

**APPLICANT:**  
DMK DEVELOPMENT GROUP, LLC  
8200 SHELBYVILLE ROAD  
SUITE 130, LOUISVILLE, KY. 40222  
PH: (502) 423-0662

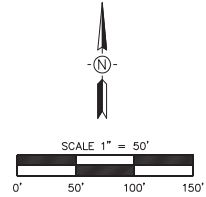
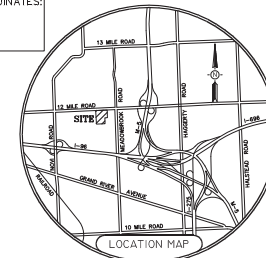
**ENGINEER:**  
KEBS, INC.  
2116 HASLETT RD.  
HASLETT, MI. 48840  
PH: (517) 339-1014

**LANDOWNER (CURRENTLY):**  
REDDEFIN INVESTMENTS, LLC.  
1500 W. BIG BEAVER ROAD  
TROY, MI 48064  
PH: (248) 476-3700

# PRELIMINARY SITE PLANS FOR: Trilogy - Novi

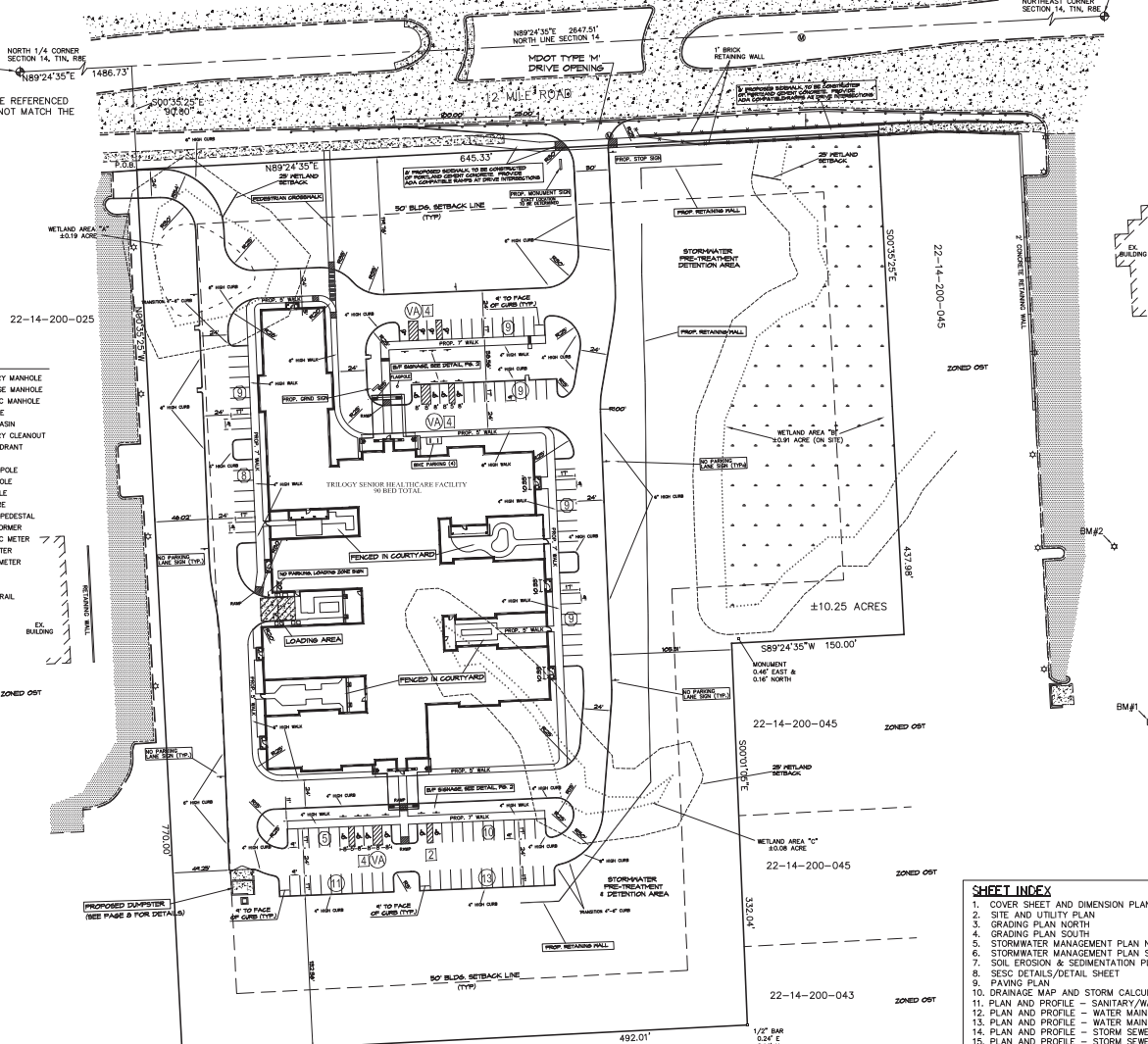
THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

**STATE PLANE COORDINATES:**  
NORTHING 364246.09  
EASTING 13367545.66



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NORTHING 364246.09  
EASTING 13367545.66

NOTE: BEARINGS AS SHOWN ON THIS DRAWING ARE REFERENCED TO THE LEGAL DESCRIPTION OF RECORD AND DO NOT MATCH THE STATE PLANE COORDINATE BEARINGS.



- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
  - = FOUND IRON AS NOTED
  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
  - = ASPHALT
  - = CONCRETE
  - = GRAVEL
  - = EXISTING SPOT ELEVATION
  - = EXISTING CONTOUR ELEVATION
  - = SANITARY SEWER
  - = WATER LINE
  - = GAS LINE
  - = UNDERGROUND TELEPHONE
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  - = TRANSFORMER
  - = GAS METER
  - = WATER METER
  - = SIGN
  - = POST
  - = GUARD RAIL

- LEGEND**
- = PROPOSED WATER MAIN
  - = PROPOSED SANITARY SEWER
  - = PROPOSED STORM SEWER
  - = PROPOSED HYDRANT
  - = PROPOSED GATE VALVE
  - = PROPOSED SAN. M.H.
  - = PROPOSED STORM M.H.
  - = PROPOSED C.B.
  - = PROPOSED GRADES
  - = PROPOSED FIRST FLOOR ELEV.
  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF FIN. FLOOR ELEV.
  - = PROPOSED TOP OF PAVT. ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = IDENTIFIED KEYING SYSTEM

- EX. SEWER INVENTORIES:**
- CATCH BASIN #100**  
INLET EL. 934.87  
6" SOUTH 931.04  
12" NORTH 930.04
- CATCH BASIN #101**  
INLET EL. 929.32  
6" WEST 924.60  
6" EAST 924.59  
18" NORTH 924.07
- CATCH BASIN #102**  
INLET EL. 925.56  
6" SW 921.15  
6" SE ??  
18" NORTH 918.58
- EX. SAN. A (PER AS-BUILTS)**  
TICKS M4145  
8" N 916.88  
8" W 916.58  
I.E. PROP. 8" E 924.02

NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT  
NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.



- BENCHMARKS:**
- BM#1 - SQUARE CATCHBASIN ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY, 450' EAST OF DUMPISTER ELEVATION - 920.64 NAVD 88
- BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, 4130' NORTH OF DUMPISTER ELEVATION - 925.80 NAVD 88

**LEGAL DESCRIPTION:**  
A parcel of land in the Northeast 1/4 of Section 14, T1N, R9E, City of Novi, Oakland County, Michigan, the surveyed boundary of said parcel described as: Commencing at the North 1/4 corner of said Section 14; thence N89°24'35"E along the North line of said Section 14 a distance of 1486.73 feet; thence S00°35'25"E perpendicular to said North line 90.00 feet to the point of beginning of this description; thence N89°24'35"E parallel with said North line 645.33 feet; thence S00°35'25"E perpendicular to said North line 437.88 feet; thence S89°24'35"W parallel with said North line 150.00 feet; thence S00°01'05"E 332.04 feet; thence S89°24'35"W parallel with said North line 492.01 feet; thence N00°35'25"W perpendicular to said North line 770.00 feet to the point of beginning, said parcel containing 10.25 acres, more or less, said parcel subject to all easements and restrictions if any.

**PARCEL NUMBER:**  
50-22-14-200-045

**EXISTING SITE DATA:**  
EXISTING ZONING: OST  
ADJACENT ZONING: OST (EAST, WEST AND SOUTH)  
RESIDENTIAL (SMALL PORTION AT SW CORNER)  
TOTAL SITE AREA = ±10.25 ACRES (446,549 S.F.)

**PROPOSED SITE USE:**  
TRIOLOGY HEALTHCARE/ASSISTED LIVING FACILITY  
TOTAL BED COUNT: 90 BEDS  
(USE IS PERMITTED BY RIGHT IN OST DISTRICT)

**BUILDING DATA (OVERALL):**  
TOTAL BUILDING SF = 55,286 SF  
TOTAL CANOPY SF = 4,640 SF  
TOTAL SF = 55,286+4,640 = 59,926 SF

**PROPOSED BUILDING SETBACKS:**  
FRONT (12 MILE) = 50'  
SIDE (EAST/WEST) = 50'  
REAR (SOUTH) = 50'

**EMPLOYEE WORK DATA:**  
TOTAL EMPLOYEES:  
17 PART TIME EMPLOYEES  
51 FULL TIME EMPLOYEES  
TOTAL EMPLOYEES = 68

WORK SHIFT #1 (6AM-2PM) = 30  
WORK SHIFT #2 (2PM-10PM) = 15  
WORK SHIFT #3 (10PM-6AM) = 6

**PARKING REQUIREMENTS:**  
1 PARKING SPACE FOR EVERY 4 BEDS  
1 PARKING SPACE FOR EACH EMPLOYEE  
90 BEDS/4 = 22.5 SPACES = 23  
68 EMPLOYEES = 68 SPACES

TOTAL SPACES REQUIRED = 23+68 = 91  
BARRIER FREE SPACES REQUIRED:  
91 SPACES, REQUIRES (4) TO BE B/F

TOTAL SPACES PROVIDED = 110 = OK  
(INCLUDES 14 B/F SPACES)

**BIKE PARKING REQUIREMENTS:**  
1 BIKE SPACE FOR EACH 20 EMPLOYEES ON THE LARGEST SHIFT  
SPACES = 68/20 = 3.4 BIKE SPACES  
BIKE SPACES PROVIDED = 4

- SHEET INDEX**
1. COVER SHEET AND DIMENSION PLAN
  2. SITE AND UTILITY PLAN
  3. GRADING PLAN NORTH
  4. GRADING PLAN SOUTH
  5. STORMWATER MANAGEMENT PLAN NORTH
  6. STORMWATER MANAGEMENT PLAN SOUTH
  7. SOIL EROSION & SEDIMENTATION PLAN
  8. SSSC DETAILS/DETAIL SHEET
  9. PAVING PLAN
  10. DRAINAGE MAP AND STORM CALCULATIONS PLAN
  11. PLAN AND PROFILE - SANITARY/WATER MAIN
  12. PLAN AND PROFILE - WATER MAIN
  13. PLAN AND PROFILE - WATER MAIN
  14. PLAN AND PROFILE - STORM SEWER
  15. PLAN AND PROFILE - STORM SEWER
  16. EXISTING SURVEY, WOODLAND AND WETLAND PLAN
  17. WOODLAND TREE INVENTORY PLAN
  18. WOODLAND REMOVAL AND REPLACEMENT PLAN ATTACHMENTS
  - LANDSCAPE PLAN (INCLUDED)
  - LIGHTING PLAN (INCLUDED IN ARCHITECTURAL PLANS)
  - MITIGATION PLAN (INCLUDED)
  - CITY OF NOVI UTILITY/PATHWAY DETAILS (NOT INCLUDED WITH THIS SUBMITTAL)

REVISIONS

2-17-14 CONCEPT	3-8-14 REV.	APPLICATOR SUBMITTAL	2-11-14 PRELIMINARY SITE PLAN SUBMITTAL	2-11-14 PRELIMINARY SITE PLAN RE-SUBMITTAL
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**KEBS, INC.** NYES ENGINEERING  
2116 HASLETT ROAD, HASLETT, MI 48840  
PH: 517-339-1014 FAX: 517-339-8047

Novi Office  
PH: 248-781-9850

**Trilogy - Novi**  
COVER SHEET

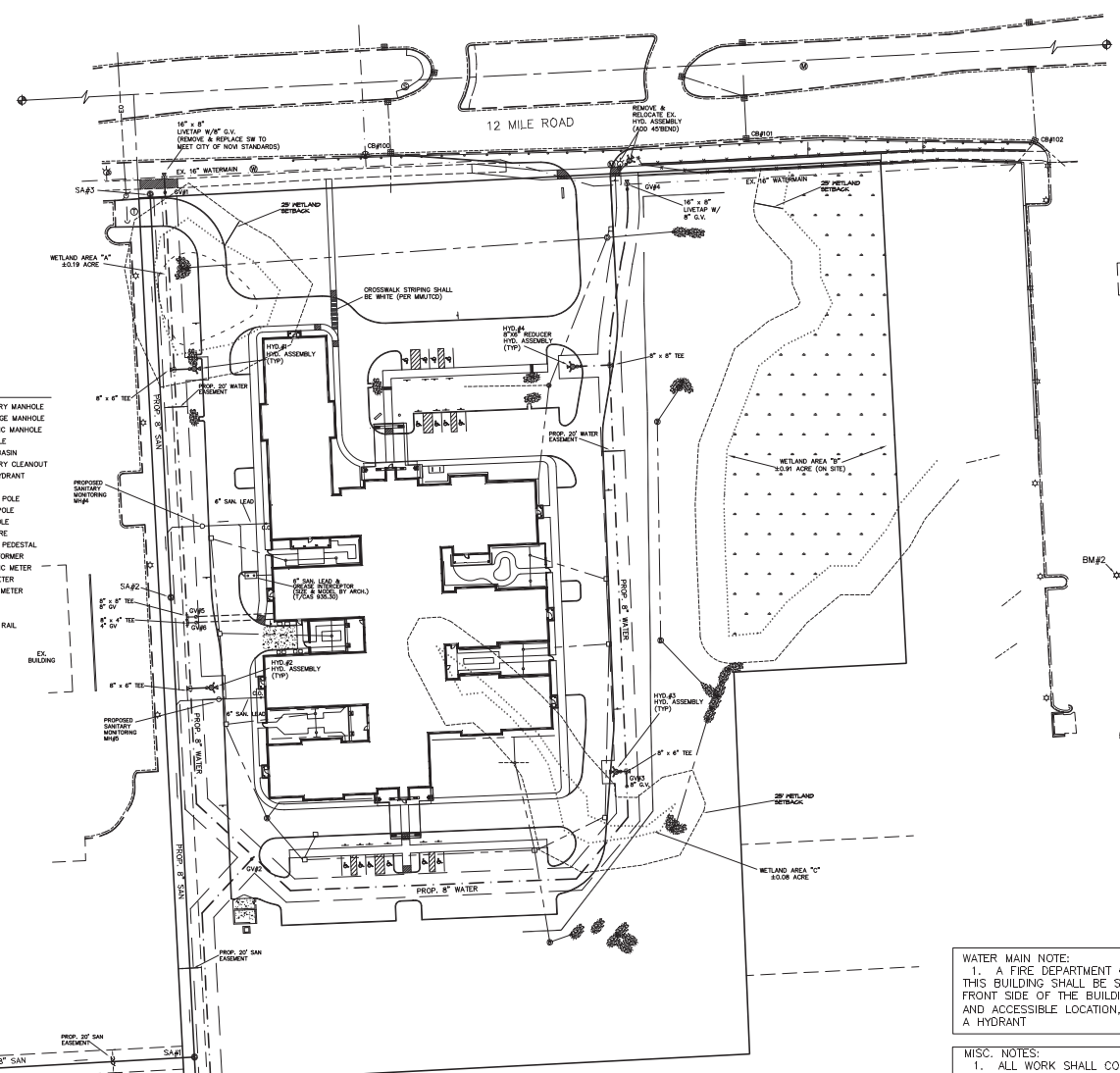
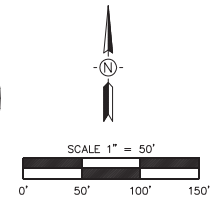
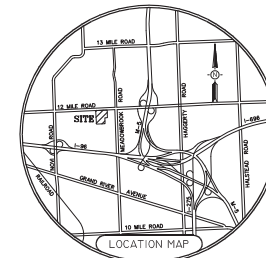
SCALE: 1" = 50'  
DATE: 4-11-14  
AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC

DESIGNER: PROJECT MGR.  
LOCATION: SECTION 14  
SHEET 1 OF 18  
JOB # 87456

SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI 48377

E-87486  
87486.TOP/END

PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN



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**EX. SEWER INVENTORIES:**

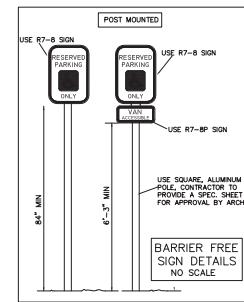
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12" NORTH	930.04
CATCH BASIN #101	INLET EL. 929.32
6" WEST	924.60
6" EAST	924.59
18" NORTH	924.07
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6" SOUTH	921.15
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**EX. SAN A (PER AS-BUILTS)**  
 (T/CAS 941.65)  
 8" N 916.68  
 8" W 916.58  
 I.E. PROP. 8" E 924.02

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**BENCHMARKS:**  
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 BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, 4130' NORTH OF DUMPSITER ELEVATION - 925.80 NAVD 88



**TRAFFIC CONTROL SIGN TABLE:**

STOP SIGNS R1-1 (24" WIDE) (1 POLE)	1
VAN ACCESSIBLE SIGNS (USE R7-8P SIGN)	6
B/F PARKING SIGNS (USE R7-8 SIGN)	14
NO PARKING-LOADING ZONE (R7-6) SIGN	1
NO PARKING FIRE LANE SIGNS	6

NOTE: ALL TRAFFIC SIGNAGE WILL COMPLY WITH THE CURRENT MUTCD STANDARDS.  
 NOTE: R-7-8 SIGNS MUST BE 7' ABOVE GRADE, WHILE R-7-8P SIGNS MUST BE 6' ABOVE GRADE.  
 NOTE: FOR PARKING STRIPING, ALL NON-BARRIER FREE PARKING SPACES AND ASSOCIATED ACCESS AISLES SHALL BE STRIPED WHITE.  
 NOTE: FOR PARKING STRIPING, ALL BARRIER-FREE PARKING SPACES AND ASSOCIATED ACCESS AISLES SHALL BE STRIPED BLUE.  
 NOTE: FOR PARKING STRIPING, ALL ABUTTING BARRIER-FREE AND NON-BARRIER FREE SPACES SHALL HAVE BLUE AND WHITE STRIPES TO SEPARATE THE TWO.

**PROPOSED SANITARY & WATER STRUCTURE INVENTORIES:**

PROPOSED SEWER INVENTORY:	PROPOSED WATER INVENTORY:	PROPOSED WATER INVENTORY:
SA#1 T/CAS 938.40 I.E. 8" N 925.52 I.E. 8" W 925.42	HYD.#1 & 6" Gv T/CAS 6" Gv = 933.70 GROUND ELEV. @ HYD. = 934.00	GATE VALVE #1 T/CAS = 939.80
SA#2 T/CAS 940.80 I.E. 8" N 927.42 I.E. 8" S 927.32	HYD.#2 & 6" Gv T/CAS 6" Gv = 930.00 GROUND ELEV. @ HYD. = 937.00	GATE VALVE #2 T/CAS = 934.35
SA#3 T/CAS 939.90 I.E. 8" S 929.00	HYD.#3 & 6" Gv T/CAS 6" Gv = 932.00 GROUND ELEV. @ HYD. = 933.00	GATE VALVE #3 T/CAS = 930.20
SANITARY MONITORING MH #4 T/CAS 935.60 I.E. W. 930.50 I.E. E. 930.40	HYD.#4 & 6" Gv T/CAS 6" Gv = 932.65 GROUND ELEV. @ HYD. = 932.75	GATE VALVE #4 T/CAS = 929.80
SANITARY MONITORING MH #5 T/CAS 935.80 I.E. W. 930.55 I.E. E. 930.45		GATE VALVE #5 T/CAS = 938.50
		GATE VALVE #6 T/CAS = 938.50

**WATER MAIN NOTE:**  
 1. A FIRE DEPARTMENT CONNECTION FOR THIS BUILDING SHALL BE SHOWN ON THE FRONT SIDE OF THE BUILDING, IN A VISIBLE AND ACCESSIBLE LOCATION, WITHIN 100' OF A HYDRANT

**MISC. NOTES:**  
 1. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF NOVI STANDARDS AND SPECIFICATIONS.  
 2. IF DEWATERING IS ANTICIPATED OR ENCOUNTERED DURING CONSTRUCTION A DEWATERING PLAN MUST BE SUBMITTED TO THE ENGINEERING DEPARTMENT FOR REVIEW.

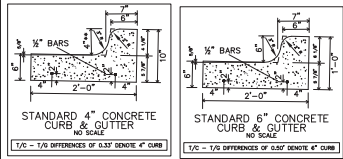
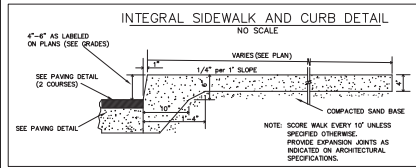
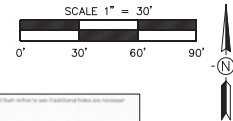
SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI 48377

E-87486  
87506.TOP/END

REVISIONS	 NYES ENGINEERING BRYAN LAND SURVEYS 2016 HASLETT ROAD, HASLETT, MI 48840 PH. 917-339-014 FAX. 917-339-8047 National Office PH. 269-781-8800	PROJECT SECTION 14 SHEET 2 OF 18 JOB # DMK DEVELOPMENT GROUP, LLC 87456
2-17-14 CONCEPT		
3-6-14 PRELIMINARY APPLICATION SUBMITTAL		
4-14 PRELIMINARY SITE PLAN SUBMITTAL		
5-14 PRELIMINARY SITE PLAN RE-SUBMITTAL	SCALE: 1" = 50' DATE: 4-11-14 AUTHORIZED BY:	DESIGNER: PROJECT MGR. CAP. SHEET 2 OF 18



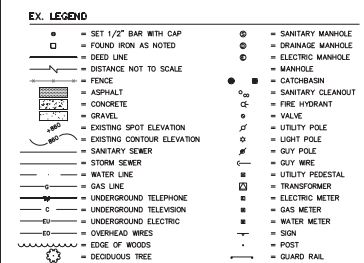
PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN



**OUTLET STRUCTURE #29**

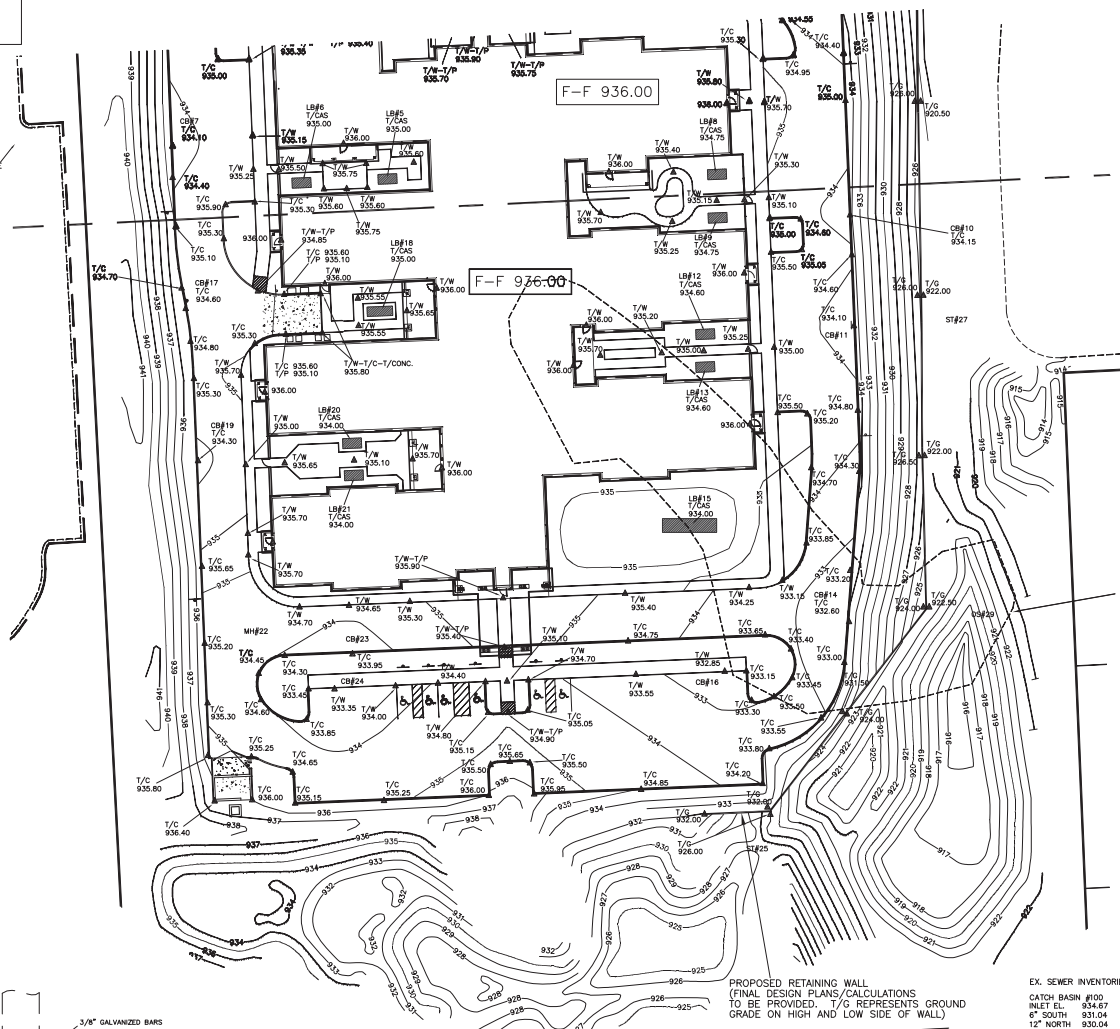
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**LEGEND**

- = PROPOSED WATER MAIN
- = PROPOSED SANITARY SEWER
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- = PROPOSED TOP OF PAINT ELEV.
- = PROPOSED TOP OF WALK ELEV.
- = DENOTES S.E.C. KEYING SYSTEM



**OUTLET #29 (CONTINUED)**

Area of outlet structure = 1.00 sq. ft.

Area of catch basin = 1.00 sq. ft.

Area of storm sewer = 1.00 sq. ft.

Area of sanitary sewer = 1.00 sq. ft.

Area of water line = 1.00 sq. ft.

Area of gas line = 1.00 sq. ft.

Area of underground telephone = 1.00 sq. ft.

Area of underground television = 1.00 sq. ft.

Area of underground electric = 1.00 sq. ft.

Area of overhead wires = 1.00 sq. ft.

Area of edge of woods = 1.00 sq. ft.

Area of deciduous tree = 1.00 sq. ft.

Area of coniferous tree = 1.00 sq. ft.

**NOTES:**

ALL DIMENSIONS ARE IN FEET AND DECIMALS THEREOF.

THIS PLAN WAS MADE AT THE DIRECTION OF THE PARTIES NAMED HERON AND IS INTENDED SOLELY FOR THEIR IMMEDIATE USE. UTILITY INFORMATION AS SHOWN WAS OBTAINED FROM AVAILABLE PUBLIC RECORDS AND FROM SUPPORTING FIELD OBSERVATIONS WHERE POSSIBLE AND IS SUBJECT TO VERIFICATION IN THE FIELD BY THE APPROPRIATE AUTHORITIES PRIOR TO USE FOR CONSTRUCTION.

BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THIS PROPERTY LIES ENTIRELY WITHIN FLOOD ZONE "X", AREAS OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, ACCORDING TO THE NATIONAL FLOOD INSURANCE PROGRAM, FLOOD INSURANCE RATE MAP FOR THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN, COMMUNITY PANEL NO. 260175 0627 F, DATED SEPTEMBER 29, 2006.

SURVEY ADDRESS: TWELVE MILE ROAD, NOVI, MI. 48377

NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT

NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.

NOTE: ALL GRADES SHOWN ARE FOR FINAL CONSTRUCTED CONDITIONS AND CONTRACTOR IS RESPONSIBLE FOR HOLDING DOWN GRADES AS THEY OR THE DEVELOPER DEEMS NECESSARY FOR BASEMENT SPOILS, TOPSOILS ETC...



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 6" EAST 934.59  
 6" SOUTH 934.04  
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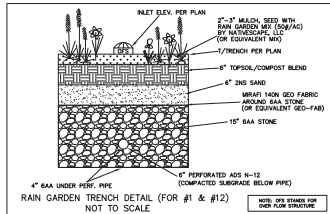
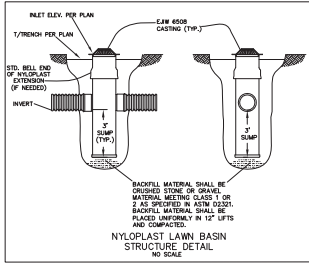
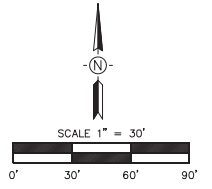
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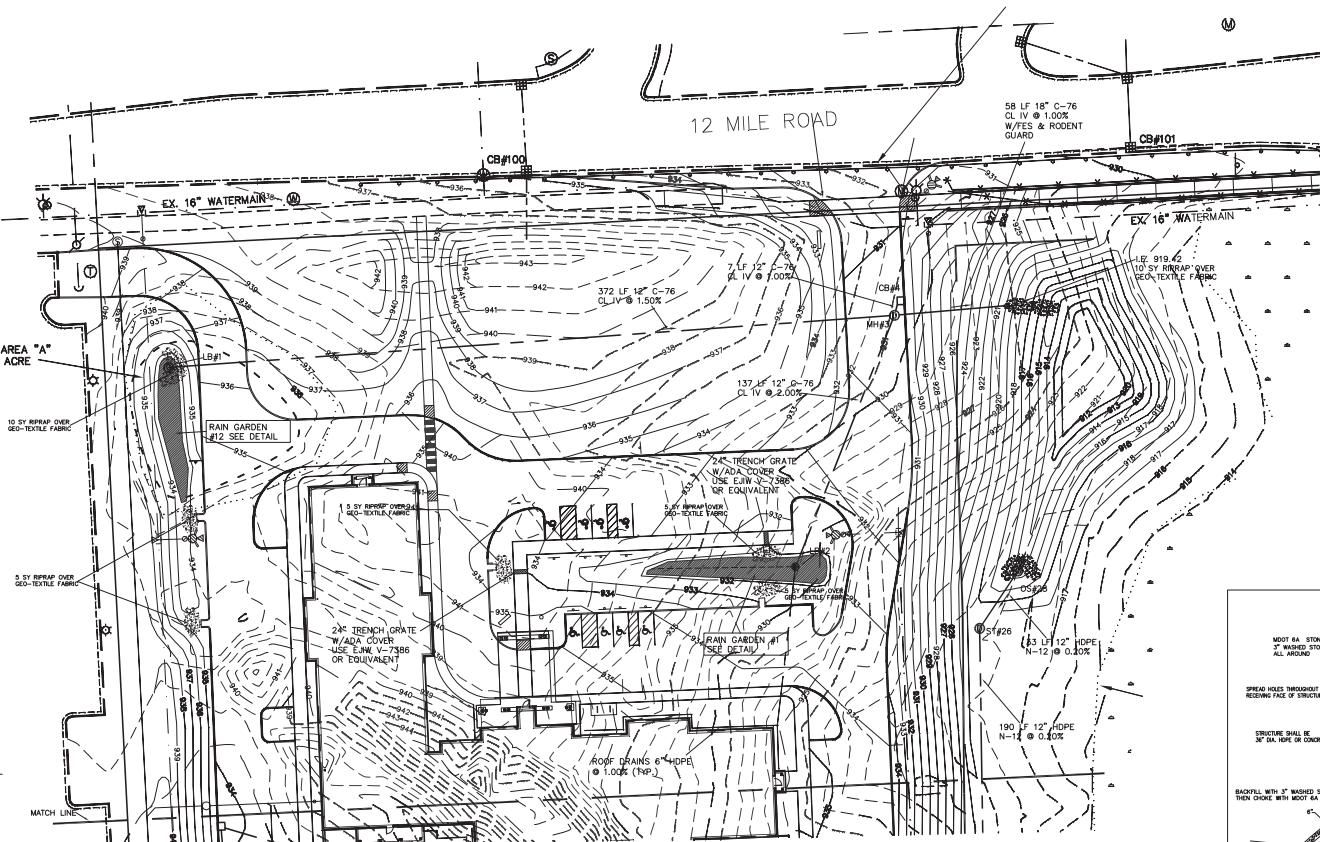
REVISIONS	KEBS, INC. NILES ENGINEERING BRYAN LAND SURVEYS
DATE: 4-11-14	PROJECT MGR. SECTION 14
AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC	SHEET 4 OF 18

PRELIMINARY SITE PLANS FOR:  
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 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

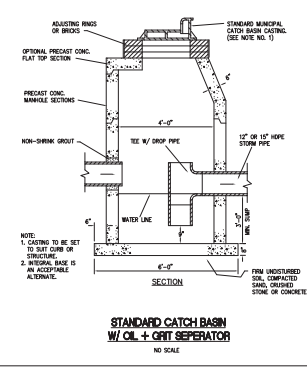
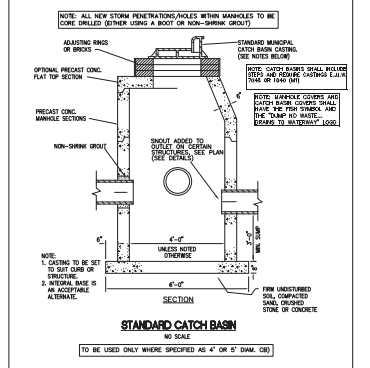
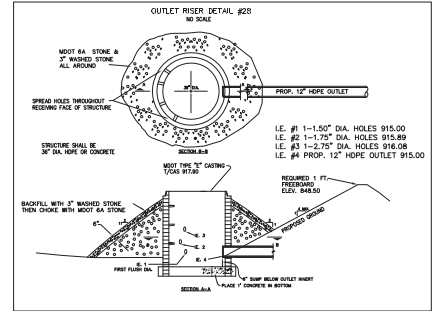


- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
  - = FOUND IRON AS NOTED
  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
  - = ASPHALT
  - = CONCRETE
  - = GRAVEL
  - = EXISTING SPOT ELEVATION
  - = EXISTING CONTOUR ELEVATION
  - = SANITARY SEWER
  - = STORM SEWER
  - = WATER LINE
  - = GAS LINE
  - = UNDERGROUND TELEPHONE
  - = UNDERGROUND TELEVISION
  - = UNDERGROUND ELECTRIC
  - = OVERHEAD WIRES
  - = EDGE OF WOODS
  - = DECIDUOUS TREE
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  - = SANITARY MANHOLE
  - = DRAINAGE MANHOLE
  - = ELECTRIC MANHOLE
  - = MANHOLE
  - = CATCHBASIN
  - = SANITARY CLEANOUT
  - = FIRE HYDRANT
  - = VALVE
  - = UTILITY POLE
  - = LIGHT POLE
  - = GUY POLE
  - = GUY WIRE
  - = UTILITY PEDESTAL
  - = TRANSFORMER
  - = ELECTRIC METER
  - = GAS METER
  - = WATER METER
  - = SIGN
  - = POST
  - = GUARD RAIL

- LEGEND**
- = PROPOSED WATER MAIN
  - = PROPOSED SANITARY SEWER
  - = PROPOSED STORM SEWER
  - = PROPOSED HYDRANT
  - = PROPOSED DATE VALVE
  - = PROPOSED SAN. M.H.
  - = PROPOSED STORM M.H.
  - = PROPOSED C.B.
  - = PROPOSED GRADES
  - = PROPOSED FIRST FLOOR ELEV.
  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF DRIVE ELEV.
  - = PROPOSED TOP OF PAVT. ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = DENOTES S.E.C. KEYING SYSTEM



PROPOSED STORM SEWER INVENTORY:	PROPOSED RAIN GARDEN INVENTORY:
LB#1 T/CAS 934.25 I.E. 12" E 931.00	RAIN GARDEN #1 T/TRENCH 933.75 915 SF
LB#2 T/CAS 934.00 T/TRENCH 933.75 I.E. 12" NE 928.75 I.E. 6" W 928.00 I.E. 8" SW 929.00	RAIN GARDEN #2 T/TRENCH 933.75 645 SF
MH#3 T/CAS 930.25 I.E. 12" W 925.42 I.E. 12" SW 926.01 I.E. 12" NE 926.01 I.E. 18" E 926.00	
CB#4 (WITH OIL & GRIT SEPARATOR) T/CURB 930.60 T/CAS 930.10 I.E. 12" SW 926.08	
LB#5 T/CAS 935.00 I.E. 12" W 931.00 I.E. 6" S 931.50	
ST#28 T/CAS 918.50 I.E. 12" N/S 914.93	
OS#28 (SEE DETAIL THIS SHEET)	



**EX. SEWER INVENTORIES:**

CATCH BASIN #100	INLET EL. 934.67
	6" SOUTH 931.04
	12" NORTH 930.04
CATCH BASIN #101	INLET EL. 929.32
	6" WEST 924.60
	6" EAST 924.50
	18" NORTH 924.07
CATCH BASIN #102	INLET EL. 925.56
	8" SW 921.15
	6" SE 921.15
	18" NORTH 918.58

EX. SAN. A (PER AS-BUILTS)  
 T/CAS 941.65  
 8" W 916.69  
 8" W 916.58



NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT  
 NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.

SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI. 48377

E-87486  
87486.TOP/END

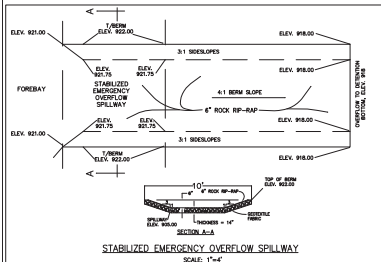
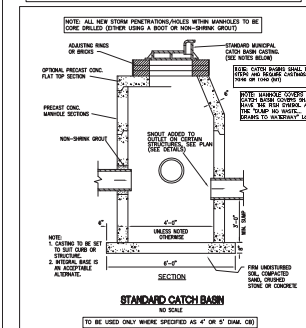
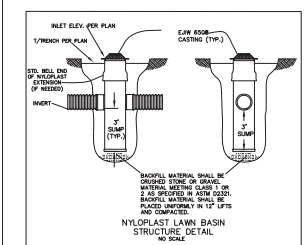
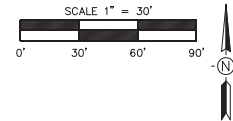
REVISIONS	DATE	BY	DESCRIPTION

**KEBS, INC.** NYS ENGINEERING  
 2116 HASLETT ROAD, HASLETT, MI 48840  
 PH. 917-339-0104 FAX. 917-339-0847

Trilogy - Novi  
 STORMWATER MANAGEMENT PLAN NORTH

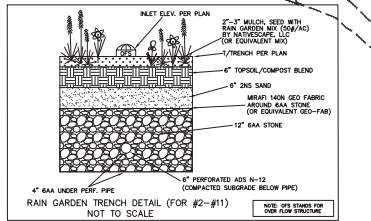
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 DATE: 4-11-14  
 AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC

PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

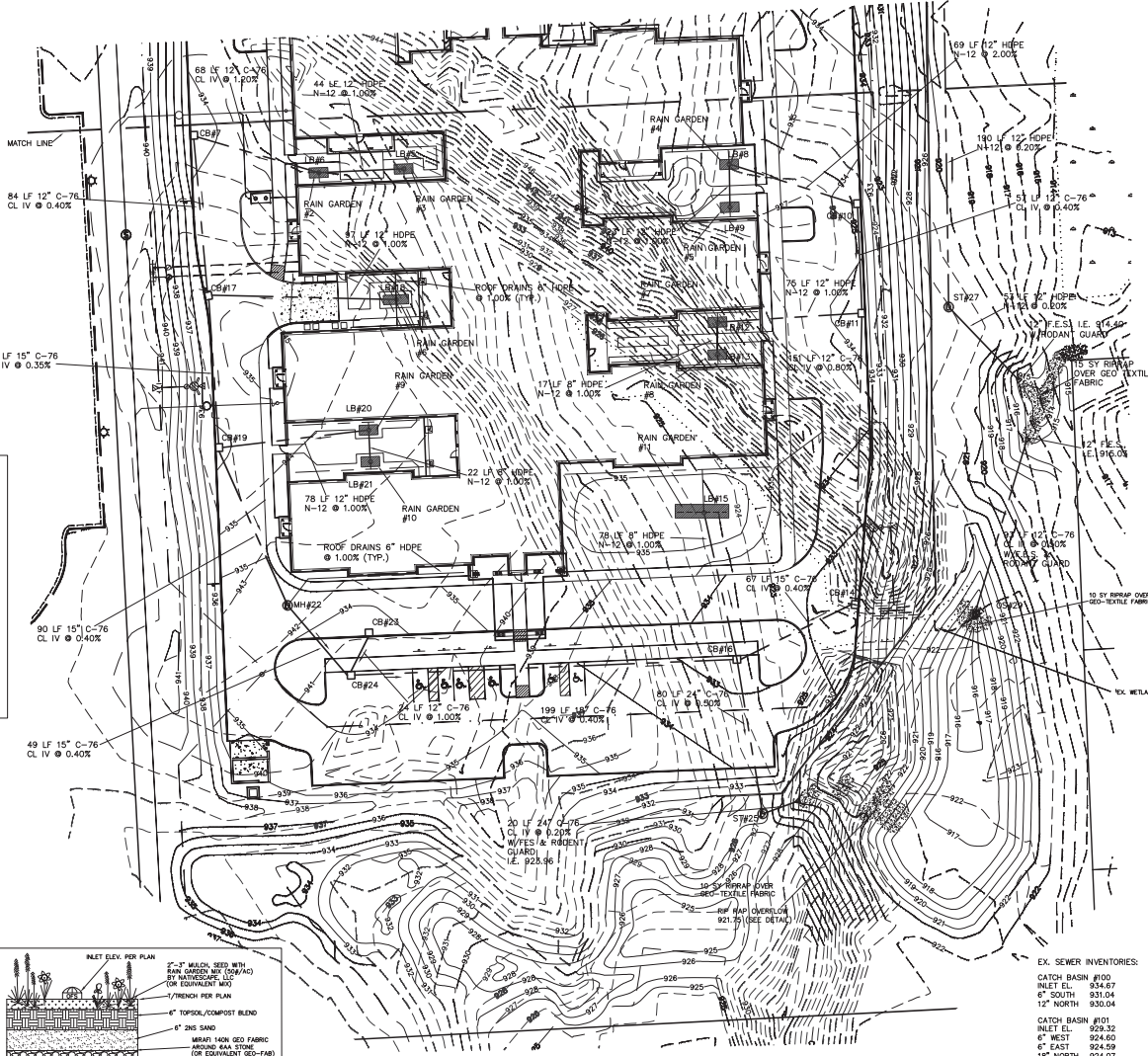


- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
  - = FOUND ROCK AS NOTED
  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
  - = ASPHALT
  - = CONCRETE
  - = GRAVEL
  - = EXISTING SPOT ELEVATION
  - = EXISTING CONTOUR ELEVATION
  - = SANITARY SEWER
  - = STORM SEWER
  - = WATER LINE
  - = GAS LINE
  - = UNDERGROUND TELEPHONE
  - = UNDERGROUND TELEVISION
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  - = OVERHEAD WIRES
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  - = UTILITY PEDESTAL
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  - = ELECTRIC METER
  - = GAS METER
  - = WATER METER
  - = SIGN
  - = POST
  - = GUARD RAIL

- LEGEND**
- = PROPOSED WATER MAIN
  - = PROPOSED SANITARY SEWER
  - = PROPOSED STORM SEWER
  - = PROPOSED HYDRANT
  - = PROPOSED DATE VALVE
  - = PROPOSED SAN. M.H.
  - = PROPOSED STORM M.H.
  - = PROPOSED C.B.
  - = PROPOSED GRADDES
  - = PROPOSED FIRST FLOOR ELEV.
  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF GROUND ELEV.
  - = PROPOSED TOP OF PAINT ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = DENOTES S.E.S.K. SYSTEM



NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT  
 NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.



- PROPOSED STORM SEWER INVENTORY:**
- LB#5  
T/CAS 935.00  
I.E. 12" W 931.20  
I.E. 6" S 931.50
  - LB#6  
T/CAS 935.00  
I.E. 12" E/W 930.76  
I.E. 6" S 931.50
  - CB#7  
T/CURB 934.10  
T/CAS 933.60  
I.E. 12" SE 929.94  
I.E. 12" SE 929.94
  - LB#8  
T/CAS 934.75  
I.E. 12" S 930.75  
I.E. 12" SE 930.75  
I.E. 6" N 930.85
  - LB#9  
T/CAS 934.75  
I.E. 12" N 930.98  
I.E. 6" S 931.15

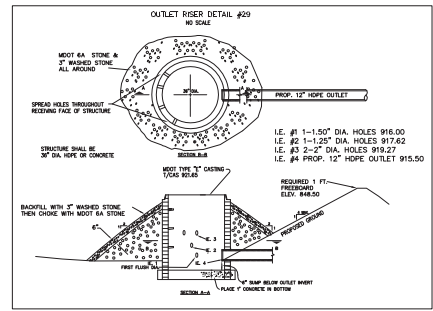
- PROPOSED RAIN GARDEN INVENTORY:**
- RAIN GARDEN #2  
T/TRENCH 934.75  
50 SF
  - RAIN GARDEN #3  
T/TRENCH 934.75  
50 SF
  - RAIN GARDEN #4  
T/TRENCH 934.50  
50 SF
  - RAIN GARDEN #5  
T/TRENCH 934.50  
50 SF
  - RAIN GARDEN #6  
T/TRENCH 934.75  
60 SF
  - RAIN GARDEN #7  
T/TRENCH 934.40  
60 SF
  - RAIN GARDEN #8  
T/TRENCH 934.40  
50 SF
  - RAIN GARDEN #9  
T/TRENCH 933.75  
50 SF
  - RAIN GARDEN #10  
T/TRENCH 933.75  
50 SF
  - RAIN GARDEN #11  
T/TRENCH 934.40  
195 SF

- PROPOSED STORM SEWER INVENTORY:**
- CB#10  
T/CAS 934.15  
T/CAS 933.65  
I.E. 12" NW/S 929.37  
I.E. 11" TRENCH 929.14

- PROPOSED STORM SEWER INVENTORY:**
- CB#11  
T/CAS 934.10  
T/CAS 933.60  
I.E. 12" W/S 929.14  
I.E. 12" W/S 930.00  
I.E. 6" N 930.50

- PROPOSED STORM SEWER INVENTORY:**
- LB#12  
T/CAS 934.60  
I.E. 12" S/E 929.89  
I.E. 8" N 929.99
  - LB#13  
T/CAS 934.60  
I.E. 12" N 930.06  
I.E. 6" S 930.15
  - CB#14  
T/CURB 932.00  
I.E. 12" N 927.93  
I.E. 15" SW 927.93
  - LB#15  
T/CAS 934.00  
I.E. 8" SE 929.00  
I.E. 8" N 929.00
  - CB#16  
T/W 932.85  
T/CAS 932.50  
I.E. 8" NW 928.22  
I.E. 15" E 927.66  
I.E. 18" W 927.70  
I.E. 24" S 924.50

- PROPOSED STORM SEWER INVENTORY:**
- CB#19  
T/CURB 934.30  
T/CAS 934.30  
I.E. 12" E 929.22  
I.E. 15" SE 929.22
  - LB#20  
T/CAS 934.00  
T/CAS 934.00  
I.E. 12" W/S 930.00  
I.E. 6" N 930.50
  - LB#21  
T/CAS 934.00  
I.E. 12" N 930.22  
I.E. 6" S 930.50
  - MH#22  
T/CAS 934.35  
I.E. 15" NW 928.66  
I.E. 6" NE 929.50
  - CB#23  
T/CURB 933.95  
I.E. 12" SW 928.90
  - CB#24  
T/W 933.35  
T/CAS 933.00  
I.E. 15" NW 928.66  
I.E. 12" NE 928.66  
I.E. 18" E 928.50

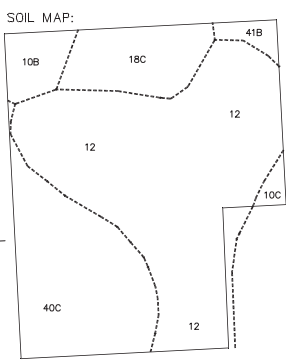


- EX. SEWER INVENTORIES:**
- CATCH BASIN #100  
INLET EL. 934.67  
6" SOUTH 931.04  
12" NORTH 930.04
  - CATCH BASIN #102  
INLET EL. 929.92  
6" WEST 924.60  
6" EAST 924.59  
18" NORTH 924.07
  - CATCH BASIN #103  
INLET EL. 925.56  
6" SW 921.15  
6" SE 91  
18" NORTH 918.58
  - EX. SAN. A (PER AS-BUILTS)  
T/CAS 941.65  
6" N 916.68  
6" W 916.58

SURVEY ADDRESS: TWELVE MILE ROAD, NOVI, MI 48377



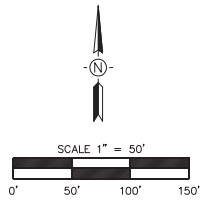
<p>REVISIONS</p> <p>DATE: 4-11-14</p> <p>SCALE: 1" = 30'</p>	<p><b>KEBS, INC.</b> NRES ENGINEERING</p> <p>2116 HASLETT ROAD, HASLETT, MI 48840                  PH: 917-330-1141 FAX: 917-330-0847</p> <p>Novi Office                  PH: 248-781-9850</p> <p><b>Trilogy - Novi</b>                  STORMWATER MANAGEMENT PLAN SOUTH</p> <p>PROJECT MGR. SECTION 14                  SHEET 6 OF 18</p>
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**SOIL TYPES:**  
 10B—MARLETTE SANDY LOAM 6-12%  
 18C—MARLETTE SANDY LOAM 6-12%  
 12—BROOKSTON AND COLWOOD LOAM  
 18C—FOX SANDY LOAM 6-12%  
 40C—ODORTHENTS, LOAMY, ROLLING  
 41B—AQUENTS, SANDY, LOAMY,  
 UNULATING

# PRELIMINARY SITE PLANS FOR: Trilogy - Novi

THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN



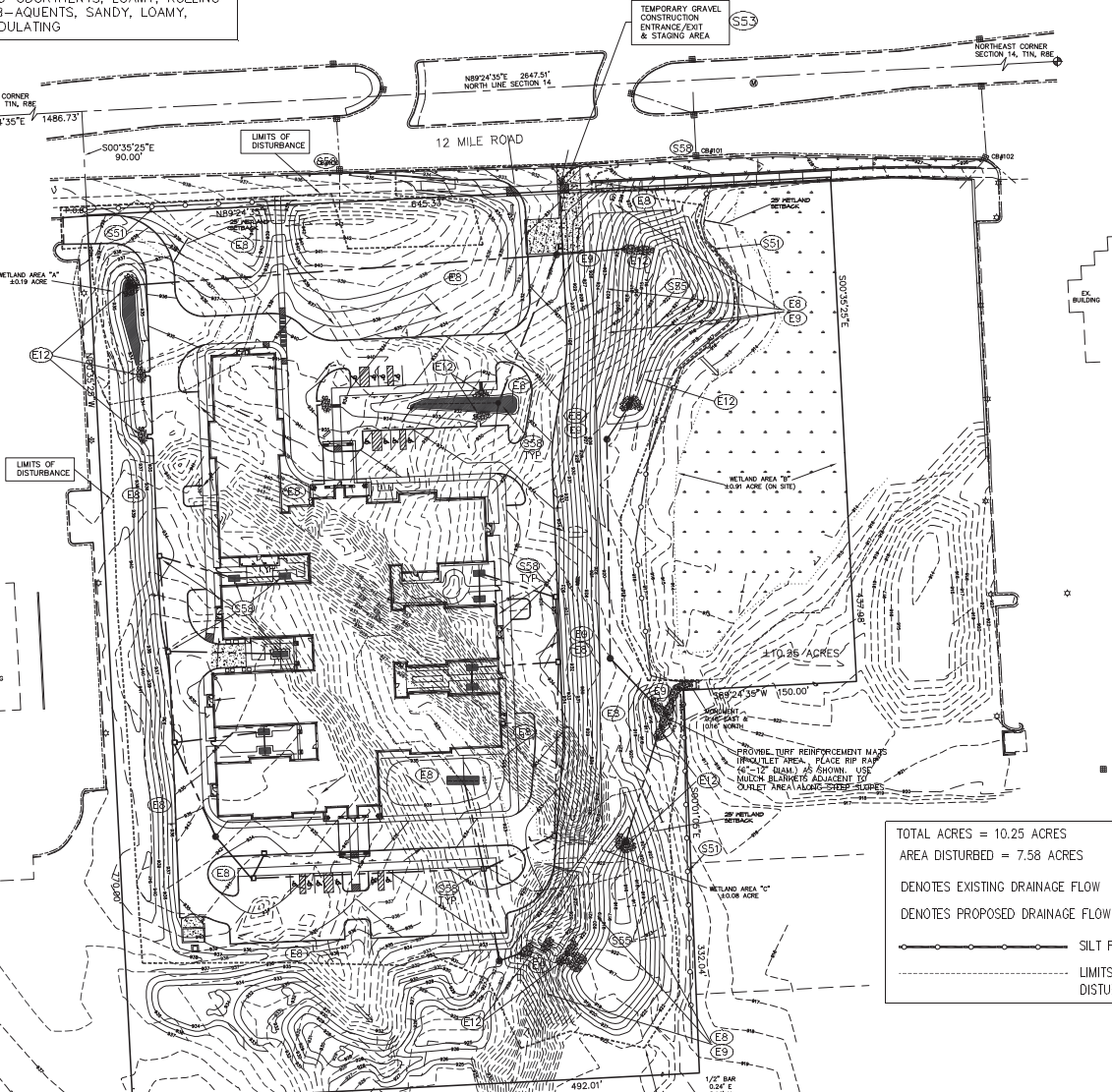
NOTE: STORM WATER RUNOFF FROM THIS SITE WILL NOT ADVERSELY AFFECT ADJACENT PROPERTIES.

NOTE: ANY STOCKPIILING OF SOIL SHALL BE SURROUNDED BY SILT FENCE, SEEDED IF LEFT OVER 30 DAYS.

- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
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  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
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- LEGEND**
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  - = PROPOSED C.B.
  - = PROPOSED GRADES
  - = PROPOSED FIRST FLOOR ELEV.
  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF GROUND ELEV.
  - = PROPOSED TOP OF PAVT. ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = IDENTIFIED S-E-C KEYING SYSTEM

- EX. SEWER INVENTORIES:**
- CATCH BASIN #100  
 INLET EL. 934.87  
 6" SOUTH 931.04  
 12" NORTH 930.04
- CATCH BASIN #101  
 INLET EL. 929.32  
 6" WEST 924.60  
 6" EAST 924.59  
 18" NORTH 924.07
- CATCH BASIN #102  
 INLET EL. 925.56  
 921.15  
 8" SE ??  
 18" NORTH 918.58
- EX. SAN A (PER AS-BUILTS)  
 (TICKS MARKS)  
 8" N 916.68  
 8" W 916.58  
 I.E. PROP. 8" E 924.02



TOTAL ACRES = 10.25 ACRES  
 AREA DISTURBED = 7.58 ACRES

DENOTES EXISTING DRAINAGE FLOW →

DENOTES PROPOSED DRAINAGE FLOW →

— SILT FENCE (TYP.)

— LIMITS OF EARTH DISTURBANCE (TYP.)

**LEGAL DESCRIPTION:**

A parcel of land in the Northeast 1/4 of Section 14, T1N, R1E, City of Novi, Oakland County, Michigan, the surveyed boundary of said parcel described as: Commencing at the North 1/4 corner of said Section 14; thence N89°24'35"E along the North line of said Section 14 a distance of 1486.73 feet; thence S00°35'25"E perpendicular to said North line 90.00 feet to the point of beginning of this description; thence N89°24'35"E parallel with said North line 645.33 feet; thence S00°35'25"E perpendicular to said North line 437.68 feet; thence S89°24'35"W parallel with said North line 150.00 feet; thence S00°01'05"E 332.04 feet; thence S89°24'35"W parallel with said North line 492.01 feet; thence N00°35'25"W perpendicular to said North line 772.00 feet to the point of beginning; said parcel containing 10.25 acres, more or less; said parcel subject to all easements and restrictions if any.



**MICHIGAN DEPARTMENT OF MANAGEMENT AND BUDGET**  
 S-E-S-C KEYING SYSTEM

KEY	BEST MANAGEMENT PRACTICES	SYMBOL	WHERE USED
<b>EROSION CONTROLS</b>			
E8	PERMANENT SEEDING		Stabilization method utilized on sites where earth change has been completed (final grading attached).
E9	MULCH BLANKETS		On exposed slopes, newly seeded areas, new ditch bottoms, or areas subject to erosion.
E12	RIPRAP		Use along shorelines, waterways, or where concentrated flows occur. Slow velocity, reduce sediment load, and reduce erosion.
<b>SEDIMENTATION CONTROLS</b>			
S53	STABILIZED CONSTRUCTION ACCESS		Used at every point where construction traffic enters or leaves a construction site.
S58	INLET PROTECTION FABRIC DROP		Use at stormwater inlets, especially at construction sites.
S51	SILT FENCE		Use adjacent to critical areas, to prevent sediment from sheet flow from entering these areas.
S55	SEDIMENT BASIN		At the outlet of disturbed areas and at the location of a permanent detention basin.

**CONSTRUCTION SCHEDULE & SEQUENCING:**

	2014	2015
	JULY	AUGUST
PLACE AND MAINTAIN TEMPORARY EROSION CONTROLS		
TOPSOIL STRIPPING & STOCKPIILING		
ON-SITE UTILITIES CONSTRUCTION		
SITE GRADING/EARTHWORK		
ROAD/PARKING/BLDG CONSTRUCTION		
TOPSOIL SPREADING		
PERMANENT SEEDING		
FINAL INSPECTIONS & REMOVE TEMPORARY EROSION CONTROLS		



NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT

NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.

**BENCHMARKS**

BM#1 = 52.41' CATCHER ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY; 4.50' EAST OF DIAMETER. ELEVATION: 920.04 NAVD 88

BM#2 = 17" DIAMETER PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY; 4.70' NORTH OF DIAMETER. ELEVATION: 925.89 NAVD 88

SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI 48377

E-87486 87486.TOP/END

REVISIONS	DATE	BY	DESCRIPTION
2-17-14 CONCEPT			
3-6-14 PRELIMINARY			
4-14-14 PRELIMINARY			
5-14-14 PRELIMINARY			
6-14-14 PRELIMINARY			
7-14-14 PRELIMINARY			
8-14-14 PRELIMINARY			
9-14-14 PRELIMINARY			
10-14-14 PRELIMINARY			
11-14-14 PRELIMINARY			
12-14-14 PRELIMINARY			

**KEBS, INC.** NYS ENGINEERING  
 2016 HASLETT ROAD, HASLETT, MI 48840  
 PH. 917-339-0104 FAX 917-339-8047

Project Office: 289-781-9850

**Trilogy - Novi**  
 SOIL EROSION CONTROL PLAN  
 SCALE: 1" = 50' DESIGNER: LOCATION: SECTION 14  
 DATE: 4-11-14 PROJECT MGR. SHEET 7 OF 18  
 AUTHORIZED BY: JOB #  
 DMK DEVELOPMENT GROUP, LLC 87456

### E8 PERMANENT SEEDING SPECIFICATIONS

**When**

- To reduce stabilization or temporary seeding areas or when an area needs permanent stabilization following completion of construction.
- Use seed and fertilizer application correct seeding and spacing or reseeded problem.
- Within 5 days of final grade.

**Why**

- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

**Where**

- Used on construction and earth change sites which require permanent vegetative stabilization.

**How**

1. Prepare 5000 psi wet construction joints to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass seed ground or approved cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed producer and with consideration of soil type, light, moisture, wind, and other site specific conditions.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.5.
6. Prepare a 3-5" seed depth, with the top 3-4" consisting of topsoil.
7. Slope steeper than 1:3 should be hydroseeded.
8. Apply seed as soon as possible after needed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical sowing.
9. Mow immediately after seeding.
10. Do not mow areas for one week after the growing season, using which will disrupt the water and begin growing to form on site conditions become.

**MAINTENANCE**

- Check seed coverage and establish with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

**LIMITATIONS**

- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

**PERMANENT SEEDING SPECIFICATION**

SEEDS ALL CONTAINS AREAS WITH THE FOLLOWING SEED MIXTURE OF APPROVED EQUAL. MINIMUM ONLY - USE EQUIVALENTS AND FERTILIZERS. SEE SPECIFICATIONS AT A RATE OF 3 LBS/1000 SQ YD.

**APPLY SILT STOP OR APPROVED BACKFILL TO SEED MIX.**

**CONSTRUCTION SPECIFICATIONS**

Grass Species	Seed Rate (lb/1000 sq yd)	Fertilizer Rate (lb/1000 sq yd)	Watering Frequency
Perennial Ryegrass	4.75 - 6.25	1.0 - 1.5	1x/week
Perennial Fescue	4.75 - 6.25	1.0 - 1.5	1x/week
Perennial Bluegrass	4.75 - 6.25	1.0 - 1.5	1x/week
Perennial Clover	4.75 - 6.25	1.0 - 1.5	1x/week

**CONSTRUCTION SPECIFICATIONS**

Grass Species	Seed Rate (lb/1000 sq yd)	Fertilizer Rate (lb/1000 sq yd)	Watering Frequency
Perennial Ryegrass	4.75 - 6.25	1.0 - 1.5	1x/week
Perennial Fescue	4.75 - 6.25	1.0 - 1.5	1x/week
Perennial Bluegrass	4.75 - 6.25	1.0 - 1.5	1x/week
Perennial Clover	4.75 - 6.25	1.0 - 1.5	1x/week

**CONSTRUCTION SPECIFICATIONS**

Grass Species	Seed Rate (lb/1000 sq yd)	Fertilizer Rate (lb/1000 sq yd)	Watering Frequency
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Perennial Clover	4.75 - 6.25	1.0 - 1.5	1x/week

### E8 PERMANENT SEEDING SPECIFICATIONS

**When**

- To reduce stabilization or temporary seeding areas or when an area needs permanent stabilization following completion of construction.
- Use seed and fertilizer application correct seeding and spacing or reseeded problem.
- Within 5 days of final grade.

**Why**

- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

**Where**

- Used on construction and earth change sites which require permanent vegetative stabilization.

**How**

1. Prepare 5000 psi wet construction joints to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass seed ground or approved cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed producer and with consideration of soil type, light, moisture, wind, and other site specific conditions.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.5.
6. Prepare a 3-5" seed depth, with the top 3-4" consisting of topsoil.
7. Slope steeper than 1:3 should be hydroseeded.
8. Apply seed as soon as possible after needed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical sowing.
9. Mow immediately after seeding.
10. Do not mow areas for one week after the growing season, using which will disrupt the water and begin growing to form on site conditions become.

**MAINTENANCE**

- Check seed coverage and establish with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

**LIMITATIONS**

- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

**PERMANENT SEEDING SPECIFICATION**

SEEDS ALL CONTAINS AREAS WITH THE FOLLOWING SEED MIXTURE OF APPROVED EQUAL. MINIMUM ONLY - USE EQUIVALENTS AND FERTILIZERS. SEE SPECIFICATIONS AT A RATE OF 3 LBS/1000 SQ YD.

**APPLY SILT STOP OR APPROVED BACKFILL TO SEED MIX.**

**CONSTRUCTION SPECIFICATIONS**

Grass Species	Seed Rate (lb/1000 sq yd)	Fertilizer Rate (lb/1000 sq yd)	Watering Frequency
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### E9 MULCH BLANKETS

**When**

- When needed areas are subject to erosion surface from, severe wind, or to prevent non-regulated erosion or areas during the winter.

**Why**

- Prevents exposed areas from being eroded from rain or wind, holds soil moisture to allow for seed germination and reduces soil erosion and degradation of protected areas.

**Where**

- Used on exposed areas, newly seeded areas, new ditch bottoms, and other areas subject to erosion.

**How**

1. Prepare subgrade to proper grade and compaction requirements.
2. Remove rocks, roots, soil nodules, or other debris from surface subject to erosion stabilization.
3. Spread or roll seed.
4. Compact with erosion control matting to make tight contact with subgrade.
5. Apply seed as soon as possible after needed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical sowing.
6. Level the surface over or horizontally across the slope.

**MAINTENANCE**

- Check depth of mulch blanket to ensure coverage of both sides of ditch.
- Remove sediment from the forebay of ditch design depth is 50% full of sediment.
- Liability concerns based on failure of the basin and feeding of adjacent properties.
- May require an effective means to reduce sediment.
- Typically, mulch blankets are used for drainage of 5 acres or more.
- Effective in removing sediment down to the medium soil size fraction, however, not effective with the soil and clay particles entering between them.

**LIMITATIONS**

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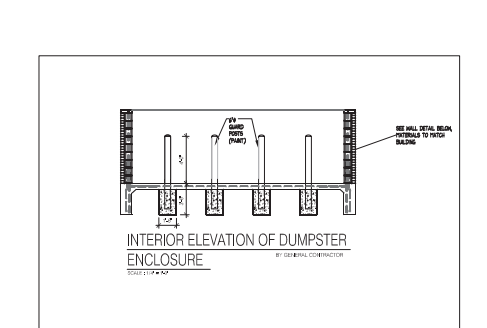
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### S51 SILT FENCE SPECIFICATIONS

**When**

- A temporary measure for preventing sediment movement.

**Why**

- Used to prevent sediment erosion, suspended in runoff from leaving an earth change area.
- Use adjacent to critical areas, setbacks, base of slopes, and watercourses.

**Where**

- Install adjacent to a contour.

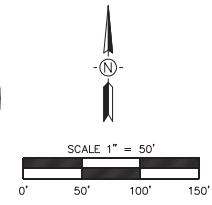
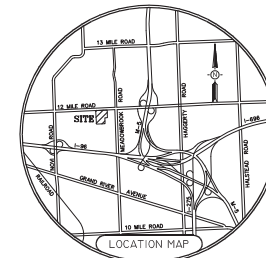
**How**

1. Silt fence should be made of woven ge



PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

OAKLAND COUNTY ROAD DEPARTMENT NOTES:  
 1. CURB & GUTTER FINISH FOR THE WEST SIDE OF SEWER MAIN SHALL EXTEND TO THE NEAREST EXISTING ADJACENT CURB.  
 2. FOR THE DRIVEWAY INSTALLATION, CURB & GUTTER REMOVAL AND REPLACEMENT SHALL ALSO BE THE RESPONSIBILITY OF THE EX. OWNER & UTILITIES SHALL BE RECONSTRUCTED IN ACCORDANCE WITH ADJACENT DRIVEWAY. THE NEW CURB & GUTTER SHALL BE SLOPPED INTO THE EXISTING CURB & GUTTER AT EACH END WITH A MINIMUM OF 9-INCHES MINIMUM.

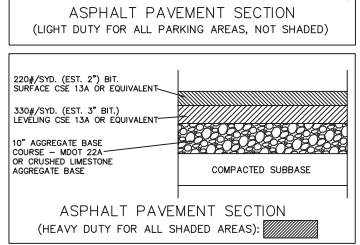
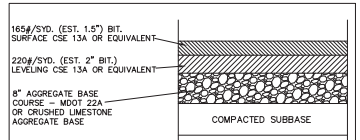
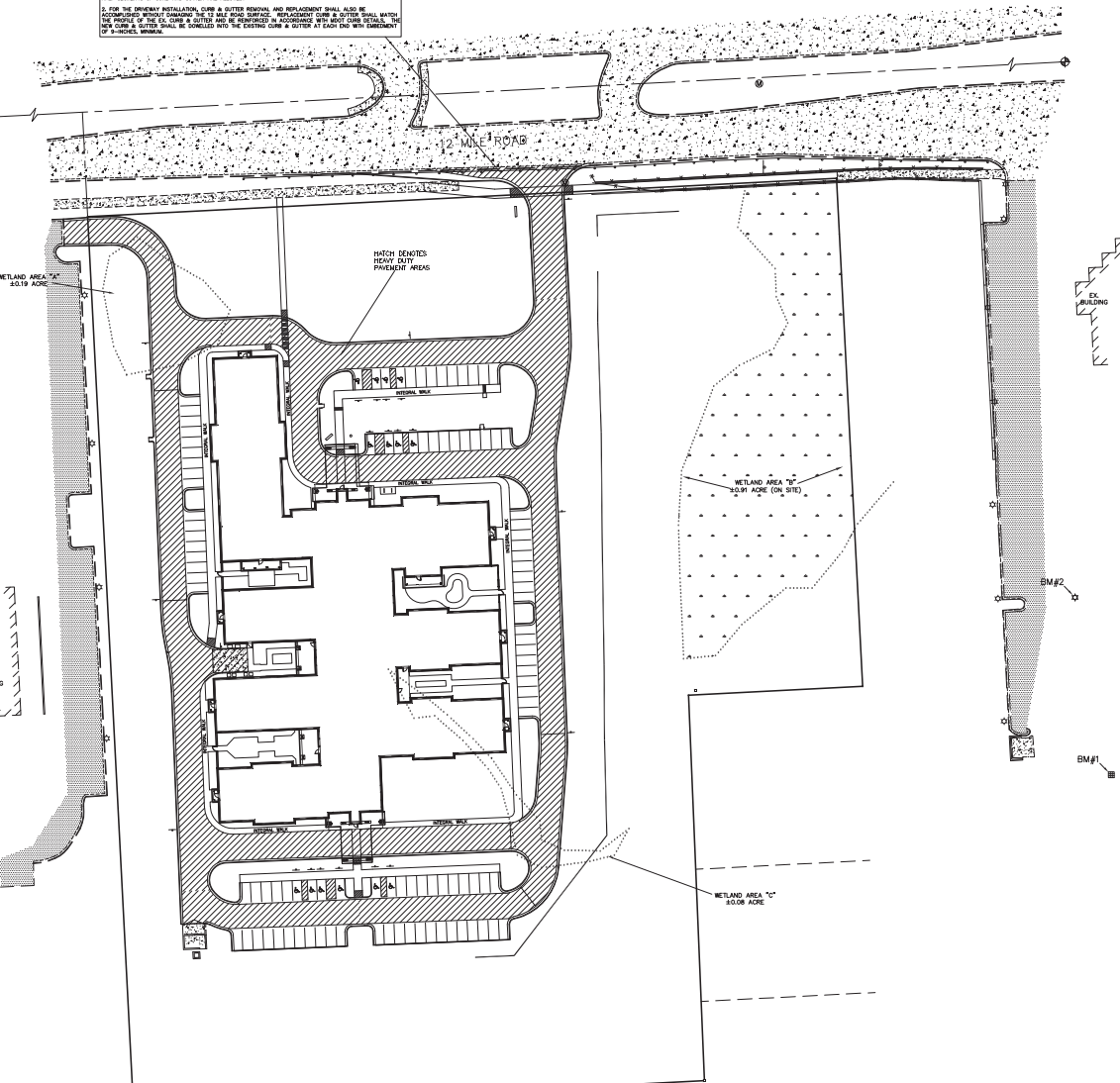


**LEGAL DESCRIPTION:**

A parcel of land in the Northeast 1/4 of Section 14, T1N, R1E, City of Novi, Oakland County, Michigan, the surveyed boundary of said parcel described as: Commencing at the North 1/4 corner of said Section 14; thence N89°24'35\"/>

- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
  - = FOUND IRON AS NOTED
  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
  - = ASPHALT
  - = CONCRETE
  - = GRAVEL
  - = EXISTING SPOT ELEVATION
  - = EXISTING CONTOUR ELEVATION
  - = SANITARY SEWER
  - = STORM SEWER
  - = WATER LINE
  - = GAS LINE
  - = UNDERGROUND TELEPHONE
  - = UNDERGROUND TELEVISION
  - = UNDERGROUND ELECTRIC
  - = OVERHEAD WIRES
  - = EDGE OF WOODS
  - = DECIDUOUS TREE
  - = CONIFEROUS TREE
- LEGEND**
- = PROPOSED WATER MAIN
  - = PROPOSED SANITARY SEWER
  - = PROPOSED STORM SEWER
  - = PROPOSED HYDRANT
  - = PROPOSED GATE VALVE
  - = PROPOSED SAN. M.H.
  - = PROPOSED STORM M.H.
  - = PROPOSED C.B.
  - = PROPOSED GRADES
  - = PROPOSED FIRST FLOOR ELEV.
  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF GROUND ELEV.
  - = PROPOSED TOP OF PAVT. ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = QUOTED S.E.C.G. KEYING SYSTEM

- EX. SEWER INVENTORIES:**
- CATCH BASIN #100  
 INLET EL. 934.87  
 6" SOUTH 931.04  
 12" NORTH 930.04
- CATCH BASIN #101  
 INLET EL. 929.32  
 6" WEST 924.60  
 6" EAST 924.59  
 18" NORTH 924.07
- CATCH BASIN #102  
 INLET EL. 925.56  
 8" SW 921.15  
 8" SE ??  
 18" NORTH 918.58
- EX. SAN A (PER AS-BUILTS)  
 (CHECK MARKS)  
 8" N 916.88  
 8" W 916.58  
 I.E. PROP. 8" E 924.02



NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT  
 NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.



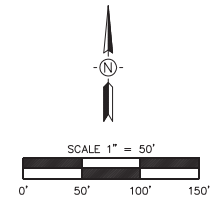
- BENCHMARKS:**
- BM#1 - SQUARE CATCHBASIN ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY, 450' EAST OF DUMPSITER ELEVATION - 920.64 NAVD 88
- BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, 4130' NORTH OF DUMPSITER ELEVATION - 925.80 NAVD 88

SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI 48377

REVISIONS 2-17-14 CONCEPT 3-6-14 PRELIMINARY SITE PLAN SUBMITTAL 2-18-14 PRELIMINARY SITE PLAN RE-SUBMITTAL		KEBS, INC. IN'S ENGINEERING 2116 HASLETT ROAD, HASLETT, MI 48840 PH. 917-339-0114 FAX. 917-339-8047 Novi Office PH. 249-781-8800	
SCALE: 1" = 50' DATE: 4-11-14 AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC		DESIGNER: PROJECT MGR. SHEET 9 OF 18 LOCATION: SECTION 14 JOB # 87456	

# PRELIMINARY SITE PLANS FOR: Trilogy - Novi

THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN



NO.	DESCRIPTION	DATE	BY	CHKD.
1	PRELIMINARY SITE PLAN	04/11/14	...	...
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- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
  - = FOUND IRON AS NOTED
  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
  - = ASPHALT
  - = CONCRETE
  - = GRAVEL
  - = EXISTING SPOT ELEVATION
  - = EXISTING CONTOUR ELEVATION
  - = SANITARY SEWER
  - = STORM SEWER
  - = WATER LINE
  - = GAS LINE
  - = UNDERGROUND TELEPHONE
  - = UNDERGROUND TELEVISION
  - = UNDERGROUND ELECTRIC
  - = OVERHEAD WIRES
  - = EDGE OF WOODS
  - = DECIDUOUS TREE
  - = CONIFEROUS TREE
  - = SANITARY MANHOLE
  - = DRAINAGE MANHOLE
  - = ELECTRIC MANHOLE
  - = MANHOLE
  - = CATCHBASIN
  - = SANITARY CLEANOUT
  - = VALVE
  - = UTILITY POLE
  - = LIGHT POLE
  - = GUY WIRE
  - = GUY WIRE
  - = UTILITY PEDESTAL
  - = TRANSFORMER
  - = ELECTRIC METER
  - = GAS METER
  - = WATER METER
  - = SIGN
  - = POST
  - = GUARD RAIL
- LEGEND**
- = PROPOSED WATER MAIN
  - = PROPOSED SANITARY SEWER
  - = PROPOSED STORM SEWER
  - = PROPOSED HYDRANT
  - = PROPOSED GATE VALVE
  - = PROPOSED SAN. M.H.
  - = PROPOSED STORM M.H.
  - = PROPOSED C.B.
  - = PROPOSED GRADES
  - = PROPOSED FIRST FLOOR ELEV.
  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF GROUND ELEV.
  - = PROPOSED TOP OF PAVT. ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = QUOTED S.E.C. KEYING SYSTEM

**EX. SEWER INVENTORIES:**

CATCH BASIN #100  
INLET EL. 934.67  
6" SOUTH 931.04  
12" NORTH 930.04

CATCH BASIN #101  
INLET EL. 929.32  
6" WEST 924.60  
6" EAST 924.59  
18" NORTH 924.07

CATCH BASIN #102  
INLET EL. 925.56  
9" SE 921.15  
9" SE 918.58

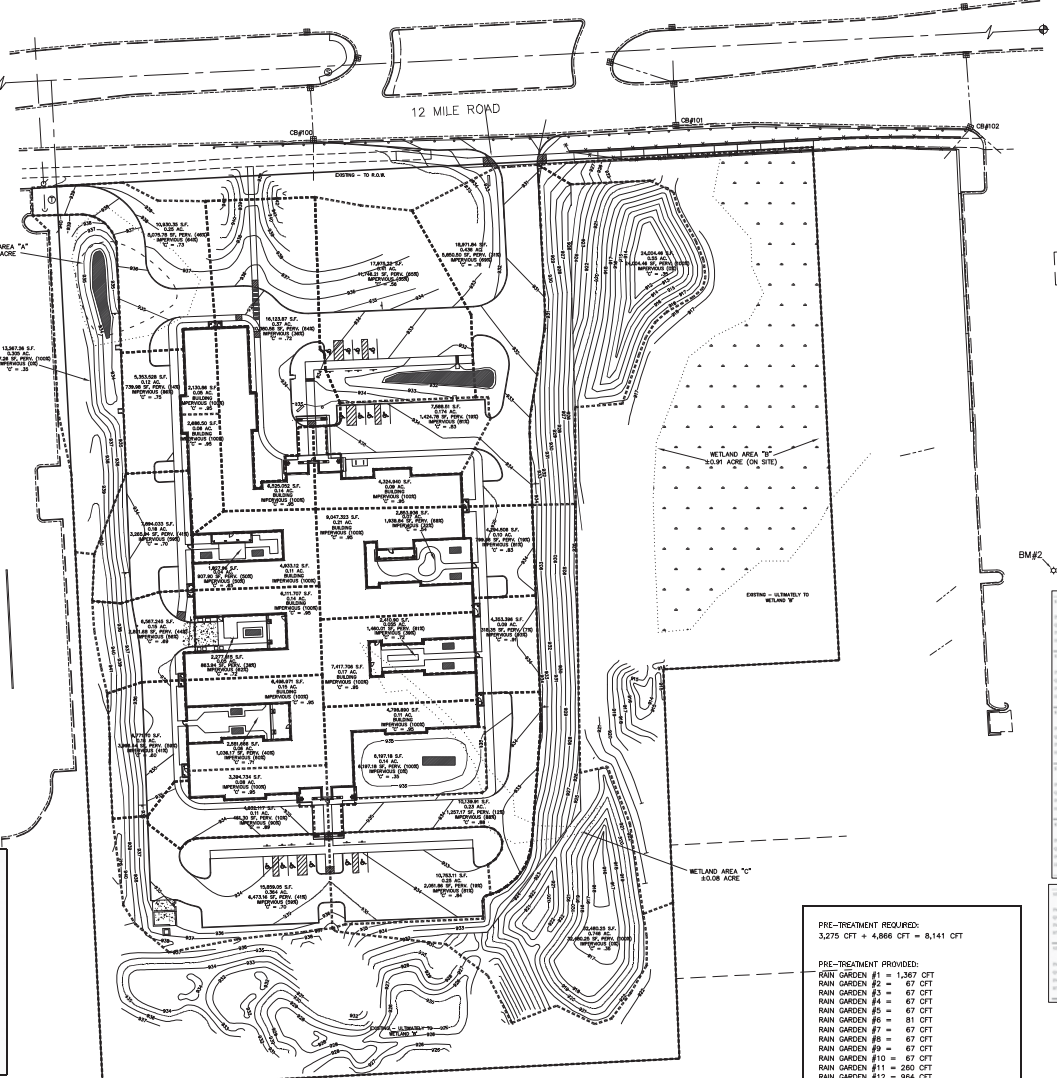
EX. SAN A (PER AS-BUILTS)  
1" X 6" 916.68  
8" N 916.58  
1" X 6" 916.58  
I.E. PROP. 8" E 924.02

**SPILLWAY VELOCITY AT 2" DEPTH**

NO.	DESCRIPTION	DATE	BY	CHKD.
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NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT

NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.



**STORMWATER CALCULATIONS - NORTH POND**

1. CALCULATE TOTAL DETENTION REQUIREMENTS FOR THE NORTH END.

TOTAL AREA TO DETENTION = 2.91 ACRES (SEE DRAINAGE PLAN)

CALCULATE "C" FACTOR [SEE INDIVIDUAL CALCULATIONS]

"C" FACTOR (CALCULATED FROM DRAIN MAP)  
 $C = \frac{100 - P}{10} = \frac{100 - 1.81}{10} = 0.82$   
 $C = \frac{100 - P}{10} = \frac{100 - 2.91}{10} = 0.82$

APPROXIMATE TIME OF CONCENTRATION: 490 FT. OF PIPEW @ 2.5 FPS = 196 SECONDS  
 TIME OF CONCENTRATION = 10 MINUTES +  $\frac{196}{60} = 13.27$  MINUTES

FIRST FLUSH REQUIRED =  $1.815 \times 2.91 \times 0.82 = 3.275$  CFT [SEE BELOW]

BANK FULL REQUIRED =  $1.815 \times 2.91 \times 43,560 \text{ (sq ft/acre)} \times 0.82 = 18,310$  CFT

100-YR STORAGE VOLUME REQUIRED =  $C \times 2.91 \text{ (ACRES)} \times 0.2419 \times 2.91 \times 0.82 = 1.8372$   
 $T = -25 + \frac{18,310}{1,324.7} = 181.47$  AND  $V_S = 18,310 - 400T = 181,47 - 425 = 177,220$

VS =  $\frac{18,310 \times (181.47 - 40)}{0.2419(181.47)} = 12,746$  CFT/AC/MP  
 181,47 - 425 = 177,045

100-YR STORAGE VOLUME = 12,746 + (2.91) × (0.82) = 22,096 CFT

**PROPOSED DETENTION VOLUME (NORTH POND)**

ELEV.	AREA	VOLUME BETWEEN ELEVATIONS
912	1,236 SF	1,292 CFT
913	1,946 SF	2,470 CFT
914	3,075 SF	3,867 CFT
915	4,353 SF	5,102 CFT
916	5,882 SF	6,756 CFT
917	7,634 SF	8,636 CFT
918	9,638 SF	11,945 CFT

24,163 CFT (FROM 914-918)

**STORMWATER CALCULATIONS - SOUTH POND**

1. CALCULATE TOTAL DETENTION REQUIREMENTS FOR THE SOUTH END.

TOTAL AREA TO DETENTION = 3.83 ACRES (SEE DRAINAGE PLAN)

CALCULATE "C" FACTOR [SEE INDIVIDUAL CALCULATIONS]

"C" FACTOR (CALCULATED FROM DRAIN MAP)  
 $C = \frac{100 - P}{10} = \frac{100 - 2.91}{10} = 0.70$   
 $C = \frac{100 - P}{10} = \frac{100 - 3.83}{10} = 0.70$

APPROXIMATE TIME OF CONCENTRATION: 740 FT. OF PIPEW @ 2.5 FPS = 296 SECONDS  
 TIME OF CONCENTRATION = 10 MINUTES +  $\frac{296}{60} = 14.93$  MINUTES

FIRST FLUSH REQUIRED =  $1.815 \times 3.83 \times 0.70 = 4.866$  CFT [SEE BELOW]

BANK FULL REQUIRED =  $1.815 \times 3.83 \times 43,560 \text{ (sq ft/acre)} \times 0.70 = 15,834$  CFT

100-YR STORAGE VOLUME REQUIRED =  $C \times 3.83 \text{ (ACRES)} \times 0.2419 \times 3.83 \times 0.70 = 2.85$   
 $T = -25 + \frac{15,834}{1,324.7} = 194.37$  AND  $V_S = 15,834 - 400T = 15,834 - 152,000 = -136,166$

VS =  $\frac{15,834 \times (194.37 - 40)}{0.2419(194.37)} = 12,953.5$  CFT/AC/MP  
 154,37 - 425 = 153,945

100-YR STORAGE VOLUME = 12,953.5 + (3.83) × (0.70) = 24,728 CFT

**PROPOSED DETENTION VOLUME (SOUTH POND)**

ELEV.	AREA	VOLUME BETWEEN ELEVATIONS
916	610 SF	2,154 CFT
917	3,088 SF	4,280 CFT
918	5,050 SF	5,746 CFT
919	6,480 SF	7,311 CFT
920	8,130 SF	9,045 CFT
921	9,958 SF	11,015 CFT
922	12,072 SF	13,621 CFT

39,621 CFT

**PRE-TREATMENT PROVIDED:**

- RAIN GARDEN #1 = 1,267 CFT
- RAIN GARDEN #2 = 67 CFT
- RAIN GARDEN #3 = 67 CFT
- RAIN GARDEN #4 = 67 CFT
- RAIN GARDEN #5 = 67 CFT
- RAIN GARDEN #6 = 81 CFT
- RAIN GARDEN #7 = 67 CFT
- RAIN GARDEN #8 = 67 CFT
- RAIN GARDEN #9 = 67 CFT
- RAIN GARDEN #10 = 67 CFT
- RAIN GARDEN #11 = 260 CFT
- RAIN GARDEN #12 = 984 CFT
- SOUTH POND = 2,010 CFT
- NORTH POND = 4,271 CFT

**PRE-TREATMENT REQUIRED:**  
 3,275 CFT + 4,866 CFT = 8,141 CFT

**TOTAL PROVIDED = 9,289 CFT > 8,141 CFT**

SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI 48377

E-87486  
87166-10P-1END

REVISIONS	DATE	DESCRIPTION
2-17-14 CONCEPT	2-17-14	CONCEPT
3-6-14 PRE-APPLICATION SUBMITTAL	3-6-14	PRE-APPLICATION SUBMITTAL
4-11-14 PRELIMINARY SITE PLAN SUBMITTAL	4-11-14	PRELIMINARY SITE PLAN SUBMITTAL
5-14-14 PRELIMINARY SITE PLAN RE-SUBMITTAL	5	

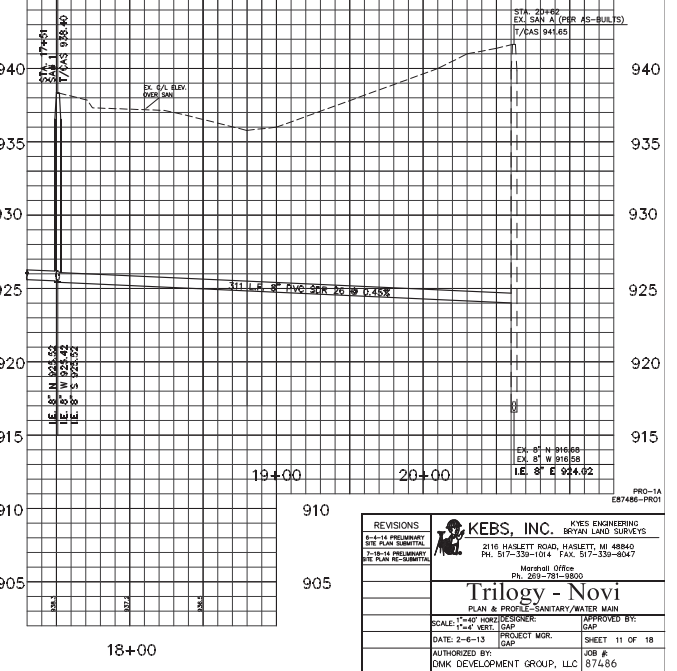
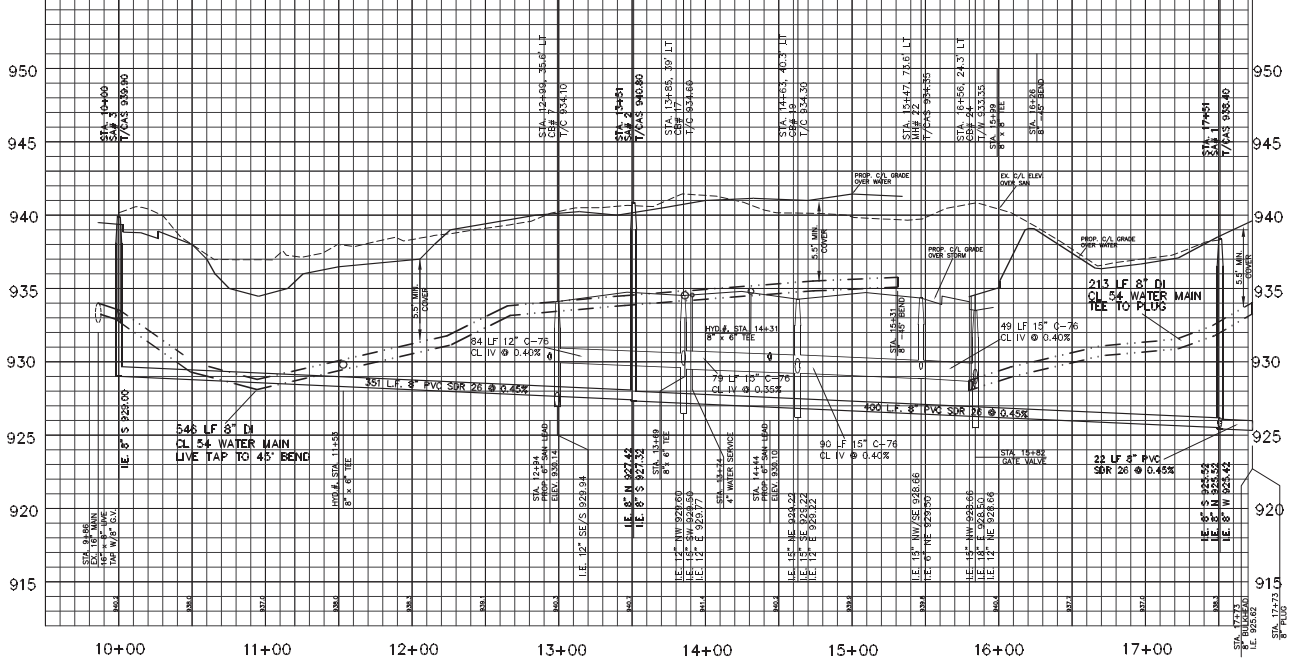
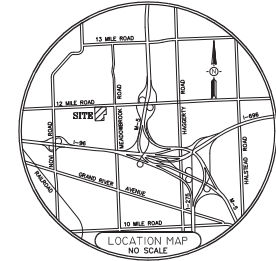
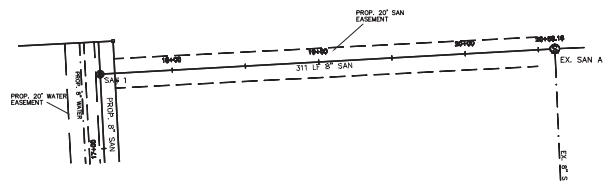
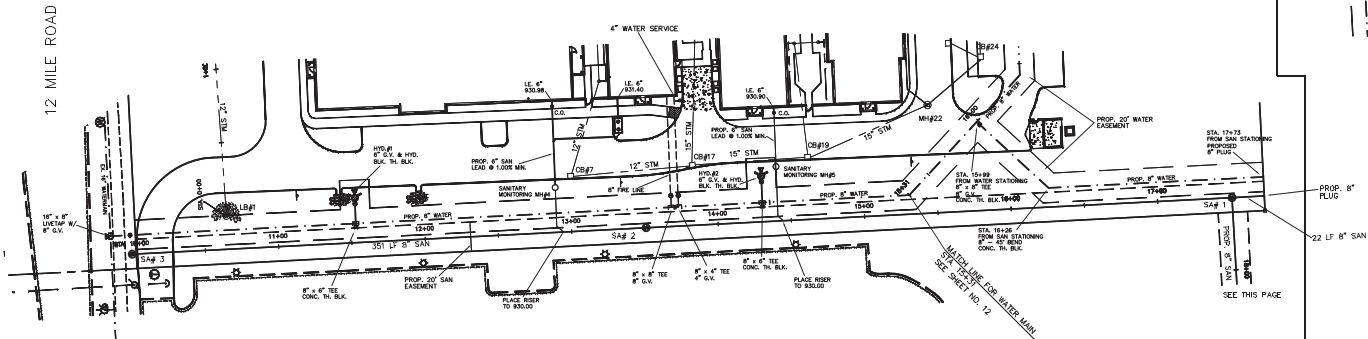
**EX. SEWER INVENTORIES:**

- CATCH BASIN #100  
INLET EL. 934.67  
6" SOUTH 931.04  
12" NORTH 930.04
- CATCH BASIN #101  
INLET EL. 929.32  
6" WEST 924.60  
6" EAST 924.59  
18" NORTH 924.07
- CATCH BASIN #102  
INLET EL. 925.56  
8" SW 921.15  
8" SE 918.58  
18" NORTH 918.58
- EX. SAN A (PER AS-BUILTS)  
T/CAS 941.65  
8" N 916.69  
8" W 916.58

**BENCHMARKS:**

- BM#1 - SQUARE CATCHBASIN ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY, ±50' EAST OF DUMPSTER  
ELEVATION - 920.64 NAVD 88
- BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, ±130' NORTH OF DUMPSTER  
ELEVATION - 925.80 NAVD 88

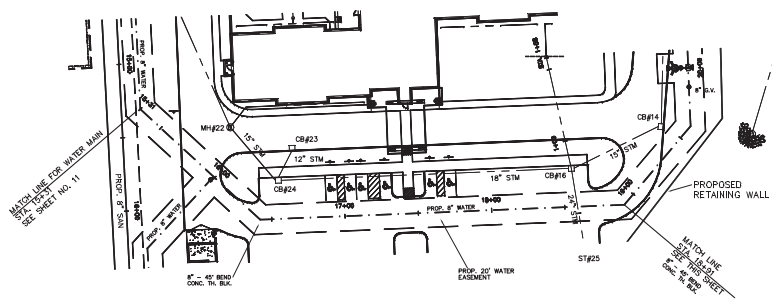
**TRILOGY SENIOR HEALTHCARE FACILITY**



<p>REVISIONS</p> <p>DATE: 2-6-13</p> <p>AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC</p>	<p><b>KEBS, INC.</b> NILES ENGINEERING</p> <p>2116 HASLETT ROAD, HASLETT, MI 48840 PH: 517-339-1014 FAX: 517-339-8847</p> <p>Project Office PH: 269-781-8800</p> <p><b>Trilogy - Novi</b> PLAN &amp; PROFILE - SANITARY/WATER MAIN</p> <p>DATE: 2-6-13 SCALE: 1"=4' VERT. 1"=40' HORIZ. PROJECT MGR. DMK JOB # 07456</p>	<p>APPROVED BY: GAP</p> <p>SHEET 11 OF 18</p> <p>87486-PROJ1</p>
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TRILGY SENIOR HEALTHCARE FACILITY

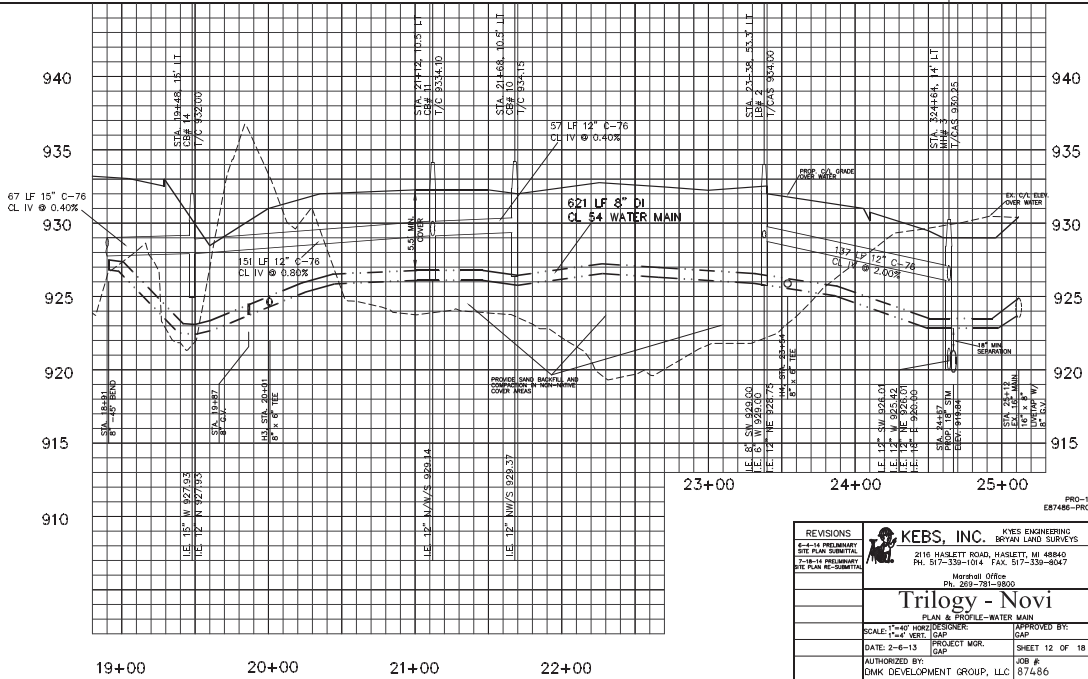
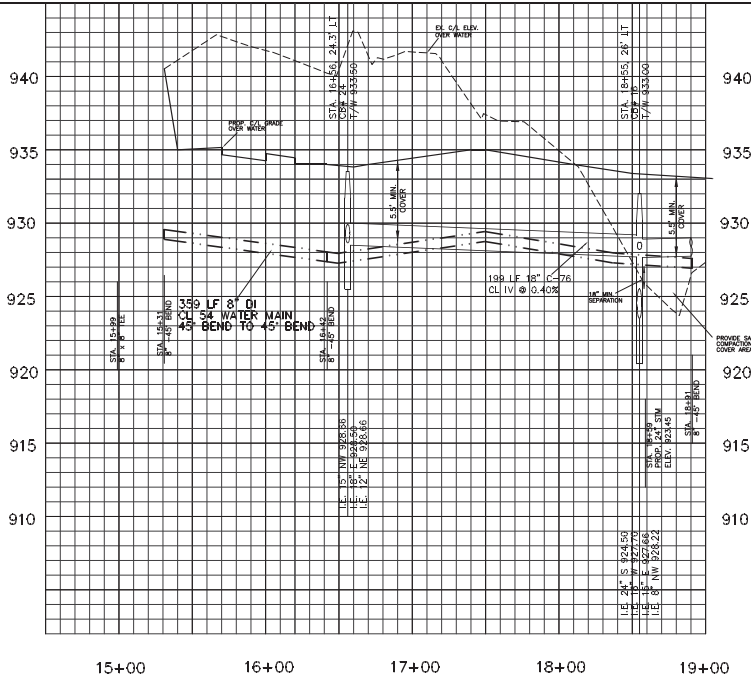
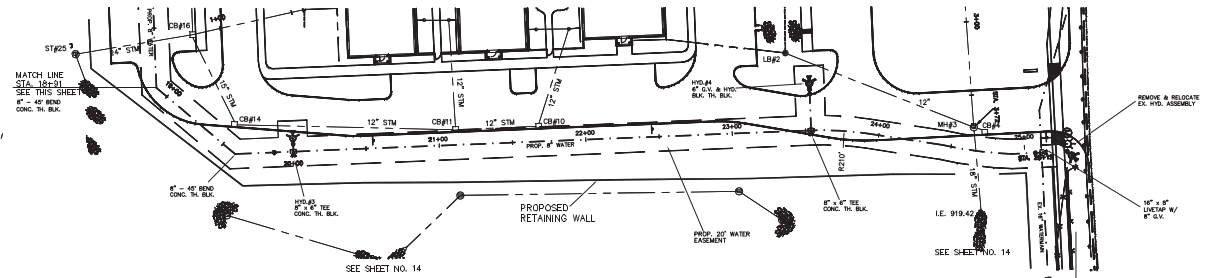


**BENCHMARKS:**  
 BM#1 - SQUARE CATCHBASIN ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY, ±50' EAST OF DUMPSTER ELEVATION - 920.64 NAVD 88  
 BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, ±130' NORTH OF DUMPSTER ELEVATION - 925.60 NAVD 88



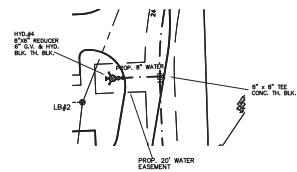
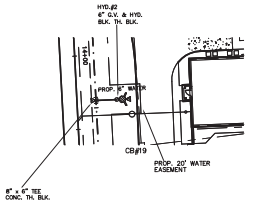
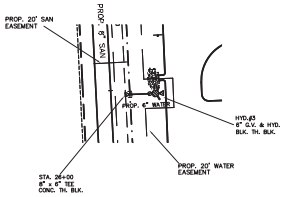
EX. SEWER INVENTORIES:  
 CATCH BASIN #100  
 INLET EL. 934.67  
 5' SOUTH 931.04  
 12' NORTH 930.04  
 CATCH BASIN #101  
 INLET EL. 929.32  
 6' WEST 924.60  
 6' EAST 924.59  
 18' NORTH 924.07  
 CATCH BASIN #102  
 INLET EL. 925.56  
 8' SW 921.15  
 8' SE 921.77  
 18' NORTH 918.58  
 EX. SAN A (PER AS-BUILTS)  
 7' OAS 941.65  
 8' N 916.68  
 8' W 916.58

TRILGY SENIOR HEALTHCARE FACILITY



REVISIONS 6-4-14 PRELIMINARY SITE PLAN SUBMITTAL 7-24-14 PRELIMINARY SITE PLAN RE-SUBMITTAL	<b>KEBS, INC.</b> KES ENGINEERING BRYAN LAND SURVEYS 2116 HASLETT ROAD, HASLETT, MI 48840 PH. 917-330-1014 FAX 917-330-8047 National Office PH. 269-781-8800
<b>Trilgy - Novi</b> PLAN & PROFILE-WATER MAIN	
SCALE: 1"=4' VERT. 1"=40' HORIZ. DATE: 2-6-13 PROJECT MGR. SHEET 12 OF 18 AUTHORIZED BY: JOB # DMK DEVELOPMENT GROUP, LLC 87456	

PROJ-18  
 ERT486-PROT



**BENCHMARKS:**

BM#1 - SQUARE CATCHBASIN ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY, ±50' EAST OF DUMPSTER  
ELEVATION - 920.64 NAVD 88

BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, ±130' NORTH OF DUMPSTER  
ELEVATION - 925.80 NAVD 88



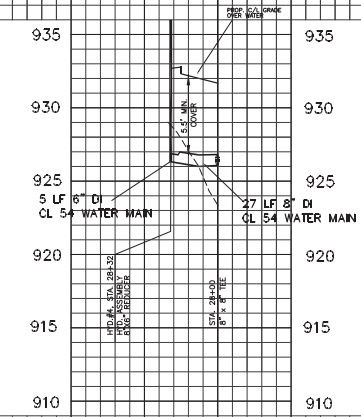
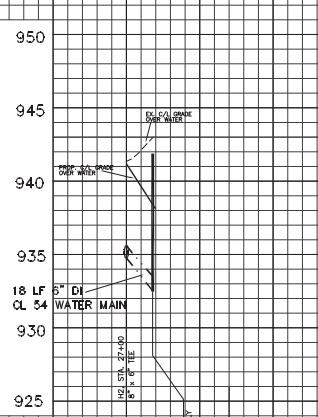
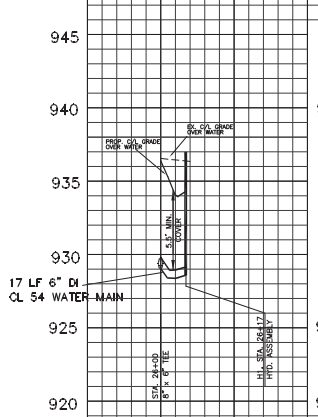
**EX. SEWER INVENTORIES:**

CATCH BASIN #100  
INLET EL. 924.67  
6" SOUTH 931.04  
12" NORTH 930.04

CATCH BASIN #101  
INLET EL. 929.32  
6" WEST 924.80  
6" EAST 924.59  
18" NORTH 924.07

CATCH BASIN #102  
INLET EL. 925.56  
6" SW 921.15  
6" SE 71  
18" NORTH 918.58

EX. SAN A (PER AS-BUILTS)  
4" N 916.65  
8" W 916.58



26+00

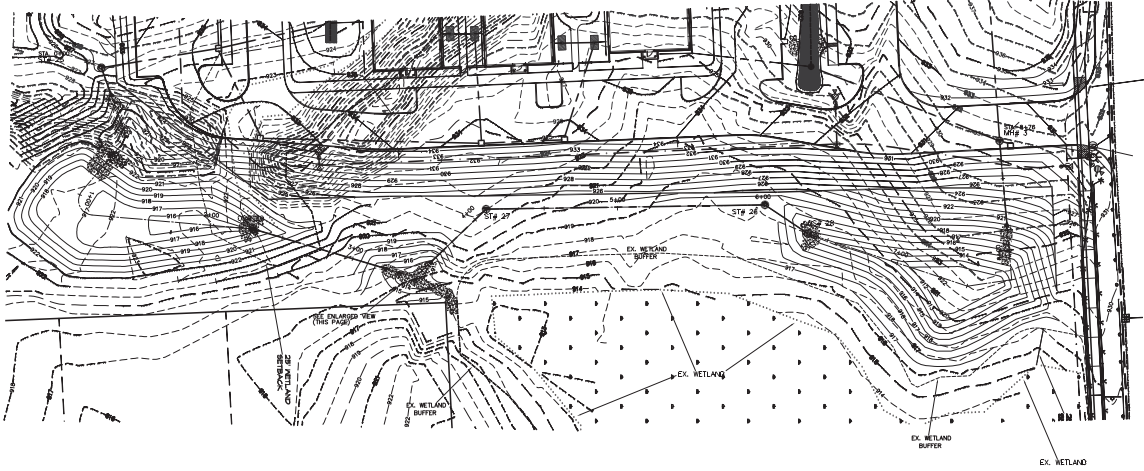
27+00

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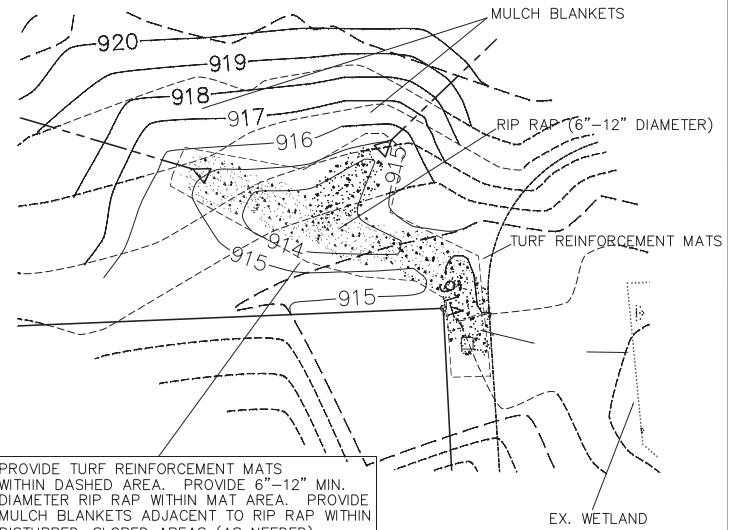
REVISIONS 2-4-13 PRELIMINARY SITE PLAN SUBMITTAL 2-18-13 PRELIMINARY SITE PLAN RE-SUBMITTAL	<b>KEBS, INC.</b> NYES ENGINEERING 2116 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-1014 FAX. 517-339-8047 Internal Office PH. 269-781-8800	APPROVED BY: [Signature]
SCALE: 1"=4' VERT. (CAP) DATE: 2-6-13 AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC		PROJECT MGR. [Signature] SHEET 13 OF 18 JOB # 87436

PROJ-10  
E87486-PROJ

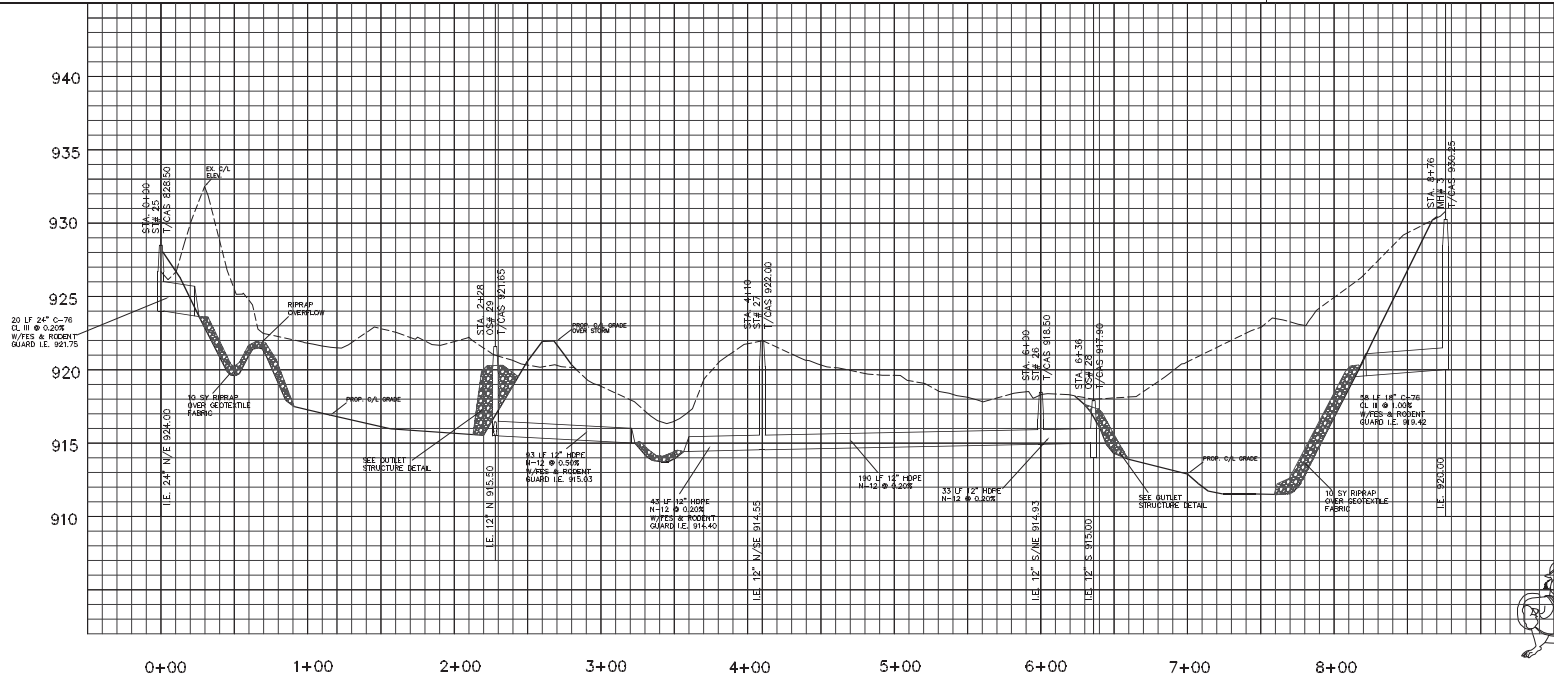
TRILOGY SENIOR HEALTHCARE FACILITY



SCALE = 1" = 10' (THIS VIEW ONLY)



PROVIDE TURF REINFORCEMENT MATS WITHIN DASHED AREA. PROVIDE 6"-12" MIN. DIAMETER RIP RAP WITHIN MAT AREA. PROVIDE MULCH BLANKETS ADJACENT TO RIP RAP WITHIN DISTURBED, SLOPED AREAS (AS NEEDED)



**BENCHMARKS:**  
 BM#1 - SQUARE CATCHBASIN ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY, ±50' EAST OF DUMPSTER  
 ELEVATION - 920.64 NAVD 88  
 BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, ±130' NORTH OF DUMPSTER  
 ELEVATION - 925.80 NAVD 88



REVISIONS 6-14-14 PRELIMINARY SITE PLAN SUBMITTAL 7-28-14 PRELIMINARY SITE PLAN RE-SUBMITTAL	<b>KEBS, INC.</b> KYES ENGINEERING 2016 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-1014 FAX 517-339-8047 National Office PH. 269-781-9800
<b>Trilogy - Novi</b> PLAN & PROFILE-STORM SEWER	
SCALE: 1"=4' VERT. GAP DATE: 2-6-13 PROJECT MGR. GAP AUTHORIZED BY: PROJECT MGR. GAP JOB # DMK DEVELOPMENT GROUP, LLC 87456	

PROJ-18  
 E87486-PROT

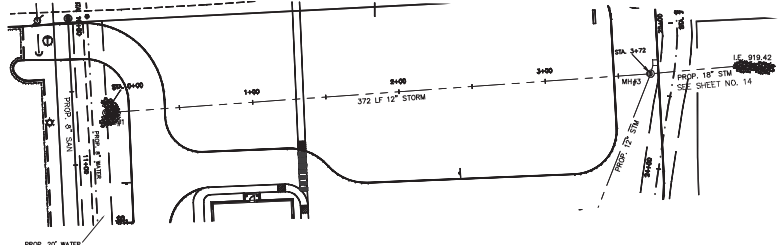
EX. SEWER INVENTORIES:

- CATCH BASIN #100
- INLET EL. 934.67
- 6" SOUTH 931.04
- 12" NORTH 930.04
- CATCH BASIN #101
- INLET EL. 929.32
- 6" WEST 924.60
- 8" EAST 924.59
- 18" NORTH 924.07
- CATCH BASIN #102
- INLET EL. 925.56
- 8" SW 921.15
- 8" SE 921.15
- 18" NORTH 918.58
- EX. SAN A (PER AS-BUILTS)
- T/CAS 941.65
- 8" N 916.68
- 8" W 916.58



BENCHMARKS:

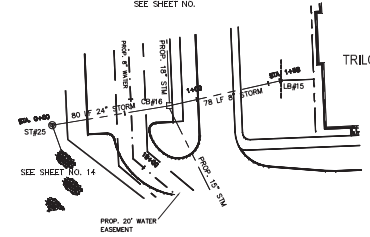
- BM#1 - SQUARE CATCHBASIN ON SOUTH EDGE OF PARKING LOT EAST OF PROPERTY, ±50' EAST OF DUMPSTER ELEVATION - 920.64 NAVD 88
- BM#2 - "X" ON CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, ±130' NORTH OF DUMPSTER ELEVATION - 925.80 NAVD 88



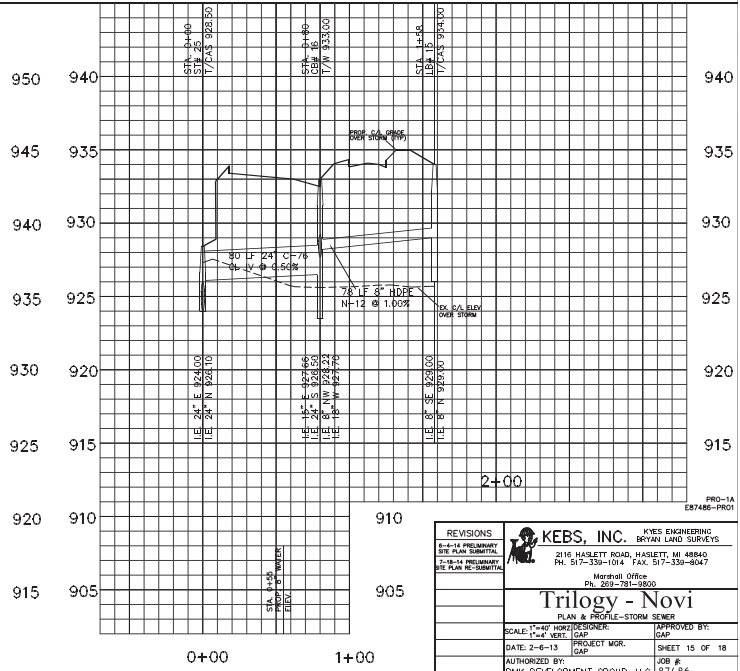
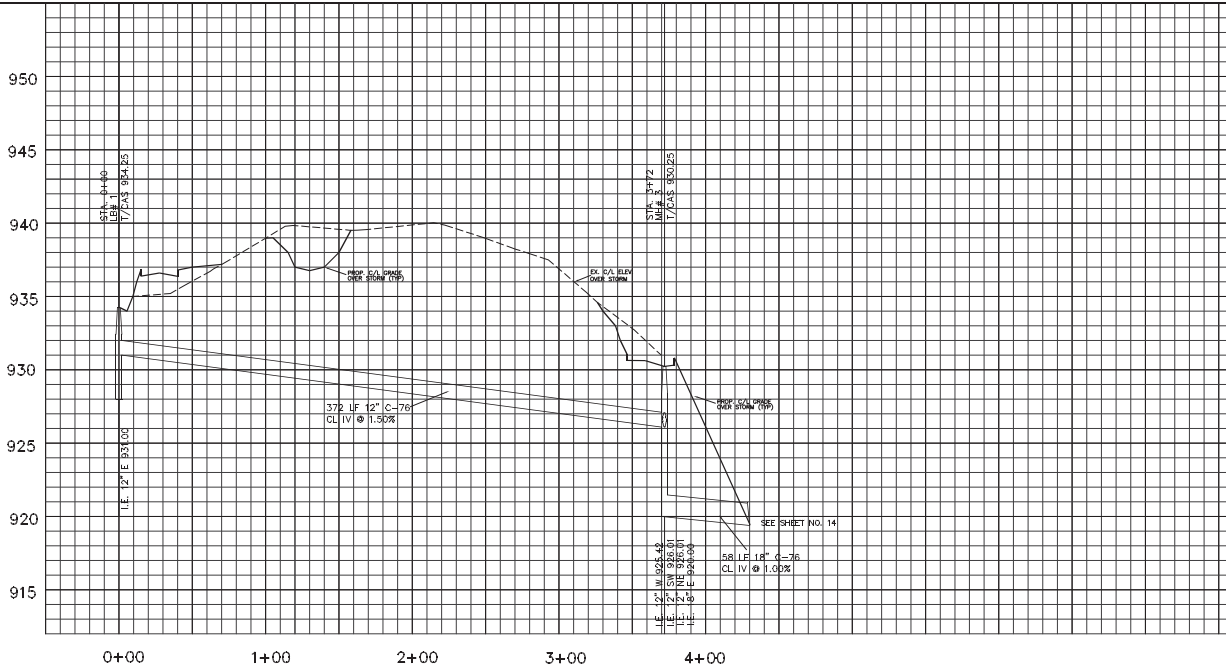
TRILGY SENIOR HEALTHCARE FACILITY



LOCATION MAP NO SCALE

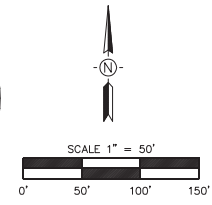
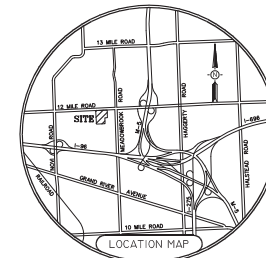


TRILGY SENIOR HEALTHCARE FACILITY



REVISIONS	KEBS, INC. IN'S ENGINEERING BRYAN LAND SURVEYS
DATE: 2-6-13	2016 HASLETT ROAD, HASLETT, MI 48840 PH: 517-339-1014 FAX: 517-339-8047
AUTHORIZED BY:	Internal Office PH: 269-781-8800
<b>Trilogy - Novi</b>	
PLAN & PROFILE - STORM SEWER	
SCALE: 1"=4' VERT. 1"=40' HORIZ.	APPROVED BY:
DATE: 2-6-13	PROJECT MGR. SHEET 15 OF 18
AUTHORIZED BY:	JOB #
DMK DEVELOPMENT GROUP, LLC	87456

PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN



- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
  - = FOUND IRON AS NOTED
  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
  - = ASPHALT
  - = CONCRETE
  - = GRAVEL
  - = EXISTING SPOT ELEVATION
  - = EXISTING CONTOUR ELEVATION
  - = SANITARY SEWER
  - = STORM SEWER
  - = WATER LINE
  - = GAS LINE
  - = UNDERGROUND TELEPHONE
  - = UNDERGROUND TELEVISION
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  - = OVERHEAD WIRES
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  - = GUY POLE
  - = GUY WIRE
  - = UTILITY PEDESTAL
  - = TRANSFORMER
  - = ELECTRIC METER
  - = GAS METER
  - = WATER METER
  - = SIGN
  - = POST
  - = GUARD RAIL

- LEGEND**
- = PROPOSED WATER MAIN
  - = PROPOSED SANITARY SEWER
  - = PROPOSED STORM SEWER
  - = PROPOSED HYDRANT
  - = PROPOSED DATE VALVE
  - = PROPOSED SAN. M.H.
  - = PROPOSED STORM M.H.
  - = PROPOSED C.B.
  - = PROPOSED GRADES
  - = PROPOSED FIRST FLOOR ELEV.
  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF GROUND ELEV.
  - = PROPOSED TOP OF PAVT. ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = QUOTED S.E.C. KEYING SYSTEM

- EX. SEWER INVENTORIES:**
- CATCH BASIN #100**  
 INLET EL. 934.87  
 6" SOUTH 931.04  
 12" NORTH 930.04
- CATCH BASIN #101**  
 INLET EL. 929.32  
 6" WEST 924.60  
 6" EAST 924.59  
 18" NORTH 924.07
- CATCH BASIN #102**  
 INLET EL. 925.56  
 8" S/E 921.15  
 8" SE ??  
 18" NORTH 918.58
- EX. SAN A (PER AS-BUILTS)**  
 (CHECK M.A.S.)  
 8" N 916.68  
 8" W 916.58  
 I.E. PROP. 8" E 924.02

APPROXIMATE LOCATION OF REGULATED WOODLANDS

APPROXIMATE LOCATION OF REGULATED WOODLANDS

**BENCHMARKS**

BM#1 - 55.44' CATCHSTAIN ON SOUTH EDGE OF DRIVEWAY EAST OF PROPERTY, 55' EAST OF DIAMETER, ELEVATION = 920.84 (MAY 88)

BM#2 - 17" CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, 27'-0" NORTH OF DRIVEWAY, ELEVATION = 925.89 (MAY 88)

SEE TREE INVENTORY FOR LISTING OF ALL TREE NUMBERS

**LEGAL DESCRIPTION:**

A parcel of land in the Northeast 1/4 of Section 14, T1N, R1E, City of Novi, Oakland County, Michigan, the surveyed boundary of said parcel described as: Commencing at the North 1/4 corner of said Section 14; thence N89°24'35"E along the North line of said Section 14 a distance of 1486.73 feet; thence S00°35'25"E perpendicular to said North line 90.00 feet to the point of beginning of this description; thence N89°24'35"E parallel with said North line (645.33 feet; thence S00°35'25"E perpendicular to said North line 437.68 feet; thence S89°24'35"W parallel with said North line 150.00 feet; thence S00°01'05"E 332.04 feet; thence S89°24'35"W parallel with said North line 492.01 feet; thence N00°35'25"W perpendicular to said North line 772.00 feet to the point of beginning; said parcel containing 10.25 acres, more or less; said parcel subject to all easements and restrictions if any.

NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT

NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.



SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI 48377

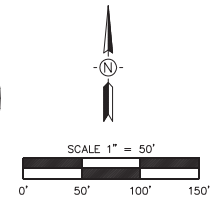
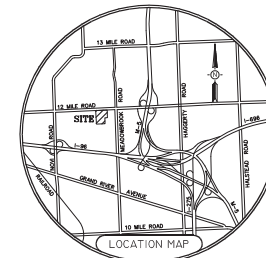
E-87486  
87506-TOP/END

REVISIONS	<p>2-17-14 CONCEPT</p> <p>3-6-14 REV.</p> <p>4-14-14 PRELIMINARY SITE PLAN SUBMITTAL</p> <p>7-28-14 PRELIMINARY SITE PLAN RE-SUBMITTAL</p>	<p>KEBS, INC. IN'S ENGINEERING</p> <p>2116 HASLETT ROAD, HASLETT, MI 48840</p> <p>PH. 917-339-0104 FAX. 917-339-8047</p> <p>Novi Office PH. 249-781-9850</p>	<p>LOCATION: SECTION 14</p>
SCALE: 1" = 50'	DESIGNER: GAP	PROJECT MGR. SHEET 16 OF 18	
DATE: 4-11-14	PROJECT MGR. GAP	JOB #	
AUTHORIZED BY:	PROJECT MGR. GAP	JOB #	
		DMK DEVELOPMENT GROUP, LLC 874456	





PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN



**LEGAL DESCRIPTION:**

A parcel of land in the Northeast 1/4 of Section 14, T1N, R1E, City of Novi, Oakland County, Michigan, the surveyed boundary of said parcel described as: Commencing at the North 1/4 corner of said Section 14; thence N89°24'35"E along the North line of said Section 14 a distance of 1486.73 feet; thence S00°35'25"E perpendicular to said North line 90.00 feet to the point of beginning of this description; thence N89°24'35"E parallel with said North line 645.33 feet; thence S00°35'25"E perpendicular to said North line 437.68 feet; thence S89°24'35"W parallel with said North line 150.00 feet; thence S00°01'05"E 332.04 feet; thence S89°24'35"W parallel with said North line 492.01 feet; thence N00°35'25"W perpendicular to said North line 772.00 feet to the point of beginning; said parcel containing 10.25 acres, more or less; said parcel subject to all easements and restrictions if any.

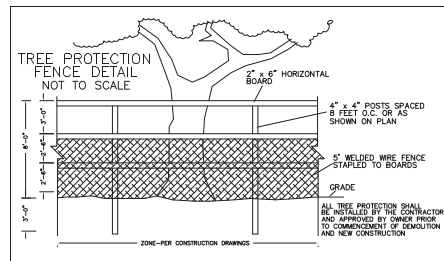
★ DENOTES TREE TO REMAIN (PROTECT W/TREE PROTECTION FENCE AS NEEDED DURING CONSTRUCTION, SEE DETAIL BELOW, AND FENCING AREAS SHOWN ON PLAN)

369 NUMBER OF TREES TO BE REMOVED AND REPLACED, PER WOODLAND ORDINANCE (LOCATED WITHIN REG. WOODLAND BOUNDARY)

TREE REPLACEMENT RATIOS:  
 EX. TREE D.B.H. = 8" < 11", THEN REPLACEMENT IS 1 TREE\*  
 EX. TREE D.B.H. = > 11" < 20", THEN REPLACEMENT IS 2 TREES\*  
 EX. TREE D.B.H. = > 20" < 29", THEN REPLACEMENT IS 3 TREES\*  
 EX. TREE D.B.H. = > 30", THEN REPLACEMENT IS 4 TREES\*

\* REPLACEMENT TREES MUST BE 2.5" CALIFER AND BE LISTED ON THE CITY OF NOVI'S TREE REPLACEMENT LIST

TOTAL REPLACEMENT TREES = 620 (SEE TREE CHART, PAGE 17)  
 TOTAL REPLACEMENT TREES = 620



- EX. LEGEND**
- = SET 1/2" BAR WITH CAP
  - = FOUND IRON AS NOTED
  - = DEED LINE
  - = DISTANCE NOT TO SCALE
  - = FENCE
  - = ASPHALT
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- CATCH BASIN #100  
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- CATCH BASIN #102  
 INLET EL. 925.56  
 8" SW 921.15  
 8" SE ??  
 18" NORTH 918.58
- EX. SAN A (PER AS-BUILTS)  
 (CHECK M.A.S.)  
 8" N 916.68  
 8" W 916.58  
 I.E. PROP. 8" E 924.02



TREES THAT WERE LOCATED OFF PROPERTY:  
 269-272  
 277-300  
 550-556  
 599

NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT  
 NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.



**BENCHMARKS**

BM#1 - 55.41' CATCHBASIN ON SOUTH EDGE OF EAST 1/4 PROPERTY, 550' EAST OF DIAMETER, ELEVATION 920.04 NAVD'83

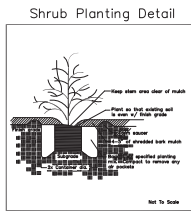
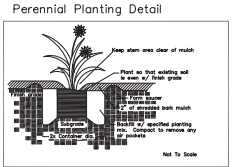
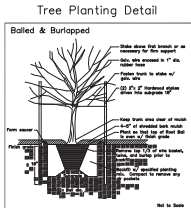
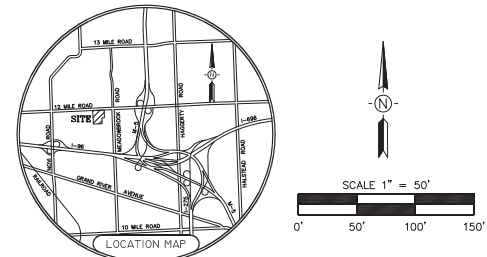
BM#2 - 17' CONCRETE PEDESTAL OF LIGHT POLE IN PARKING LOT EAST OF PROPERTY, 470'-NORTH OF DIAMETER, ELEVATION 925.89 NAVD'83

SURVEY ADDRESS: 41795 TWELVE MILE ROAD, NOVI, MI 48377

E-87486  
87566-TOP/END

REVISIONS	KEBS, INC.	NYES ENGINEERING
2-17-14 CONCEPT	2116 HASLETT ROAD, HASLETT, MI 48840	2116 HASLETT ROAD, HASLETT, MI 48840
3-4-14 PRELIMINARY APPLICATION SUBMITTAL	PH: 917-339-1014 FAX: 917-339-8047	PH: 917-339-1014 FAX: 917-339-8047
4-14 PRELIMINARY SITE PLAN SUBMITTAL	Novi Office	Novi Office
5-14 PRELIMINARY SITE PLAN RE-SUBMITTAL	PH: 269-781-9850	PH: 269-781-9850
<b>Trilogy - Novi</b>		
WOODLAND REMOVAL AND REPLACEMENT PLAN		
SCALE: 1" = 50'	DRAWN BY: CAP	LOCATION: SECTION 14
DATE: 4-11-14	DESIGNED BY: CAP	SHEET 18 OF 18
AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC	PROJECT MGR. CAP	JOB #
		87456

PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN

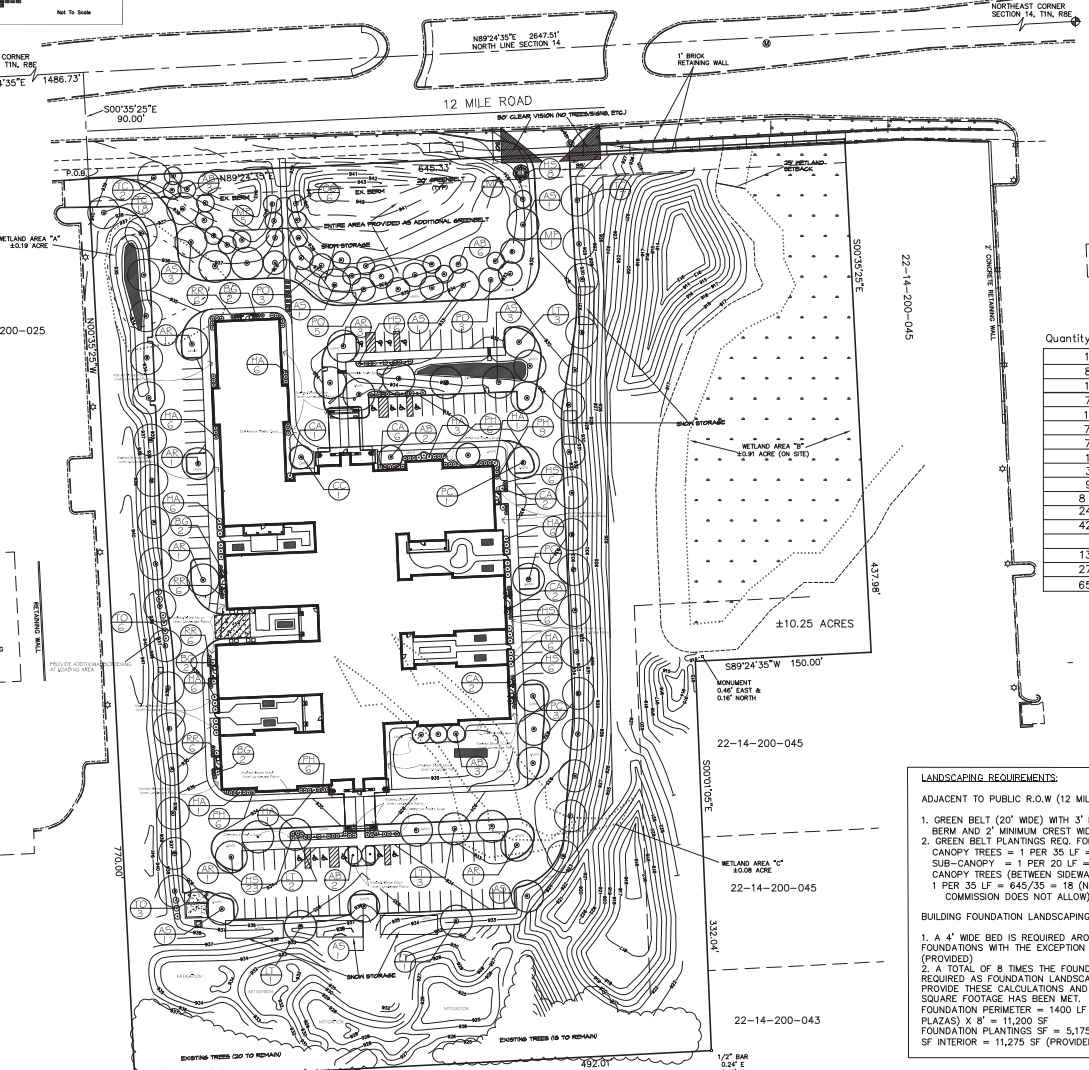


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  - = PROPOSED TOP OF CURB ELEV.
  - = PROPOSED TOP OF GROUND ELEV.
  - = PROPOSED TOP OF PAVT ELEV.
  - = PROPOSED TOP OF WALK ELEV.
  - = IDENTIFIED EXISTING SYSTEM

- EX. SEWER INVENTORIES:**
- CATCH BASIN #100**  
 INLET EL. 934.87  
 6" WEST 931.04  
 12" NORTH 930.04
- CATCH BASIN #101**  
 INLET EL. 929.32  
 6" WEST 924.60  
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 18" NORTH 924.07
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 921.15  
 8" SE 71  
 18" NORTH 918.58
- EX. SAN A (PER AS-BUILTS)**  
 (TICKS MARKED)  
 8" N 916.68  
 8" W 916.58

NOTE: ALL PUBLIC WATER SHALL BE WITHIN A 20' PUBLIC EASEMENT  
 NOTE: WATER SHALL HAVE 10' HORIZONTAL SEPARATION & 18" VERTICAL SEPARATION FROM ALL SEWERS.

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 800-482-7171 (TOLL-FREE)



**LEGAL DESCRIPTION:**

A parcel of land in the Northeast 1/4 of Section 14, T1N, R1E, City of Novi, Oakland County, Michigan, the surveyed boundary of said parcel described as: Commencing at the North 1/4 corner of said Section 14; thence N89°24'35"E along the North line of said Section 14 a distance of 1486.73 feet; thence S00°35'25"E perpendicular to said North line 90.00 feet to the point of beginning of this description; thence N89°24'35"E parallel with said North line 645.33 feet; thence S00°35'25"E perpendicular to said North line 437.68 feet; thence S89°24'35"W parallel with said North line 150.00 feet; thence S00°01'05"E 332.04 feet; thence S89°24'35"W parallel with said North line 492.01 feet; thence N00°35'25"W perpendicular to said North line 770.00 feet to the point of beginning; said parcel containing 10.25 acres, more or less; said parcel subject to all easements and restrictions if any.

**Plant List**

Quantity	Key	Botanical	Common	Size
16	AB	Amelanchier X 'Autumn Brilliance'	Autumn Brilliance Serviceberry	6-7'rms
8	AR	Acer frubrum 'Red Sunset'	Red Sunset Maple	2.5"-3"
10	AS	Acer saccharum 'Green Mountain'	Green Mountain Sugar Maple	2.5"-3"
7	CC	Cercis canadensis	Eastern Redbud	2.5"-3"
10	LT	Liriodendron tulipifera	Tulip Tree	2.5"-3"
7	MP	Malus 'Prairie Fire'	Prairie Fire Crabapple	2"-2.5"
7	PC	Pyrus calleryana, 'Cleveland Select'	Cleveland Select Pear	2.5"-3"
11	PO	Picea omorika	Serbian Spruce	7'-8'
37	CT	Tilia cordata	Little Leaf Linden	2.5"-3"
9	TO	Thuja occidentalis	EMERALD GREEN ARBORVITAE	10 GAL
24	RR	Rosa Radtko	Double Knockout Rose	3 GAL
42	HA	Hydrangea arborescens 'Annabelle'	Annabelle Hydrangea	3 GAL
13	CA	Calamagrostis acutiflora 'Karl Foerster'	Karl Foerster Feather Reed Grass	2 GAL
27	PH	Pennisetum 'Hamel'	Dwarf Fountain Grass	2 GAL
65	HS	Hermocalis 'Stella de Oro	Stella de Oro Daylily	2 GAL

**EXISTING LEGEND**

- = FENCE
- = Light Fixture

**TREE LEGEND**

- = Proposed Tree
- = Proposed Shrub or tree
- = Proposed Orn. Grass or shrub

**General Notes:**

- Start of work includes acceptance of existing conditions left by other contractors. If conditions are not acceptable contact the Owner/Contractor.
- Contractor is responsible for setting quantities. The quantity on the drawing is the quantity to be installed.
- All plant material to meet American Nursery Association Standards. Landscape Contractor to guarantee plant material for 2 years from date of installation.
- Landscape Contractor is responsible for their own and existing utility drawings.
- Landscape Contractor to verify if at least 48" of space at all plant back and 12" at lawn areas. All lawn areas to be seeded with Kentucky Bluegrass or similar. Seeding must be completed between April 15th and October 15th.
- Tree ground stakes made or used as per all the standard amount of plant material unless otherwise specified. Install back marks 12" deep.
- Edge Key by City of Novi or used to be installed between all lawn areas and plant beds.
- Marked Stone Mark to be 2" diameter Stone from Homestead Farms (or approved equal).

**LANDSCAPING REQUIREMENTS:**

- ADJACENT TO PUBLIC R.O.W (12 MILE ROAD):
- GREEN BELT (20' WIDE) WITH 3" MINIMUM HEIGHT BERM AND 2' MINIMUM CREST WIDTH.
  - GREEN BELT PLANTINGS REQ. FOR 645 LF FRONTAGE:  
 CANOPY TREES = 1 PER 35 LF = 645/35 = 18  
 SUB-CANOPY = 1 PER 20 LF = 645/20 = 32  
 CANOPY TREES (BETWEEN SIDEWALK AND CURB) =  
 1 PER 35 LF = 645/35 = 18 (NOT PROVIDED, ROAD COMMISSION DOES NOT ALLOW)
- BUILDING FOUNDATION LANDSCAPING:
- A 4' WIDE BED IS REQUIRED AROUND THE BUILDING FOUNDATIONS WITH THE EXCEPTION OF ACCESS AREAS (PROVIDED).
  - A TOTAL OF 8 TIMES THE FOUNDATION PERIMETER IS REQUIRED AS FOUNDATION LANDSCAPE AREA. PLEASE PROVIDE THESE CALCULATIONS AND SHOW WHERE THE SQUARE FOOTAGE HAS BEEN MET.  
 FOUNDATION PERIMETER = 1400 LF (NOT INCLUDING INTERIOR PLAZAS) X 8' = 11,200 SF  
 FOUNDATION PLANTINGS SF = 5,175 SF PERIMETER + 6,100 SF INTERIOR = 11,275 SF (PROVIDED)

**PARKING AREA LANDSCAPE REQUIREMENTS:**

- LANDSCAPE ISLAND (REQUIRED SF) = A+B+C  
 A = PARKING SPACE SF X 10%  
 A = 110 SPACES X (9' X 17') X 10% = 1,683 SF  
 B = ALL OTHER PAVED AREAS X 5% (UNDER 50,000 SF)  
 B = 20,500 SF X 5% = 1,025 SF (AREAS ADA TO PARKING)  
 C = ALL OTHER PAVED AREAS X 1% (OVER 50,000 SF)  
 C = 0 SF X 1% = 0 SF  
 LANDSCAPE ISLAND AREA REQ. = A+B+C = 2,708 SF (REQ.)  
 LANDSCAPE ISLAND AREA PROV. = 13,263 SF (PROVIDED)  
 CANOPY TREES REQ. = 2,708 SF/75 = 36 TREES  
 CANOPY TREES PROV. = 30
- PARKING LOT PERIMETER TREES (REQUIRED) = 1 PER 35 LF  
 PERIMETER ROAD CANOPIES PROVIDED = 36 TREES (SPACED @ 35')

**NOTES**

ALL PLANT MATERIALS SHALL BE WARRANTED FOR A 2-YEAR PERIOD AFTER ACCEPTANCE

PLANT MATERIAL COST ESTIMATE, PER NOVI MATRIX = \$113,000 (APPROXIMATE)

SURVEY ADDRESS: TWELVE MILE ROAD, NOVI, MI 48377

REVISIONS

2-17-14	CONCEPT	
3-6-14	PRELIMINARY APPLICATION SUBMITTAL	
4-14-14	PRELIMINARY SITE PLAN SUBMITTAL	
4-14-14	FINAL SITE PLAN RE-SUBMITTAL	

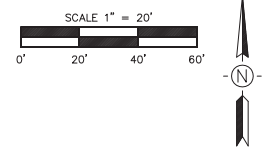
**KEBS, INC.** NYS ENGINEERING  
 2016 HASLETT ROAD, HASLETT, MI 48840  
 PH: 917-339-0104 FAX: 917-339-0847  
 Internal Office: PH: 249-781-9800

**Trilogy - Novi**  
 LANDSCAPING PLAN  
 SCALE: 1" = 50'  
 DATE: 4-11-14  
 AUTHORIZED BY: DMK DEVELOPMENT GROUP, LLC

DESIGNER: PROJECT MGR. SHEET LANDSCAPE  
 CAP. JOB # 87456

Seal: Tim Barfield ASLA #3901000859

PRELIMINARY SITE PLANS FOR:  
**Trilogy - Novi**  
 THE CITY OF NOVI, OAKLAND COUNTY, MICHIGAN



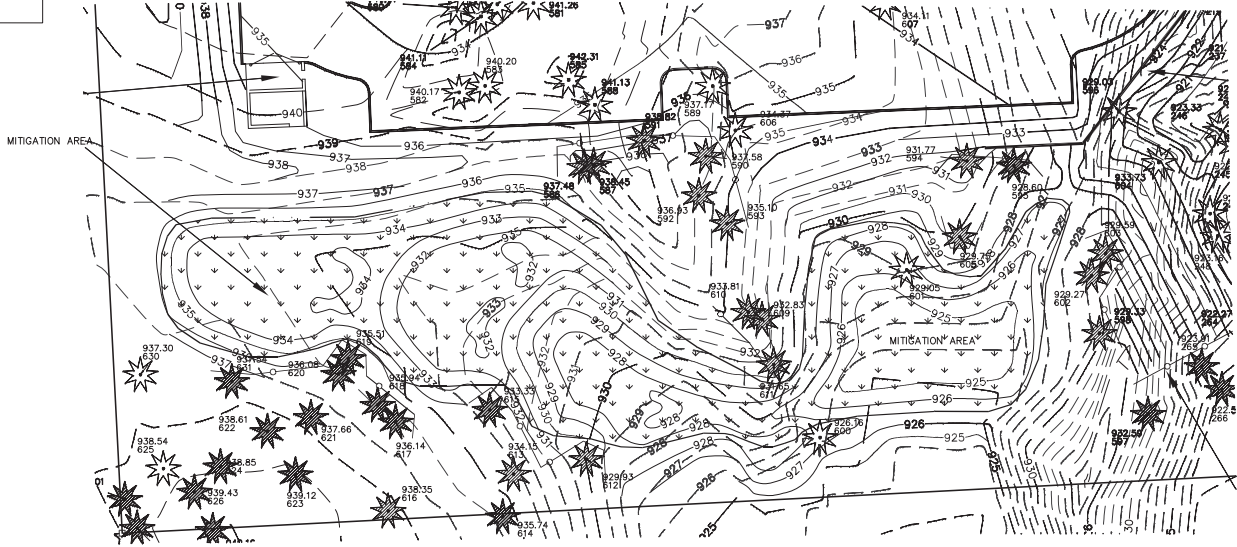
MITIGATION NOTES:

CITY OF NOVI REGULATED WETLANDS THAT ARE PROPOSED TO BE DISTURBED AND/OR FILLED:

WETLAND 'A': 0.19 ACRE (EMERGENT/SCRUB-SHRUB).  
 MITIGATION REQUIRED: 0.19 X 1.5 = 0.285 ACRES

WETLAND 'C': 0.08 ACRE (FORESTED).  
 MITIGATION REQUIRED: 0.08 X 2.0 = 0.16 ACRES

TOTAL MITIGATION REQUIRED = 0.445 ACRES  
 TOTAL MITIGATION PROVIDED = 0.46 ACRES



SCALE: 1"=4'

**EX. LEGEND**

○	= SET 1/2" BAR WITH CAP	○	= SANITARY MANHOLE
□	= FOUND IRON AS NOTED	○	= DRAINAGE MANHOLE
—	= DEED LINE	○	= ELECTRIC MANHOLE
—	= DISTANCE NOT TO SCALE	○	= MANHOLE
—	= FENCE	○	= CATCHBASIN
—	= ASPHALT	○	= SANITARY CLEANOUT
—	= CONCRETE	○	= FIRE HYDRANT
—	= GRAVEL	○	= VALVE
—	= EXISTING SPOT ELEVATION	○	= UTILITY POLE
—	= EXISTING CONTOUR ELEVATION	○	= LIGHT POLE
—	= SANITARY SEWER	○	= GUY POLE
—	= STORM SEWER	○	= GUY WIRE
—	= WATER LINE	○	= UTILITY PEDESTAL
—	= GAS LINE	○	= TRANSFORMER
—	= UNDERGROUND TELEPHONE	○	= ELECTRIC METER
—	= UNDERGROUND TELEVISION	○	= GAS METER
—	= UNDERGROUND ELECTRIC	○	= WATER METER
—	= OVERHEAD WIRES	○	= SIGN
—	= EDGE OF WOODS	○	= POST
—	= DECIDUOUS TREE	○	= GUARD RAIL
—	= CONIFEROUS TREE		

**LEGEND**

—	PROPOSED WATER MAIN
—	PROPOSED SANITARY SEWER
—	PROPOSED STORM SEWER
○	PROPOSED HYDRANT
○	PROPOSED DATE VALVE
○	PROPOSED SAN. M.H.
○	PROPOSED STORM M.H.
○	PROPOSED C.B.
○	PROPOSED GRADES
○	PROPOSED FIRST FLOOR ELEV.
○	PROPOSED TOP OF CURB ELEV.
○	PROPOSED TOP OF GROUND ELEV.
○	PROPOSED TOP OF PAVT ELEV.
○	PROPOSED TOP OF WALK ELEV.
○	SHOWS S.E.S.C. KEYING SYSTEM

SURVEY ADDRESS: TWELVE MILE ROAD, NOVI, MI 48377

E-87486  
 87486.TOP/END

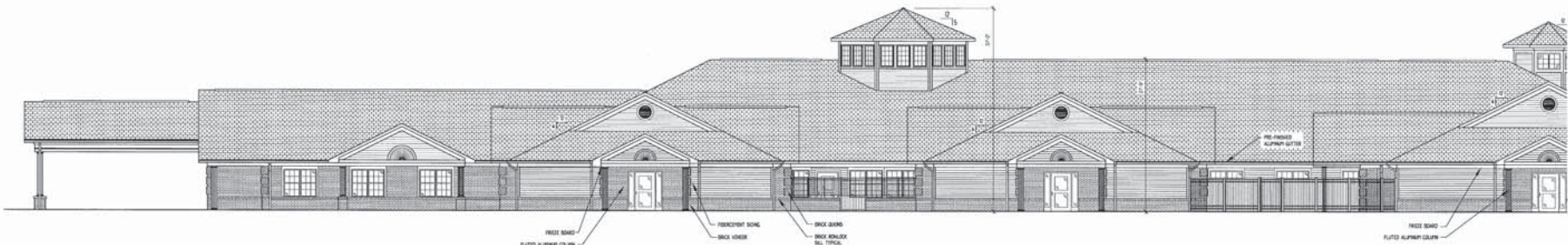


REVISIONS 8-11-14 PRELIMINARY SITE PLAN SUBMITTAL		<b>KEBS, INC.</b> N'S ENGINEERING 2116 HASLETT ROAD, HASLETT, MI 48840 PH. 517-339-0104 FAX. 517-339-8047 Novi Office PH. 248-781-8850	
<b>Trilogy - Novi</b> MITIGATION PLAN			
SCALE: 1"= 20'	DESIGNER:	PROJECT MGR.	LOCATION: SECTION 14
DATE: 4-11-14	CAP:	SHEET	M-1
AUTHORIZED BY:	JOB #	87486	
DMK DEVELOPMENT GROUP, LLC		87486	



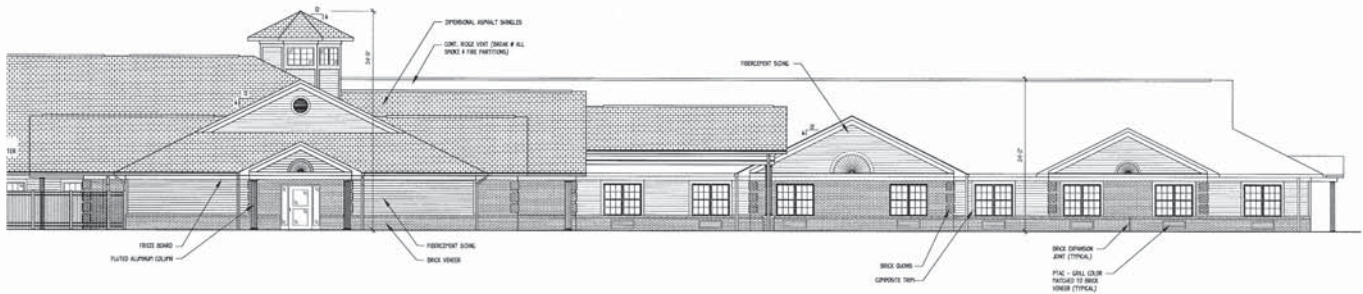
**NORTH EXTERIOR ELEVATION**

1  
AT 15  
1/8" = 1'-0"



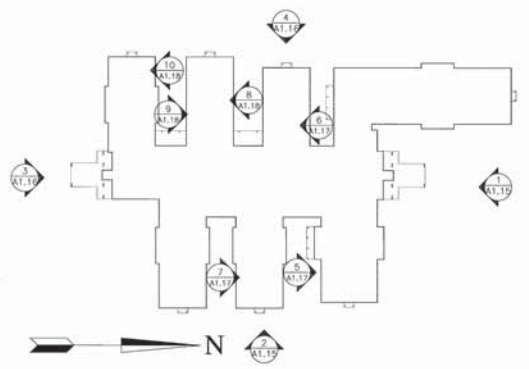
**PARTIAL EAST EXTERIOR ELEVATION**

2  
AT 15  
1/8" = 1'-0"



**PARTIAL EAST EXTERIOR ELEVATION**

2  
AT 15  
1/8" = 1'-0"



NOTE:  
PAINT ALL METAL ROOF CAPS, INTAKE HOODS  
AND EXHAUST HOODS. SEE SPECIFICATIONS  
(VERIFY AMOUNT WITH HVAC CONTRACTOR)

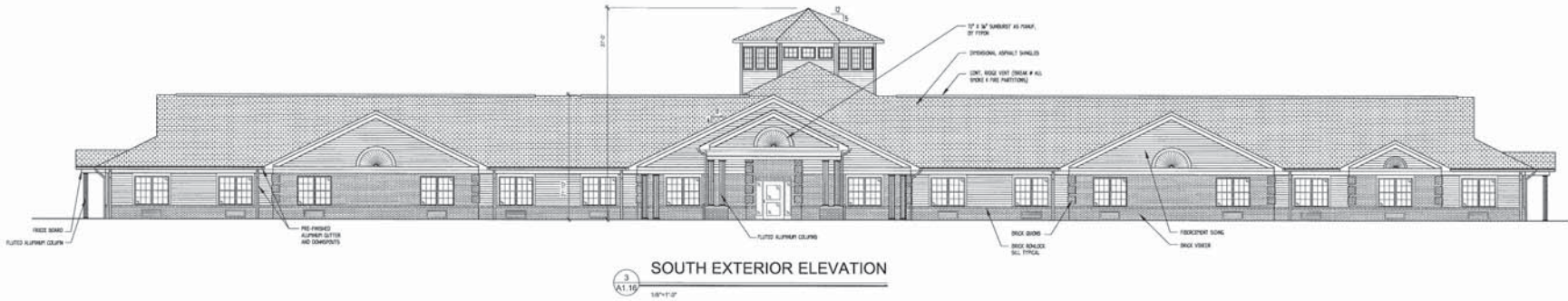
NOTE:  
BRICK EXPANSION JOINTS SHALL NOT  
EXCEED 40'-0" MAXIMUM SPACING

*Robert L. Powell*  
7-17-14

NOVI HEALTH CAMPUS  
(VILLAGE CENTER)  
NOVI, MICHIGAN

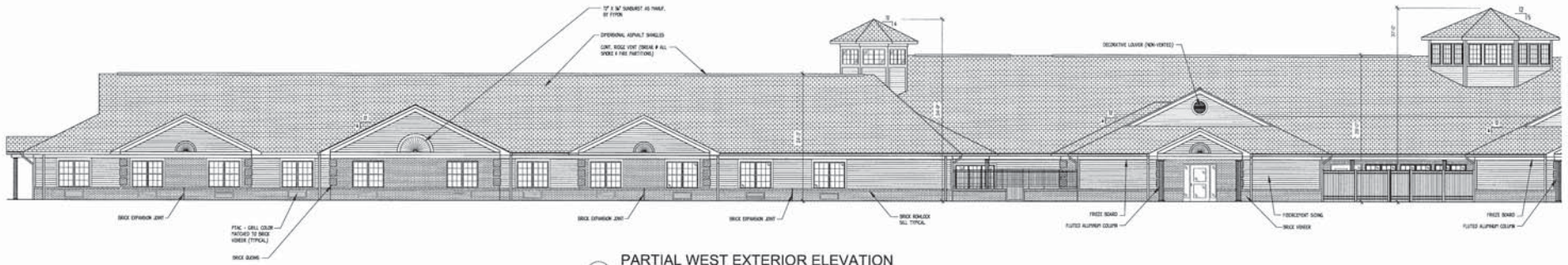
UNIVERSAL DESIGN ASSOCIATES, P.C.

EXTERIOR ELEVATIONS  
DATE: 7-17-14  
PROJECT: NH1240  
SHEET: AT 15 OF 68



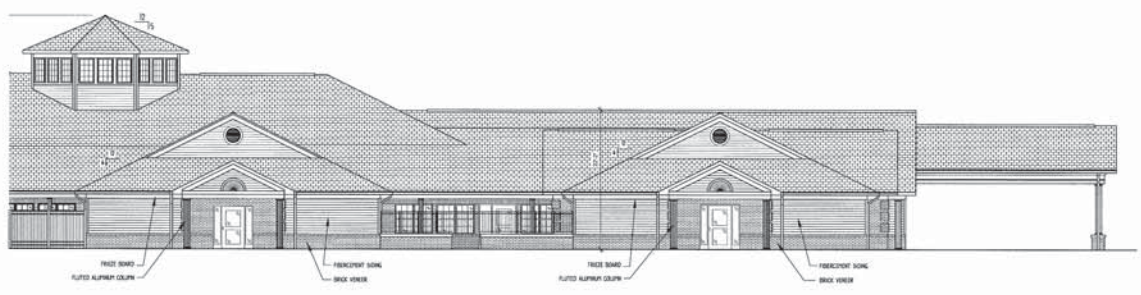
**SOUTH EXTERIOR ELEVATION**

3  
A1.16  
1/8" = 1'-0"



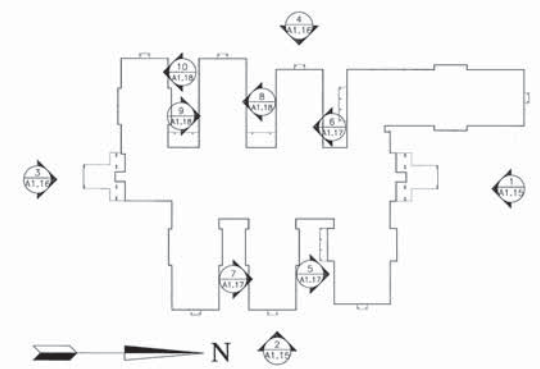
**PARTIAL WEST EXTERIOR ELEVATION**

4  
A1.16  
1/8" = 1'-0"



**PARTIAL WEST EXTERIOR ELEVATION**

4  
A1.16  
1/8" = 1'-0"



NOTE:  
PAINT ALL METAL ROOF CAPS, INTAKE HOODS  
AND EX-HAUST HOODS. SEE SPECIFICATIONS  
(VERIFY AMOUNT WITH HVAC CONTRACTOR)

NOTE:  
BRICK EXPANSION JOINTS SHALL NOT  
EXCEED 40'-0" MAXIMUM SPACING



Raphael L. Burch  
7/17/14

UNIVERSAL DESIGN ASSOCIATES, INC.  
 10000 W. 15th Street, Suite 100  
 Novi, Michigan 48240  
 Phone: 248.224.2200  
 Fax: 248.224.2201  
 www.universal-design.com

**NOVI HEALTH CAMPUS**  
 (VILLAGE CENTER)  
 NOVI, MICHIGAN

EXTERIOR ELEVATIONS  
 DATE: 7-17-14  
 DRAWING NO: N1240  
 SHEET NO: A1.16 OF 68

