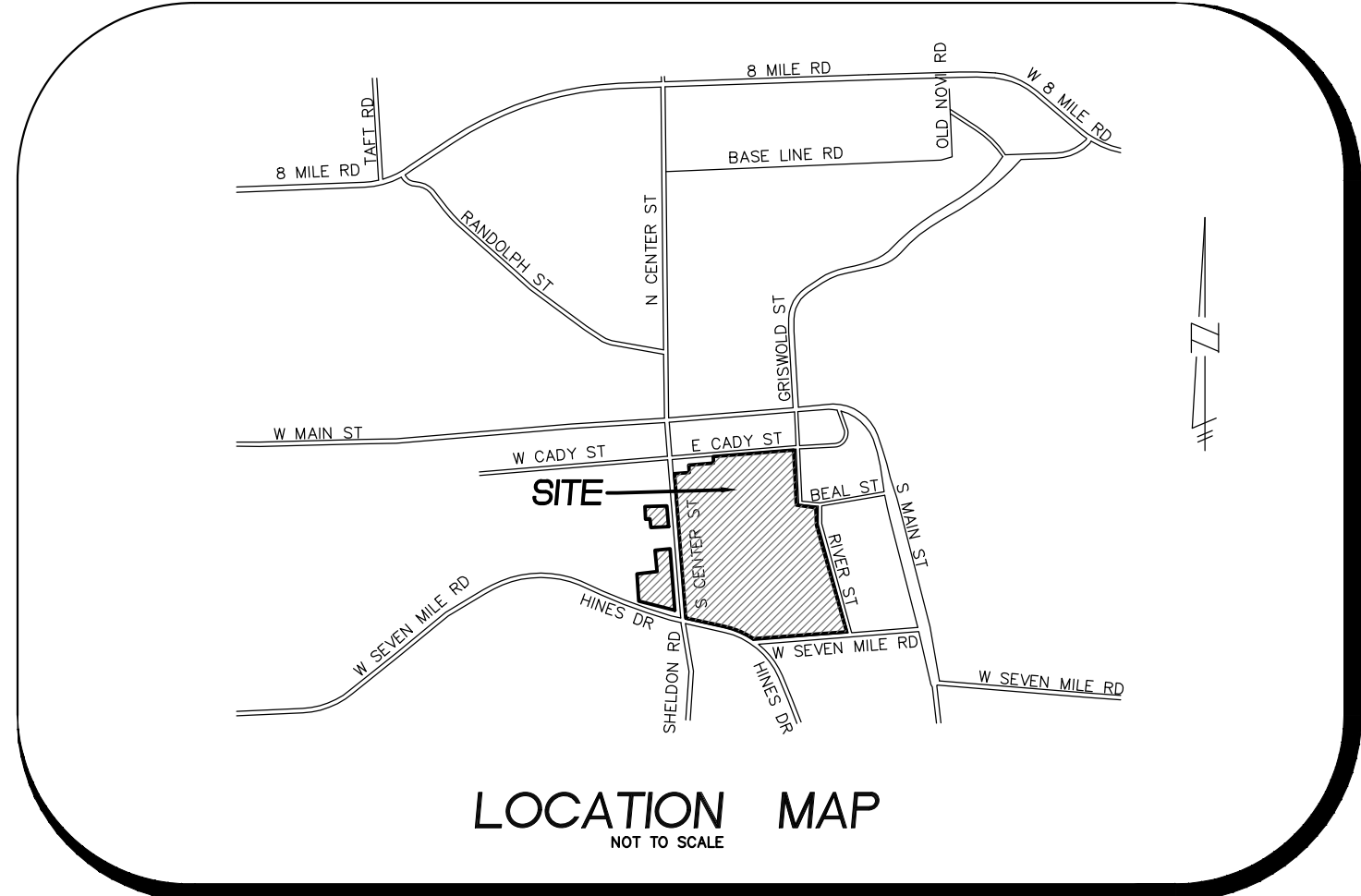


PRELIMINARY SITE PLAN

THE DOWNS

DOWNTOWN NORTHVILLE

SECTION 3, T1S, R8E, CITY OF NORTHVILLE WAYNE COUNTY, MICHIGAN
 PREPARED FOR:
HUNTER PASTEUR, NORTHVILLE, LLC
 32300 NORTHWESTERN HWY, SUITE 230
 FARMINGTON HILLS, MI 48334



LEGAL DESCRIPTION

OVERALL PARCEL:
 PART OF LOT 72, ALL OF LOTS 73-78, PART OF LOT 79, ALL OF LOTS 80-81, AND PART OF LOT 82 OF "ASSESSOR'S NORTHVILLE PLAT NO. 1", AS RECORDED IN LIBER 66 OF PLATS, PAGE 45, WAYNE COUNTY RECORDS; ALSO ALL OF LOTS 171-196 AND PART OF LOT 197 OF "ASSESSOR'S NORTHVILLE PLAT NO. 2", AS RECORDED IN LIBER 66 OF PLATS, PAGE 44, WAYNE COUNTY RECORDS; ALSO ALL OF THAT PART VACATED CHURCH STREET AND VACATED BEAL AVENUE AS VACATED PER RESOLUTION RECORDED IN LIBER 20023, PAGE 101, WAYNE COUNTY RECORDS;

ALL OF THE AFOREMENTIONED BEING MORE PARTICULARLY DESCRIBED AS:
 COMMENCING AT THE NORTHWEST CORNER OF LOT 168 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2"; THENCE N84°53'43"E 174.61 FEET ALONG THE SOUTH LINE OF CADY STREET (50 FEET WIDE) TO THE NORTHWEST CORNER OF LOT 171 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2" FOR A POINT OF BEGINNING; THENCE ALONG THE SOUTH LINE OF SAID CADY STREET THE FOLLOWING THREE (3) COURSES: 1) N84°53'43"E 682.35 FEET, 2) N79°20'27"E 42.12 FEET, AND 3) N85°47'04"E 218.30 FEET; THENCE ALONG THE WESTERLY LINE OF GRISWOLD STREET (VARIABLE WIDTH) THE FOLLOWING FIVE (5) COURSES: 1) S02°52'19"E 193.33 FEET, 2) S86°05'20"W 3.01 FEET, 3) S04°23'26"E 133.89 FEET, 4) N85°43'59"E 15.98 FEET, AND 5) S04°24'37"E 129.36 FEET; THENCE THENCE N84°12'51"W 100.00 FEET ALONG THE NORTH LINE OF BEAL AVENUE (50 FEET WIDE); THENCE S05°47'09"W 50.00 FEET ALONG THE EASTERLY LINE OF THAT PORTION OF VACATED BEAL AVENUE PER RESOLUTION RECORDED IN LIBER 20023, PAGE 101, WAYNE COUNTY RECORDS; THENCE S84°12'51"E 289.65 FEET ALONG THE SOUTH LINE OF SAID BEAL AVENUE; THENCE ALONG THE WEST LINE OF RIVER STREET THE FOLLOWING THREE (3) COURSES: 1) S09°44'28"E 227.57 FEET, 2) S15°01'28"E 427.16 FEET, AND 3) S15°34'36"E 462.92 FEET; THENCE S85°45'58"E 238.48 FEET; THENCE N89°00'21"W 563.09 FEET; THENCE N43°05'04"W 95.18 FEET; THENCE ALONG THE SOUTH LINE OF SAID LOT 183 THE FOLLOWING FOUR (4) COURSES: 1) S78°36'11"W 254.94 FEET, 2) S78°39'12"W 117.60 FEET, 3) N77°44'48"W 142.02 FEET, AND 4) N57°47'56"W 135.76 FEET; THENCE N05°05'49"W 578.08 FEET ALONG THE EAST LINE OF CENTER STREET (60 FEET WIDE); THENCE N05°12'42"W 537.43 FEET CONTINUING ALONG THE EAST LINE OF SAID CENTER STREET; THENCE N84°59'05"E 130.92 FEET ALONG THE SOUTH LINE OF LOT 164 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2"; THENCE N04°02'34"W 179.19 FEET ALONG THE WEST LINE OF SAID LOT 174; THENCE N84°20'38"E 39.77 FEET ALONG THE SOUTH LINE OF LOT 170 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2"; THENCE N05°05'12"W 126.38 FEET ALONG THE WEST LINE OF SAID LOT 171 TO THE POINT OF BEGINNING.

NORTH PARCEL:
 PART OF LOT 72, ALL OF LOTS 73-78, PART OF LOT 79, ALL OF LOTS 80-81, AND PART OF LOT 82 OF "ASSESSOR'S NORTHVILLE PLAT NO. 1", AS RECORDED IN LIBER 66 OF PLATS, PAGE 45, WAYNE COUNTY RECORDS; ALSO ALL OF LOTS 171-181 AND PART OF LOT 182 OF "ASSESSOR'S NORTHVILLE PLAT NO. 2", AS RECORDED IN LIBER 66 OF PLATS, PAGE 44, WAYNE COUNTY RECORDS; ALSO PART OF THAT PART OF VACATED CHURCH STREET AND VACATED BEAL AVENUE AS VACATED PER RESOLUTION RECORDED IN LIBER 20023, PAGE 101, WAYNE COUNTY RECORDS;

ALL OF THE AFOREMENTIONED BEING MORE PARTICULARLY DESCRIBED AS:
 COMMENCING AT THE NORTHWEST CORNER OF LOT 168 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2"; THENCE N84°53'43"E 174.61 FEET ALONG THE SOUTH LINE OF CADY STREET (50 FEET WIDE) TO THE NORTHWEST CORNER OF LOT 171 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2" FOR A POINT OF BEGINNING; THENCE ALONG THE SOUTH LINE OF SAID CADY STREET THE FOLLOWING THREE (3) COURSES: 1) N84°53'43"E 682.35 FEET, 2) N79°20'27"E 42.12 FEET, AND 3) N85°47'04"E 218.30 FEET; THENCE ALONG THE WESTERLY LINE OF GRISWOLD STREET (VARIABLE WIDTH) THE FOLLOWING FIVE (5) COURSES: 1) S02°52'19"E 193.33 FEET, 2) S86°05'20"W 3.01 FEET, 3) S04°23'26"E 133.89 FEET, AND 5) S04°24'37"E 129.36 FEET; THENCE THENCE N84°12'51"W 100.00 FEET ALONG THE NORTH LINE OF BEAL AVENUE (50 FEET WIDE); THENCE S05°47'09"W 25.00 FEET ALONG THE EASTERLY LINE OF THAT PORTION OF VACATED BEAL AVENUE PER RESOLUTION RECORDED IN LIBER 20023, PAGE 101, WAYNE COUNTY RECORDS; THENCE N84°12'51"W 166.13 FEET; THENCE 43.04 FEET ALONG A 230.00 FEET RADIUS CURVE TO THE LEFT, SAID CURVE HAVING A CENTRAL ANGLE OF 10°43'23" AND A CHORD WHICH BEARS N89°34'32"W 42.98 FEET; THENCE S85°03'47"W 809.73 FEET; THENCE N05°12'42"W 117.93 FEET ALONG THE EAST LINE OF CENTER STREET (50 FEET WIDE); THENCE N84°59'05"E 130.92 FEET ALONG THE SOUTH LINE OF LOT 164 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2"; THENCE N04°02'34"W 179.19 FEET ALONG THE WEST LINE OF SAID LOT 174; THENCE N84°20'38"E 39.77 FEET ALONG THE SOUTH LINE OF LOT 170 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2"; THENCE N05°05'12"W 126.38 FEET ALONG THE WEST LINE OF SAID LOT 171 TO THE POINT OF BEGINNING.

SOUTH PARCEL:
 PART OF LOT 182, ALL OF LOTS 183-196, AND PART OF LOT 197 OF "ASSESSOR'S NORTHVILLE PLAT NO. 2", AS RECORDED IN LIBER 66 OF PLATS, PAGE 44, WAYNE COUNTY RECORDS; ALSO PART OF THAT PART OF VACATED CHURCH STREET AND VACATED BEAL AVENUE AS VACATED PER RESOLUTION RECORDED IN LIBER 20023, PAGE 101, WAYNE COUNTY RECORDS;

ALL OF THE AFOREMENTIONED BEING MORE PARTICULARLY DESCRIBED AS:
 COMMENCING AT THE NORTHWEST CORNER OF LOT 168 OF SAID "ASSESSOR'S NORTHVILLE PLAT NO. 2"; THENCE S05°12'42"E 423.66 FEET ALONG THE EAST LINE OF CENTER STREET (50 FEET WIDE) TO THE POINT OF BEGINNING; THENCE N85°03'47"E 809.73 FEET; THENCE 43.04 FEET ALONG A 230.00 FEET RADIUS CURVE TO THE RIGHT, SAID CURVE HAVING A CENTRAL ANGLE OF 10°43'23" AND A CHORD WHICH BEARS S89°34'23"E 42.98 FEET; THENCE S84°12'51"E 166.13 FEET; THENCE S05°47'09"W 25.00 FEET ALONG THE EASTERLY LINE OF THAT PORTION OF VACATED BEAL AVENUE PER RESOLUTION RECORDED IN LIBER 20023, PAGE 101, WAYNE COUNTY RECORDS; THENCE S84°12'51"E 289.65 FEET ALONG THE SOUTH LINE OF BEAL AVENUE (50 FEET WIDE); THENCE ALONG THE WEST LINE OF RIVER STREET THE FOLLOWING THREE (3) COURSES: 1) S09°44'28"E 227.57 FEET, 2) S15°01'28"E 427.16 FEET, AND 3) S15°34'36"E 462.92 FEET; THENCE S85°45'58"E 238.48 FEET; THENCE N89°00'21"W 563.09 FEET; THENCE N43°05'04"W 95.18 FEET; THENCE ALONG THE SOUTH LINE OF SAID LOT 183 THE FOLLOWING FOUR (4) COURSES: 1) S78°36'11"W 254.94 FEET, 2) S78°39'12"W 117.60 FEET, 3) N77°44'48"W 142.02 FEET, AND 4) N57°47'56"W 135.76 FEET; THENCE N05°05'49"W 578.08 FEET ALONG THE EAST LINE OF CENTER STREET (60 FEET WIDE); THENCE N05°12'42"W 419.50 FEET CONTINUING ALONG THE EAST LINE OF SAID CENTER STREET TO THE POINT OF BEGINNING.

PARKING PARCEL:
 LOT 223, LOT 224, LOT 226, LOT 227, LOT 228, AND PART OF LOT 225 OF "ASSESSOR'S NORTHVILLE PLAT NO. 3", AS RECORDED IN LIBER 66 OF PLATS, PAGE 43, WAYNE COUNTY RECORDS; MORE PARTICULARLY DESCRIBED AS: BEGINNING AT THE NORTHEAST CORNER OF SAID LOT 223; THENCE S05°05'49"E 485.34 FEET ALONG THE WEST LINE OF CENTER STREET; THENCE N78°06'14"W 87.93 FEET ALONG THE NORTH LINE OF EDWARD HINES DRIVE; THENCE CONTINUING ALONG THE NORTH LINE OF SAID EDWARD HINES DRIVE, 258.72 FEET ALONG A 1842.59 FOOT CURVE TO THE RIGHT, SAID CURVE HAVING A CENTRAL ANGLE OF 08°02'42", AND A CHORD WHICH BEARS N74°02'51"W 258.51 FEET; THENCE N04°38'15"W 228.14 FEET ALONG THE EAST LINE OF SOUTH WING STREET; THENCE N84°11'48"E 49.85 FEET; THENCE S04°32'04"E 29.85 FEET; THENCE N84°01'07"E 161.44 FEET ALONG THE NORTH LINE OF SAID LOT 226; THENCE N05°57'44"W 160.02 FEET ALONG THE WEST LINE OF SAID LOT 224; THENCE N82°12'58"E 115.10 FEET ALONG THE SOUTH LINE OF FAIRBROOK STREET TO THE POINT OF BEGINNING.

VACANT PARCEL:
 LOT 219 AND LOT 220 OF "ASSESSOR'S NORTHVILLE PLAT NO. 3", AS RECORDED IN LIBER 66 OF PLATS, PAGE 43, WAYNE COUNTY RECORDS, CITY OF NORTHVILLE, WAYNE COUNTY, MICHIGAN.



SHEET INDEX

1. COVER SHEET
- 2.-3. EXISTING CONDITIONS PLAN
4. OVERALL SITE PLAN
- 5.-6. GRADING AND UTILITY PLAN
7. OPEN SPACE PLAN
- 8.-9. STORM WATER MANAGEMENT PLAN
10. FLOODPLAIN PLAN
11. PHASING PLAN

LANDSCAPE PLANS

- L100 OVERALL KEY PLAN
- L101-L109 LANDSCAPE PLANS
- L110-L113 STREETScape SECTIONS

ARCHITECTURE - BUILDINGS

- A0.1-A0.2 NORTHVILLE BUILDING HEIGHTS DIAGRAM
- A1.1 NW-A1.7 NW NORTHWEST SITE FLOOR PLANS
- A2.1 NW NORTHWEST SITE PUBLIC WAY ELEVATIONS
- A1.1 NE-A1.6 NE NORTHEAST SITE FLOOR PLANS
- A2.1 NE NORTHEAST SITE PUBLIC WAY ELEVATIONS

ARCHITECTURE - ROW HOUSES

- A101 TYPICAL UNIT FLOOR PLANS
- A301-A304 EXTERIOR ELEVATIONS

ARCHITECTURE - CARRIAGE HOMES/TOWNHOMES/SINGLE FAMILY

- 1.-2. CARRIAGE HOMES ELEVATIONS
3. CARRIAGE HOMES FLOOR PLAN
- 4.-7. TOWNHOMES ELEVATIONS
8. TOWNHOMES FLOOR PLAN
9. 36'x84'-8" S.F. BUNGALOW ELEVATIONS
10. 36'x84'-8" S.F. BUNGALOW FLOOR PLAN
- 11.-12. 41'x76' S.F. BUNGALOW ELEVATIONS
13. 41'x76' S.F. BUNGALOW FLOOR PLAN

BENCHMARKS

1. RIM OF SANITARY MANHOLE AT THE INTERSECTION OF CENTER STREET AND FAIRBROOK STREET. MANHOLE IS 3.5' EAST OF THE CENTERLINE OF CENTER STREET AND 17.5' SOUTH OF THE CENTERLINE OF FAIRBROOK STREET. ELEVATION 780.07' (NAVD88)
2. RIM OF SANITARY MANHOLE AT THE INTERSECTION OF RIVER STREET AND BEAL STREET. MANHOLE IS 10' NORTH OF THE CENTERLINE OF BEAL STREET AND 1' WEST OF THE CENTERLINE OF RIVER STREET. ELEVATION 777.58' (NAVD88)

NOTE: ALL ELEVATIONS SHOWN THROUGHOUT THE PLAN SET ARE ON NAVD88 DATUM.



THE FORBES COMPANY



ENGINEERING | SURVEYING
 39205 COUNTRY CLUB DRIVE, SUITE C8
 FARMINGTON HILLS, MI 48331
 PHONE: 248.308.3331

ENVIRONMENTAL CONSULTANT BY:
KING & MACGREGOR ENVIRONMENTAL, INC.
 43050 EAST FORD ROAD, SUITE 130
 CANTON, MI 48187
 PHONE: 734.354.0594

SURVEY PROVIDED BY:
ALPINE ENGINEERING, INC.
 46892 WEST ROAD, SUITE 109
 NOVI, MI 48375
 PHONE: 248.926.3765

LANDSCAPE PLAN PROVIDED BY:
GRISSIM METZ ANDRIESE ASSOCIATES
 15000 EDWARD N. HINES DR., SUITE A
 PLYMOUTH, MI 48170
 PHONE: 248.347.7010

REVISIONS			ENGINEER'S SEAL
NO.	ITEM	DATE	

DATE: 12-15-21 DESIGNED BY: A.A. JOB NUMBER: 21-001
 CHECKED BY: R.E. DRAWING FILE: 1-21001-CV.DWG

LEGEND

- EX. CATCH BASIN
- EX. MANHOLE
- ▽ EX. END SECTION
- ⊕ EX. OVERFLOW STRUCTURE
- ⊖ EX. CLEANOUT
- ⊗ EX. HYDRANT
- ⊘ EX. WATER SHUTOFF
- ⊙ EX. FIRE DEPT. CONNECTION
- ⊚ EX. WATER WELL
- ⊛ EX. LIGHTPOLE
- ⊜ EX. UTILITY POLE
- ⊝ EX. GUY ANCHOR
- ⊞ EX. TRAFFIC SIGNAL
- ⊟ EX. GAS SHUTOFF
- ⊠ EX. GAS VENT
- ⊡ EX. HANDHOLE
- ⊢ EX. PEDESTAL
- ⊣ EX. TRANSFORMER
- ⊤ EX. GENERATOR
- ⊥ EX. GAS METER
- ⊦ EX. ELECTRIC METER
- ⊧ EX. AIR CONDITIONER
- ⊨ EX. RAILROAD SIGNAL
- ⊩ EX. SIGN
- ⊪ EX. POST/BOLLARD
- ⊫ EX. FLAGPOLE
- ⊬ EX. MAILBOX
- ⊭ EX. PARKING METER
- ⊮ EX. SATELLITE DISH
- ⊯ EX. SOIL BORING
- ⊰ EX. MONITOR WELL
- ⊱ FOUND IRON
- ⊲ SET IRON
- ⊳ EX. BOULDER
- ⊴ EX. TREE STUMP
- ⊵ EX. TREE
- ⊶ EX. TREE TAG & NUMBER
- ⊷ EX. TREE LINE
- ⊸ EX. FENCE
- ⊹ EX. SANITARY SEWER
- ⊺ EX. STORM SEWER
- ⊻ EX. WATER MAIN
- ⊼ EX. ELECTRIC CABLE
- ⊽ EX. COMMUNICATION
- ⊾ EX. GAS LINE
- ⊿ EX. OVERHEAD LINE

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

NOTE:
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AS DISCLOSED BY AVAILABLE UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE COMPANY. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREE TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER IMMEDIATELY IF A CONFLICT IS APPARENT.



SEE SHEET 9 FOR
PRE-CONSTRUCTION
RUN-OFF RATE
CALCULATIONS

ALPINE ENGINEERING, INC.
CIVIL ENGINEERS & LAND SURVEYORS

COMMERCIAL
SITE PLANNING
SITE ENGINEERING
INDUSTRIAL SURVEYING
CONSTRUCTION LAYOUT

SURVEYING
ALTA SURVEYS
BOUNDARY SURVEYS
TOPOGRAPHY
PARCEL SPLITS

RESIDENTIAL
SUBDIVISIONS
SITE CONDOMINIUM
PLOT PLANS
CONSTRUCTION LAYOUT

(248) 926-3701 (BUS)
(248) 926-3765 (FAX)
WWW.ALPINE-INC.NET

46892 WEST ROAD
SUITE 109
NOVI, MICHIGAN 48377

811
Know what's below
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CLIENT:	RANGE:
SECTION:	TOWNSHIP:
	MICHIGAN
REVISED:	
DATE:	
DRAWN BY:	
CHECKED BY:	
FBK:	
CHF:	
SCALE HOR 1" =	FT.
VER 1" =	FT.



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

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COMMERCIAL
 SITE PLANNING
 SITE ENGINEERING
 INDUSTRIAL & MULTI-UNIT
 CONSTRUCTION LAYOUT

SURVEYING
 ALTA SURVEYS
 BOUNDARY SURVEYS
 TOPOGRAPHIC SURVEYS
 PARCEL SPLITS

RESIDENTIAL
 SUBDIVISIONS
 SITE CONDOMINIUM
 MULTI-FAMILY
 LOTS & PLANS
 CONSTRUCTION LAYOUT

ALPINE ENGINEERING INC.
 CIVIL ENGINEERS & LAND SURVEYORS

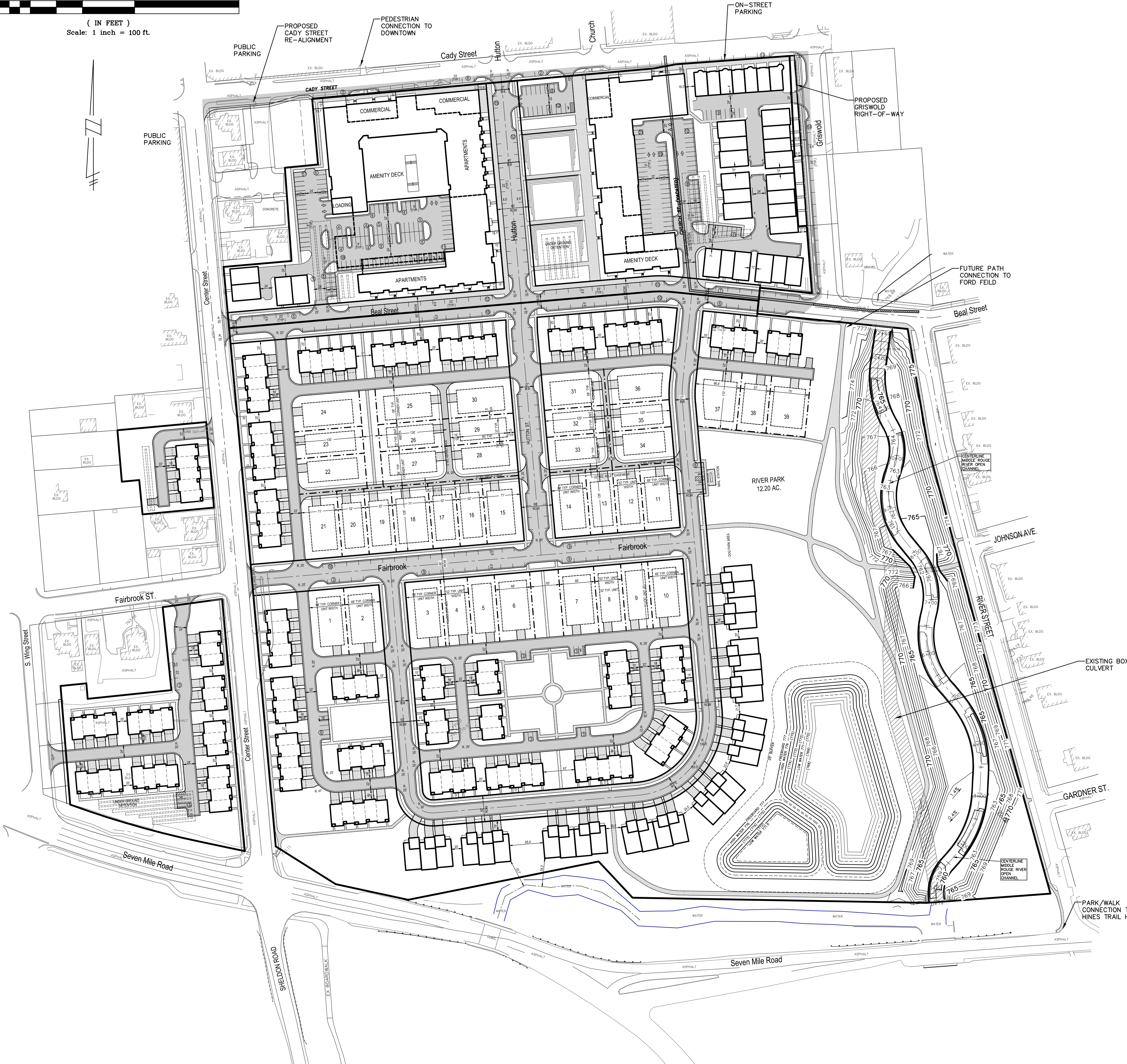
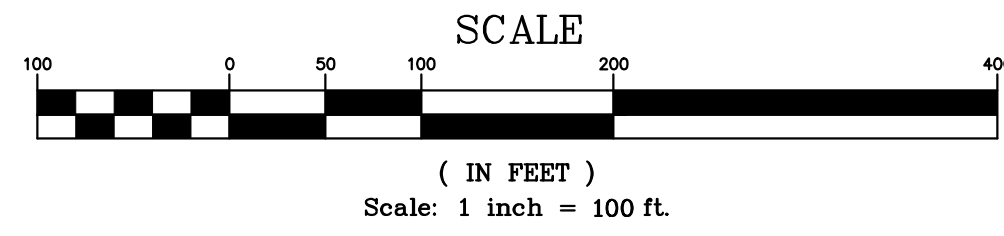
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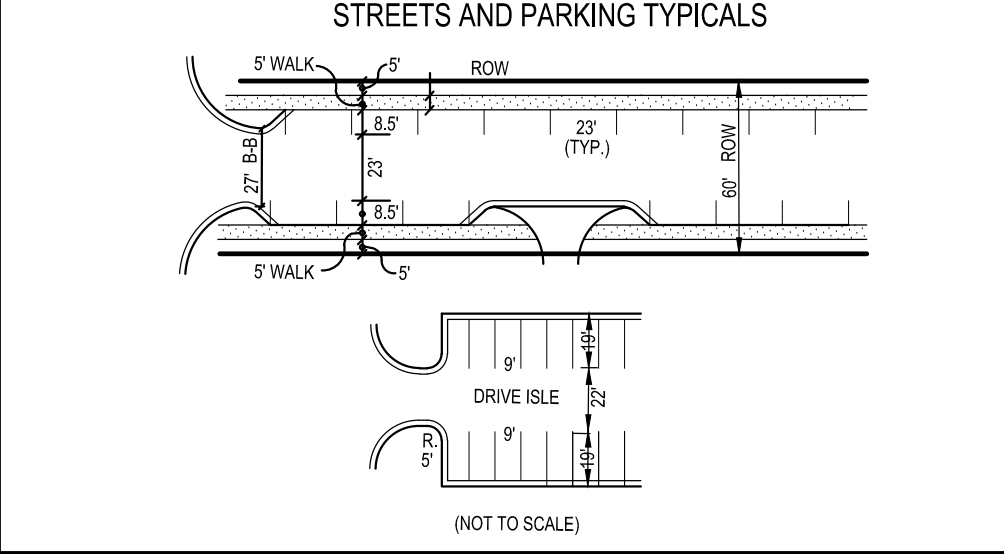
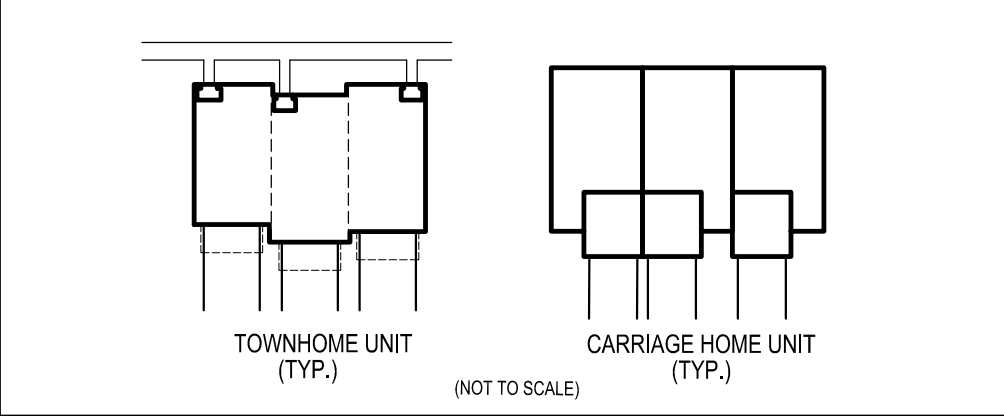


SITE SUMMARY

SITE AREA	= 48.12 AC
LESS PUBLIC R.O.W.	= 3.57 AC
NET SITE AREA	= 44.45 AC
EXISTING ZONING	CBD, RTD, R-2
PROPOSED ZONING	PUD
DEVELOPMENT BREAKDOWN	
NW APARTMENTS	= 3.36 AC
UNITS SHOWN	= 174 UNITS
DENSITY SHOWN	= 51.79 DU/AC
SETBACKS	
FRONT YARD	= 10' (COMMERCIAL - CSO DISTRICT)
SIDE YARD	N/A
REAR YARD	N/A
RESIDENTIAL USE	
COMMERCIAL / RETAIL USE	= 210,690 SF
GARAGE / SERVICE AREA	= 9,270 SF
TOTAL BUILDING AREA	= 297,610 SF
OUTDOOR AMENITY TERRACE	= 19,700 SF
NE CONDOMINIUM BUILDING	
UNITS SHOWN	= 1.85 AC
DENSITY SHOWN	= 53 UNITS
SETBACKS	
FRONT YARD	= 10' (COMMERCIAL - CSO DISTRICT)
SIDE YARD	N/A
REAR YARD	N/A
RESIDENTIAL USE	
COMMERCIAL / RETAIL USE	= 104,830 SF
GARAGE / SERVICE AREA	= 4,850 SF
TOTAL BUILDING AREA	= 26,020 SF
OUTDOOR AMENITY TERRACE	= 135,700 SF
OUTDOOR AMENITY TERRACE	= 6,770 SF
ROW HOUSES	
UNITS SHOWN	= 2.27 AC
DENSITY SHOWN	= 31 UNITS
SETBACKS	
FRONT YARD	= 15' (CADY STREET)
BUILDING SEPARATION	= 10' (GRISWOLD ST. PROP. ROW)
REAR YARD	= 12' (N/A)
RESIDENTIAL USE	
COMMERCIAL / FLEX USE	= 27,313 SF
GARAGE / SERVICE AREA	= 2,084 GFA
TOWN HOMES	
TOWN HOMES	= 12.29 AC
DENSITY SHOWN	= 147 UNITS
DENSITY SHOWN	= 11.96 DU/AC
SETBACKS	
FRONT YARD	= 10' MIN.
BUILDING SEPARATION	= 20'
REAR YARD	= N/A
CARRIAGE HOMES	
CARRIAGE HOMES	= 3.09 AC
DENSITY SHOWN	= 28 UNITS
DENSITY SHOWN	= 9.06 DU/AC
SETBACKS	
FRONT YARD	= 19'
BUILDING SEPARATION	= 20'
REAR YARD	= N/A
SINGLE FAMILY HOMES	
LOTS SHOWN	= 8.40 AC
DENSITY SHOWN	= 39 UNITS
DENSITY SHOWN	= 4.64 LOTS/AC
SETBACKS	
FRONT YARD	= 15'
SIDE YARD	= 7.5' (15' TOTAL)
REAR YARD	= 19' (FROM ALLEY)
TOTAL RESIDENTIAL	
TOTAL OVERALL NET DENSITY	= 472 UNITS
TOTAL OVERALL NET DENSITY	= 10.62 UNITS/AC
TOTAL OVERALL GROSS DENSITY	= 9.81 UNITS/AC

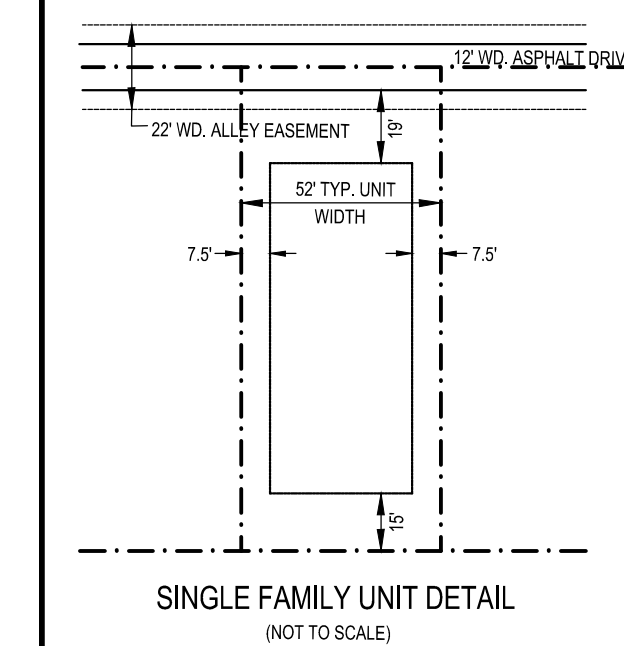
PARKING PROVIDED SUMMARY

NW APARTMENTS	
GARAGE	= 187 SPACES
SURFACE LOT	= 108 SPACES
	= 295 SPACES
	= 1.70 SPACES PER UNIT
NE CONDOMINIUM BUILDING	
GARAGE	= 42 SPACES
SURFACE LOT	= 63 SPACES
	= 105 SPACES
	= 1.98 SPACES PER UNIT
ROW HOUSES	
GARAGE	= 62 SPACES (2 GAR)
SURFACE LOT	= 16 SPACES
	= 78 SPACES
PUBLIC STREET PARALLEL	
CADY STREET	= 26 SPACES
CADY SURFACE LOT	= 18 SPACES
GRISWOLD STREET	= 14 SPACES
BEAL STREET	= 66 SPACES
HUTTON STREET	= 47 SPACES
FAIRBROOK STREET	= 46 SPACES
	= 217 SPACES
TOWNHOMES / CARRIAGE	
GARAGES / DRIVES	= 700 SPACES (2 GAR / 2 DRIVE)
PUBLIC ON-STREET	= 44 SPACES
	= 744 SPACES
SINGLE FAMILY HOMES	
GARAGES / DRIVES	= 156 SPACES (2 GAR / 2 DRIVE)
PUBLIC ON-STREET	= 8 SPACES
MAIL STATION	= 6 SPACES
	= 170 SPACES
TOTAL RESIDENTIAL PARKING PROVIDED	
	= 1,334 SPACES
TOTAL PUBLIC PARKING PROVIDED	
	= 275 SPACES



LEGEND

EXISTING	PROPOSED	DESCRIPTION
[Symbol]	[Symbol]	PAVEMENT (ASPHALT)
[Symbol]	[Symbol]	SIDE WALK (CONCRETE)
[Symbol]	[Symbol]	CONCRETE CURB AND GUTTER
[Symbol]	[Symbol]	STORM SEWER
[Symbol]	[Symbol]	SANITARY SEWER
[Symbol]	[Symbol]	WATER MAIN
[Symbol]	[Symbol]	MANHOLE
[Symbol]	[Symbol]	CATCH BASIN W/STREAM GUARD
[Symbol]	[Symbol]	CURB INLET W/SILT SAC
[Symbol]	[Symbol]	END SECTION
[Symbol]	[Symbol]	GATE VALVE
[Symbol]	[Symbol]	HYDRANT
[Symbol]	[Symbol]	FLOOD PLAIN
[Symbol]	[Symbol]	CONTOURS
[Symbol]	[Symbol]	SPOT ELEVATION
[Symbol]	[Symbol]	SURFACE DRAINAGE
[Symbol]	[Symbol]	OVERFLOW ROUTE
[Symbol]	[Symbol]	TREE FENCE
[Symbol]	[Symbol]	SILT FENCE
[Symbol]	[Symbol]	PROPOSED DRIVEWAY LOCATION
[Symbol]	[Symbol]	LIMIT OF DISTURBANCE



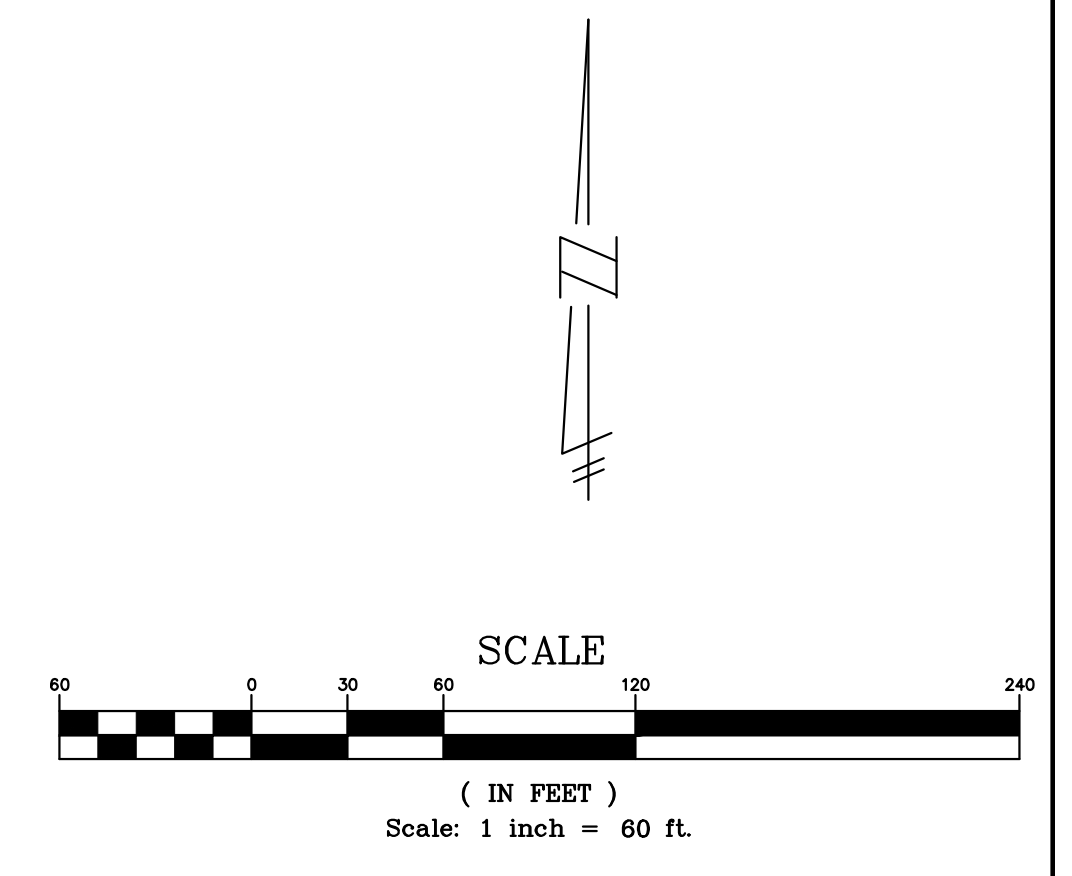
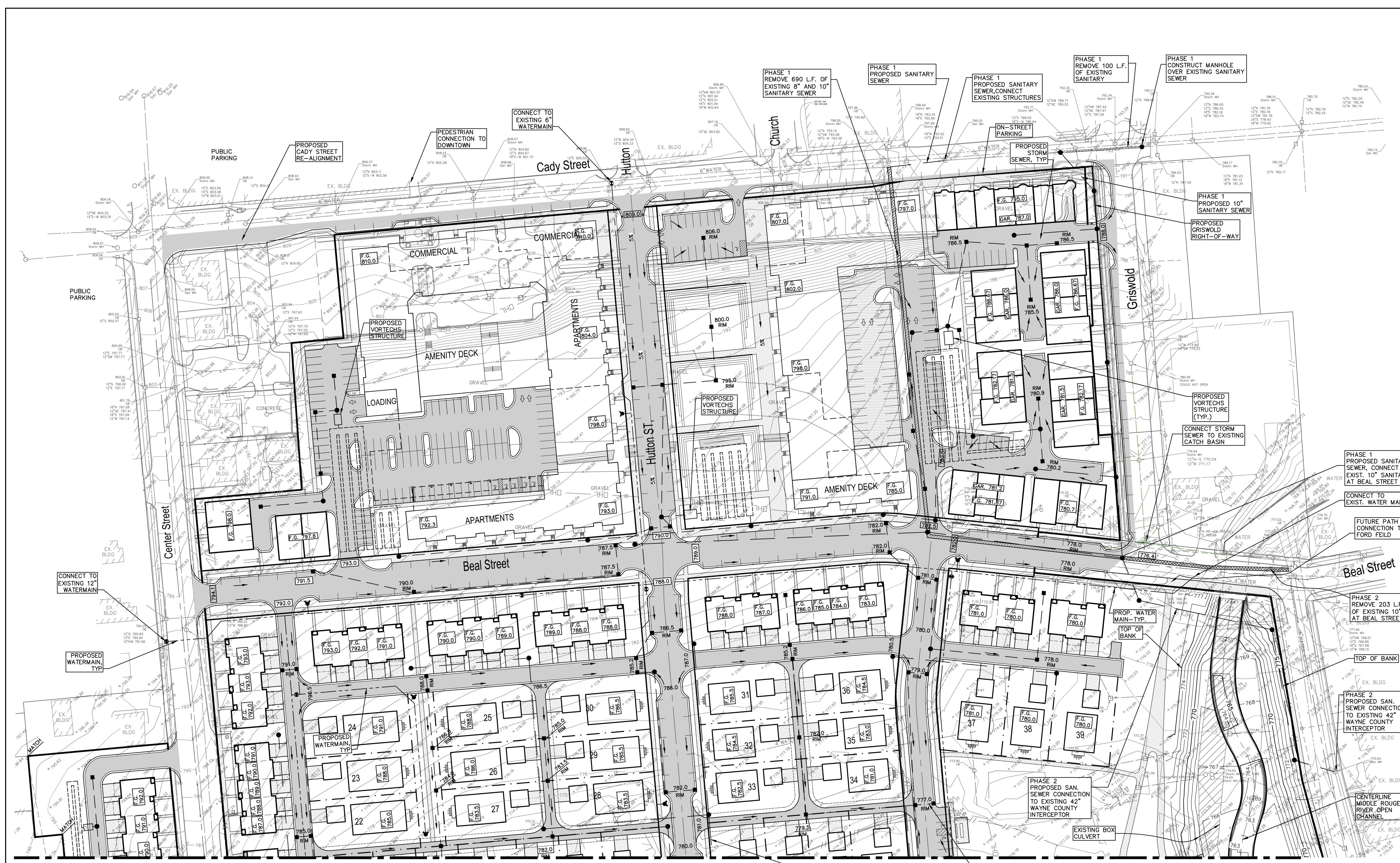
THE DOWNS
SECTION 3, T1S, R8E, CITY OF NORTHVILLE
WAYNE COUNTY, MICHIGAN

REVISIONS			UTILITY WARNING
NO.	ITEM	DATE	UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.
			<p>811 Know what's below. Call before you dig.</p> <p>THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.</p>
DATE: 12-05-21			DESIGNED BY: A.A. JOB NUMBER: 21-001
			CHECKED BY: R.R. DRAWING FILE: 4-21001-04.DWG

OVERALL SITE PLAN

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING
39205 COUNTRY CLUB DRIVE, SUITE C8
FARMINGTON HILLS, MI 48331
PHONE: 248.308.3331

SHEET
4



LEGEND

EXISTING	PROPOSED	DESCRIPTION
[Hatched pattern]	[Hatched pattern]	PAVEMENT (ASPHALT)
[Dashed line]	[Dashed line]	SIDE WALK (CONCRETE)
[Dashed line]	[Dashed line]	CONCRETE CURB AND GUTTER
[Dashed line]	[Dashed line]	STORM SEWER
[Dashed line]	[Dashed line]	SANITARY SEWER
[Dashed line]	[Dashed line]	WATER MAIN
[Circle]	[Circle]	MANHOLE
[Circle]	[Circle]	CATCH BASIN W/STREAM GUARD
[Circle]	[Circle]	CURB INLET W/SILT SAC
[Circle]	[Circle]	END SECTION
[Circle]	[Circle]	GATE VALVE
[Circle]	[Circle]	HYDRANT
[Circle]	[Circle]	FLOOD PLAIN
[Circle]	[Circle]	CONTOURS
[Circle]	[Circle]	1000.00
[Circle]	[Circle]	SPOT ELEVATION
[Circle]	[Circle]	SURFACE DRAINAGE
[Circle]	[Circle]	OVERFLOW ROUTE
[Circle]	[Circle]	TREE FENCE
[Circle]	[Circle]	SILT FENCE
[Circle]	[Circle]	PROPOSED DRIVEWAY LOCATION
[Circle]	[Circle]	LIMIT OF DISTURBANCE

THE DOWNS
SECTION 3, T1S, R8E, CITY OF NORTHVILLE
WAYNE COUNTY, MICHIGAN

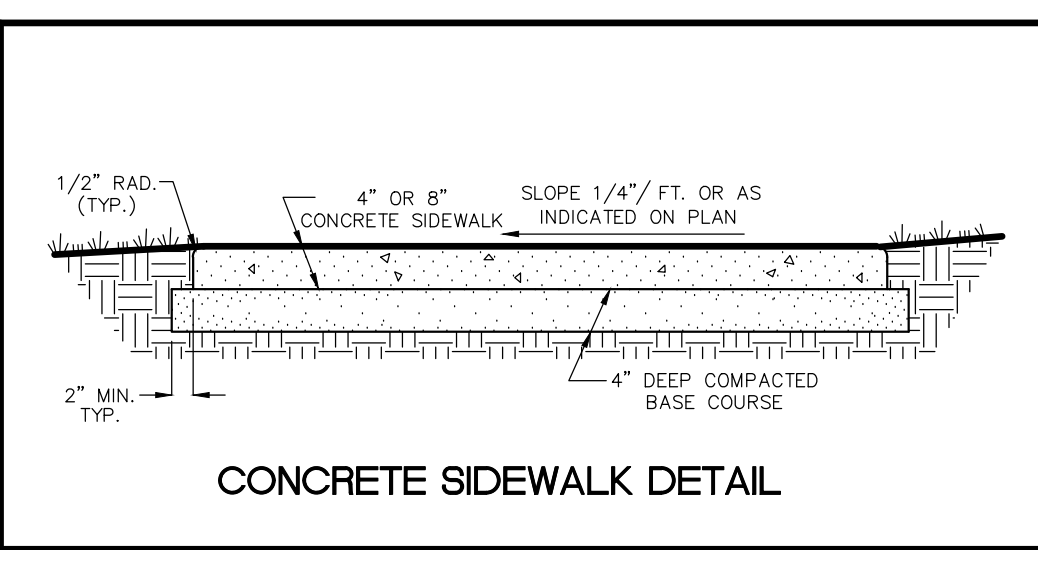
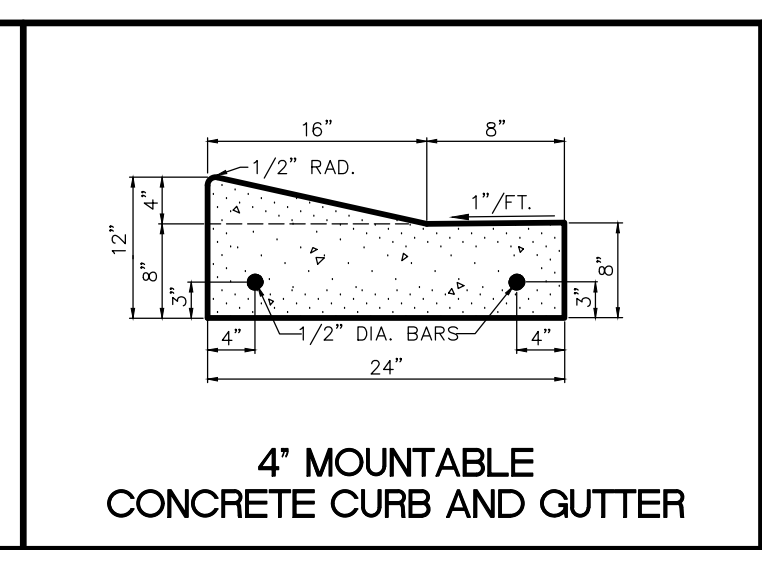
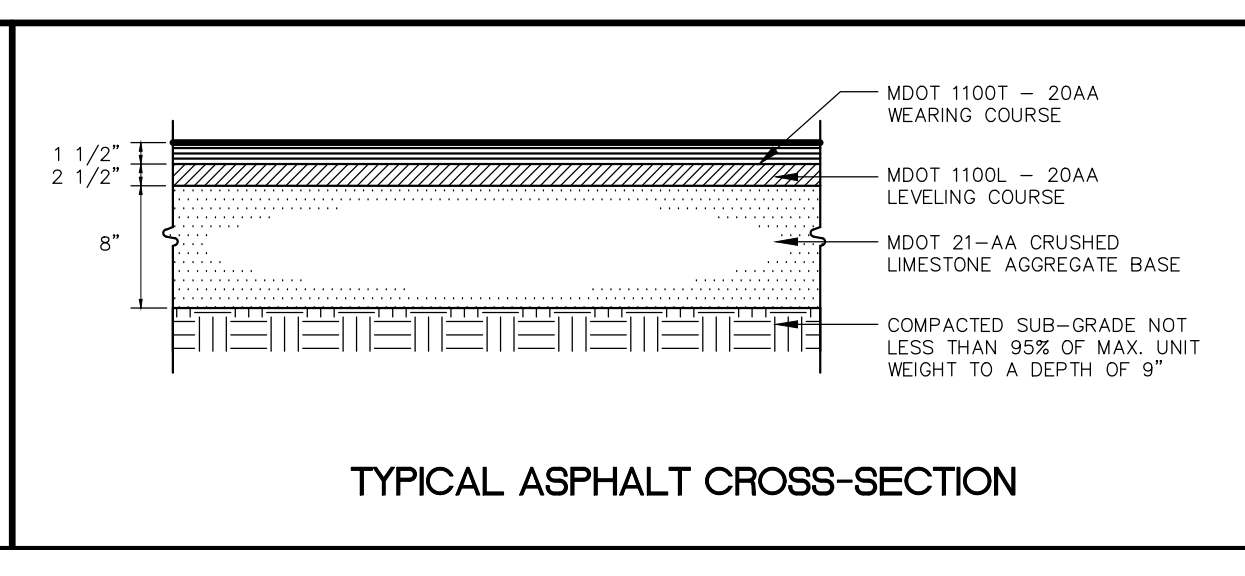
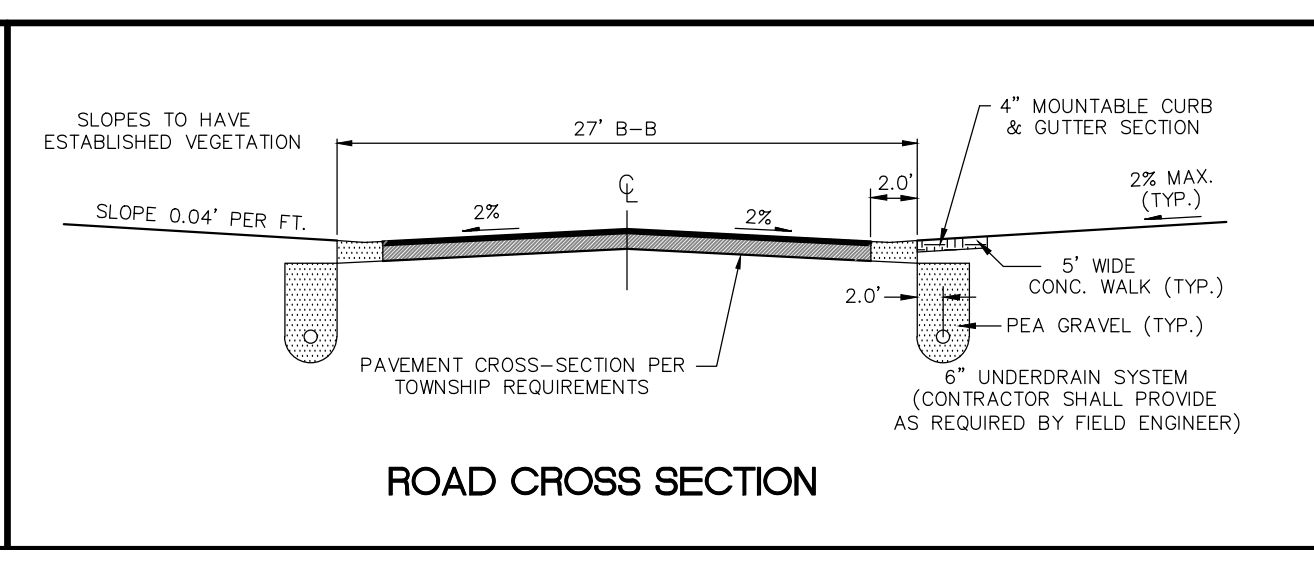
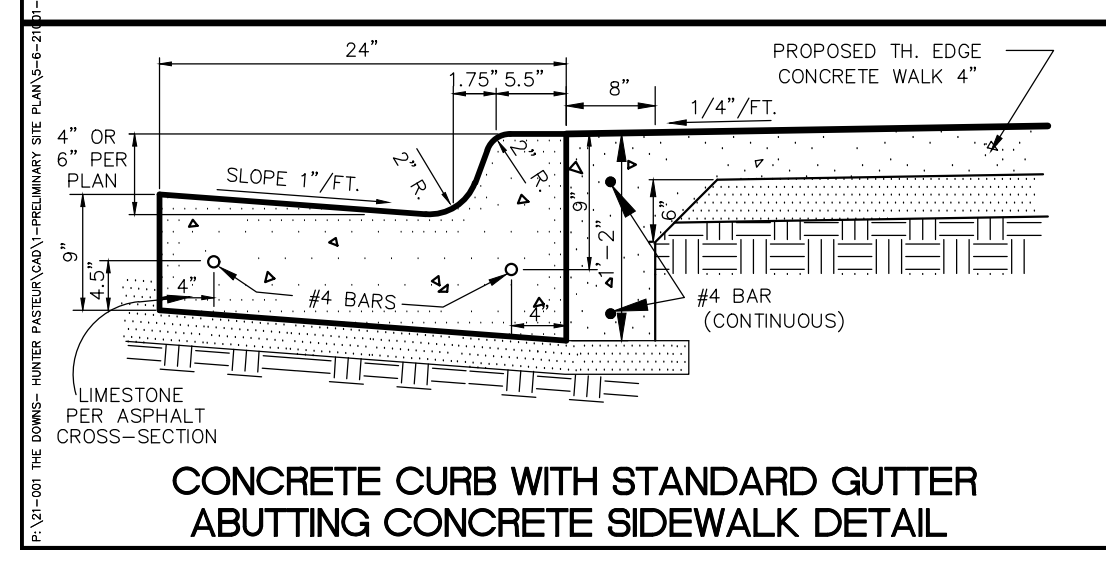
REVISIONS		UTILITY WARNING
NO.	ITEM	DATE

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

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

DATE: 12-05-21 DESIGNED BY: A.A. JOB NUMBER: 21-001
CHECKED BY: R.R. DRAWING FILE: 5-6-21001-17.DWG

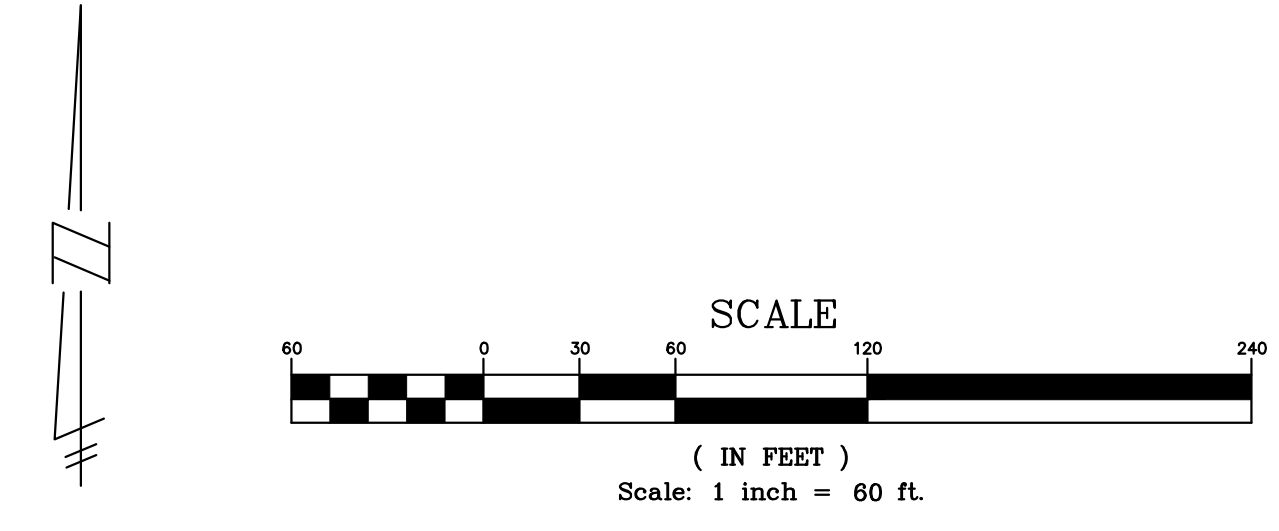


GRADING AND UTILITY PLAN

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING
39205 COUNTRY CLUB DRIVE, SUITE C8
FARMINGTON HILLS, MI 48331
PHONE: 248.308.3331

SHEET 5

FOR CONTINUATION SEE SHEET 5



REVISIONS		
NO.	ITEM	DATE

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

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LEGEND

	EXISTING		PROPOSED

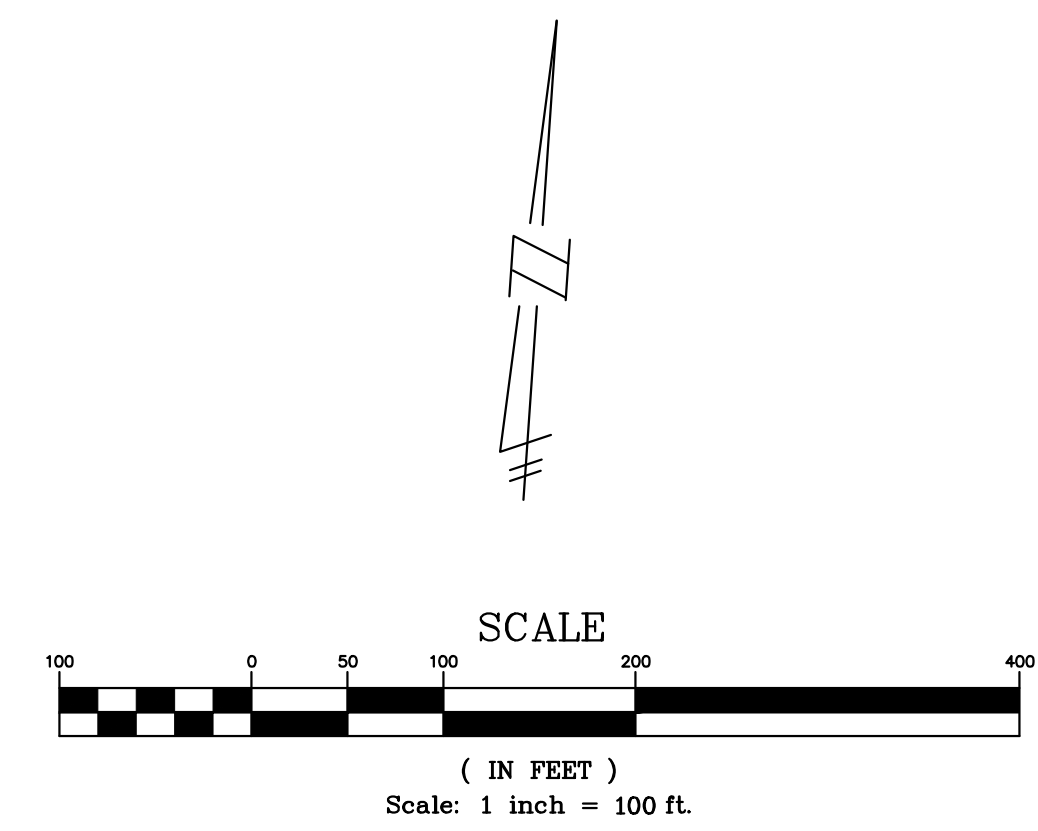
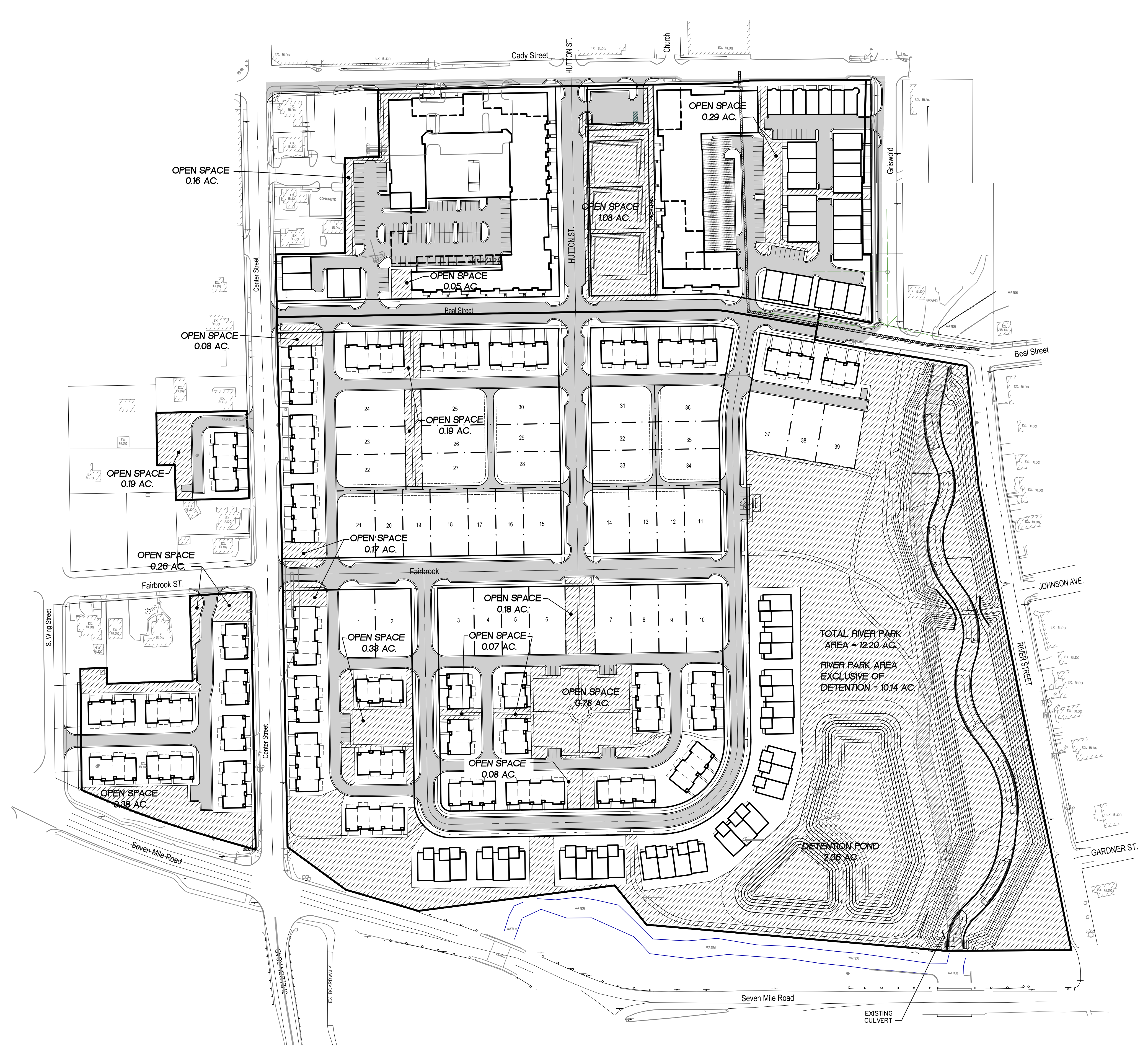
THE DOWNS
 SECTION 3, T1S, R8E, CITY OF NORTHVILLE
 WAYNE COUNTY, MICHIGAN

DATE: 12-05-21
 DESIGNED BY: A.A. JOB NUMBER: 21-001
 CHECKED BY: R.E. DRAWING FILE: 6-6-21001-UT.DWG

UTILITY PLAN

SEIBER KEAST LEHNER
 ENGINEERING | SURVEYING
 39205 COUNTRY CLUB DRIVE, SUITE C8
 FARMINGTON HILLS, MI 48331
 PHONE: 248.308.3331

SHEET
 6



OPEN SPACE SUMMARY	
SITE AREA	48.12 ACRES
OPEN SPACE SHOWN	15.10 ACRES
OPEN SPACE PERCENTAGE	31.38% ACRES
OPEN SPACE EXCLUDING DETENTION	12.69 ACRES
OPEN SPACE PERCENTAGE	26.4%
OPEN SPACE AS SHOWN ON MASTER PLAN	9.31 AC. (19.3%)

LEGEND		
	EXISTING	PAVEMENT (ASPHALT)
	PROPOSED	SIDE WALK (CONCRETE)
		CONCRETE CURB AND GUTTER
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		MANHOLE
		CATCH BASIN W/STREAM GUARD
		CURB INLET W/SILT SAC
		END SECTION
		GATE VALVE
		HYDRANT
		FLOOD PLAIN
		CONTOURS
		SPOT ELEVATION
		SURFACE DRAINAGE
		OVERFLOW ROUTE
		TREE FENCE
		SILT FENCE
		PROPOSED DRIVEWAY LOCATION
		LIMIT OF DISTURBANCE

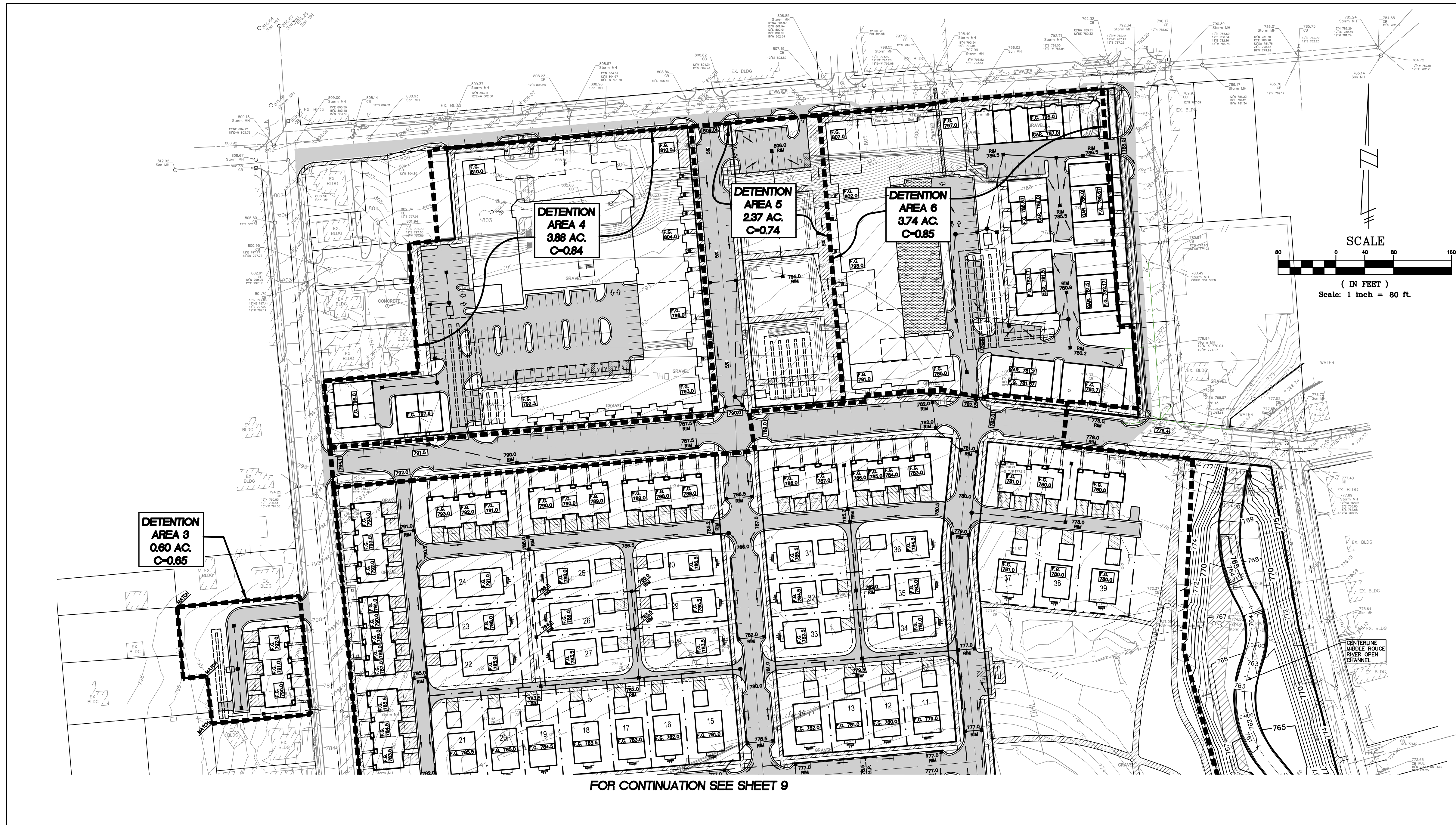
THE DOWNS
SECTION 3, T1S, R8E, CITY OF NORTHVILLE
WAYNE COUNTY, MICHIGAN

REVISIONS		UTILITY WARNING
NO.	ITEM	DATE
<p>UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED.</p> <p align="center">811 Know what's below. Call before you dig.</p> <p>THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.</p>		<p>DESIGNED BY: A.A. JOB NUMBER: 21-091 CHECKED BY: R.E. DRAWING FILE: 7-21001-05.DWG</p>

OPEN SPACE PLAN

<p>SEIBER KEAST LEHNER ENGINEERING SURVEYING 39205 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 PHONE: 248.308.3331</p>	<p>SHEET 7</p>
---	----------------------------------

12/11/2021 10:00 AM THE DOWNS - MAINS PAVED AND CONCRETE DRIVEWAYS - SEE PLAN 7-21001-05.DWG - 12/11/2021 10:00 AM



PROPOSED U.G. DETENTION BASIN
C FACTOR AREA 3

	Area	C	A * C
TOTAL AREA TRIBUTARY TO DETENTION BASINS	= 0.60 Ac		
PAVING AREA (WALKS, DRIVE, ROAD)	= 0.17 Ac	@ 0.95	= 0.16
BUILDING AREA	= 0.11 Ac	@ 0.95	= 0.10
LAWN AREA	= 0.32 Ac	@ 0.40	= 0.13
DETECTION (LOW WATER AREA)	= 0.00 Ac	@ 1.00	= 0.00
TOTAL AREA	= 0.60 Ac	@ 0.65	= 0.39
C_{avg} = A * C / TOTAL ACRES = 0.65			

PROPOSED U.G. DETENTION BASIN
C FACTOR AREA 4

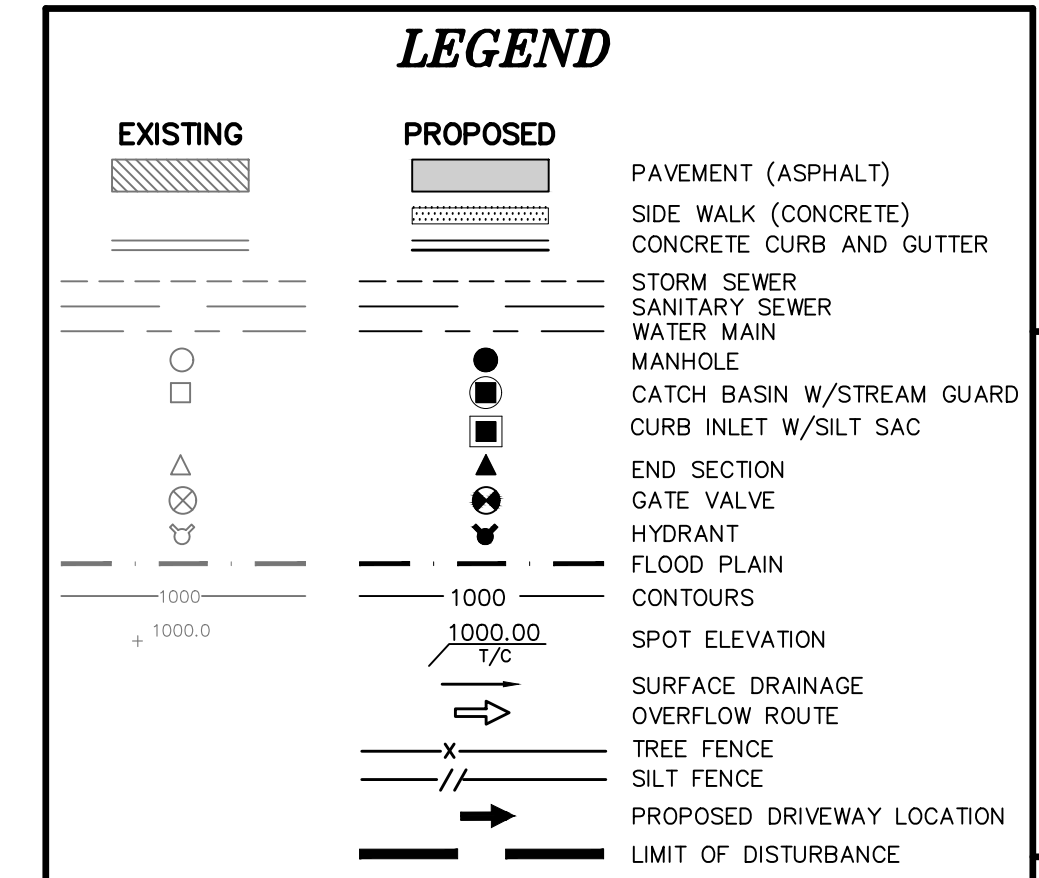
	Area	C	A * C
TOTAL AREA TRIBUTARY TO DETENTION BASINS	= 3.88 Ac		
PAVING AREA (WALKS, DRIVE, ROAD)	= 1.16 Ac	@ 0.95	= 1.10
BUILDING AREA	= 1.94 Ac	@ 0.95	= 1.85
LAWN AREA	= 0.77 Ac	@ 0.40	= 0.31
TOTAL AREA	= 3.88 Ac	@ 0.84	= 3.26
C_{avg} = A * C / TOTAL ACRES = 0.84			

PROPOSED U.G. DETENTION BASIN
C FACTOR AREA 5

	Area	C	A * C
TOTAL AREA TRIBUTARY TO DETENTION BASINS	= 2.37 Ac		
PAVING AREA (WALKS, DRIVE, ROAD)	= 1.47 Ac	@ 0.95	= 1.39
BUILDING AREA	= 0.00 Ac	@ 0.95	= 0.00
LAWN AREA	= 0.90 Ac	@ 0.40	= 0.36
TOTAL AREA	= 2.37 Ac	@ 0.74	= 1.75
C_{avg} = A * C / TOTAL ACRES = 0.74			

PROPOSED U.G. DETENTION BASIN
C FACTOR AREA 6

	Area	C	A * C
TOTAL AREA TRIBUTARY TO DETENTION BASINS	= 3.74 Ac		
PAVING AREA (WALKS, DRIVE, ROAD)	= 1.20 Ac	@ 0.95	= 1.14
BUILDING AREA	= 1.83 Ac	@ 0.95	= 1.74
LAWN AREA	= 0.71 Ac	@ 0.40	= 0.28
TOTAL AREA	= 3.74 Ac	@ 0.85	= 3.17
C_{avg} = A * C / TOTAL ACRES = 0.85			



UTILITY WARNING
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 THE CONTRACTOR SHALL BE RESPONSIBLE FOR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.

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JOB NUMBER: 21-001
 DESIGNED BY: A.A.
 CHECKED BY: B.R.
 DATE: 12-05-21
 DRAWING FILE: P-9-21001-SWM.DWG

DETECTION AREA 3
 0.60 AC.
 C=0.65

DETECTION AREA 4
 3.88 AC.
 C=0.84

DETECTION AREA 5
 2.37 AC.
 C=0.74

DETECTION AREA 6
 3.74 AC.
 C=0.85

FOR CONTINUATION SEE SHEET 9

U.G. DETENTION BASIN CALCULATIONS: AREA 3

Ac = 0.60 Ac
 C = 0.65
 Q₄₁₁ = 0.09 cfs (0.15 cfs/Ac)
 Q₀ = Q₄₁₁ / (Ac * C) = 0.23 (cfs/Ac Imp.)
 T₁₀₀ = -45 + sqrt(19845/Q₀) = 248.52 min
 V_{S100} = (17649 * T) / (T + 45) - 40 * Q₀ * T₁₀₀ = 12653 ft³/Ac Imp.
 V_{T100} = V_S * Ac * C = 4913 ft³

U.G. DETENTION BASIN CALCULATIONS: AREA 4

Ac = 3.88 Ac Area 4
 C = 0.84
 Q₄₁₁ = 0.58 cfs (0.15 cfs/Ac)
 Q₀ = Q₄₁₁ / (Ac * C) = 0.18 (cfs/Ac Imp.)
 T₁₀₀ = -45 + sqrt(19845/Q₀) = 288.38 min
 V_{S100} = (17649 * T) / (T + 45) - 40 * Q₀ * T₁₀₀ = 13207 ft³/Ac Imp.
 V_{T100} = V_S * Ac * C = 43002 ft³

U.G. DETENTION BASIN CALCULATIONS: AREA 5

Ac = 2.37 Ac Area 5
 C = 0.74
 Q₄₁₁ = 0.36 cfs (0.15 cfs/Ac)
 Q₀ = Q₄₁₁ / (Ac * C) = 0.20 (cfs/Ac Imp.)
 T₁₀₀ = -45 + sqrt(19845/Q₀) = 267.98 min
 V_{S100} = (17649 * T) / (T + 45) - 40 * Q₀ * T₁₀₀ = 12940 ft³/Ac Imp.
 V_{T100} = V_S * Ac * C = 22699 ft³

U.G. DETENTION BASIN CALCULATIONS: AREA 6

Ac = 3.74 Ac Area 6
 C = 0.85
 Q₄₁₁ = 0.56 cfs (0.15 cfs/Ac)
 Q₀ = Q₄₁₁ / (Ac * C) = 0.18 (cfs/Ac Imp.)
 T₁₀₀ = -45 + sqrt(19845/Q₀) = 289.55 min
 V_{S100} = (17649 * T) / (T + 45) - 40 * Q₀ * T₁₀₀ = 13221 ft³/Ac Imp.
 V_{T100} = V_S * Ac * C = 41867 ft³

UNDERGROUND BASIN DETAIL - AREA 3

DYODS™ Design Your Own Detention System
CONTECH™ CMP DETENTION SYSTEMS

Project Summary
 Date: 12/9/2021
 Project Name: Northville Downs
 City/County: Northville, MI
 State: MI
 Designed By: RLW
 Company: UDS No. 3

Corrugated Metal Pipe Calculator
 Storage Volume Required (cf): 4,913
 Limiting Width (ft): 16.00
 Invert Depth Below Asphalt (ft): 5.50
 Solid or Perforated Pipe: Solid
 Shape Or Diameter (in): 36
 Spacing between Barrels (ft): 3.00
 Stone Width Around Perimeter of System (ft): 1
 Depth A: Porous Stone Above Pipe (in): 0
 Depth C: Porous Stone Below Pipe (in): 0
 Stone Porosity (0 to 40%): 0

System Sizing
 Pipe Storage: 4,928 cf
 Porous Stone Storage: 0 cf
 Total Storage Provided: 4,928 cf
 Number of Barrels: 12
 Length per Barrel: 119.0 ft
 Length Per Header: 13.0 ft
 Rectangular Footprint (W x L): 15. ft x 126. ft

CONTECH Materials
 Total CMP Footage: 251 ft
 Approximate Total Pieces: 11 pcs
 Approximate Coupling Bands: 10 bands
 Approximate Truckloads: 3 trucks

Construction Quantities**
 Total Excavation: 455 cy
 Porous Stone Backfill For Storage: 0 cy stone
 Backfill to Grade Excluding Stone: 272 cy fill
 **Construction quantities are approximate and should be verified upon final design.

UNDERGROUND BASIN DETAIL - AREA 4

DYODS™ Design Your Own Detention System
CONTECH™ CMP DETENTION SYSTEMS

Project Summary
 Date: 12/9/2021
 Project Name: Northville Downs
 City/County: Northville, MI
 State: MI
 Designed By: RLW
 Company: UDS No. 4

Corrugated Metal Pipe Calculator
 Storage Volume Required (cf): 43,002
 Limiting Width (ft): 80.00
 Invert Depth Below Asphalt (ft): 9.00
 Solid or Perforated Pipe: Solid
 Shape Or Diameter (in): 36
 Spacing between Barrels (ft): 3.00
 Stone Width Around Perimeter of System (ft): 1
 Depth A: Porous Stone Above Pipe (in): 0
 Depth C: Porous Stone Below Pipe (in): 0
 Stone Porosity (0 to 40%): 0

System Sizing
 Pipe Storage: 43,128 cf
 Porous Stone Storage: 0 cf
 Total Storage Provided: 43,128 cf
 Number of Barrels: 12
 Length per Barrel: 119.0 ft
 Length Per Header: 74.0 ft
 Rectangular Footprint (W x L): 76. ft x 122. ft

CONTECH Materials
 Total CMP Footage: 688 ft
 Approximate Total Pieces: 31 pcs
 Approximate Coupling Bands: 38 bands
 Approximate Truckloads: 20 trucks

Construction Quantities**
 Total Excavation: 3091 cy
 Porous Stone Backfill For Storage: 0 cy stone
 Backfill to Grade Excluding Stone: 1494 cy fill
 **Construction quantities are approximate and should be verified upon final design.

UNDERGROUND BASIN DETAIL - AREA 5

DYODS™ Design Your Own Detention System
CONTECH™ CMP DETENTION SYSTEMS

Project Summary
 Date: 12/9/2021
 Project Name: Northville Downs
 City/County: Northville, MI
 State: MI
 Designed By: RLW
 Company: UDS No. 5

Corrugated Metal Pipe Calculator
 Storage Volume Required (cf): 22,699
 Limiting Width (ft): 58.00
 Invert Depth Below Asphalt (ft): 9.00
 Solid or Perforated Pipe: Solid or Perforated
 Shape Or Diameter (in): 36
 Spacing between Barrels (ft): 3.00
 Stone Width Around Perimeter of System (ft): 1
 Depth A: Porous Stone Above Pipe (in): 0
 Depth C: Porous Stone Below Pipe (in): 0
 Stone Porosity (0 to 40%): 0

System Sizing
 Pipe Storage: 22,720 cf
 Porous Stone Storage: 0 cf
 Total Storage Provided: 22,720 cf
 Number of Barrels: 5
 Length per Barrel: 80.0 ft
 Length Per Header: 52.0 ft
 Rectangular Footprint (W x L): 54. ft x 90. ft

CONTECH Materials
 Total CMP Footage: 452 ft
 Approximate Total Pieces: 23 pcs
 Approximate Coupling Bands: 22 bands
 Approximate Truckloads: 12 trucks

Construction Quantities**
 Total Excavation: 1620 cy
 Porous Stone Backfill For Storage: 0 cy stone
 Backfill to Grade Excluding Stone: 779 cy fill
 **Construction quantities are approximate and should be verified upon final design.

UNDERGROUND BASIN DETAIL - AREA 6

DYODS™ Design Your Own Detention System
CONTECH™ CMP DETENTION SYSTEMS

Project Summary
 Date: 12/9/2021
 Project Name: Northville Downs
 City/County: Northville, MI
 State: MI
 Designed By: RLW
 Company: UDS No. 6

Corrugated Metal Pipe Calculator
 Storage Volume Required (cf): 41,867
 Limiting Width (ft): 67.00
 Invert Depth Below Asphalt (ft): 9.00
 Solid or Perforated Pipe: Solid or Perforated
 Shape Or Diameter (in): 36
 Spacing between Barrels (ft): 3.00
 Stone Width Around Perimeter of System (ft): 1
 Depth A: Porous Stone Above Pipe (in): 0
 Depth C: Porous Stone Below Pipe (in): 0
 Stone Porosity (0 to 40%): 0

System Sizing
 Pipe Storage: 42,072 cf
 Porous Stone Storage: 0 cf
 Total Storage Provided: 42,072 cf
 Number of Barrels: 6
 Length per Barrel: 129.0 ft
 Length Per Header: 63.0 ft
 Rectangular Footprint (W x L): 65. ft x 139. ft

CONTECH Materials
 Total CMP Footage: 837 ft
 Approximate Total Pieces: 39 pcs
 Approximate Coupling Bands: 38 bands
 Approximate Truckloads: 20 trucks

Construction Quantities**
 Total Excavation: 3012 cy
 Porous Stone Backfill For Storage: 0 cy stone
 Backfill to Grade Excluding Stone: 1454 cy fill
 **Construction quantities are approximate and should be verified upon final design.

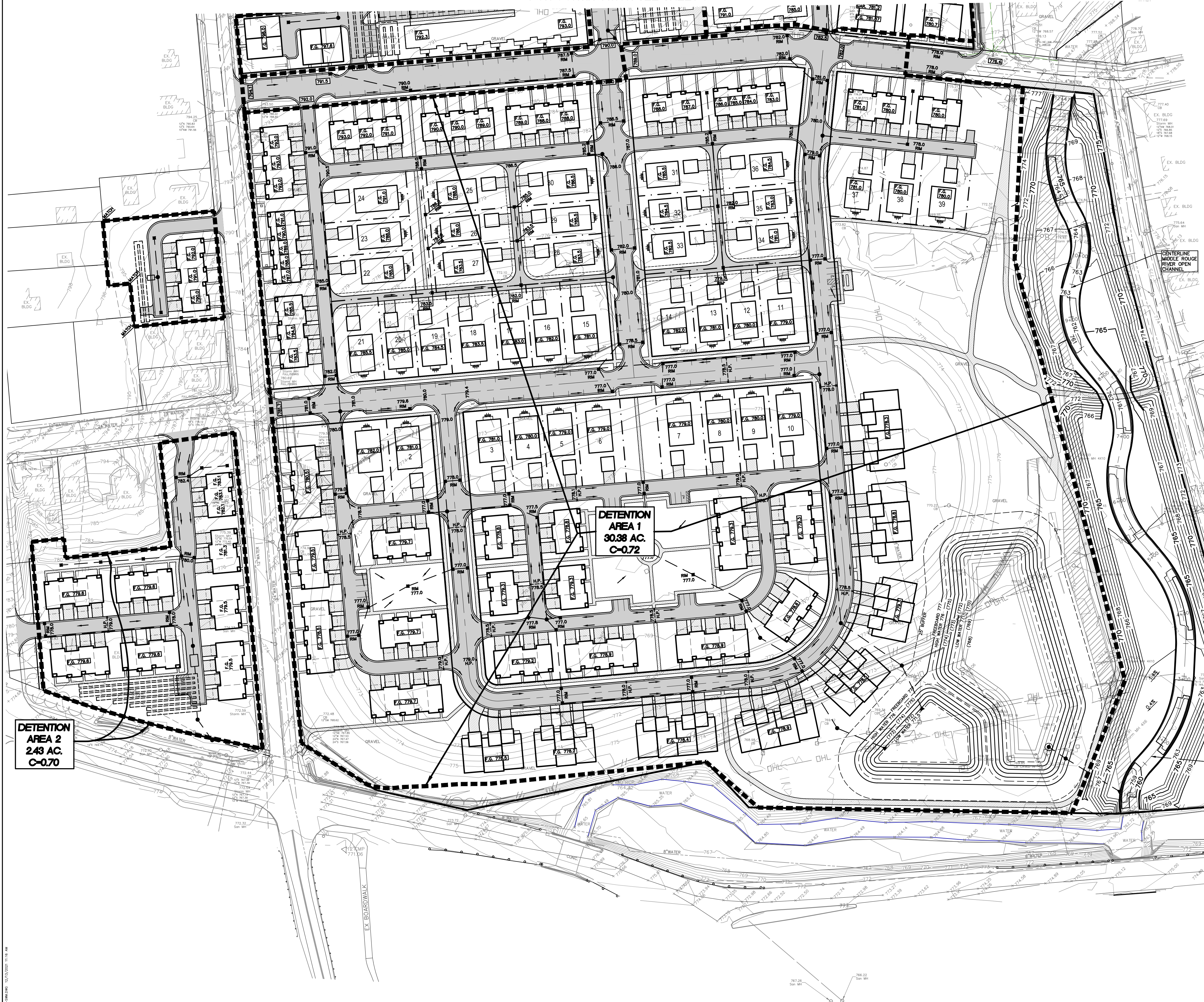
THE DOWNS
 SECTION 3, T1S, R8E, CITY OF NORTHVILLE
 WAYNE COUNTY, MICHIGAN

STORM WATER MANAGEMENT PLAN

SHEET 8

SEIBER KEAST LEHNER
 ENGINEERING I SURVEYING
 39205 COUNTRY CLUB DRIVE, SUITE C8
 FARMINGTON HILLS, MI 48331
 PHONE: 248.508.3331

FOR CONTINUATION SEE SHEET 8



DETENTION AREA 2
2.43 AC
C=0.70

DETENTION AREA 1
30.38 AC
C=0.72

PROPOSED U.G. DETENTION BASIN

	Area	C	A * C
C FACTOR AREA 2			
TOTAL AREA TRIBUTARY TO DETENTION BASINS	2.43	Ac	0.70
PAVING AREA (WALKS, DRIVE, ROAD)	0.74	Ac	0.58
BUILDING AREA	0.61	Ac	0.58
LAWN AREA	1.09	Ac	0.43
DETENTION (LOW WATER AREA)		Ac	0.00
TOTAL AREA	2.43	Ac	1.71
$C_{avg} = A * C / \text{TOTAL ACRES} =$			0.70

PROPOSED DETENTION BASIN

	Area	C	A * C
C FACTOR AREA 1			
TOTAL AREA TRIBUTARY TO DETENTION BASINS	27.47	Ac	8.61
PAVING AREA (WALKS, DRIVE, ROAD)	9.06	Ac	5.45
BUILDING AREA	5.74	Ac	5.45
LAWN AREA	11.44	Ac	4.58
DETENTION (LOW WATER AREA)	1.23	Ac	1.23
TOTAL AREA	27.47	Ac	19.87
$C_{avg} = A * C / \text{TOTAL ACRES} =$			0.72

REVISIONS

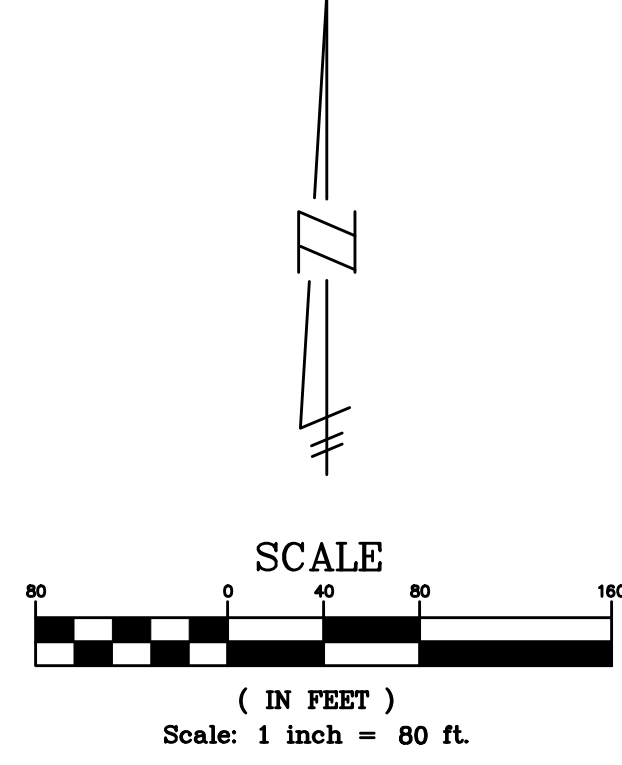
NO.	ITEM	DATE

UTILITY WARNING

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UNDERGROUND BASIN DETAIL - AREA 3

DYODS™
Design Your Own Detention System

CONTECH
CONTECH
For design assistance, drawings, and pricing visit contech-cup.com

Project Summary

Case No.	12/2021
Project Name	Northville Downs
City/County	Northville, MI
State	MI
Designed By	R.E.
Company	SEIBER KEAST LEHNER
System No.	008 No. 2

Enter Information in Blue Cells

Detention Basin Calculator

Storage Volume Required (ft³)	1,163
Length (ft)	18.00
Invert Depth Below Asphalt (ft)	0.20
Soil or Perforated Pipe	19.63 ft Pipe Area
Shape Or Diameter (ft)	19.63
Number Of Headers	2.00
Spacing between Barrels (ft)	2.50
Stone Width Annual Percentage of System (%)	0
Depth A: Porous Stone Above Pipe (ft)	0
Depth C: Porous Stone Below Pipe (ft)	0
Stone Porosity (ft to 40%)	0

System Storage

Pipe Storage	22,011	ft³
Porous Stone Storage	1,163	ft³
Total Storage Provided	22,011	ft³
Number of Barrels	1	barrel
Length per Barrel	18.00	ft
Length Per Header	50.0	ft
Rectangular Footprint (ft x ft)	52.8 x 100.0	ft²

CONTECH Materials

Total CUP Footings	1,121	ft
Approximate Total Pieces	50	pcs
Approximate Covering Barrels	61	barrels
Approximate Trussboards	13	trucks

Construction Quantities**

Total Excavation	2003	cy
Porous Stone Backfill For Storage	1	cy stone
Backfill to Grade Backfilling Stone	1188	cy fill

**Construction quantities are approximate and should be verified upon final design.

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Northville Downs

PRECONSTRUCTION SURFACE RUNOFF USING SCS METHOD - 24 HOUR RAINFALL

Area = 45.276 acres
10 year rainfall (P) = 3.34 in. NOAA ATLAS 14
100 year rainfall (P) = 5.23 in.

Hydrologic Soil Group	Land Use	RCN	Area (Ac)
B	Open Spaces (Good Grass)	61	11.876
B	Gravel	85	12.424
B	Asphalt and Impervious	98	20.976
Total		45.276	3836.124

Composite RCN = 85
S = 1000/RCN - 10 = 1.80 in

RUNOFF (inches)
SRO = (P-0.25)² / (P+0.85) = 1.86 in (10 year)
3.55 in (100 year)

VOLUME OF RUNOFF (area x depth)
305,103 cubic feet (10 year)
584,096 cubic feet (100 year)

TIME OF CONCENTRATION

Overland Flow

L =	300	ft
Df. in Elev. =	809 - 793 =	16
S =	100°/14(3000) =	5.33

Sheet Flow

L =	300	ft
K =	0.48	
V =	K * S ^{0.57} =	1.109
Tc =	L / (V * 3600)	0.075 hrs
		4.51 min.

Shallow Concentrated Flow

L =	1138	ft
V =	2.25	
Tc =	L / (V * 3600)	0.140 hrs
		8.43 min.

Waterway Flow

L =	128	ft
Df. in Elev. =	770 - 768 =	2
S =	100°/8(3640) =	1.56
K =	1.2	
V =	K * S ^{0.57} =	1.500
Tc =	L / (V * 3600)	0.024 hrs
		1.42 min.

Total Time of Concentration [Tc] = 14.36 min
0.24 hr

Unit Hydrograph Peak
Unit Hydrograph Peak (Q_u) = 238.6 * Tc^{-0.81} = 770.60 cfs/in/mi²

Peak rate of runoff

% Swamp	0.00%
% Lake	0.00%

10 Year

Peak Rate of Runoff (Q) = Area (mi²) * SRO * Q_u = 101.20 cfs
Adjustment Ponding - Swamp 1
Lake 1
1000

10 year Peak Q = 101.2 cfs

100 Year

Peak Rate of Runoff (Q) = Area (mi²) * SRO * Q_u = 193.74 cfs
Adjustment Ponding - Swamp 1
Lake 1
1000

100 year Peak Q = 193.7 cfs

Pre-Construction Max Runoff Rate = 193.7 cfs (100 Yr Storm)
Post Construction Max Runoff Rate = 6.79 cfs (0.15 cfs / Ac)

U.G. DETENTION BASIN CALCULATIONS: AREA 2

Ac = 2.43 Ac
C = 0.70
Q_u = 0.36 cfs (0.15 cfs/Ac)
Q_u = Q_{u11} / (Ac * C) = 0.21 (cfs/Ac Imp.)
T₁₀₀ = 45 + sqrt(19845/Q_u) = 260.23 min
V_{S100} = (17649 * T₁₀₀) / (T + 45) - 40 * Q_u * T₁₀₀ = 12830 ft³/Ac Imp.
V_{T100} = V_S * Ac * C = 21963 ft³

UG BASIN

Prelim Basin Storage Calcs
Storage Pipe Dia. = 60 in
Vol / ft = 19.63 c.f. / ft
Pipe Length Required = 1119
8 Pipes

W	47
L	128

DETENTION BASIN CALCULATIONS: AREA 1

Ac = 30.38 Ac Area 1
C = 0.72

DETERMINE VOLUME REQUIRED IN BASIN FOREBAYS - FIRST FLOOD

V_{T11} = 1815 * Ac * C = 1815 * (27.47 Ac) * (0.71) = 39872 ft³
Q_{avg11} = V_{T11} / 86400 = (35878 cf) / (86400) = 0.46 cfs

Elevation (ft)	Area (ft²)	Inc. Vol. (ft³)	Cum. Vol. (ft³)
771.5	8148		
772	9368	8758	8758
773	11912	10640	19398
774	14683	13297.5	32696
775	17680	16181.5	48877
776	20903	19291.5	68169

Z_{if} = 774.4 ft

DETERMINE DETENTION REQUIREMENTS (100-YEAR STORM)

Q_u = 4.56 cfs (0.15 cfs/Ac)
Q_u = Q_{u11} / (Ac * C) = 0.21 (cfs/Ac Imp.)
T₁₀₀ = 45 + sqrt(19845/Q_u) = 284.32 min
V_{S100} = (17649 * T₁₀₀) / (T + 45) - 40 * Q_u * T₁₀₀ = 12888.48 ft³/Ac Imp.
V_{T100} = V_S * Ac * C = 283135 ft³
V_{T100-adj} = 254560 ft³ - 39145 ft³ = 243263 ft³

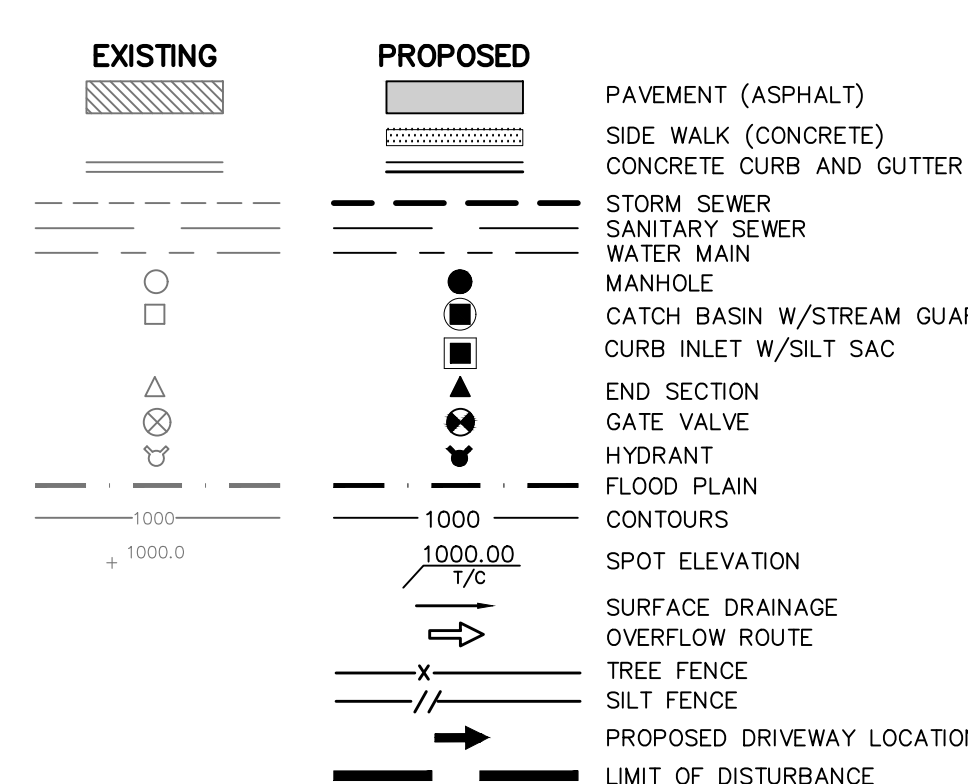
DETERMINE BANK FULL FLOOD STORAGE VOLUME

V_{T11} = 5160 * Ac * C = 113355.2 ft³
V_{T11-adj} = 73483 ft³
Q_{avg11} = V_{T11} / 144000 = 0.79 cfs

Elevation (ft)	Basin Only (ft²)	Forebay above Z _{if} (ft²)	Inc. Volume (ft³)	Cum. Vol. (ft³)
771.0	32637			0
772.0	37177		35177	35177
773.0	43031		40374	75551
774.0	48578		45805	121356
774.4	51141	16012	22113	0
775.0	54358	17680	29355	9375
776.0	60372	20903	57365	19292

Z₁₀₀ = 775.88 ft

LEGEND



THE DOWNS

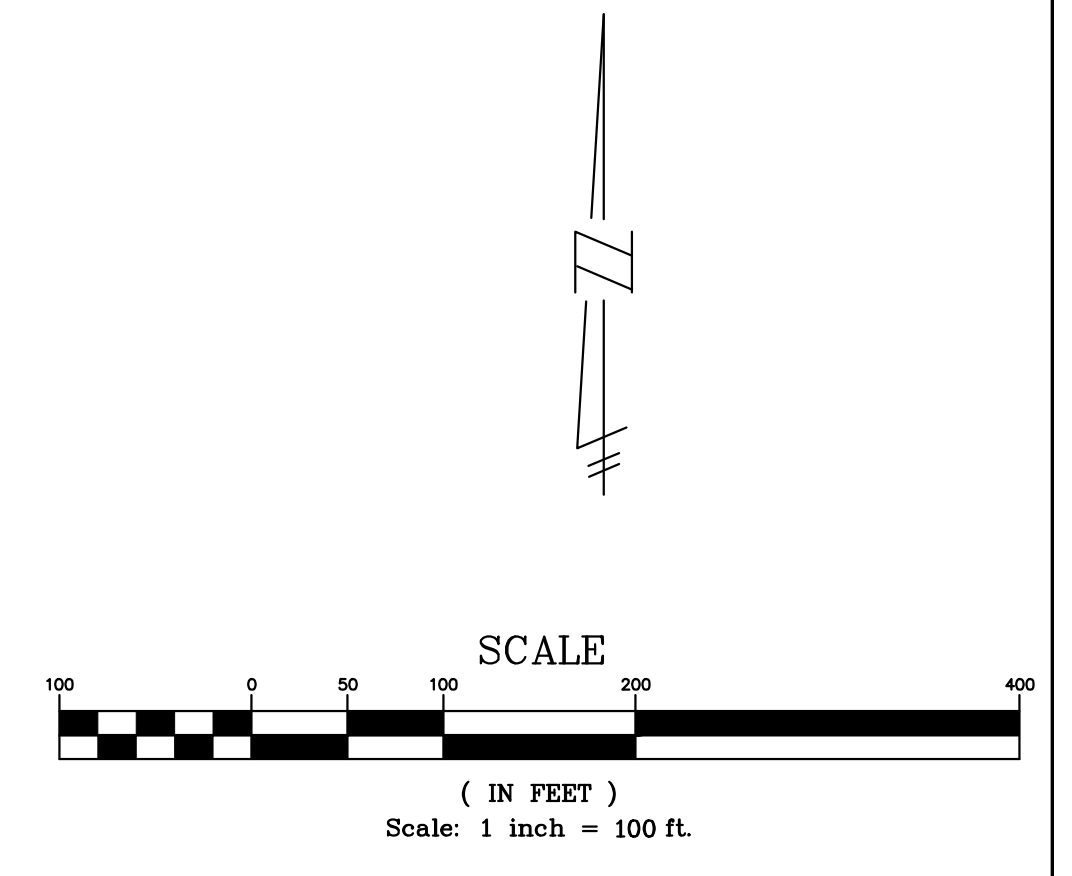
SECTION 3, T1S, R8E, CITY OF NORTHVILLE WAYNE COUNTY, MICHIGAN

DATE: 12-05-21 DESIGNED BY: A.A. JOB NUMBER: 21-001
CHECKED BY: R.E. DRAWING FILE: 8-9-21001-SWM.DWG

STORM WATER MANAGEMENT PLAN

SEIBER KEAST LEHNER
ENGINEERING | SURVEYING
39205 COUNTRY CLUB DRIVE, SUITE C8
FARMINGTON HILLS, MI 48331
PHONE: 248.308.3331

SHEET 9



EXISTING 100 YEAR FLOOD
PLAIN LINE PER FEMA FIRM
PANEL: 26163C0036E
EFFECTIVE DATE: 11-26-2021

POST CONSTRUCTION
100 YEAR FLOOD
PLAIN LINE

PROPOSED
OPEN
CHANNEL

CENTERLINE OF MIDDLE
ROUGE RIVER OPEN
CHANNEL

POST CONSTRUCTION
100 YEAR FLOOD PLAIN
LINE

THE DOWNS
SECTION 3, T1S, R8E, CITY OF NORTHVILLE
WAYNE COUNTY, MICHIGAN

REVISIONS		UTILITY WARNING
NO.	ITEM	DATE

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

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

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

DATE: 12-05-21 DESIGNED BY: A.A. JOB NUMBER: 21-001
CHECKED BY: R.E. DRAWING FILE: 10-21001-FLOOD PLAIN.DWG

FLOODPLAIN PLAN

SEIBER KEAST LEHNER ENGINEERING SURVEYING 39205 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 PHONE: 248.308.3331	SHEET 10
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12/05/2021 10:00 AM THE DOWNS - NORTHVILLE FLOODPLAIN PLAN - SECTION 3, T1S, R8E - FLOODPLAIN PLAN - 12/05/2021 10:00 AM



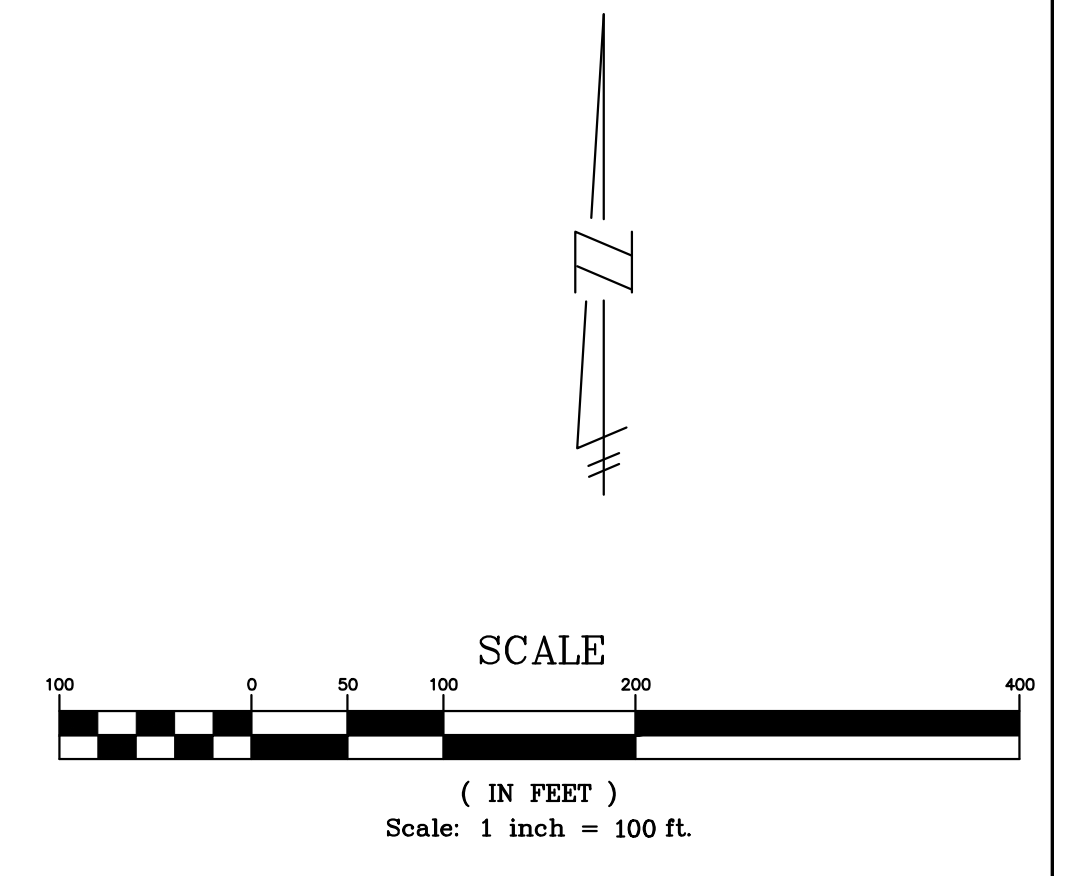
PHASE 1 (H.P.)
 AREA = 10.67 AC.
 174 APARTMENTS
 31 ROW HOMES
 53 CONDOS
 24.18 UNITS/ACRE

PHASE 3 (TOLL)
 AREA = 3.97 AC.
 16 TOWN HOMES
 13 S.F. HOMES
 7.3 UNITS/ACRE

PHASE 2 (TOLL)
 AREA = 15.22 AC.
 57 TOWN HOMES
 28 S.F. HOMES
 28 CARRIAGE HOMES
 7.29 UNITS/ACRE

PHASE 3 (TOLL)
 AREA = 3.23 AC.
 40 TOWN HOMES
 12.38 UNITS/ACRE

PHASE 1 (TOLL)
 AREA = 3.03 AC.
 34 TOWN HOMES
 11.22 UNITS/AC.



HUNTER PASTEUR	
	PHASE 1: JULY 2022 – JANUARY 2025 (30 MONTHS) ABSORPTION: JANUARY 2025 – JANUARY 2026 (20–24 UNITS/MONTH)
TOLL BROTHERS	
	PHASE 1: MARCH 2023 – JUNE 2025 (27 MONTHS) ABSORPTION: JUNE 2024 – JUNE 2025 (14 MONTHS)
	PHASE 2: SEPTEMBER 2023 – NOVEMBER 2026 (38 MONTHS) ABSORPTION: MAY 2025 – NOVEMBER 2026 (14 MONTHS)
	PHASE 3: MARCH 2025 – AUGUST 2027 (29 MONTHS) ABSORPTION: JUNE 2026 – AUGUST 2027 (13 MONTHS)
	RIVER PARK: JULY 2024 – NOVEMBER 2024 (5 MONTHS)

THE DOWNS

SECTION 3, T1S, R8E, CITY OF NORTHVILLE
 WAYNE COUNTY, MICHIGAN

REVISIONS		UTILITY WARNING
NO.	ITEM	DATE
		UNDERGROUND UTILITY LOCATIONS AS SHOWN ON THE PLAN, WERE OBTAINED FROM UTILITY OWNER AND NOT FIELD LOCATED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF AND/OR RELOCATION OF ALL UTILITIES THAT MAY INTERFERE WITH CONSTRUCTION.
DESIGNED BY: A.A. JOB NUMBER: 21-001 DATE: 12-14-21 CHECKED BY: R.E. DRAWING FILE: 11-21001-PHASING PLAN.DWG		
PHASING PLAN		
SEIBER KEAST LEHNER ENGINEERING SURVEYING 39205 COUNTRY CLUB DRIVE, SUITE C8 FARMINGTON HILLS, MI 48331 PHONE: 248.308.3331		SHEET 11

P:\21001 THE DOWNS\11-21001 PHASING PLAN\DRAWING\11-21001-PHASING PLAN.DWG 12/14/21 11:48 AM