL REVIEW
- 3-21-16 DESIGN REVIEW
- 3-11-16 PARKING LOT REVISION
- 3-21-16 PARKING LOT DESIGN REVIEW
- 1-16-16 PARKING LOT BID
- Date: 5/16/2017

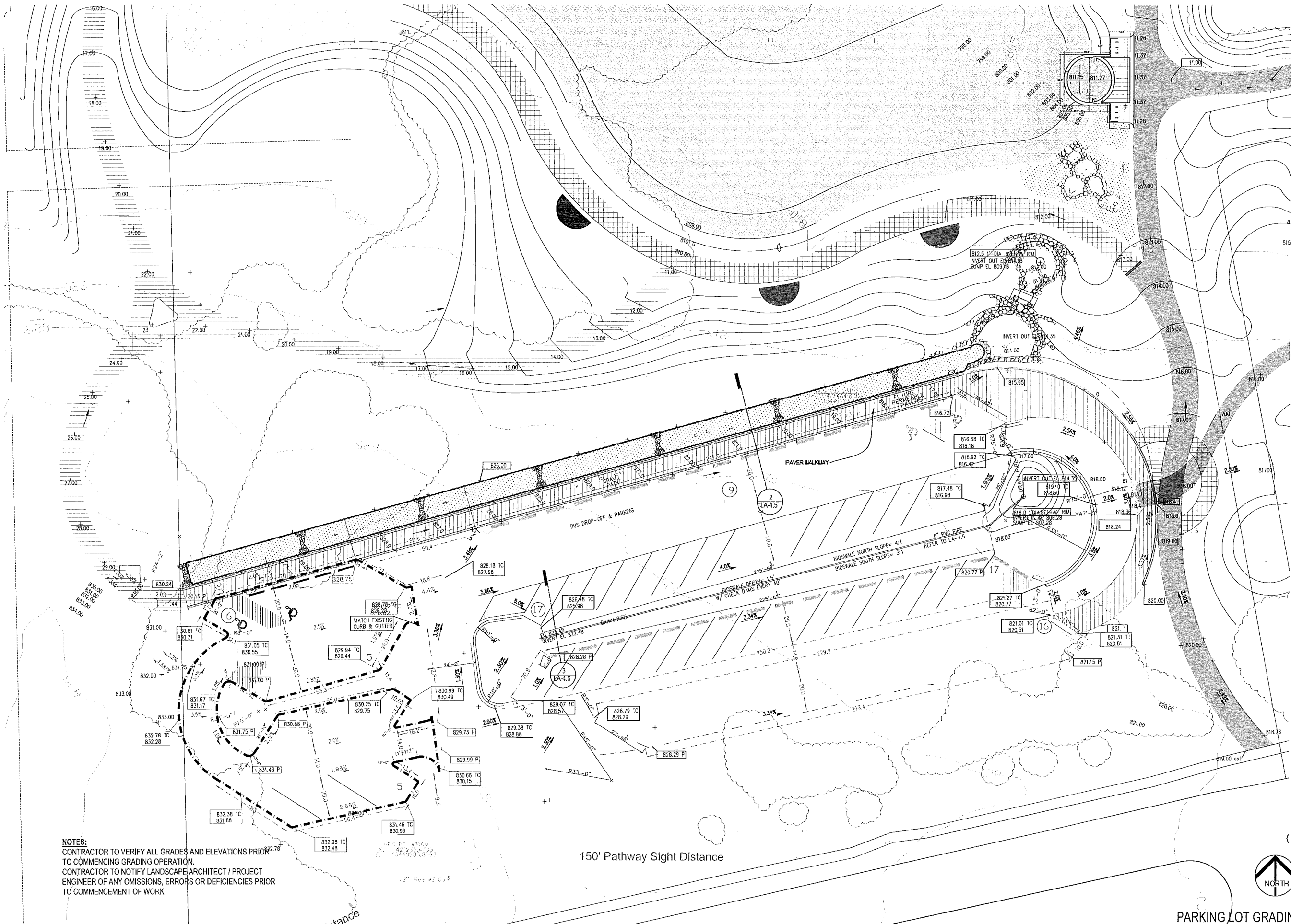
**NÚÑEZ DESIGN**  
 LANDSCAPE ARCHITECTURE + URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P: 248. 224. 5933  
 nunezdesigninc@gmail.com

Designed / Drawn: RLM / BC  
 Checked / Approved: RLM  
 Job # 02-02-2017



SHEET:  
**SP - 2.2**

PROJECT FILE: Riverbend Park REVISED PARKING LOT Package\_05.22.2017.dwg



**NOTES:**  
 CONTRACTOR TO VERIFY ALL GRADES AND ELEVATIONS PRIOR TO COMMENCING GRADING OPERATION.  
 CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT / PROJECT ENGINEER OF ANY OMISSIONS, ERRORS OR DEFICIENCIES PRIOR TO COMMENCEMENT OF WORK



**PARKING LOT GRADING SP - 2.2**



**Innovation Hills**  
 Formerly Known As Riverbend Park  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI,  
 48309  
 FILE NUMBER

CLIENT:  
 City of Rochester Hills

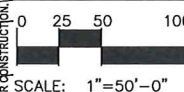
Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

5-22-17 FINAL SUBMITTAL REVISION  
 4-21-17 FINAL SUBMITTAL REVIEW  
 3-21-16 DESIGN REVIEW  
 3-11-16 PARKING LOT REVIEW  
 3-21-16 PARKING LOT DESIGN REVIEW  
 1-26-16 PARKING LOT BID  
 Date: 5/18/2017

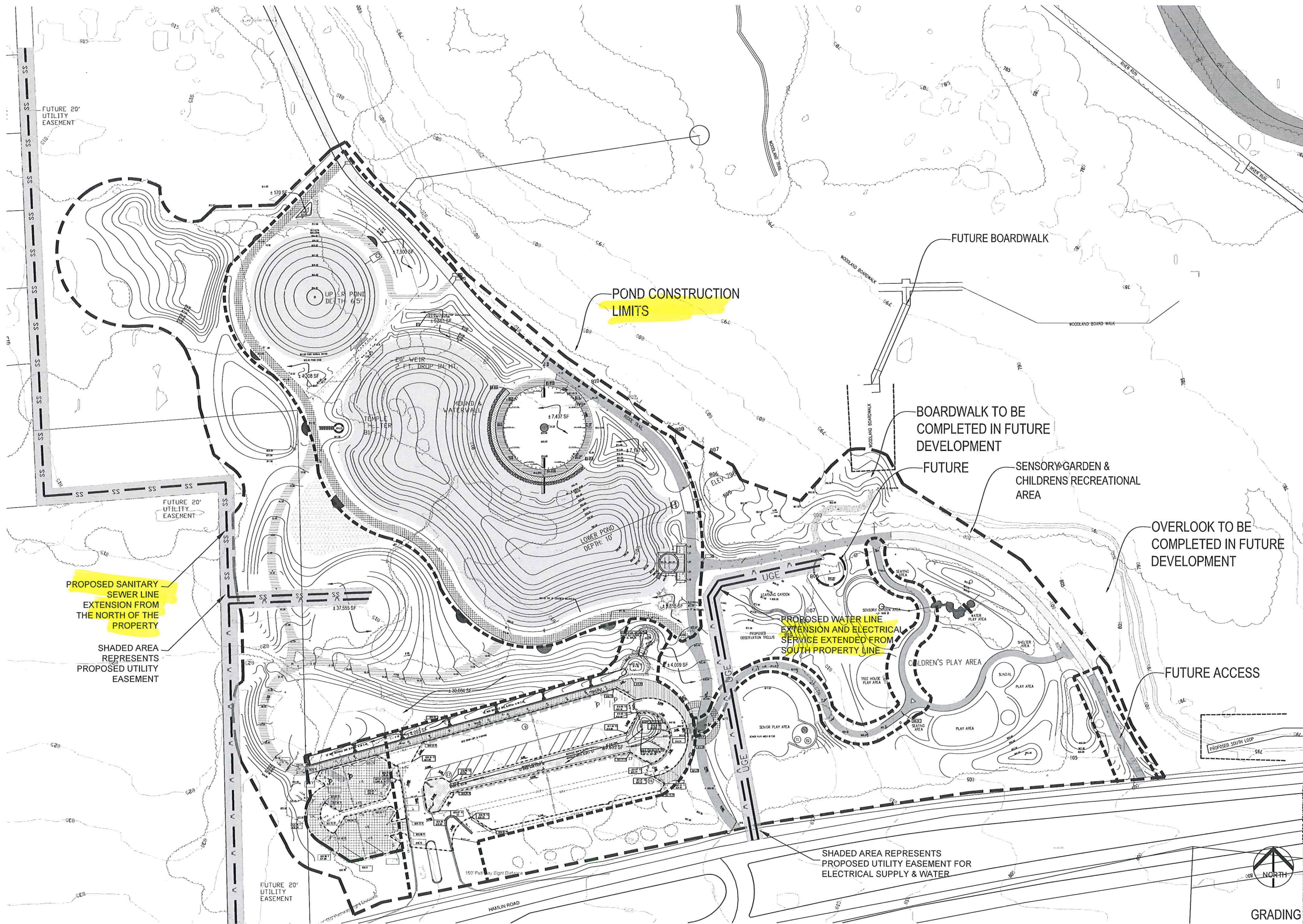


LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P. 248. 224. 5933  
 nunezdesigninc@gmail.com

Designed / Drawn: RLN / BC  
 Checked / Approved: RLN  
 Job # 02-02-2017

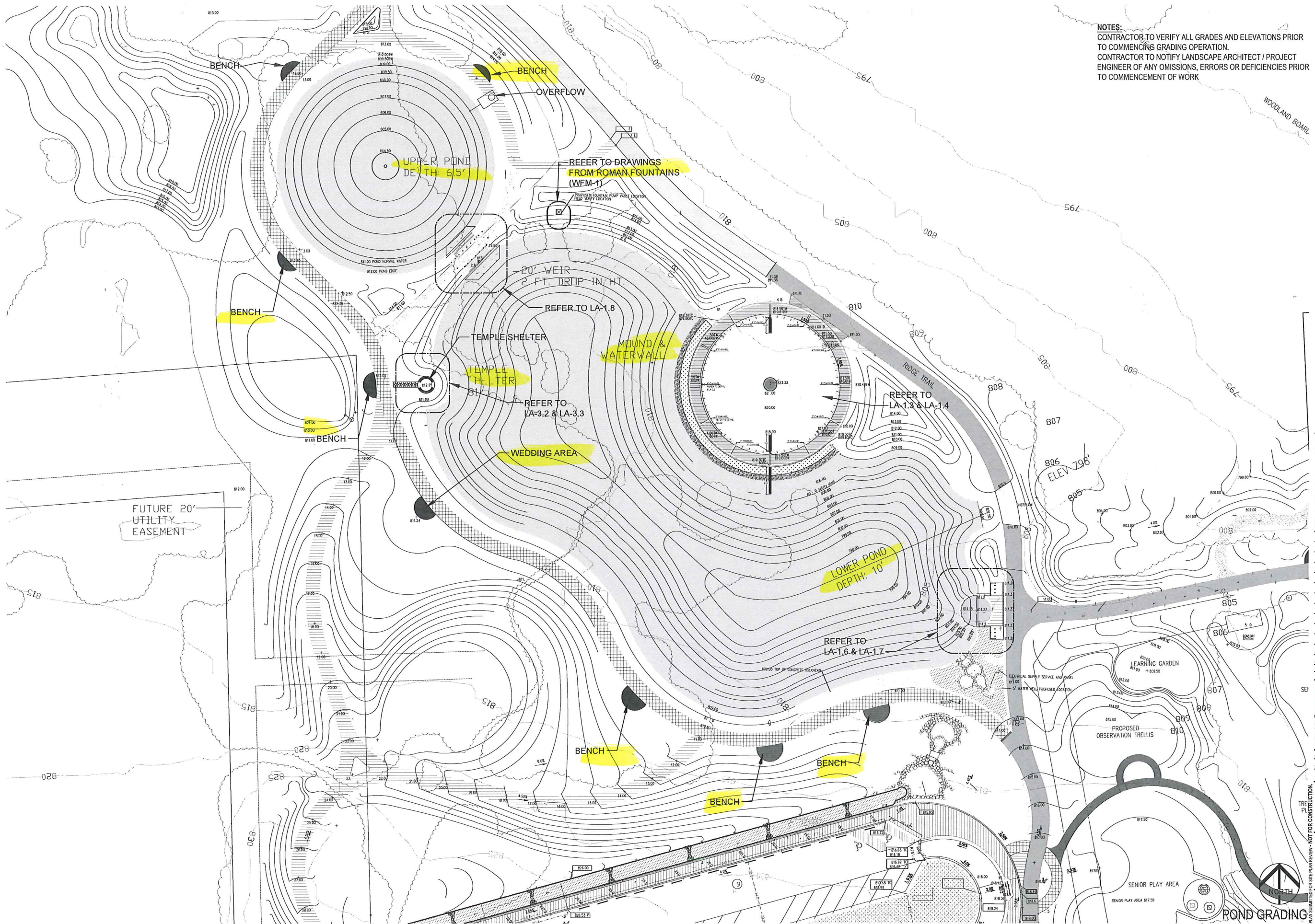


GRADING LA - 1.0



PROJECT FILE: Riverbend Park REVISED PARKING LOT PACKAGE 03.22.2017.dwg  
 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. THIS DOCUMENT AND THE SUBJECT MATTER CONTAINED THEREIN IS PROPRIETARY AND IS NOT TO BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF NÚÑEZ DESIGN, INC.  
 PLAN SUBMITTED FOR SITE PLAN REVIEW - NOT FOR CONSTRUCTION





**NOTES:**  
 CONTRACTOR TO VERIFY ALL GRADES AND ELEVATIONS PRIOR TO COMMENCING GRADING OPERATION.  
 CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT / PROJECT ENGINEER OF ANY OMISSIONS, ERRORS OR DEFICIENCIES PRIOR TO COMMENCEMENT OF WORK

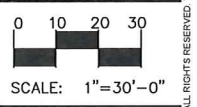


**Innovation Hills**  
 Formerly Known As "Riverview Park"  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI,  
 48309  
 FILE NUMBER

CLIENT:  
 City of Rochester Hills  
 Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

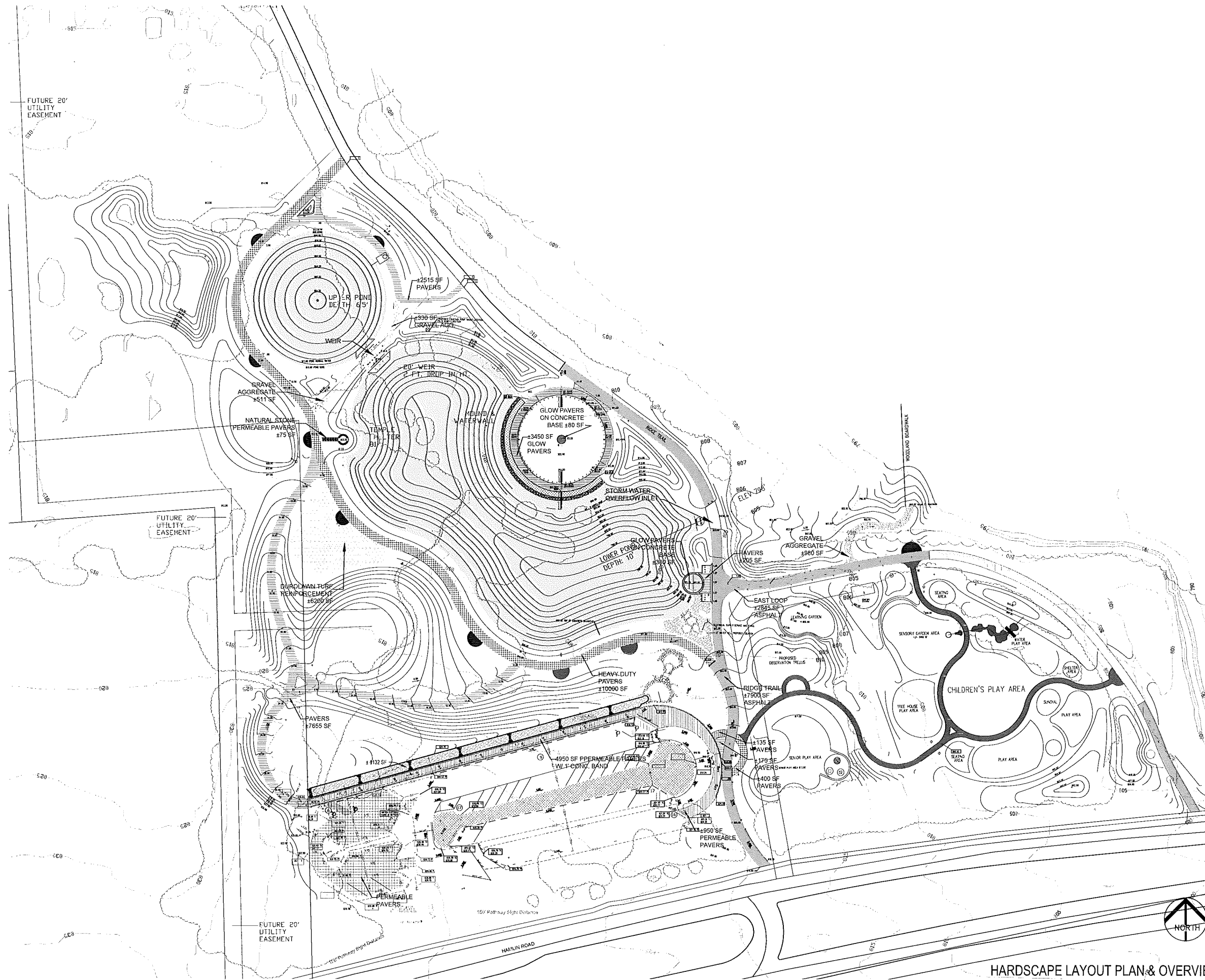
4-21-17 FINAL SUBMITTAL REVIEW  
 8-21-16 DESIGN REVIEW  
 8-11-16 PARKING LOT REVISION  
 8-21-16 PARKING LOT DESIGN REVIEW  
 1-8-16 PARKING LOT BID  
 Date: 4/7/2017

SEI  
**NÚÑEZ DESIGN**  
 LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P. 248. 224. 5933  
 nunezdesigninc@gmail.com  
 Designed / Drawn: RLN / RC  
 Checked / Approved: RLN  
 Job # 02-02-2017

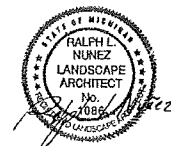


**811**  
 Know what's below.  
 Call before you dig.  
 SHEET:  
**POND GRADING LA - 1.1**

PROJECT FILE: Riverview Park LA Package\_04.21.2017.dwg  
 COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained therein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.



**NUÑEZ  
DESIGN**



**Riverbend Park**  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills

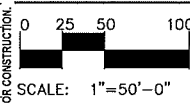
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

- 4-21-17 RIVAL SUBMITTAL REVIEW
- 8-21-16 DESIGN REVIEW
- 8-11-16 PARKING LOT REVISION
- 8-21-18 PARKING LOT DESIGN REVIEW
- 1-8-18 PARKING LOT BID
- Date: 4/7/2017



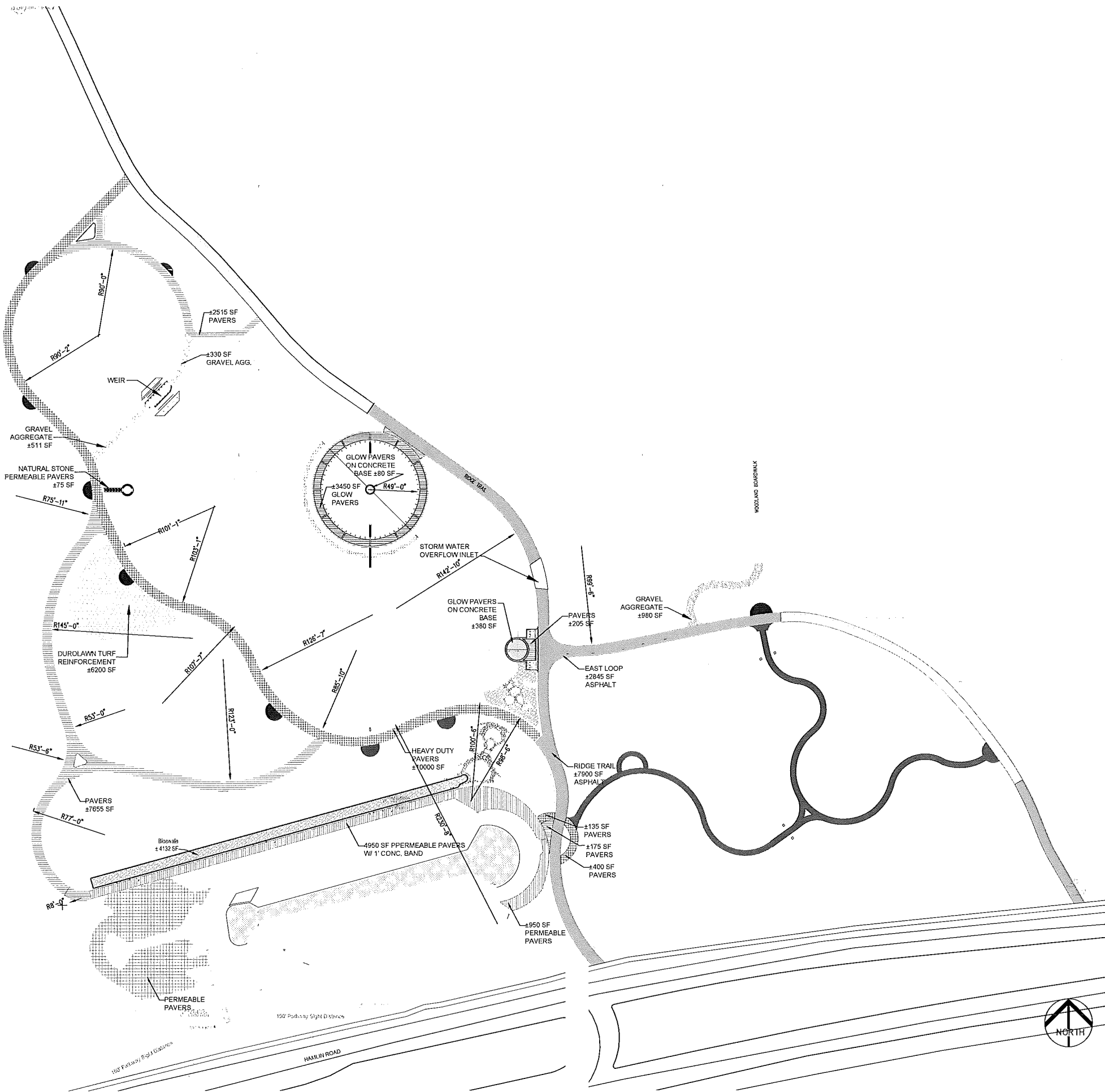
LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P: 248.224.5933  
nunezdesigninc@gmail.com

Designed / Drawn: RLW / BC  
Checked / Approved: RLW  
Job # 02-02-2017

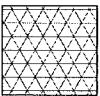
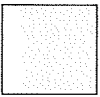
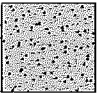


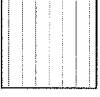
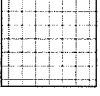
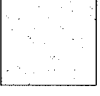
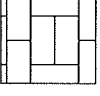



**811**  
Know what's below.  
Call before you dig.

FOR SUBMITTAL OR WITH PLAN NUMBER - NOT FOR CONSTRUCTION. COPYRIGHT © 2017 NUÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained herein is proprietary and is not to be used or reproduced without the written permission of NUÑEZ DESIGN, INC. PROJECT FILE: Riverbend Park LA Package\_04.21.2017.dwg



### HARDSCAPING LEGEND

SYMBOL	TYPE OF HARDSCAPE / AREA / MANUFACTURER
	DUROLAWN TURF REINFORCEMENT ±6,200 SF
	EXISTING ASPHALT TO REMAIN
	CONCRETE TBD
	NEW ASPHALT 10,730 SF
	PAVERS - VARIOUS ±15,000 SF UNILOCK STONEHENGE-STANDARD-COFFEE CREEK
	PAVERS - PERMEABLE ±11,000 SF UNILOCK ECO-OPTILOC-STANDARD
	PAVERS - HEAVY DUTY LOAD (COLOR BY NUNEZDESIGN) ±10,040 SF UNILOC ECO-PRIORA-STANDARD-ii CAMPO FINISH
	GRAVEL AGGREGATE ±1100 SF
	NATURAL LIMESTONE PAVERS ±75 SF UNILOC NATURAL STONE-BLACK RIVER
	GLOWPATH PAVERS ±3,910 SF CREATIVE BRICK

GLOWPATH BRICK PAVERS  
CREATIVE BRICK  
ALEX  
3195 ORCHARD LAKE ROAD  
KEEGO HARBOR, MICHIGAN 48320  
248.229.2788  
WWW.CREATIVEBP.COM

UNILOC  
SCOTT BLACK  
UNILOC MICHIGAN, INC  
12591 EMERSON DRIVE  
BRIGHTON, MICHIGAN 48116  
248.437.7037  
SCOTT.BLACK@UNILOC.COM

DURALAWN  
877.352.2163



Riverbend Park  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills

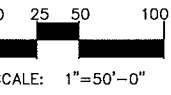
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

4-21-17 FINAL SUBMITTAL REVIEW  
8-21-16 DESIGN REVIEW  
8-11-16 PARKING LOT REVISION  
8-21-16 PARKING LOT DESIGN REVIEW  
1-8-16 PARKING LOT BID  
Date: 4/7/2017



LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P. 248. 224. 5933  
nunezdesigninc@gmail.com

Designed / Drawn: RLN/RJC  
Checked / Approved: RLN  
Job # 02-02-2017



SHEET:  
LA - 2.1

COPYRIGHT © 2017 NUNEZDESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained herein is proprietary and is not to be used or reproduced without the written permission of NUNEZDESIGN, INC. PROJECT FILE: Riverbend Park, LA Package - 04.21.2017.dwg

Innovation Hills  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI,  
 48309  
 FILE NUMBER

CLIENT:  
 City of Rochester Hills

Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

4-21-17 FINAL SUBMITTAL REVIEW  
 8-21-16 DESIGN REVIEW  
 8-11-16 PARKING LOT REVISION  
 8-21-16 PARKING LOT DESIGN REVIEW  
 1-8-16 PARKING LOT BID  
 Date: 4/17/2017

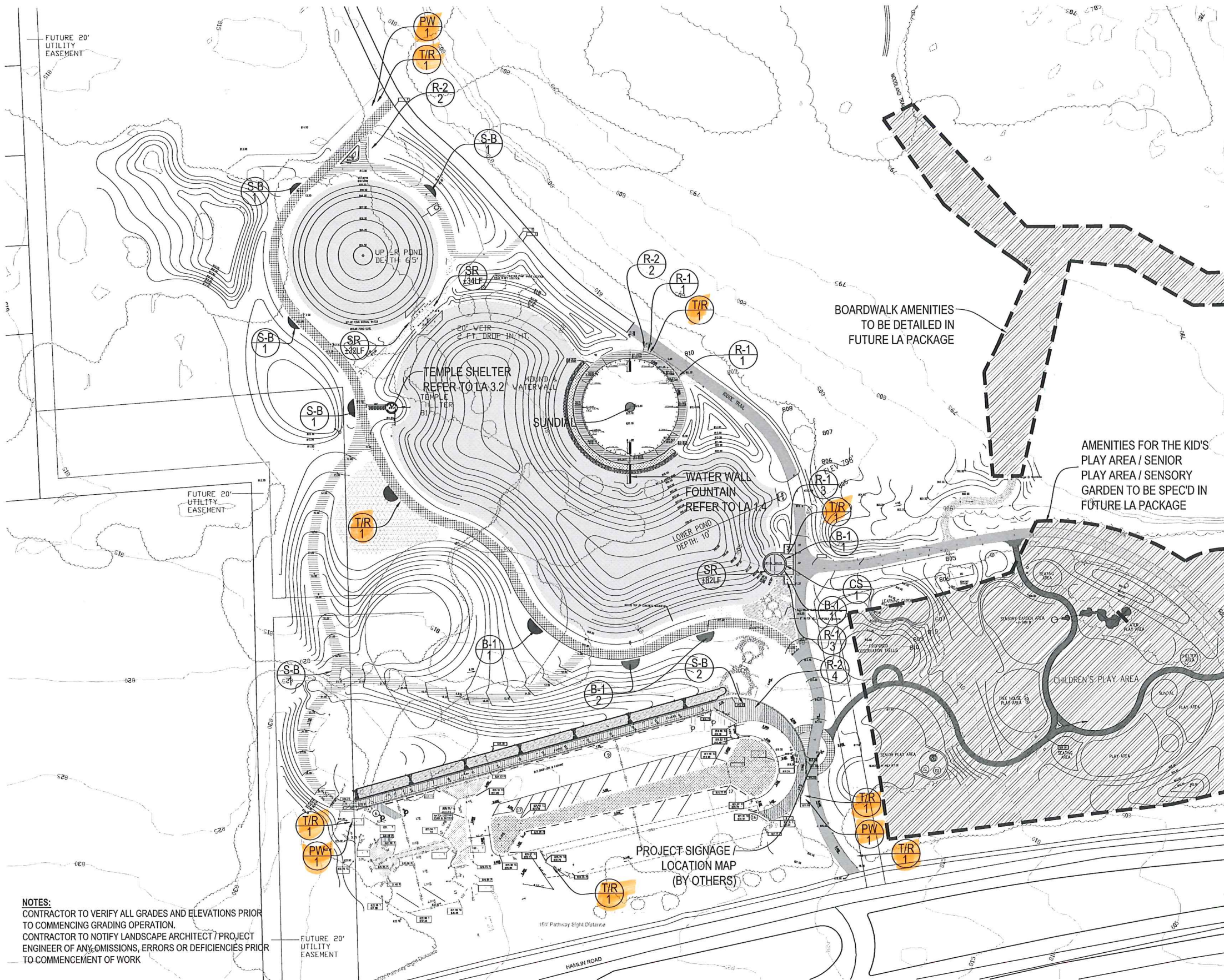
**NÚÑEZ DESIGN**  
 LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P. 248. 224. 5933  
 nunezdesigninc@gmail.com

Designed / Drawn: RLN / RC  
 Checked / Approved: RLN  
 Job # 02-02-2017

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

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

SHEET:  
 AMENITY PLAN LA - 3.0



BOARDWALK AMENITIES  
 TO BE DETAILED IN  
 FUTURE LA PACKAGE

AMENITIES FOR THE KID'S  
 PLAY AREA / SENIOR  
 PLAY AREA / SENSORY  
 GARDEN TO BE SPEC'D IN  
 FUTURE LA PACKAGE

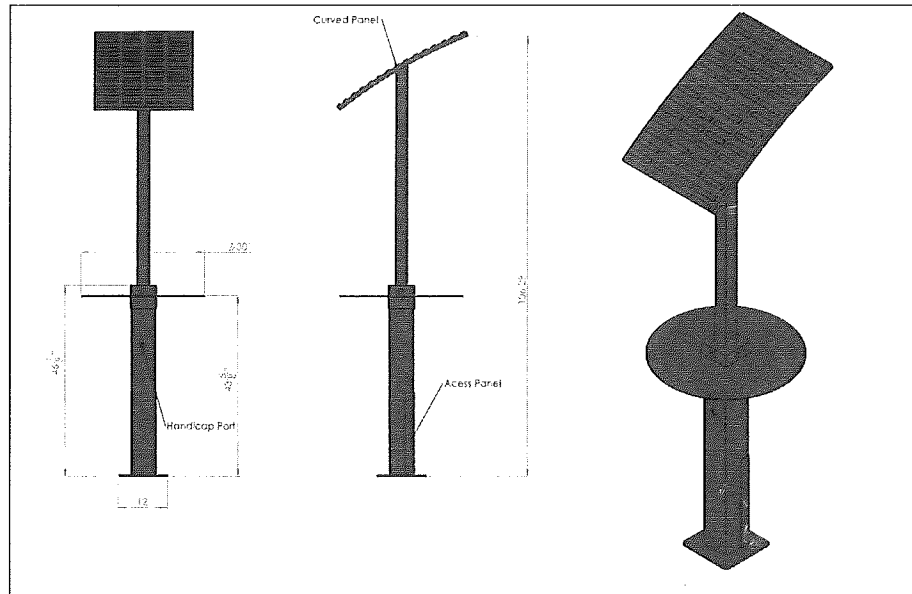
**AMENITY PLAN KEY:**  
 SEE LA 3.1 FOR AMENITY DETAILS

- (S-B) STONE BENCH
- (B-1) BENCH TYPE-1: BENCH WITH BACK & ARMS
- (B-2) BENCH TYPE-2: BENCH WITH NO BACK & ARMS
- (B-3) BENCH TYPE-3: BENCH WITH NO BACK, NO ARMS
- (CS) SOLAR POWERED CHARGING STATION W/ WI-FI
- (R-1) BICYCLE RACK TYPE-1: DECORATIVE BIKE RACK
- (R-2) BICYCLE RACK TYPE-2: STANDARD "U" BIKE RACK
- (T/R) TRASH / RECYCLING BINS
- (PW) DOG WASTE STATIONS
- (SR) SAFETY RAILING

**NOTES:**  
 CONTRACTOR TO VERIFY ALL GRADES AND ELEVATIONS PRIOR  
 TO COMMENCING GRADING OPERATION.  
 CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT / PROJECT  
 ENGINEER OF ANY OMISSIONS, ERRORS OR DEFICIENCIES PRIOR  
 TO COMMENCEMENT OF WORK



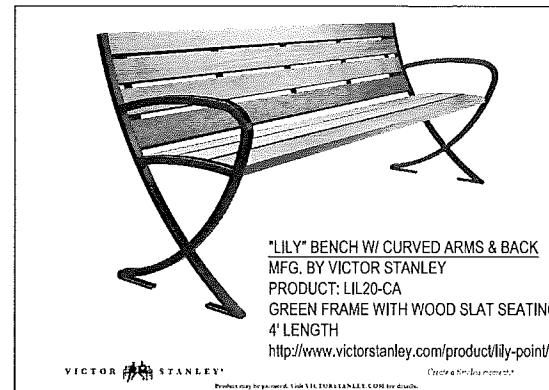
PROJECT FILE: Innovation Hills LA 3.0 Amenities Package\_04.21.2017.dwg  
 PLAN SUBMITTED FOR SITE PLAN REVIEW - NOT FOR CONSTRUCTION. THIS DOCUMENT AND THE SUBJECT MATTER CONTAINED THEREIN IS PROPRIETARY AND IS NOT TO BE USED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF NÚÑEZ DESIGN, INC. COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED.



SUNCHARGE SYSTEMS CHARGING STATION  
 PRODUCT: SOLAR CHARGING POLE W/ WIFI  
 WWW.SUNCHARGE SYSTEMS.COM  
 donny@sunchargesystems.com

CS CHARGING STATION  
 LA-3.1 NOT TO SCALE

ALL AMENITIES MUST BE INSTALLED PER MANUFACTURERS SPECIFICATIONS.



"LILY" BENCH W/ CURVED ARMS & BACK  
 MFG. BY VICTOR STANLEY  
 PRODUCT: LIL20-CA  
 GREEN FRAME WITH WOOD SLAT SEATING  
 4' LENGTH  
<http://www.victorstanley.com/product/lily-point/>

B-1 "LILY" BENCH W/ CURVED ARMS & BACK  
 LA-3.1 NOT TO SCALE



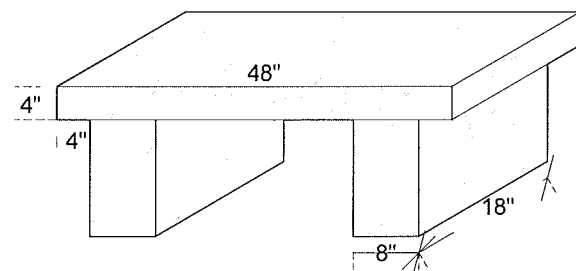
"LILY" BACKLESS BENCH W/ CURVED ARMS  
 MFG. BY VICTOR STANLEY  
 PRODUCT: LIL23-CA  
 GREEN FRAME WITH WOOD SLAT SEATING  
 4' LENGTH  
<http://www.victorstanley.com/product/lily-point/>

B-2 "LILY" BACKLESS BENCH W/ CURVED ARMS  
 LA-3.1 NOT TO SCALE



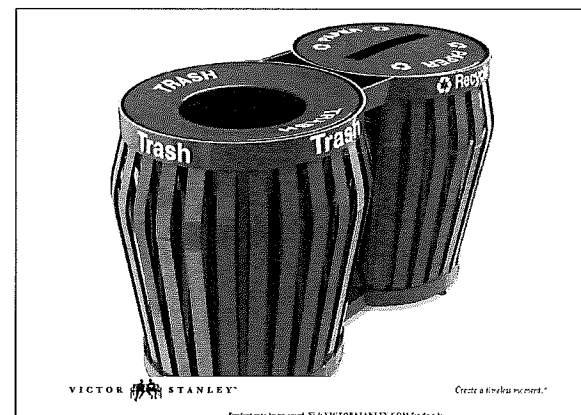
"LILY" BACKLESS BENCH, NO ARMS  
 MFG. BY VICTOR STANLEY  
 PRODUCT: LIL23-CA  
 GREEN FRAME WITH WOOD SLAT SEATING  
 4' LENGTH  
<http://www.victorstanley.com/product/lily-point/>

B-3 "LILY" BACKLESS BENCH, NO ARMS  
 LA-3.1 NOT TO SCALE



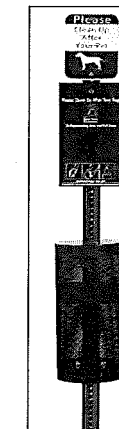
LIMESTONE BENCH BY MICHIGAN LIMESTONE  
 PRODUCT:  
 TOP: 4"x18"x48"  
 LEGS: (2) 8"x14"x48"  
 WWW.ABELLASTONE.COM  
 ABELLA4@ATT.NET

SB STONE-SLAB BENCH  
 LA-3.1 NOT TO SCALE



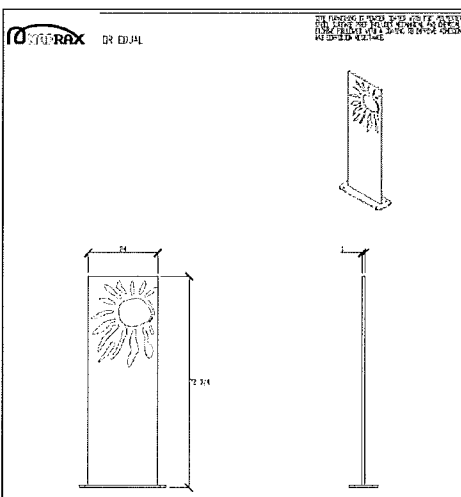
DYNASTY LITTER & RECYCLING RECEPTAL  
 MFG: VICTOR STANLEY  
 PRODUCT: DYN-236  
 COLOR: GREEN  
<http://www.victorstanley.com/product/dyn-236>

T/R WASTE RECEPTACLE  
 LA-3.1 NOT TO SCALE



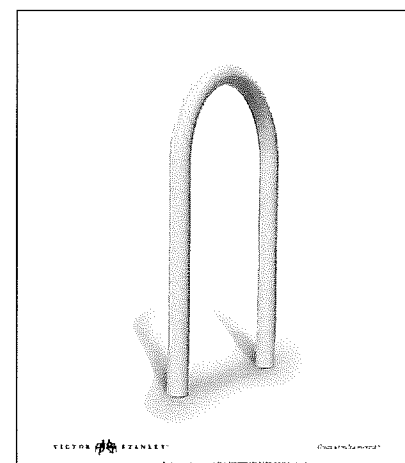
DOG WASTE STATION  
 PRODUCT: DEPOT-006-B  
 WWW.DOGWASTEDEPOT.COM  
 SALES@DOGWASTEDEPOT.COM

PW PET WASTE RECEPTACLE  
 LA-3.1 NOT TO SCALE



MAD RAX BICYCLE RACK  
 PRODUCT: SMF-5  
 WWW.MADRAX.COM  
 SALES@MADRAX.COM

R-1 DECORATIVE BIKE RACK  
 LA-3.1 NOT TO SCALE



CYCLE SENTRY BIKE RACK  
 PRODUCT: BRVS-101  
 MFG: VICTOR STANLEY  
 COLOR: GREEN  
<http://www.victorstanley.com/product/brvs-101/>

R-2 STANDARD BIKE RACK  
 LA-3.1 NOT TO SCALE



SAFETY RAILING  
 PRODUCT: "CIRCA" RAILING W/ PICKET INFILL  
 MFG: VIVA RAILINGS  
 COLOR: STAINLESS STEEL  
<https://vivarailings.com/products/picket-panels-circa/>

SR RAILING: "CIRCA" STAINLESS STEEL RAILING W/ PICKET INFILL  
 LA-3.1 NOT TO SCALE

PROPOSED AMENITIES

QTY.	SIZE	ITEM
1	POLE W/ WIFI	SUNCHARGE CHARGING STATION
6	LIL-20CA	"LILY" BENCH W/ CURVED ARMS (4')
7	48"x18"x12"	LIMESTONE BENCH
8	DYN-236	DYNASTY LITTER / RECYCLING RECEPTAL
3	DEPOT-006-B	DOG WASTE DEPOT PET WASTE STATION
1	MT-32	KEYSTONE RIDGE- MIDTOWN 32 GALLON TRASH RECEPTACLE
8	SMF-5	MAD RAX DECORATIVE BIKE RACK
8	BRVS-101	CYCLE SENTRY BIKE RACK
±148 LF	42" HI.	VIVA "CIRCA" RAILING W/ PICKET INFILL



NÚÑEZ  
 DESIGN



Innovation Hills  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI,  
 48309  
 FILE NUMBER

CLIENT:  
 City of Rochester Hills

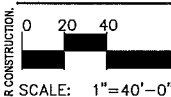
Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

4-21-17 FINAL SUBMITTAL REVIEW  
 8-21-16 DESIGN REVIEW  
 8-11-16 PARKING LOT REVISION  
 8-21-16 PARKING LOT DESIGN REVIEW  
 1-8-16 PARKING LOT BID  
 Date: 4/17/2017

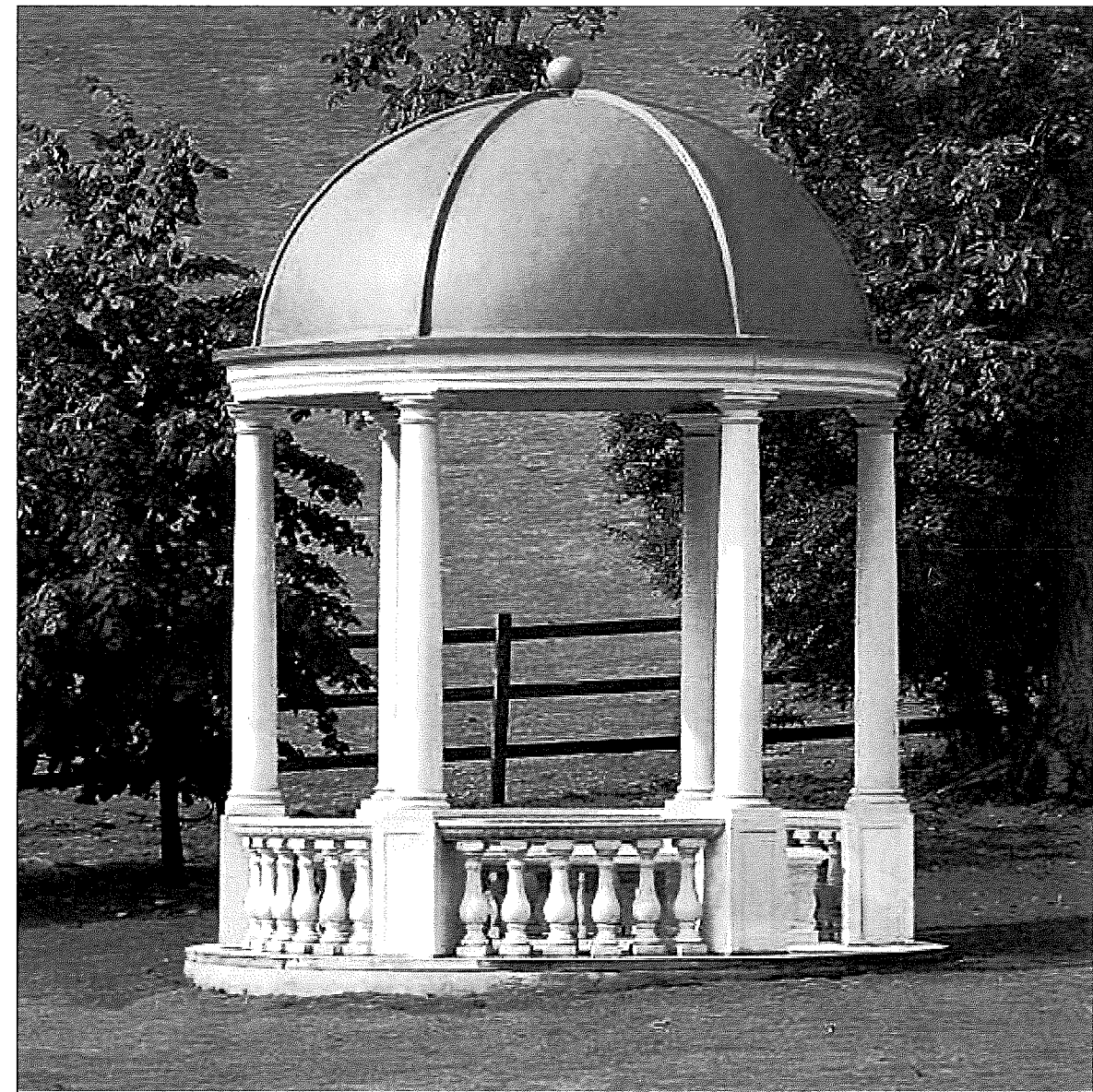
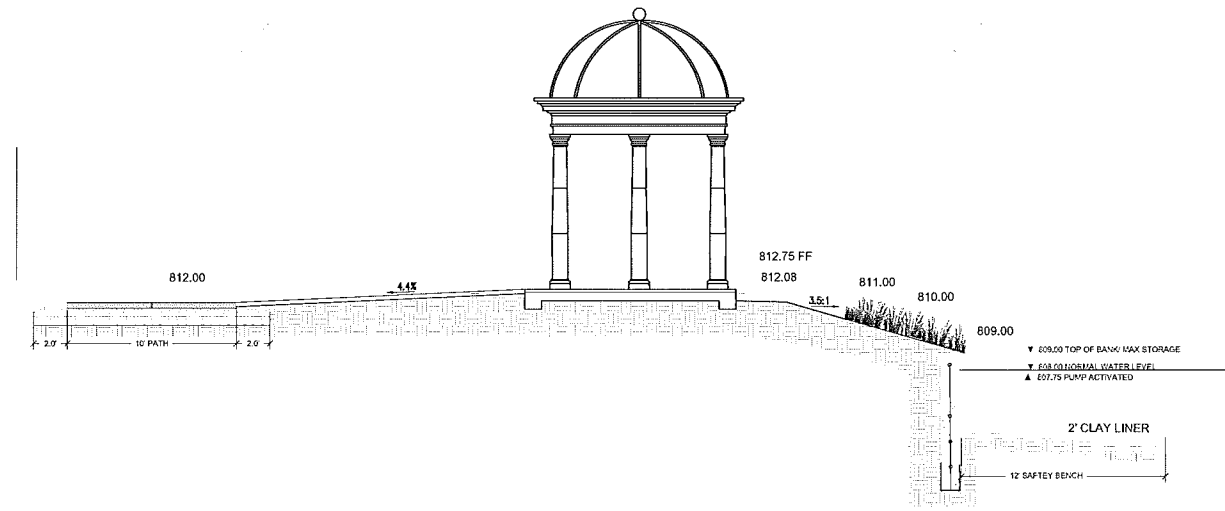
NÚÑEZ  
 DESIGN  
 LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P: 248, 224, 5933  
 nunezdesigninc@gmail.com

Designed / Drawn: RIN / BC  
 Checked / Approved: RIN

Job # 02-02-2017

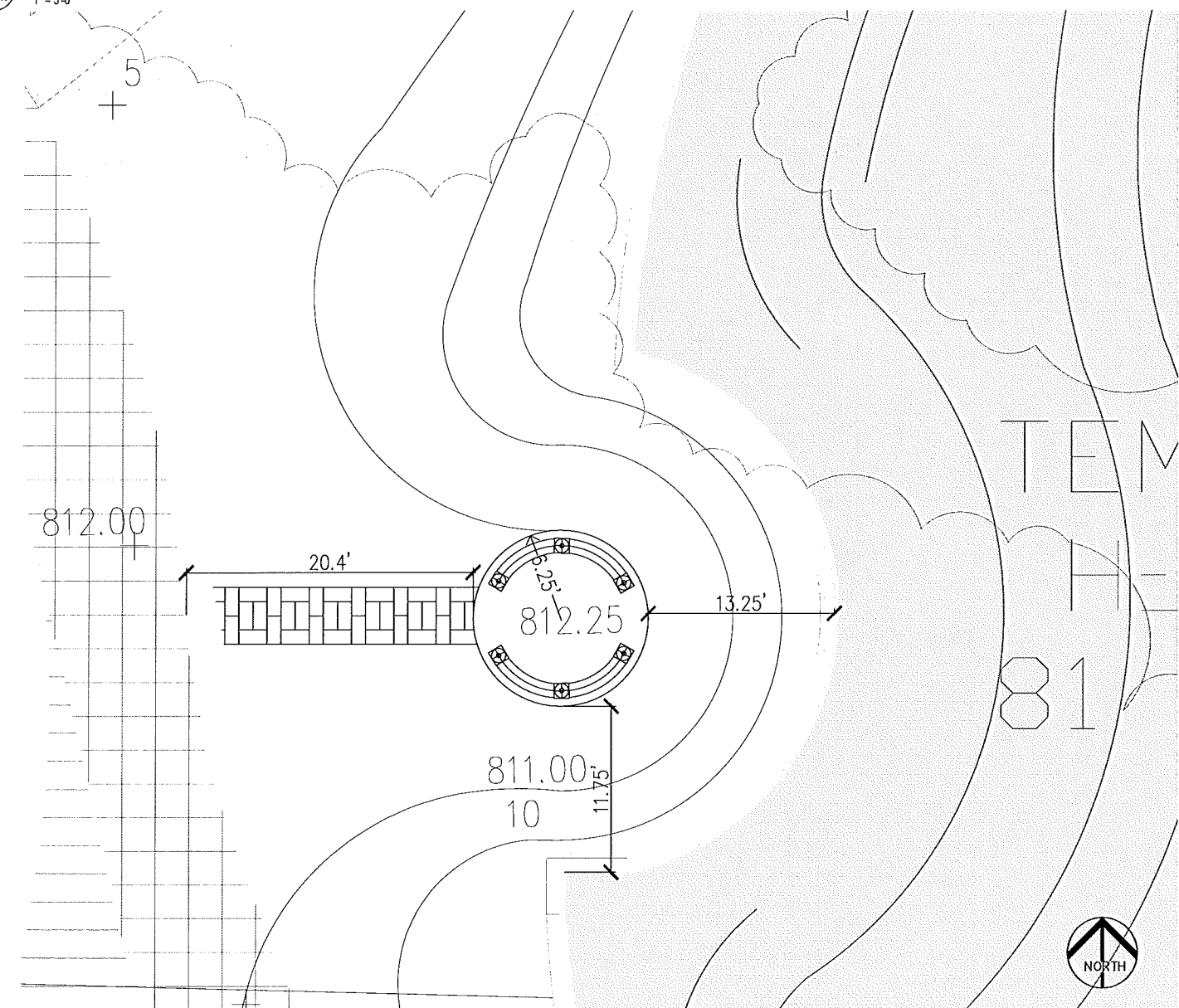


SHEET:



3 TEMPLE SHELTER - MFG. IMAGE  
NOT TO SCALE

1 TEMPLE SHELTER: EAST - WEST SECTION  
1" = 5'-0"



2 TEMPLE SHELTER - LOCATION  
1" = 20'-0"

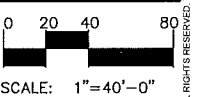
\*SEE LA 4.8 FOR TEMPLE SHELTER AREA LANDSCAPING DETAILS

Innovation Hills  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills  
  
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

4-21-17 FINAL SUBMITTAL REVIEW  
8-21-16 DESIGN REVIEW  
8-11-16 PARKING LOT REVISION  
8-21-16 PARKING LOT DESIGN REVIEW  
1-8-15 PARKING LOT BID  
Date: 4/17/2017

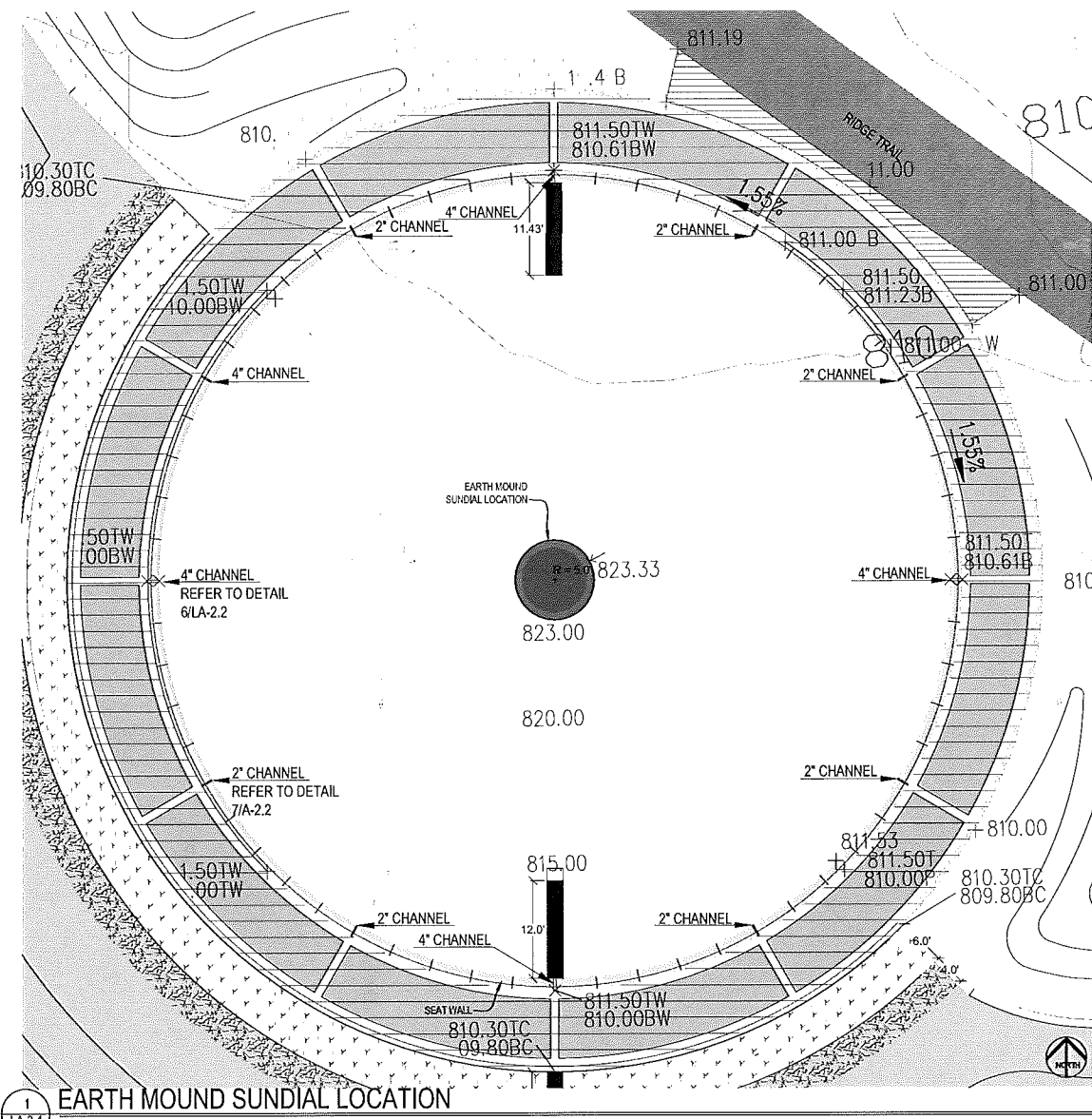
**NÚÑEZ DESIGN**  
LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P: 248. 224. 5933  
nunezdesigninc@gmail.com  
Designed / Drawn: R.L.N./R.C.  
Checked / Approved: R.L.N.  
Job # 02-02-2017



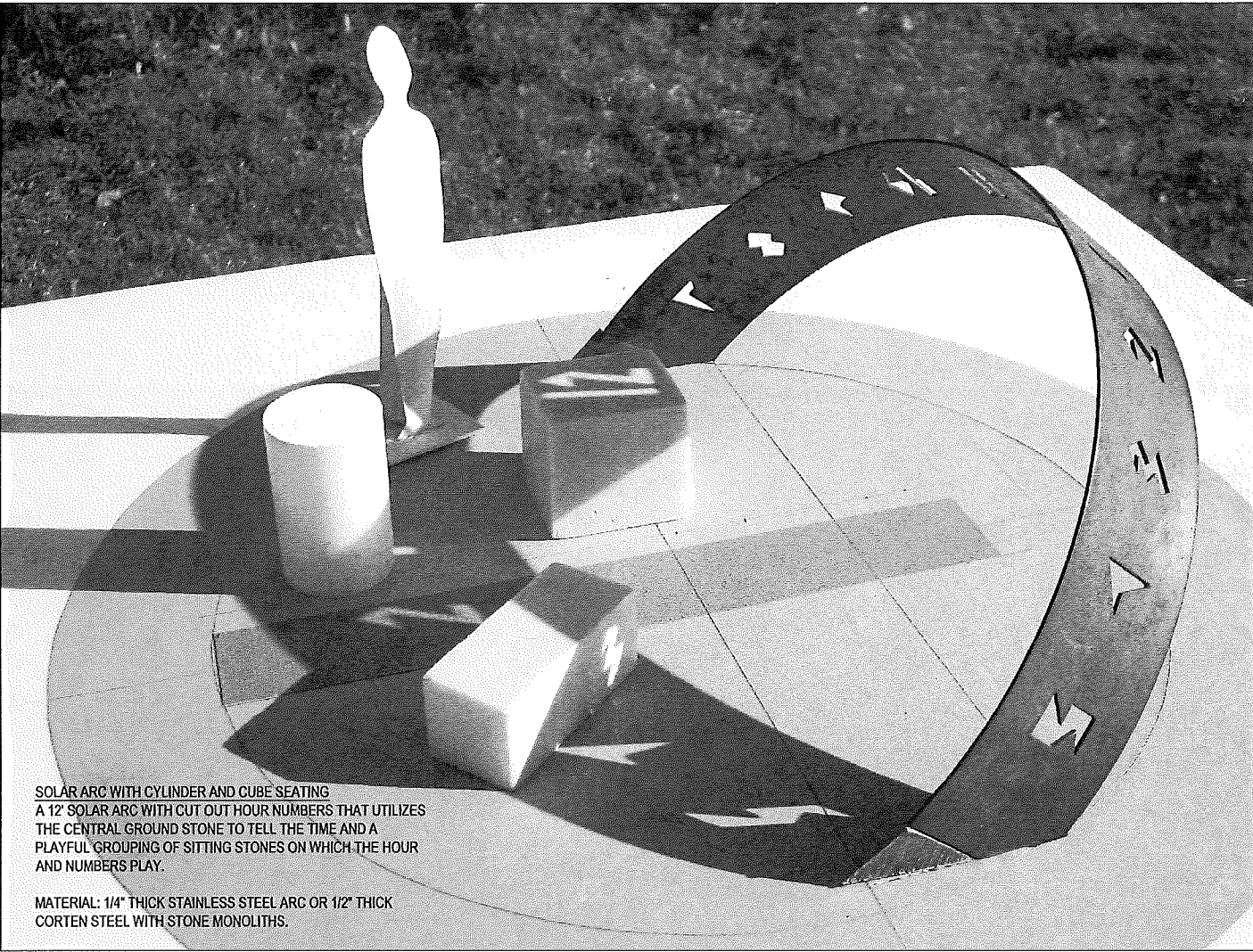
**811**  
Know what's below.  
Call before you dig.  
SHEET:

PROJECT FILE: Innovation Hills LA 3.3.D Amenities Package\_04.21.2017.dwg

COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained herein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.

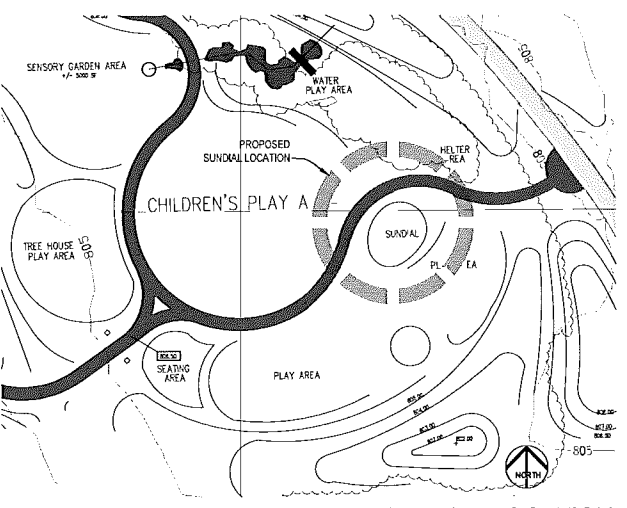


1 EARTH MOUND SUNDIAL LOCATION  
LA 3.4 1" = 10'

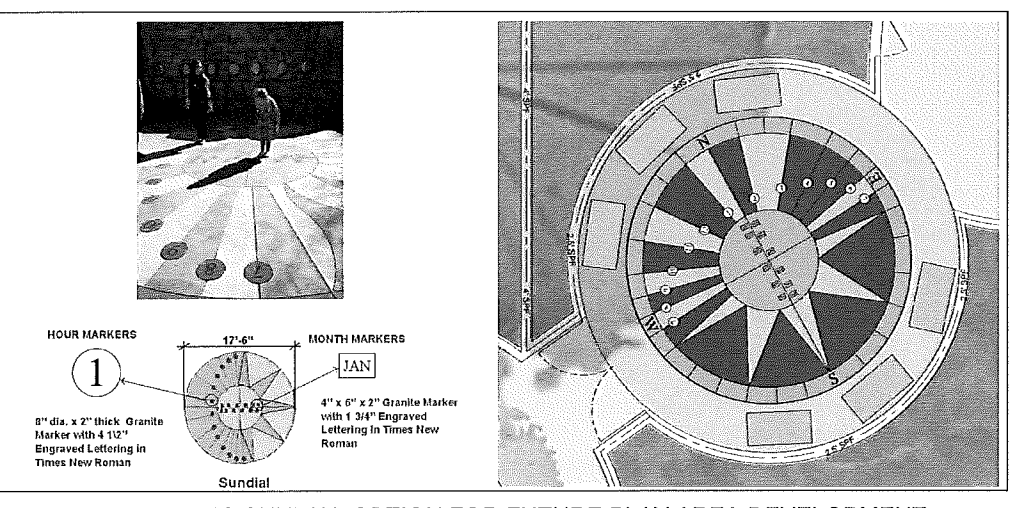


**SOLAR ARC WITH CYLINDER AND CUBE SEATING**  
 A 12' SOLAR ARC WITH CUT OUT HOUR NUMBERS THAT UTILIZES THE CENTRAL GROUND STONE TO TELL THE TIME AND A PLAYFUL GROUPING OF SITTING STONES ON WHICH THE HOUR AND NUMBERS PLAY.  
 MATERIAL: 1/4" THICK STAINLESS STEEL ARC OR 1/2" THICK CORTEN STEEL WITH STONE MONOLITHS.

2 "SOLAR ARC WITH CYLINDER AND CUBE SEATING" SUNDIAL  
LA 3.4 NOT TO SCALE



3 PROPOSED ANALEMMATIC SUNDIAL LOCATION  
LA 3.4 1" = 40'



4 ANALEMMATIC SUNDIAL OPTION FOR FUTURE PLAY AREA DEVELOPMENT  
LA 3.4 NOT TO SCALE

"BLOOMINGDALE" SUNDIAL  
 AN ANALEMMATIC DIAL CAST IN COLORED CONCRETE WITH GRANITE HOUR STONES AND MONTH MARKERS WHERE THE CHILD OR PERSON WOULD STAND TO TELL THE TIME.  
 MATERIAL: COLORED CONCRETE WITH GRANITE MARKERS.

CITY MUST SECURE CONTACT WITH ARTIST FOR COMPLETED DESIGN OF FINISHED SUNDIAL, WORKING DRAWINGS, FABRICATION, PROJECT MANAGEMENT AND SHIPPING OF SUNDIAL. THE SUNDIAL WILL BE INSTALLED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE ARTIST. CONTRACTOR RESPONSIBLE FOR TAKING DELIVERY, SITE PREPARATION AND INSTALLATION PER ARTIST INSTRUCTIONS ON ORIENTATION.

CONCEPTS SUPPLIED BY ARTIST:



ROBERT ADZEMA  
 67A LUDLOW LANE  
 PALISADES, NY 10964



Innovation Hills  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI,  
 48309  
 FILE NUMBER

CLIENT:  
 City of Rochester Hills  
 Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

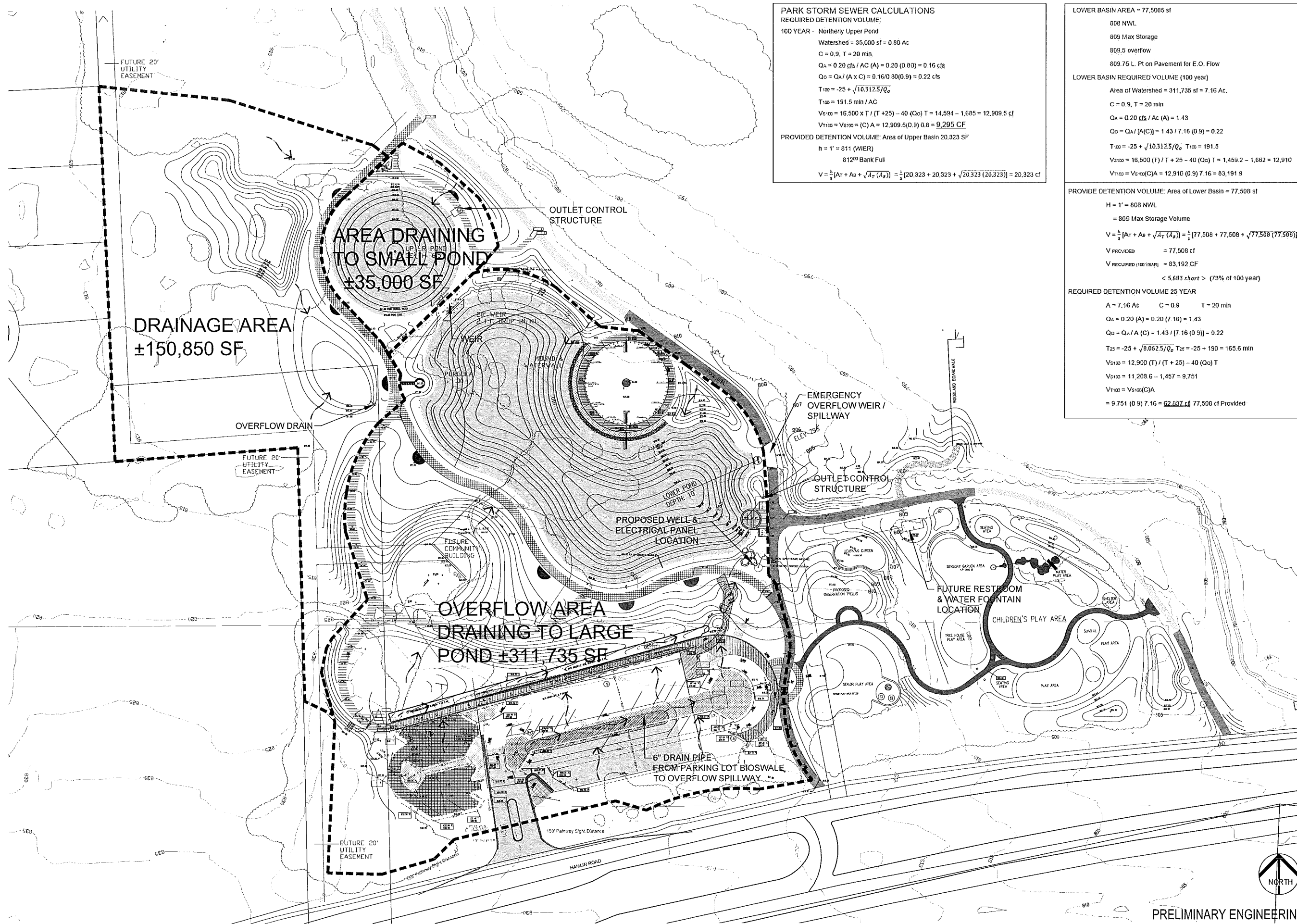
4-21-17 FINAL SUBMITTAL REVIEW  
 8-21-16 DESIGN REVIEW  
 8-11-16 PARKING LOT REVISION  
 8-21-16 PARKING LOT DESIGN REVIEW  
 1-8-16 PARKING LOT BID  
 Date: 4/17/2017

**NÚÑEZ DESIGN**  
 LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P: 248.224.5933  
 nunezdesigninc@gmail.com  
 Designed / Drawn: RLN / RLC  
 Checked / Approved: RLN  
 Job # 02-02-2017



811  
 Know what's below.  
 Call before you dig.  
 SHEET: LA - 3.4

COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained herein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC. PROJECT FILE: Innovation Hills LA 3.0 Amenities Package\_04-21-2017.dwg



**PARK STORM SEWER CALCULATIONS**  
 REQUIRED DETENTION VOLUME:  
 100 YEAR - Northern Upper Pond  
 Watershed = 35,000 sf = 0.80 Ac  
 C = 0.9, T = 20 min  
 $Q_A = 0.20 \text{ cfs} / \text{AC} (A) = 0.20 (0.80) = 0.16 \text{ cfs}$   
 $Q_0 = Q_A / (A \times C) = 0.16 / (0.80 \times 0.9) = 0.22 \text{ cfs}$   
 $T_{100} = -25 + \sqrt{10,312.5 / Q_0}$   
 $T_{100} = 191.5 \text{ min} / \text{AC}$   
 $V_{S100} = 16,500 \times T / (T + 25) - 40 (Q_0) T = 14,594 - 1,685 = 12,909.5 \text{ cf}$   
 $V_{T100} = V_{S100} (C) A = 12,909.5 (0.9) 0.8 = 9,295 \text{ CF}$   
 PROVIDED DETENTION VOLUME: Area of Upper Basin 20,323 SF  
 $n = 1' = 811 (\text{WEIR})$   
 812<sup>nd</sup> Bank Full  
 $V = \frac{1}{2} [A_T + A_B + \sqrt{A_T (A_B)}] = \frac{1}{2} [20,323 + 20,323 + \sqrt{20,323 (20,323)}] = 20,323 \text{ cf}$

LOWER BASIN AREA = 77,5086 sf  
 808 NWL  
 809 Max Storage  
 809.5 overflow  
 809.75 L. Pt on Pavement for E.O. Flow  
 LOWER BASIN REQUIRED VOLUME (100 year)  
 Area of Watershed = 311,735 sf = 7.16 Ac.  
 C = 0.9, T = 20 min  
 $Q_A = 0.20 \text{ cfs} / \text{Ac} (A) = 1.43$   
 $Q_0 = Q_A / (A \times C) = 1.43 / (7.16 (0.9)) = 0.22$   
 $T_{100} = -25 + \sqrt{10,312.5 / Q_0}$   $T_{100} = 191.5$   
 $V_{S100} = 16,500 (T) / (T + 25) - 40 (Q_0) T = 1,459.2 - 1,682 = 12,910$   
 $V_{T100} = V_{S100} (C) A = 12,910 (0.9) 7.16 = 83,191.9$

PROVIDE DETENTION VOLUME: Area of Lower Basin = 77,508 sf  
 H = 1' = 808 NWL  
 = 809 Max Storage Volume  
 $V = \frac{1}{2} [A_T + A_B + \sqrt{A_T (A_B)}] = \frac{1}{2} [77,508 + 77,508 + \sqrt{77,508 (77,508)}]$   
 $V_{PROVIDED} = 77,508 \text{ cf}$   
 $V_{REQUIRED} (100 \text{ YEAR}) = 83,192 \text{ CF}$   
 < 5,683 short > (73% of 100 year)  
 REQUIRED DETENTION VOLUME 25 YEAR  
 A = 7.16 Ac C = 0.9 T = 20 min  
 $Q_A = 0.20 (A) = 0.20 (7.16) = 1.43$   
 $Q_0 = Q_A / (A \times C) = 1.43 / (7.16 (0.9)) = 0.22$   
 $T_{25} = -25 + \sqrt{8,062.5 / Q_0}$   $T_{25} = -25 + 190 = 165.6 \text{ min}$   
 $V_{S100} = 12,900 (T) / (T + 25) - 40 (Q_0) T$   
 $V_{S100} = 11,208.6 - 1,457 = 9,751$   
 $V_{T100} = V_{S100} (C) A$   
 = 9,751 (0.9) 7.16 = 62,637 cf / 77,508 cf Provided

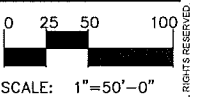


Innovation Hills  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI,  
 48309  
 FILE NUMBER

CLIENT:  
 City of Rochester Hills  
 Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

4-21-17 FINAL SUBMITTAL REVIEW  
 8-21-16 DESIGN REVIEW  
 8-11-16 PARKING LOT REVISION  
 8-21-16 SANITARY LOT DESIGN REVIEW  
 1-8-16 PARKING LOT BID  
 Date: 4/17/2017

**NÚÑEZ DESIGN**  
 LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P: 248.224.5933  
 nunezdesigninc@gmail.com  
 Designed / Drawn: RLN / RC  
 Checked / Approved: RLN  
 Job # 02-02-2017

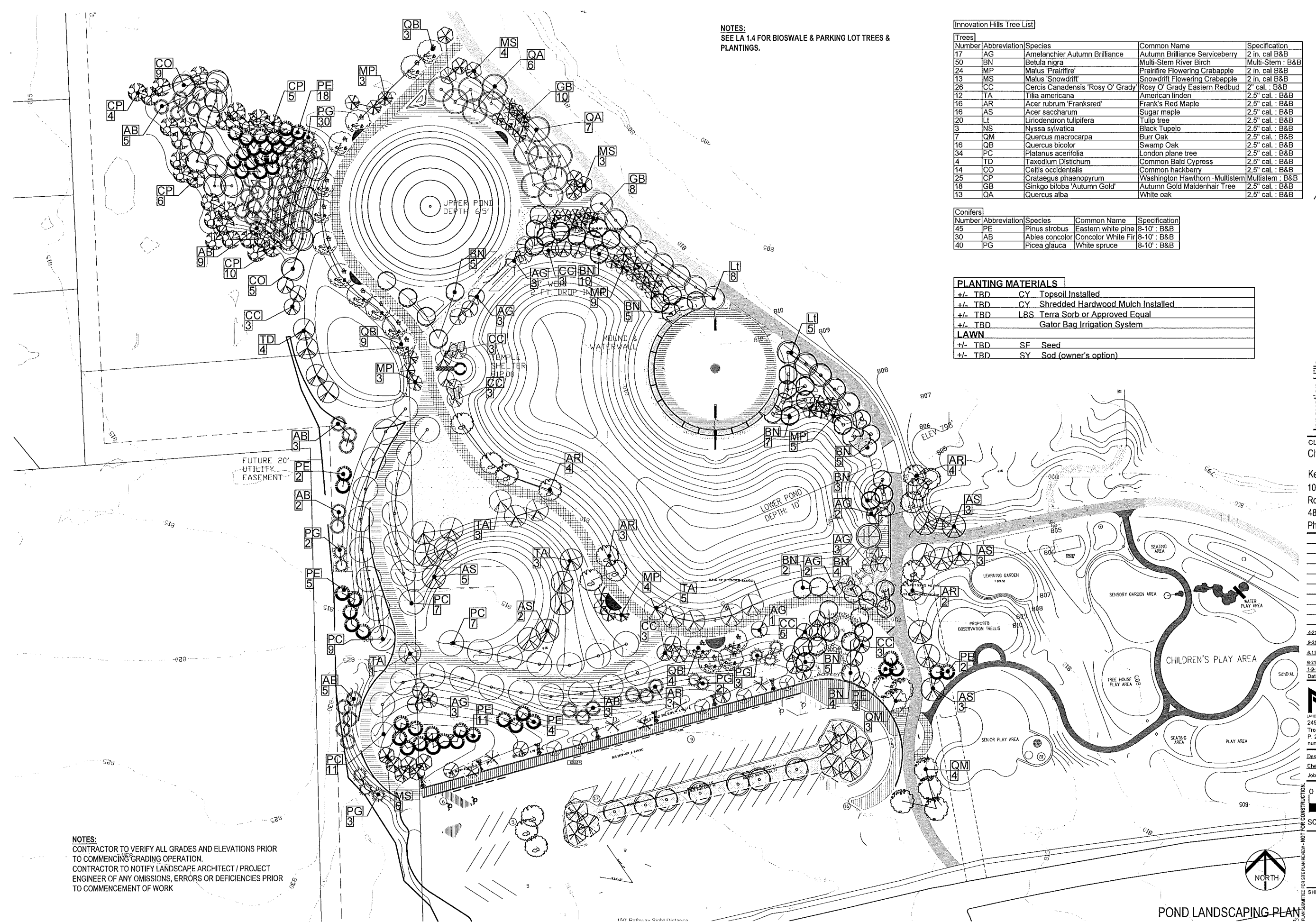


SHEET:  
 E - 1.0

PRELIMINARY ENGINEERING

PROJECT FILE: R:\overhead Park ENG Package\_04\_21\_2017.dwg  
 COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained herein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.





NOTES:  
SEE LA 1.4 FOR BIOSWALE & PARKING LOT TREES & PLANTINGS.

Innovation Hills Tree List

Number	Abbreviation	Species	Common Name	Specification
17	AG	Amelanchier Autumn Brilliance	Autumn Brilliance Serviceberry	2 in. cal B&B
50	BN	Betula nigra	Multi-Stem River Birch	Multi-Stem : B&B
24	MP	Malus 'Prairifire'	Prairifire Flowering Crabapple	2 in. cal B&B
13	MS	Malus 'Snowdrift'	Snowdrift Flowering Crabapple	2 in. cal B&B
26	CC	Cercis Canadensis 'Rosy O' Grady'	Rosy O' Grady Eastern Redbud	2" cal. : B&B
12	TA	Tilia americana	American Linden	2.5' cal. : B&B
16	AR	Acer rubrum 'Franksred'	Frank's Red Maple	2.5' cal. : B&B
16	AS	Acer saccharum	Sugar maple	2.5' cal. : B&B
20	LT	Liriodendron tulipifera	Tulip tree	2.5' cal. : B&B
3	NS	Nyssa sylvatica	Black Tupelo	2.5' cal. : B&B
7	QM	Quercus macrocarpa	Burr Oak	2.5' cal. : B&B
16	QB	Quercus bicolor	Swamp Oak	2.5' cal. : B&B
34	PC	Platanus acerifolia	London plane tree	2.5' cal. : B&B
4	TD	Taxodium Distichum	Common Bald Cypress	2.5' cal. : B&B
14	CO	Celtis occidentalis	Common hackberry	2.5' cal. : B&B
25	CP	Crataegus phaenopyrum	Washington Hawthorn -Multistem	Multistem : B&B
18	GB	Ginkgo biloba 'Autumn Gold'	Autumn Gold Maidenhair Tree	2.5' cal. : B&B
13	QA	Quercus alba	White oak	2.5' cal. : B&B

Number	Abbreviation	Species	Common Name	Specification
45	PE	Pinus strobus	Eastern white pine	8-10' : B&B
30	AB	Abies concolor	Concolor White Fir	8-10' : B&B
40	PG	Picea glauca	White spruce	8-10' : B&B

PLANTING MATERIALS

+/- TBD	CY	Topsoil Installed
+/- TBD	CY	Shredded Hardwood Mulch Installed
+/- TBD	LBS	Terra Sorb or Approved Equal
+/- TBD		Gator Bag Irrigation System
<b>LAWN</b>		
+/- TBD	SF	Seed
+/- TBD	SY	Sod (owner's option)

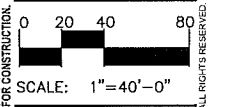


Innovation Hills  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER  
PROJECT FILE: NO.4.0 LA Package\_4-21-2017.dwg

CLIENT:  
City of Rochester Hills  
  
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

4-21-17 FINAL SUBMITTAL REVIEW  
5-21-18 DESIGN REVIEW  
8-11-18 PARKING LOT REVISION  
6-21-16 PARKING LOT DESIGN REVIEW  
1-8-18 PARKING LOT BID  
Date: 4/17/2017

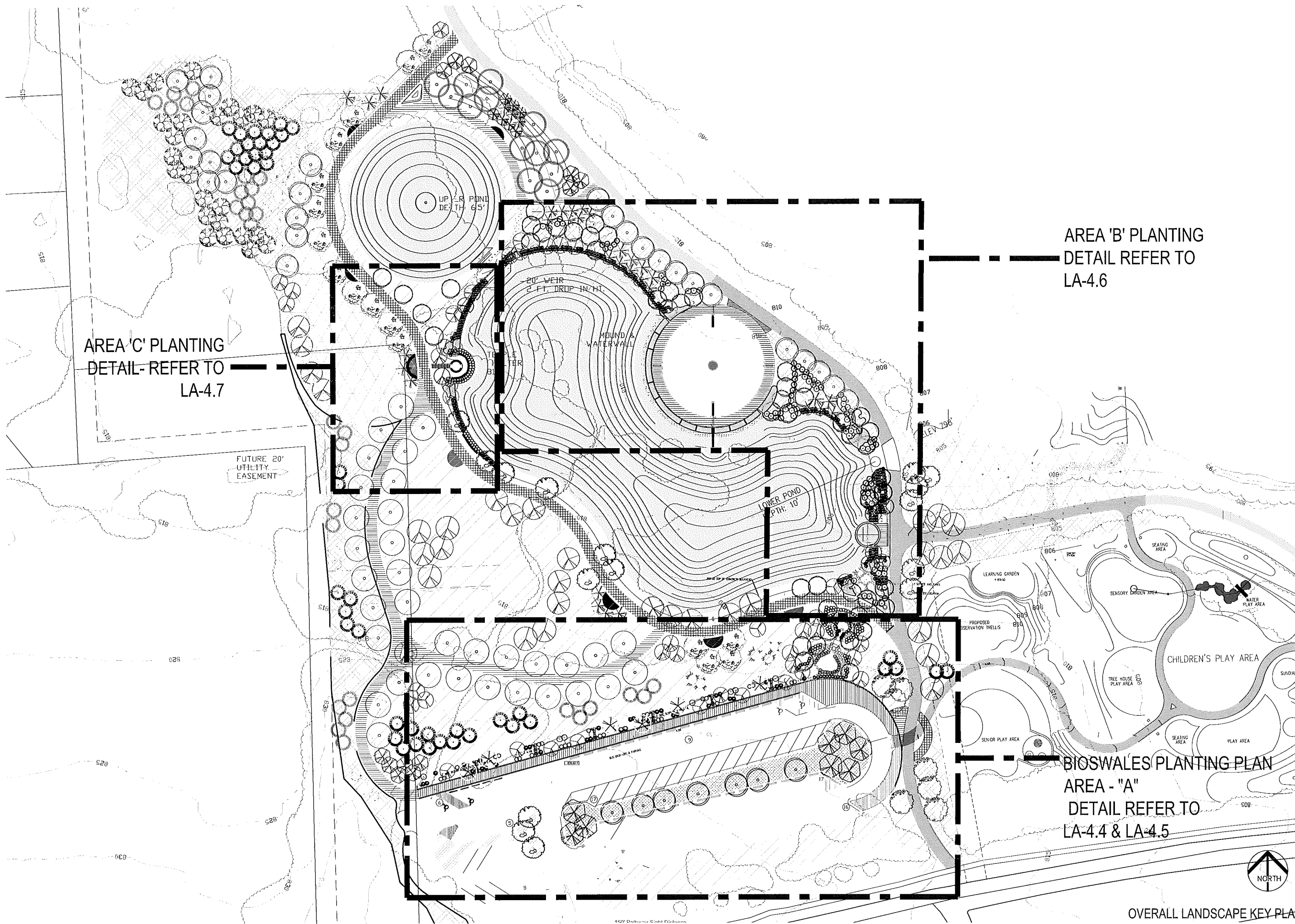
**NÚÑEZ DESIGN**  
LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P: 248.224.5933  
nunezdesigninc@gmail.com  
Designed / Drawn: RLN/LBC  
Checked / Approved: RLN  
Job # 02-02-2017



LA - 4.0

NOTES:  
CONTRACTOR TO VERIFY ALL GRADES AND ELEVATIONS PRIOR TO COMMENCING GRADING OPERATION.  
CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT / PROJECT ENGINEER OF ANY OMISSIONS, ERRORS OR DEFICIENCIES PRIOR TO COMMENCEMENT OF WORK

COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the subject matter contained herein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.



AREA 'C' PLANTING  
DETAIL-REFER TO  
LA-4.7

AREA 'B' PLANTING  
DETAIL REFER TO  
LA-4.6

BIOSWALES PLANTING PLAN  
AREA - "A"  
DETAIL REFER TO  
LA-4.4 & LA-4.5

Innovation Hills  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER

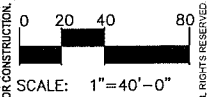
CLIENT:  
City of Rochester Hills  
  
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

5-22-17 FINAL SUBMITTAL REVISION  
4-21-17 FINAL SUBMITTAL REVIEW  
9-21-16 DESIGN REVIEW  
8-11-16 PARKING LOT REVISION  
6-21-16 PARKING LOT DESIGN REVIEW  
1-9-16 PARKING LOT BID  
Date: 5/22/2017



LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P: 248. 224. 5933  
nunezdesigninc@gmail.com

Designed / Drawn: RLN / BC  
Checked / Approved: RLN  
Job # 02-02-2017



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

COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. THIS DOCUMENT AND THE SUBJECT MATTER CONTAINED THEREIN IS PROPRIETARY AND IS NOT TO BE LOANED OR REPRODUCED WITHOUT THE WRITTEN PERMISSION OF NÚÑEZ DESIGN, INC.

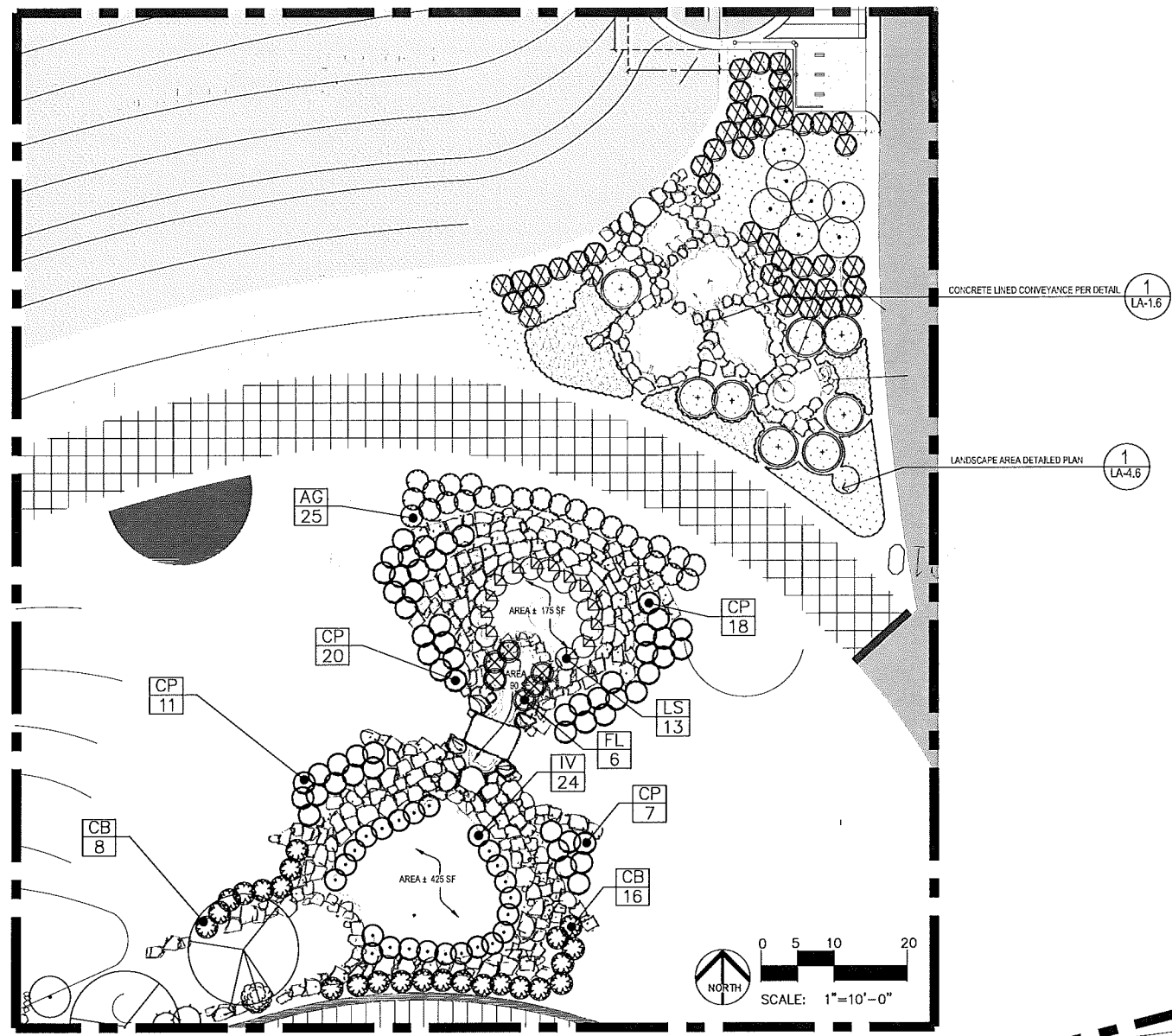
**NOTES:**  
SEE LA 1.0 FOR TREES PLANTINGS NORTH OF BIOSWALES.

**BIOSWALE PLANT LIST:**

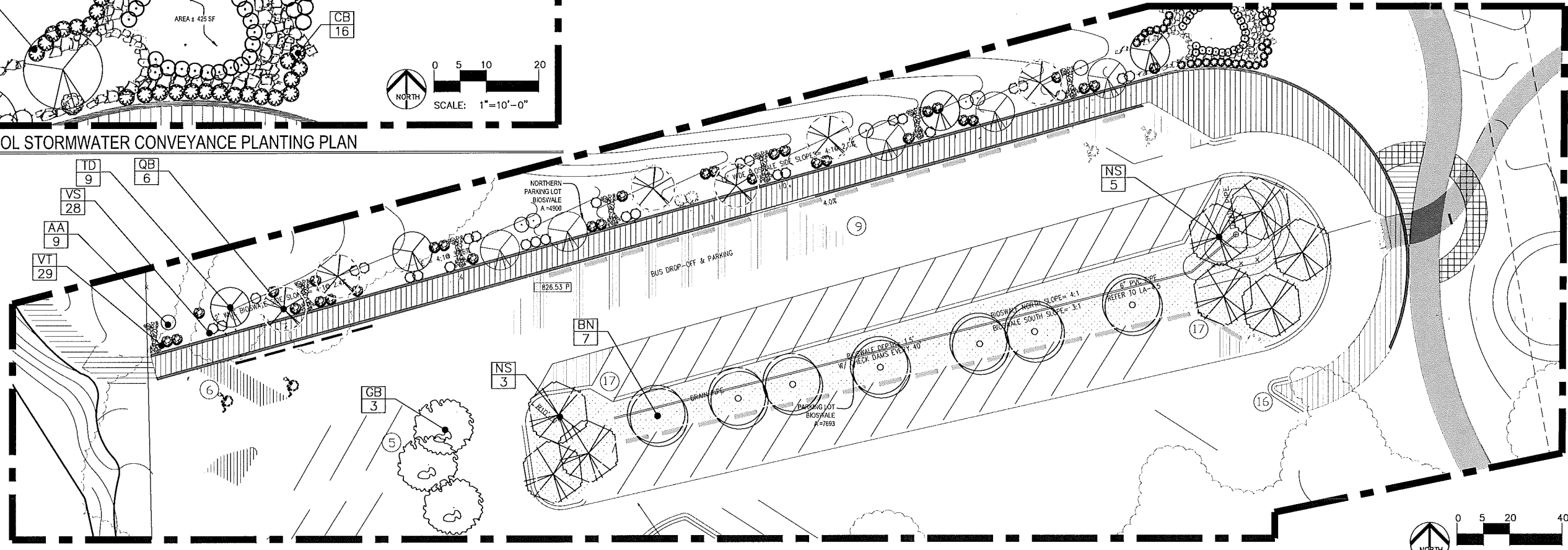
QTY.	KEY	SIZE	ROOT	BOTANICAL / COMMON NAME
<b>TREE PLANTINGS</b>				
7	BN	B&B	2" cal	Betula nigra / River Birch (Multi-Stem)
3	GB	B&B	2" cal	Ginkgo biloba 'Autumn Gold' / Maidenhair Tree
8	NS	B&B	2" cal	Nyssa sylvatica / Black Tupelo
6	QB	B&B	2" cal	Quercus bicolor / Swamp White Oak
9	TD	B&B	2" cal	Taxodium distichum / Bald Cypress
<b>SHRUB PLANTINGS</b>				
9	AA	No. 5	Cont.	Aronia arbutifolia / Chokeberry
28	VS	No. 5	Cont.	Itea virginica 'Henry's Garnet' / Virginia Sweetspire
29	VT	No. 5	Cont.	Viburnum trilobum / American Cranberrybush
<b>PERENNIAL PLANTINGS</b>				
6	FL	No. 3	Cont.	Fragaria x 'Lipstick' / Lipstick Strawberry
24	irv	18" O.C.	Quarts	Iris virginica / Blue Flag Iris
13	LS	No. 3	Cont.	Liatris Spicata 'Kobold' / Gayfeather
<b>GRASSES</b>				
25	AG	No. 3	Cont.	Anropogon gerardii / Big Bluestem
24	CB	No. 3	Cont.	Calamagrostis Brachytricha / Korean Feather Grass
56	CP	No. 3	Cont.	Carex pennsylvanica / Pennsylvania Sedge

**BIOSWALE SEED MIX: TOTAL AREA ±13,283 SF**

BOTANICAL NAME	COMMON NAME	OZ. PER ACRE
Carex comosa	Bristly Sedge	2.00
Carex cristatella	Crested Oval Sedge	1.00
Carex lurida	Bottlebrush Sedge	2.50
Carex spp.	Prarie Sedge Mix	2.00
Carex vulpinoidea	Bristly Sedge	4.00
Avena sativa	Common Oat	360.00
Lolium multiflorum	Annual Rye	100.00



**1 LA.4.4 STEP POOL STORMWATER CONVEYANCE PLANTING PLAN**



**2 LA.4.4 BIOSWALE PLANTING PLAN**

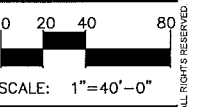


**Innovation Hills**  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER

**CLIENT:**  
City of Rochester Hills  
  
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

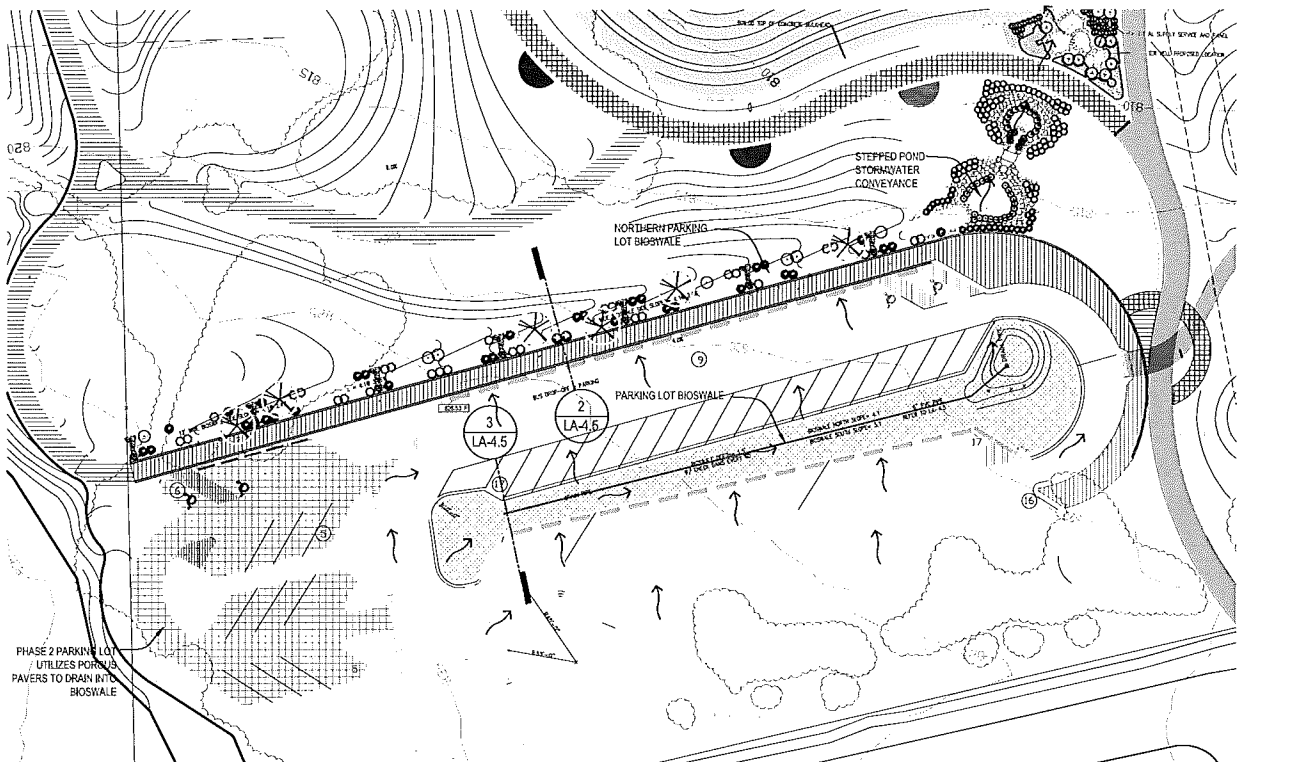
5-22-17 FINAL SUBMITTAL REVISION  
4-21-17 FINAL SUBMITTAL REVIEW  
9-21-16 DESIGN REVIEW  
8-11-16 PARKING LOT REVISION  
8-21-16 PARKING LOT DESIGN REVIEW  
1-8-16 PARKING LOT BID  
Date: 5/22/2017

**NÚÑEZ DESIGN**  
LANDSCAPE ARCHITECTURE • URBAN DESIGN  
249 Park Street  
Troy, Michigan 48063  
P. 248. 224. 5933  
nunezdesigninc@gmail.com  
Designed / Drawn: R/LN / R/C  
Checked / Approved: R/LN  
Job #: 02-02-2017

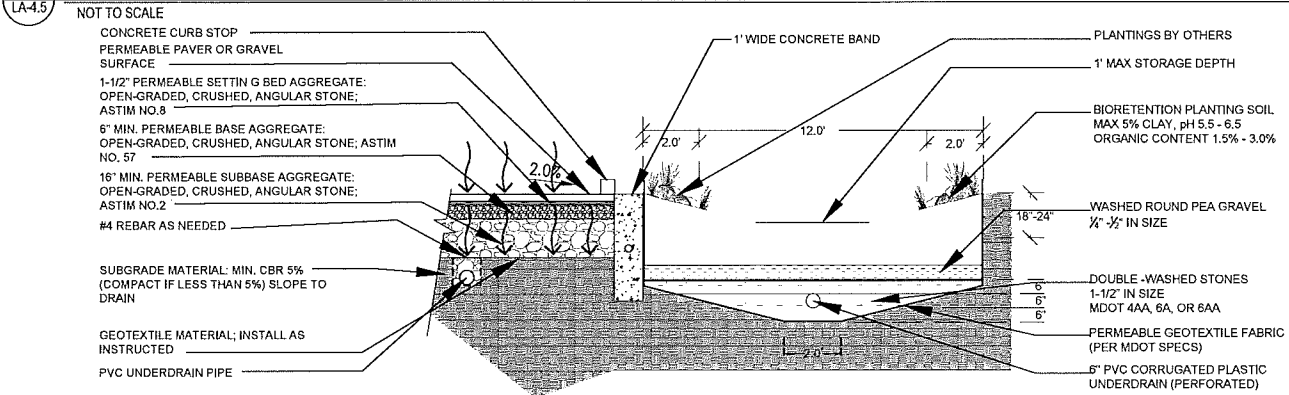


PLAN SUBMITTED FOR SITE PLAN REVIEW - NOT FOR CONSTRUCTION. SHEET: LA - 4.4

PROJECT FILE: NO.43 LA Package\_5-22-2017.dwg



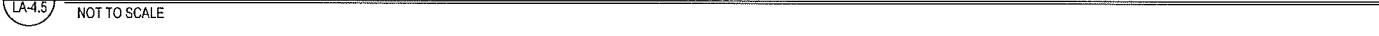
**1 PARKING LOT BIO SWALE AND STORM WATER PLAN**  
LA-4.5



**2 PARKING LOT BIO SWALE SECTION**  
LA-4.5



**3 BIO SWALE - NORTH OF PARKING LOT SECTION**  
LA-4.5



**NOTES:**

- BIORETENTION DESIGN ELEMENTS
  - DISTRIBUTED PLACEMENT OF BIORETENTION AREAS ACROSS A DEVELOPMENT SITE RESULTS IN SMALLER, MORE MANAGEABLE SUBAREAS WITHIN THE DEVELOPMENT SITE.
  - OTHER RESIDENTIAL, COMMERCIAL OR INDUSTRIAL SITES, BIORETENTION AREAS SHOULD BE LOCATED NEAR THE SOURCE OF THE RUNOFF GENERATED FROM IMPERVIOUS SURFACES. FACILITIES SHOULD BE LOCATED NEAR THE PERIMETERS AND EDGES TO MAINTAIN TYPICAL USE OF THE PROPERTY.
  - BIORETENTION AREAS SHOULD NOT BE LOCATED WITHIN 10 FEET OF BUILDING FOUNDATIONS UNLESS THE BUILDING DESIGN INCORPORATES ADEQUATE WATERPROOFING MEASURES. BIORETENTION AREAS SHOULD NOT BE LOCATED NEAR HEADS OR SEPTIC SYSTEMS.
  - BIORETENTION AREAS SHOULD NOT BE LOCATED WITHIN 10 FEET OF PUBLIC ROAD RIGHTS OF WAY.
  - TO MINIMIZE EXCESS PONDING, EXCESS RUNOFF SHOULD BE COLLECTED AWAY FROM THE BIORETENTION BY GRADING THE ELEVATION OF MAIN PAVEMENT SURFACE EQUIVALENT TO THE ELEVATION AT WHICH RUNOFF IS ESCORTING INTO BIORETENTION AREA.
  - A SAFE OVERLAND FLOW PATH FOR THE EXCESS RUNOFF IS REQUIRED.
  - BIORETENTION AREAS SHOULD BE DESIGNED AS OFF-LINE SYSTEMS WHENEVER POSSIBLE. THIS IS TO PREVENT EXCESSIVE FLOW OF WATER WITHIN THE FACILITY.
  - SLOPED AREAS EXCEEDING 20% SHOULD NOT BE USED FOR BIORETENTION UNLESS "KEEP GRASSY" DESIGNS ARE EMPLOYED.
  - BIORETENTION AREAS SHOULD NOT BE BUILT WHERE STORAGE AREAS WOULD NEED TO BE CREATED, TO MAKE ROOM FOR THE FACILITY.
  - BIORETENTION LOT APPLICATIONS, BUMPER BLOCKS OR GAUPPED CURBS SHOULD BE USED TO PREVENT ENTRY OF VEHICLES INTO THE BIORETENTION AREA.
  - A WALKWAY UNDERDRAIN HAS THE EFFECT OF PROTECTING STORAGE AREA BELOW THE INVERT OF THE UNDERDRAIN DISCHARGE PIPE. THE STORAGE AREA IS EQUAL TO THE VOID SPACE OF THE MATERIAL USED.
- BIORETENTION DESIGN ELEMENTS
  - BIORETENTION AREAS SHOULD BE STABILIZED PRIOR TO CONSTRUCTION OF THE BIORETENTION AREAS TO MINIMIZE COPIATION AND CONTAMINATION OF THE BIORETENTION SITE.
  - PLACEMENT OF THE GRAVEL OVER THE UNDERDRAIN MUST BE DONE WITH CARE. ANGLE DROPPING THE GRAVEL HIGH LEVELS FROM A BACKHOE OR FRONT-END LOADER BUCKET, SPILL DIRECTLY OVER UNDERDRAIN AND SPREAD MANUALLY.
  - PLACEMENT OF THE PLANTING SOIL IN THE BIORETENTION AREA SHOULD BE LIMITED TO 12 TO 18 INCHES AND LIGHTLY COMPACTED. MANUAL COMPACTION EFFORT CAN BE APPLIED BY TAPPING WITH A BUCKET FROM A DOZER OR BACKHOE. DO NOT USE HEAVY EQUIPMENT WITHIN THE BIORETENTION FACILITY. HEAVY EQUIPMENT CAN BE USED AROUND THE PERIMETER OF THE BASIN TO SUPPLY SOIL AND GRAVEL. GRAVE BIORETENTION MATERIALS WITH LIGHT EQUIPMENT SUCH AS A COMPACT LOADER OR A DOZER LOADER WITH MASH TRACKS.
  - CONSTRUCTION SHALL SIGNIFICANTLY CONTRIBUTE TO DESIGN FAILURE. COMPACTION CAN BE AVOIDED AT THE BASE OF THE BIORETENTION FACILITY BY USING AN ALTERNATIVE TILLING OPERATION SUCH AS A CHESS PLOW, RIPPER OR SUBSOILER. THESE TILLING OPERATIONS ARE TO RE-FRACTURE THE SOIL PROFILE THROUGHOUT THE 12 INCH COMPACTION ZONE. ROTOTILLERS ARE USUALLY NOT TILLY ENOUGH TO REMOVE THE EFFECTS OF COMPACTION FROM HEAVY EQUIPMENT.
  - ROTTOTILL 2 TO 3 INCHES OF GRAVEL INTO THE BASE OF THE BIORETENTION FACILITY BEFORE BACK FILLING THE FACILITY AND PLACEMENT OF THE UNDERDRAIN. PUMP AWAY POOLED WATER BEFORE ROTOTILLING BASE.
  - IN ORDER TO SPEED UP THE NATURAL COMPACTION PROCESS, PRESUMING THE PLACED SOIL MAY BE PERFORMED SIGNIFICANT SETTLEMENT CAN OCCUR AFTER THE FIRST PRECIPITATION AND ADDITIONAL SETTLEMENT MAY OCCUR SUBSEQUENT TO THE INITIAL WETTING. IF TIME AND CONSTRUCTION SCHEDULE PERMITS, IT IS PREFERABLE TO ALLOW NATURAL SETTLEMENT TO OCCUR WITH THE HELP OF RAIN EVENTS TO FREEKON THE SOIL MEDIUM.
- BIORETENTION AREA DESIGN STANDARDS
  - THE DRAINAGE AREA TO EACH BIORETENTION AREA SHOULD BE SMALLER THAN AN ACRE AND PREFERABLY LESS THAN 1 ACRE. NOTE THAT THESE CAN BE MULTIPLE BIORETENTION AREAS WITHIN A GIVEN DEVELOPMENT.
  - SHEET FLOW TO BIORETENTION AREAS SHOULD TRAVEL A MAXIMUM DISTANCE OF 150 FEET.
  - A VEGETATED BUFFER STRIP WITH A MINIMUM WIDTH OF 2 FEET MUST BE PROVIDED AROUND EACH BIORETENTION AREA. THE WIDTH OF THE BUFFER STRIP AROUND BIORETENTION AREAS IS MEASURED FROM THE MAXIMUM WATER SURFACE ELEVATION OF THE PONDING AREA ASSOCIATED WITH THE BIORETENTION AREA.
  - THE DEPTH OF THE PONDING AREA IN BIORETENTION AREAS SHOULD EXCEED A MAXIMUM OF 3 INCHES TO 4 INCHES IS PREFERRED FOR AREAS THAT RECEIVE HIGH INTENSIVE LOCAL OR RAIN EVENTS WITH LOW INFILTRATION RATES. THIS SHOULD BE DONE IN CONJUNCTION WITH A SMALLER DRAINAGE AREA.
  - SOIL BOUNDARY AND FIELD INFILTRATION RATE TESTS MUST BE PERFORMED TO DETERMINE CHARACTERISTICS OF THE IN-SITU SOIL AT THE PROPOSED BIORETENTION AREAS.
  - BIORETENTION AREAS MUST INCLUDE AN UNDERDRAIN OR OVERFLOW STRUCTURE UNLESS THE APPLICANT DEMONSTRATES THAT THE INFILTRATION RATE OF SOIL WITHIN THE BIORETENTION AREA IS SUFFICIENT TO PREVENT EXCESS PONDING. UNDERDRAINS MUST SATISFY THE FOLLOWING REQUIREMENTS:
    - UNDERDRAINS MUST HAVE A HYDRAULIC CAPACITY GREATER THAN THE INFILTRATION RATE OF THE SOIL IN THE BIORETENTION AREA.
    - THE UNDERDRAIN MUST BE PERFORATED ALONG ITS ENTIRE LENGTH. THE LOCATION OF THE PERFORATIONS IS DEPEND ON THE DESIGN. TYPICALLY, THE PERFORATIONS ARE PLACED CLOSEST TO THE INVERT OF THE PIPE TO ACHIEVE MAXIMUM POTENTIAL FOR DRAINING. THE FACILITY THE PERFORATIONS CAN BE PLACED NEAR THE TOP OF THE PIPE IF AN ANTI-EROSION ZONE IS INSTALLED. WATER BELOW THE PERFORATED PORTION OF THE UNDERDRAIN WILL HAVE A TENDENCY TO INFILTRATE DURING PERIODS OF SATURATION. OTHERWISE, WATER WILL HAVE A TENDENCY TO INFILTRATE INTO THE SURROUNDING IN-SITU SOILS.
    - UNDERDRAINS CANNOT BE PERFORATED WITHIN 1 FEET OF WHERE THE UNDERDRAIN SYSTEM CONNECTS TO A STORM SEWER STRUCTURE.
    - UNDERDRAINS MUST INCLUDE AN ADEQUATE OUTLET INTO A DETENTION SYSTEM, RETENTION BASIN, STORM SEWER OR WATERCOURSE, TO ACHIEVE A POSITIVE FLOW.
    - A 6-INCH GRAVEL BED IS REQUIRED TO PROTECT UNDERDRAIN PIPES AND REDUCE CLOGGING. A GRAVEL BLANKET AROUND THE UNDERDRAIN HELPS KEEP IT FREE OF POSSIBLE SOIL TRANSPORT.
    - THE UNDERDRAIN SYSTEM MUST INCLUDE A CLEANOUT WELL TO PROVIDE ACCESS FOR CLEANING THE SYSTEM.
    - THE BOTTOM OF BIORETENTION AREAS SHOULD BE 3 FEET OR MORE ABOVE THE SEASONAL HIGH GROUND WATER TABLE.
    - A MAXIMUM OF 50% VOID SPACES IN THE PLANTING SOILS AND UNDERGRAVEL BLANKETS CAN BE CONSIDERED STORAGE VOLUME WITHIN THE BIORETENTION AREA.
    - BIORETENTION AREAS MAY NOT BE LOCATED WITHIN PRE-EXISTING SURFACE WATERS.



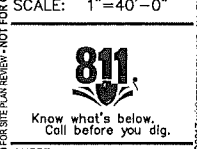
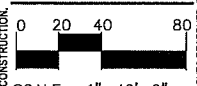
Innovation Hills  
2800 W. Hamlin Rd.,  
Rochester Hills, MI,  
48309  
FILE NUMBER

CLIENT:  
City of Rochester Hills  
  
Ken Elwert  
1000 Rochester Hills Dr.  
Rochester Hills, MI  
48309  
Phone: 248-656-4600

5-22-17 FINAL SUBMITTAL REVIEW  
4-21-17 FINAL SUBMITTAL REVIEW  
3-21-16 DESIGN REVIEW  
3-11-16 PARKING LOT REVISION  
3-21-16 PARKING LOT DESIGN REVIEW  
1-8-16 PARKING LOT BID  
Date: 5/22/2017



Designed / Drawn: RLH/RLC  
Checked / Approved: RLN  
Job #: 02-02-2017



PROJECT FILE: NO. 4.0 LA Package\_5-22-2017.dwg  
COPYRIGHT © 2017 NÚÑEZ DESIGN, INC. ALL RIGHTS RESERVED. This document and the images matter contained herein is proprietary and is not to be used or reproduced without the written permission of NÚÑEZ DESIGN, INC.

BIOSWALE PLANT LIST:

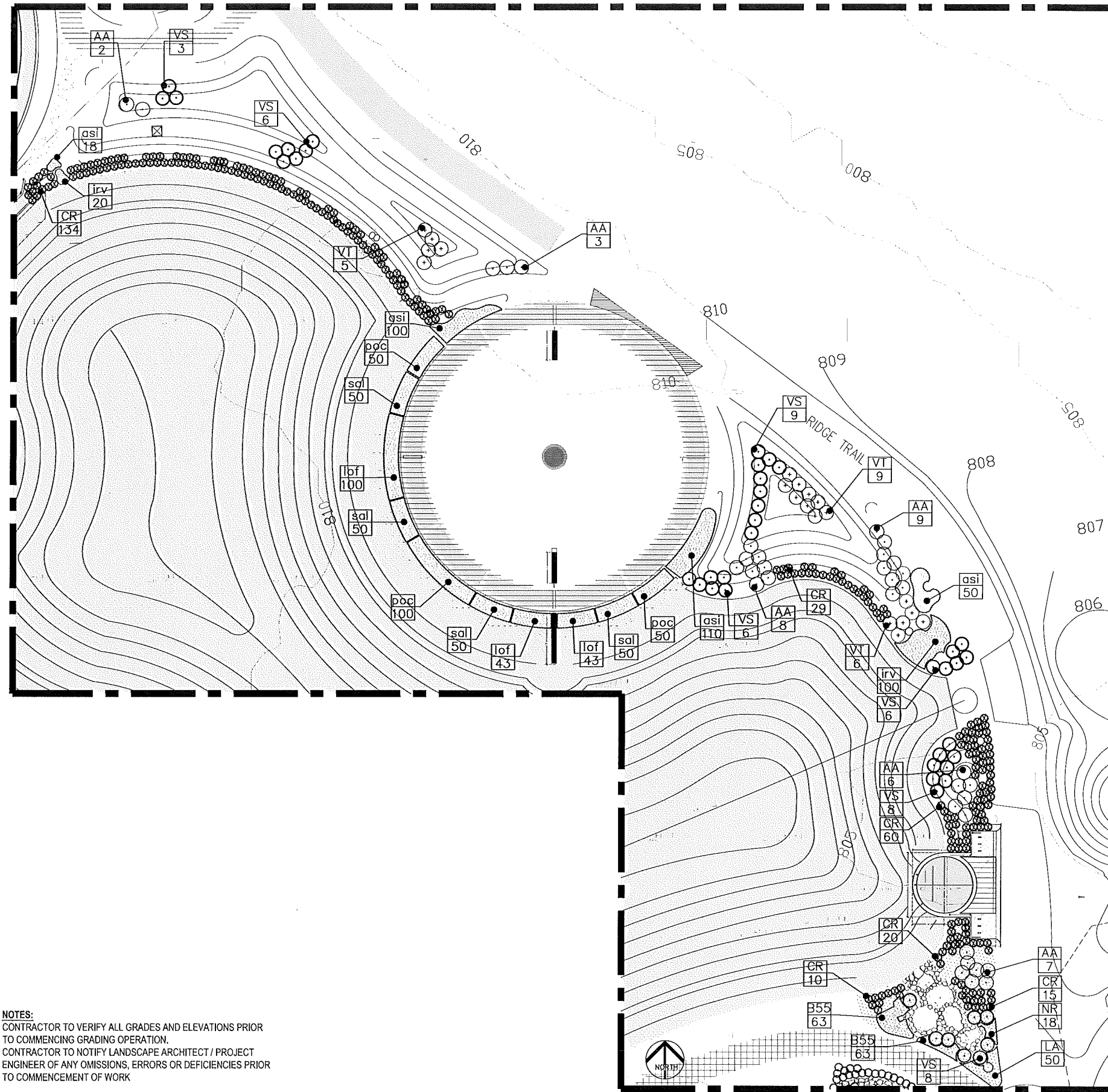
QTY. KEY SIZE ROOT BOTANICAL / COMMON NAME

SHRUB PLANTINGS

- 35 AA No. 3 Cont. Aronia arbutifolia / Chokeberry
- 259CR No. 3 Cont. Cotoneaster dammeri 'Royal Beauty'/Royal Beauty Cotoneaster
- 46 VS No. 3 Cont. Itea virginica 'Henry's Garnet' / Virginia Sweetspire
- 20 VT No. 3 Cont. Viburnum trilobum / American Cranberrybush

PERENNIAL PLANTINGS

- 260asi 18"O.C.,Bulbs Asclepias Incarnata / Swamp Milkweed
- 100irv 18"O.C.,Quarts Iris virginica / Blue Flag Iris
- 68 LA 18"O.C.,No.3 Cont. Lavandula angustifolia / English Lavender
- 186lof 18"O.C.,Bulbs Lobelia fulgens/ Cardinal Flower
- 18 NR 18"O.C.,No.3 Cont. Nepeta Racemosa / Catmint
- 126B55 18"O.C.,No.3 Cont. Oenothera fruticosa / Narrowleaf Evening Primrose
- 200poc 18"O.C., Bare-root Pontederia cordata / Pickerelweed
- 200sal 18"O.C., Bulbs Sagittaria latifolia / Arrowhead or Duck Potato



**NOTES:**  
 CONTRACTOR TO VERIFY ALL GRADES AND ELEVATIONS PRIOR TO COMMENCING GRADING OPERATION.  
 CONTRACTOR TO NOTIFY LANDSCAPE ARCHITECT / PROJECT ENGINEER OF ANY OMISSIONS, ERRORS OR DEFICIENCIES PRIOR TO COMMENCEMENT OF WORK

1 ENLARGED PLANTING PLAN - AREA 'B'  
 LA-4.3

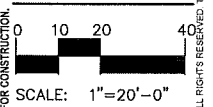
Innovation Hills  
 2800 W. Hamlin Rd.,  
 Rochester Hills, MI.  
 48309  
 FILE NUMBER

CLIENT:  
 City of Rochester Hills  
 Ken Elwert  
 1000 Rochester Hills Dr.  
 Rochester Hills, MI  
 48309  
 Phone: 248-656-4600

4-21-17 FINAL SUBMITTAL REVIEW  
 8-21-18 DESIGN REVIEW  
 8-11-18 PARKING LOT REVISION  
 8-21-18 PARKING LOT DESIGN REVIEW  
 1-9-19 PARKING LOT BID  
 Date: 4/20/2017

**NÚÑEZ DESIGN**  
 LANDSCAPE ARCHITECTURE • URBAN DESIGN  
 249 Park Street  
 Troy, Michigan 48063  
 P: 248.224.5933  
 nunezdesigninc@gmail.com

Designed / Drawn: RLN / RL  
 Checked / Approved: RLN  
 Job # 02-02-2017



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

DETAIL LANDSCAPE PLAN - AREA 'B' LA - 4.6

PROJECT FILE: NO. 4.0 LA Package\_4-3:2017.dwg