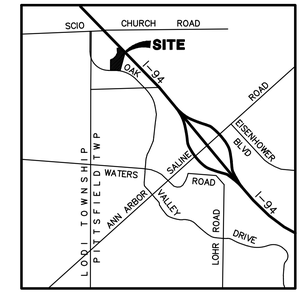
PARK PLACE FIVE
PRELIMINARY SITE PLAN

UNIT 5, PARK PLACE FOR BUSINESS CONDOMINIUM P.U.D.
2373 OAK VALLEY DRIVE
SECTION 6, T3S, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN



VICINITY SKETCH
NOT TO SCALE

ENGINEER/SURVEYOR
LANDSCAPE ARCHITECT:

MIDWESTERN CONSULTING, L.L.C.
3815 PLAZA DRIVE
ANN ARBOR, MI 48108
(734) 995-0200
ATTN: R. JAMES GORENFLO

ARCHITECT

OX STUDIO INC.
302 S. STATE ST., SUITE B
ANN ARBOR, MI 48104
(734) 929-9800
ATTN: ROBB BURROUGHS

DEVELOPER/OWNER

THE PROMANAS GROUP
2411 OAK VALLEY DRIVE
ANN ARBOR, MI 48103
(734) 477-9400
ATTN: JOHN BOGDASARIAN

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1. COVER SHEET
2. EXISTING CONDITIONS AND REMOVALS
3. TREE LIST, TEST PIT LOGS
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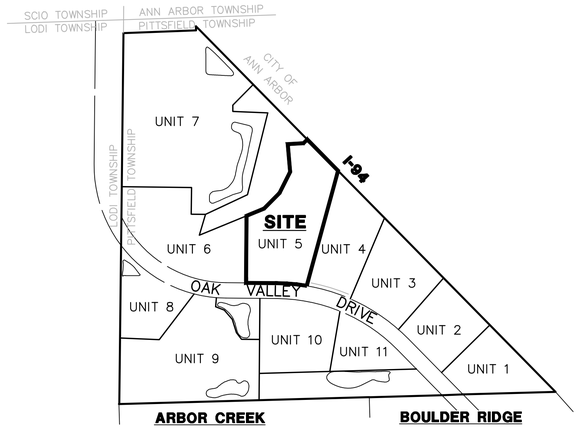
16. A-2. LEVEL 1 FLOOR PLAN
17. A-3. LEVEL 2 FLOOR PLAN
18. A-4. EXTERIOR ELEVATIONS



PARK PLACE FOR BUSINESS SITE CONDOMINIUM
ZONING: PUD

AREA SKETCH
SCALE: 1"=500'

DEVELOPMENT SUMMARY

DEVELOPMENT SUMMARY

	Required/Permitted	Proposed
Gross Lot Area	1.0 acre	258,926 sq ft / 5.94 acres
Net Lot Area*		217,891 sq ft / 5.00 acres
Zoning	PUD (BP stds)	PUD (BP stds)
Proposed Use	General/Medical Office	General/Medical Office
Total Floor Area		62,082 sq ft gross
Medical Office		27,500 sq ft
General Office		34,582 sq ft
Ground Floor Area		30,308 sq ft
Building Height	3 stories/45 ft ht	2.5 stories/43 ft ht
Impervious Surfaces	60% max.	
Building		29,968 sq ft
Pavement		80,535 sq ft
Walks		5,320 sq ft
Total	155,248 sf permitted	115,823 sq ft (53%)
Floor Area Ratio	60% max.	25%
Ground Floor Coverage	40% max.	12%
Setbacks		
Front (S)	50 ft	126 ft
Side (E & W)	20 ft min, 40 ft total	143 ft E & 59 ft W
Rear (N)	35 ft	308 ft
Required Parking		
Medical Office	1 space/200 sf (138 req)	138 spaces
General Office	1 space/300 sf (116 req)	116 spaces
		254 total spaces
Bicycle	None required	8 hoop & 6 locker spaces
		14 total

*Net lot area = 5.94 ac - (0.67 ac wetland) - (0.30 ac. drain esmt x 0.9) = 5.00ac

LEGAL DESCRIPTION

UNIT 5, PARK PLACE FOR BUSINESS, ACCORDING TO THE MASTER DEED RECORDED IN LIBER 3104, PAGES 552 THROUGH 559, WASHTENAW COUNTY RECORDS, AND AMENDED BY FIRST AMENDMENT TO THE MASTER DEED AS RECORDED IN LIBER 3790, PAGE 411, WASHTENAW COUNTY RECORDS, AND AMENDED BY SECOND AMENDMENT TO THE MASTER DEED AS RECORDED IN LIBER 5010, PAGE 281, WASHTENAW COUNTY RECORDS, DESIGNATED AS REPLAT NO. 2 OF WASHTENAW COUNTY CONDOMINIUM SUBDIVISION PLAN NO. 211, TOGETHER WITH RIGHTS IN GENERAL COMMON ELEMENTS AND LIMITED COMMON ELEMENTS AS SET FORTH IN THE MASTER DEED AS DESCRIBED IN ACT 59 OF THE PUBLIC ACTS OF 1978, AS AMENDED.

NOTES:

1. UNIT 5 IS PART OF THE APPROVED & RECORDED PARK PLACE FOR BUSINESS CONDOMINIUM P.U.D., LIBER 3104, PG. 596-599, DATED MAY 4, 1995. THE APPROVED P.U.D. SITE PLANS, EXHIBIT B DRAWINGS, AND MASTER DEED & BYLAWS PROVIDE DRAINAGE EASEMENTS FOR EACH UNIT AS NECESSARY TO PROVIDE REQUIRED DRAINAGE OUTLETS. ANY REQUIRED DITCHES NOT CONSTRUCTED PRIOR TO THE DEVELOPMENT OF ANY UNIT WILL BE CONSTRUCTED AS A PART OF THE SITE IMPROVEMENTS.
2. BECAUSE THIS SITE IS LOCATED IN THE MALLETT'S CREEK WATERSHED, THE OWNER AGREES TO USE ONLY PRODUCTS WITH LOW OR NO PHOSPHATES.

SITE PLAN, PARK PLACE FOR BUSINESS, UNIT 5 – CSPA#16-02

PARK PLACE FIVE

JOB No. **15297**

REVISIONS:	REV. DATE
PER REVIEW COMMENTS	03/04/16
PER REVIEW COMMENTS	5/18/16

DATE: 1/21/16
SHEET 01 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: RJG
TECH:
15297CV1.DWG
FB#

1

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RELEASED FOR:	DATE
PRELIM. SITE PLAN SUBMITTAL	1/21/16

STATE OF MICHIGAN
HEATH HARTT
ENGINEER
No. 56247
LICENSED PROFESSIONAL ENGINEER

HEATH T. HARTT
P.E. # 56247

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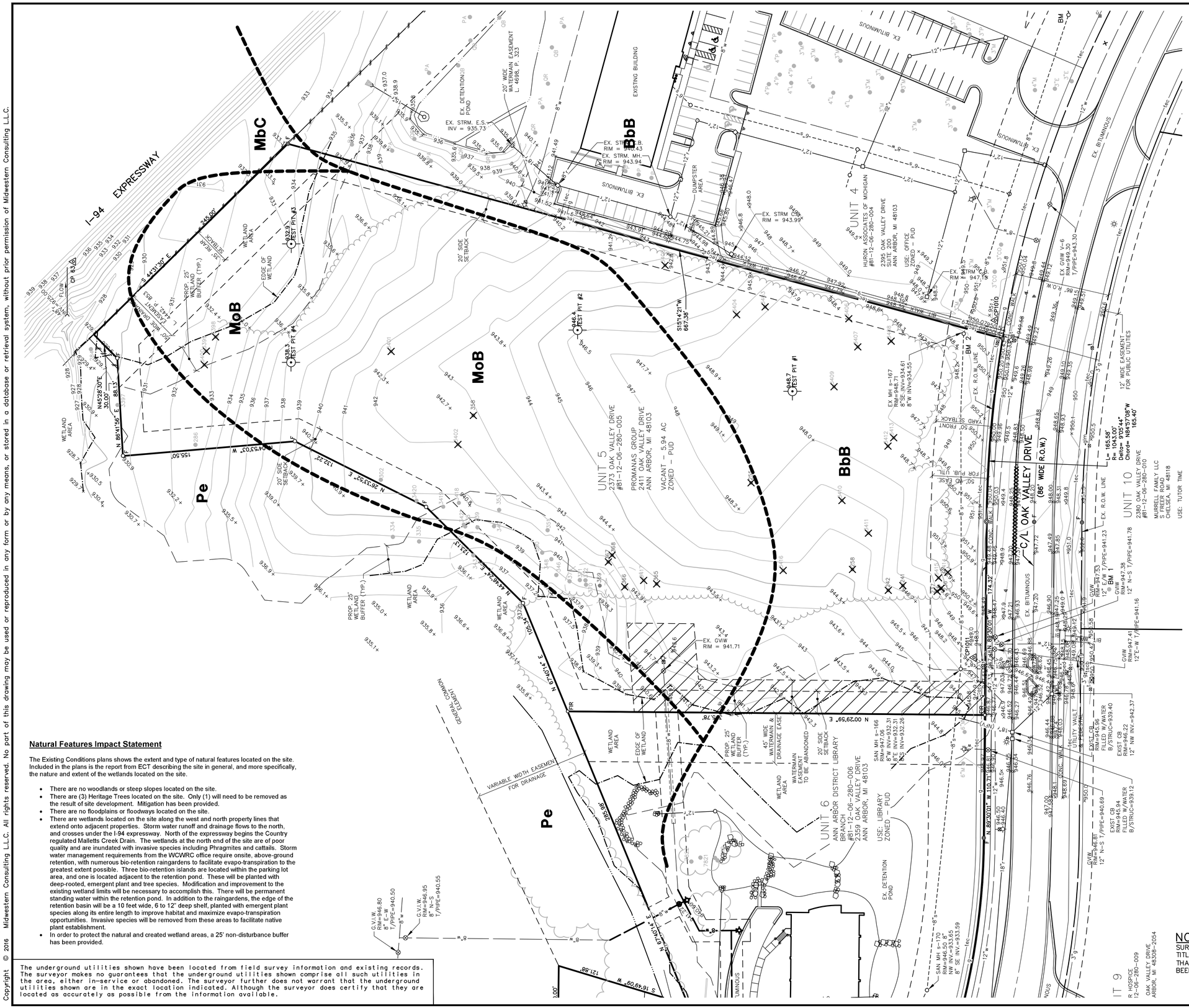

LEGEND

838	EXIST. CONTOUR
×836.2	EXIST. SPOT ELEVATION
	ELEC. TRANSFORMER
tec	EXIST. TELEPHONE, ELECTRIC & CABLE
	EXIST. LIGHT POLE
t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
w	EXIST. WATER MAIN
	EXIST. HYDRANT
	EXIST. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
r	EXIST. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	END SECTION
	CULVERT
s	EXIST. SANITARY SEWER
	EDGE OF WATER
	SIGN
tr	TELEPHONE RISER
catv	CABLE TELEVISION RISER
e	ELECTRIC METER
w	WATER METER
g	GAS METER
glm	GAS LINE MARKER
	FENCE
	SINGLE TREE
	TREE OR BRUSH LIMIT
	TEST PIT LOCATION
S	SET IRON PIPE
F	FOUND IRON PIPE
F	FOUND MONUMENT
FIR	FOUND IRON ROD
	CONTROL PT.
	EXIST. WETLAND LIMITS
	HERITAGE TREE/CRITICAL ROOT ZONE
	CONCRETE TO BE REMOVED
	BITUMINOUS TO BE REMOVED
	UTILITY TO BE ABANDONED
	CURB TO BE REMOVED
	TREE TO BE REMOVED
REL	ITEM TO BE RELOCATED
REM	ITEM TO BE REMOVED

GENERAL SOILS INFORMATION

SOIL SURVEY OF WASHTENAW COUNTY, MICHIGAN USDA NATURAL RESOURCES CONSERVATION SERVICE, AMENDED JANUARY, 1996 MORLEY-BLOUNT SOILS ASSOCIATION

BbB: BLOUNT LOAM, 2 TO 6% SLOPES. THE HAZARD OF EROSION IS SLIGHT. THE WATER TABLE IS SEASONALLY HIGH. RUNOFF IS MEDIUM OR SLOW.

MoB: MORLEY LOAM, 2 TO 6% SLOPES. THE HAZARD OF EROSION IS SLIGHT. SURFACE RUNOFF IS SLOW.

MoC: MORLEY LOAM, 6 TO 12% SLOPES. THE HAZARD OF EROSION IS SLIGHT. SURFACE RUNOFF IS SLOW.

Pe: Pewamo clay loam, 0 to 2 percent slopes

BENCH MARKS

1. GEAR PIN IN SW FACE OF TWIN 18" SHAGBARK HICKORY. ELEV.= 955.98, NGVD 29 (USGS)
2. N. SIDE OF RIM ON SANITARY SEWER MANHOLE s-167 ELEV.= 948.71, NGVD 29 (USGS)
3. N. SIDE OF RIM ON SANITARY SEWER MANHOLE s-168 ELEV.= 950.26, NGVD 29 (USGS)
4. LOWER ALL ELEVATIONS 0.32' TO OBTAIN NAVD 88 DATUM.

NOTES:

SURVEY PREPARED WITHOUT THE BENEFIT OF A TITLE SEARCH. NO GUARANTEE CAN BE MADE THAT ALL EASEMENTS AND/OR EXCEPTIONS HAVE BEEN SHOWN ON THE FACE OF THE SURVEY.

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

Natural Features Impact Statement

The Existing Conditions plans shows the extent and type of natural features located on the site. Included in the plans is the report from ECT describing the site in general, and more specifically, the nature and extent of the wetlands located on the site.

- There are no woodlands or steep slopes located on the site.
- There are (3) Heritage Trees located on the site. Only (1) will need to be removed as the result of site development. Mitigation has been provided.
- There are no floodplains or floodways located on the site.
- There are wetlands located on the site along the west and north property lines that extend onto adjacent properties. Storm water runoff and drainage flows to the north, and crosses under the I-94 expressway. North of the expressway begins the Country regulated Malletts Creek Drain. The wetlands at the north end of the site are of poor quality and are inundated with invasive species including Phragmites and cattails. Storm water management requirements from the WCWRC office require onsite, above-ground retention, with numerous bio-retention raingardens to facilitate evapo-transpiration to the greatest extent possible. Three bio-retention islands are located within the parking lot area, and one is located adjacent to the retention pond. These will be planted with deep-rooted, emergent plant and tree species. Modification and improvement to the existing wetland limits will be necessary to accomplish this. There will be permanent standing water within the retention pond. In addition to the raingardens, the edge of the retention basin will be a 10 feet wide, 6 to 12" deep shelf, planted with emergent plant species along its entire length to improve habitat and maximize evapo-transpiration opportunities. Invasive species will be removed from these areas to facilitate native plant establishment.
- In order to protect the natural and created wetland areas, a 25' non-disturbance buffer has been provided.

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

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JOHN BOGDASARIAN
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PARK PLACE FIVE

PRELIMINARY SITE PLAN
EXISTING CONDITIONS AND REMOVAL PLAN

02

DATE:	1/21/16
SHEET	2 OF 18
CADD-DWG.	WAJ
ENG:	HTH
PM:	RJG
TECH:	
15297EX1.dwg	

JOB No. 15297

REVISIONS:
PER REVIEW COMMENTS — REV. DATE 3/4/16

INFILTRATION TEST LOGS

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL LOG

Proj. Name:	2373 Oak Valley Drive
Proj. Number:	9491
Site Address:	2373 Oak Valley Drive Sylvan Lake , Michigan
Drilled by:	ERG Environmental Services
Method:	Geoprobe
Geologist:	Jeremy Efros, CPG

Boring Data	
Boring ID:	**Test Pit 1**
Total Depth:	9.5' bgs
Date Completed:	12/30/2015
MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth From	Depth To	Description	PID (ppm)	Sample Depth
0	1'	SANDY SILT, trace to some roots, brown to dark brown, moist to wet (Topsoil/ML)	NA	
1'	9.5'	SILTY CLAY, trace fine to coarse sand and gravel, brown to gray (CL)	NA	
		End of Boring		

ppm = parts per million
MW = monitoring well
TW = temporary monitoring well
bgs = below ground surface
NA = Not Available
USCS Classification Symbol
ML = Silt
CL = Clay

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL LOG

Proj. Name:	2373 Oak Valley Drive
Proj. Number:	9491
Site Address:	2373 Oak Valley Drive Sylvan Lake , Michigan
Drilled by:	ERG Environmental Services
Method:	Geoprobe
Geologist:	Jeremy Efros, CPG

Boring Data	
Boring ID:	**Test Pit 4**
Total Depth:	10' bgs
Date Completed:	12/30/2015
MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth From	Depth To	Description	PID (ppm)	Sample Depth
0	1'	SANDY SILT, trace to some roots, brown to dark brown, moist to wet (Topsoil/ML)	NA	
1'	10'	SILTY CLAY, trace fine to coarse sand and gravel, brown to gray (CL)	NA	
		End of Boring		

ppm = parts per million
MW = monitoring well
TW = temporary monitoring well
bgs = below ground surface
NA = Not Available
USCS Classification Symbol
ML = Silt
CL = Clay

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL LOG

Proj. Name:	2373 Oak Valley Drive
Proj. Number:	9491
Site Address:	2373 Oak Valley Drive Sylvan Lake , Michigan
Drilled by:	ERG Environmental Services
Method:	Geoprobe
Geologist:	Jeremy Efros, CPG

Boring Data	
Boring ID:	**Test Pit 2**
Total Depth:	10' bgs
Date Completed:	12/30/2015
MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth From	Depth To	Description	PID (ppm)	Sample Depth
0	1'	SANDY SILT, trace to some roots, brown to dark brown, moist to wet (Topsoil/ML)	NA	
1'	10'	SILTY CLAY, trace fine to coarse sand and gravel, brown to gray (CL)	NA	
		End of Boring		

ppm = parts per million
MW = monitoring well
TW = temporary monitoring well
bgs = below ground surface
NA = Not Available
USCS Classification Symbol
ML = Silt
CL = Clay

ASTI Environmental
10448 Citation Dr., Suite 100
Brighton, MI 48116

SOIL LOG

Proj. Name:	2373 Oak Valley Drive
Proj. Number:	9491
Site Address:	2373 Oak Valley Drive Sylvan Lake , Michigan
Drilled by:	ERG Environmental Services
Method:	Geoprobe
Geologist:	Jeremy Efros, CPG

Boring Data	
Boring ID:	**Test Pit 3**
Total Depth:	9' bgs
Date Completed:	12/30/2015
MW Data	
Size:	NA
Type:	NA
Screen Length:	NA
Well Depth:	NA
GW Depth (▼):	NA

Depth From	Depth To	Description	PID (ppm)	Sample Depth
0	1'	SANDY SILT, trace to some roots, brown to dark brown, moist to wet (Topsoil/ML)	NA	
1'	9.5'	SILTY CLAY, trace fine to coarse sand and gravel, occasional wet sand and silt seams from 0 to 5' bgs, brown to gray (CL)	NA	
		End of Boring		

ppm = parts per million
MW = monitoring well
TW = temporary monitoring well
bgs = below ground surface
NA = Not Available
USCS Classification Symbol
ML = Silt
CL = Clay

EXISTING TREE LIST

TAG#	DBH	COMMAN NAME	GENUS/SPECIES	STEMS	REMOVE	HERITAGE
236	9"	Shagbark Hickory	Carya ovata		R	
237	7"	Black Cherry	Prunus serotina		R	
241	7"	Common Apple	Malus pumila	triple	R	
242	11"	Black Walnut	Juglans nigra		R	
255	7"	American Elm	Ulmus americana	twin	R	
258	7"	American Elm	Ulmus americana		R	
265	7"	American Elm	Ulmus americana			
286	10"	Red Cedar	Juniperus virginiana			
287	8"	American Elm	Ulmus americana			
288	8"	Black Walnut	Juglans nigra			
289	7"	Black Walnut	Juglans nigra			
290	17"	Black Walnut	Juglans nigra			
291	9"	Black Walnut	Juglans nigra			
292	8"	Black Walnut	Juglans nigra			
293	12"	Black Walnut	Juglans nigra			
294	9"	Black Walnut	Juglans nigra			
295	11"	Black Walnut	Juglans nigra			
296	6"	American Elm	Ulmus americana			
297	8"	American Elm	Ulmus americana			
298	10"	Black Walnut	Juglans nigra			
299	6"	American Elm	Ulmus americana			
300	8"	American Elm	Ulmus americana			
302	7"	American Elm	Ulmus americana			
334	6"	Shagbark Hickory	Carya ovata			
335	7"	Shagbark Hickory	Carya ovata			
343	21"	Black Walnut	Juglans nigra			H
346	17"	Black Walnut	Juglans nigra			
348	8"	American Elm	Ulmus americana			
350	8"	American Elm	Ulmus americana	twin		
351	8"	American Elm	Ulmus americana			
353	9"	American Elm	Ulmus americana			
357	7"	American Elm	Ulmus americana			
358	7"	American Elm	Ulmus americana		R	
365	13"	Black Walnut	Juglans nigra		R	
366	18"	Black Walnut	Juglans nigra		R	H
367	10"	Black Walnut	Juglans nigra		R	
368	12"	Black Walnut	Juglans nigra		R	
369	8"	Black Walnut	Juglans nigra			
370	19"	White Oak	Quercus alba			H
371	12"	White Oak	Quercus alba			
372	12"	Black Walnut	Juglans nigra			
373	13"	Black Walnut	Juglans nigra			
3397	8"	Red Cedar	Juniperus virginiana			
3398	8"	American Elm	Ulmus americana		R	
3399	6"	American Elm	Ulmus americana		R	
3400	6"	American Elm	Ulmus americana		R	
3401	9"	American Elm	Ulmus americana		R	
3402	6"	Black Walnut	Juglans nigra		R	
3403	12"	Scotch Pine	Pinus sylvestris		R	
3404	8"	Red Pine	Pinus resinosa		R	
3405	7"	American Elm	Ulmus americana		R	
3406	8"	American Elm	Ulmus americana		R	
3407	7"	American Elm	Ulmus americana		R	
3408	7"	American Elm	Ulmus americana		R	
3409	7"	American Elm	Ulmus americana		R	
3410	6"	American Elm	Ulmus americana		R	
3411	6"	American Elm	Ulmus americana		R	
3412	6"	American Elm	Ulmus americana		R	
3413	7"	American Elm	Ulmus americana		R	
3414	8"	American Elm	Ulmus americana		R	
3415	7"	American Elm	Ulmus americana		R	
3416	6"	American Elm	Ulmus americana			
3417	6"	Black Walnut	Juglans nigra			
3418	10"	Black Walnut	Juglans nigra			
3419	6"	American Elm	Ulmus americana			
3420	6"	American Elm	Ulmus americana			
3421	12"	American Elm	Ulmus americana			

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PARK PLACE FIVE
PRELIMINARY SITE PLAN
TREE LIST, EXISTING UTILITY SCHEDULES & TEST PIT LOGS

03

JOB No. **15297**
REVISIONS:
PER REVIEW COMMENTS — REV. DATE 3/4/16

DATE: 1/21/16
SHEET 3 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: RJG
TECH:
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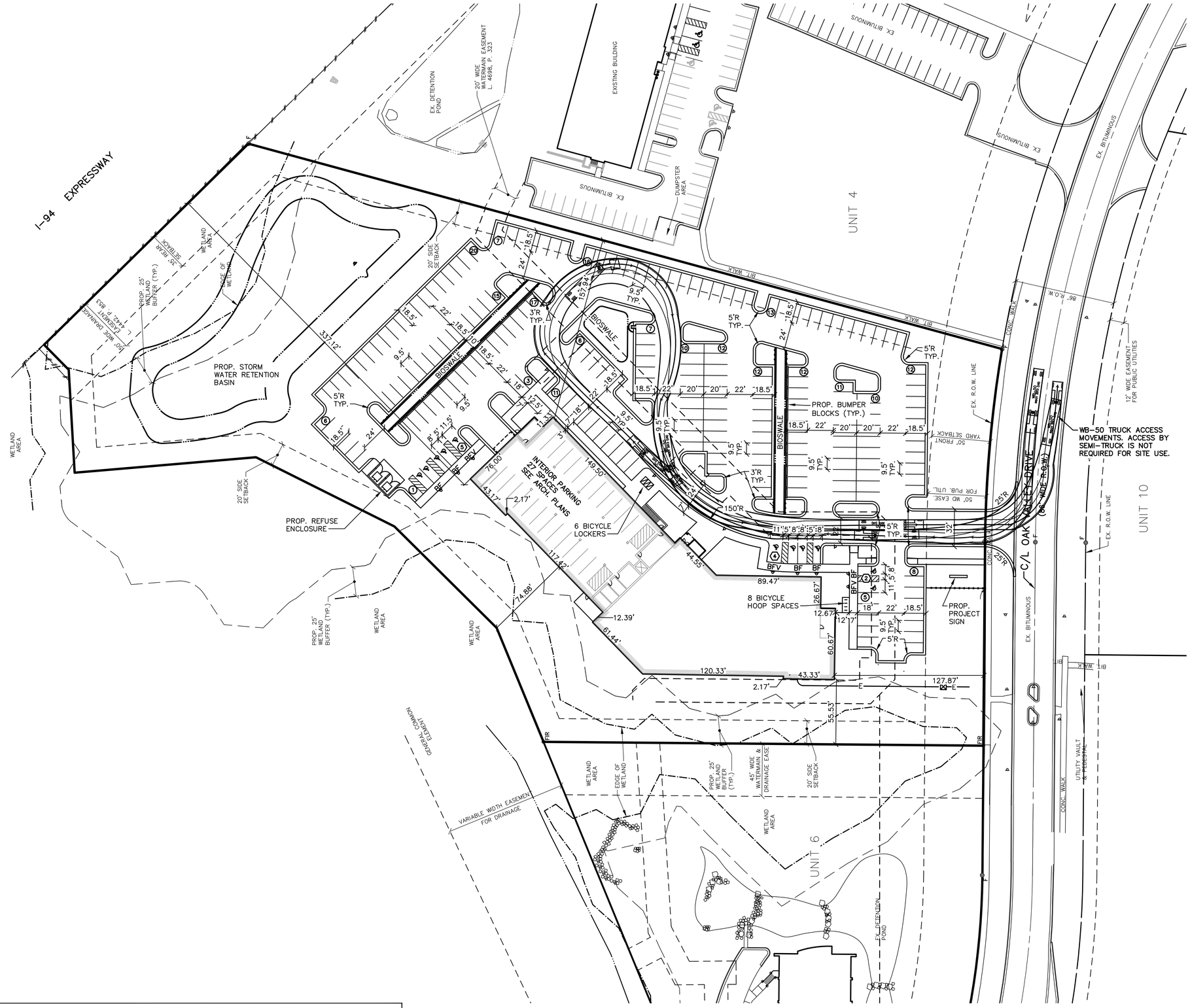

PARKING LEGEND

- NUMBER OF STANDARD PARKING SPACES IN ROW
- NUMBER OF BARRIER FREE PARKING SPACES IN ROW
- BF — BARRIER FREE PARKING SIGN
- BFV — VAN ACCESSIBLE BARRIER FREE PARKING SIGN

LEGEND

- PROP. EDGE OF WATER
- EXIST. EDGE OF WATER
- SIGN
- FENCE
- EXIST. WETLAND LIMITS
- PROP. CURB & GUTTER

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

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

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PARK PLACE FIVE

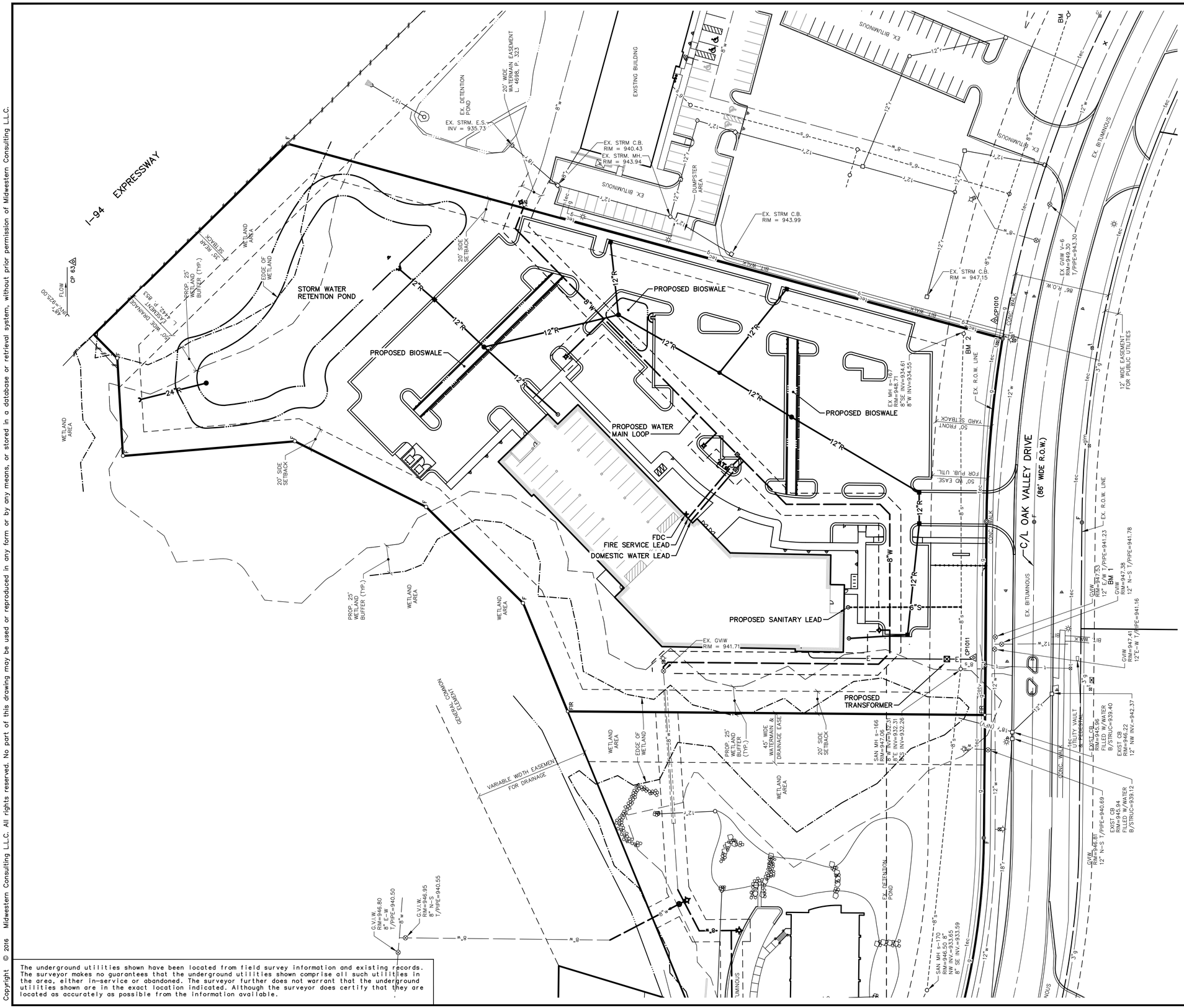
PRELIMINARY SITE PLAN
DIMENSIONAL SITE PLAN

04

JOB No. 15297

REVISIONS:	REV. DATE
PER REVIEW COMMENTS	2/18/16
PER REVIEW COMMENTS	5/18/16
PER. TWP. COMMENTS	7/13/16

DATE: 1/21/16
SHEET 4 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: RJG
TECH:
15297SP1.dwg



LEGEND

U.P.	EXIST. UTILITY POLE
	GUY WIRE
	ELEC. TRANSFORMER
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
	PROP. LIGHT POLE
t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
E	PROP. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
	PROP. GATE VALVE IN WELL
	EXIST. CURB STOP & BOX
	PROP. CURB STOP & BOX
	REDUCER
	EXIST. BLOW-OFF
	PROP. BLOW-OFF
P.I.V.	POST INDICATOR VALVE
	THRUST BLOCK
KB	PROP. KNOXBOX
R	EXIST. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	PROP. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	PROP. BEEHIVE INLET
RD	PROP. ROOF DRAIN
	END SECTION
	HEAD WALL
	CULVERT
ds	EXIST. DOWNSPOUT
ps	PROP. DOWNSPOUT
S	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
	EXIST. CLEANOUT
	PROP. CLEANOUT
	C/L OF DITCH
	SIGN
	SINGLE TREE
	TREE OR BRUSH LIMIT
	FENCE
	LIMITS OF DISTURBANCE

VERTICAL DATUM NOTE

1. ALL ELEVATIONS DATUM IS PROVIDED IN NGVD 29.
2. LOWER ALL ELEVATIONS 0.32' TO OBTAIN NAVD 88 DATUM.

NOTES

1. ALL BUILDING DOWNSPOUTS SHALL BE DIRECTED TO NEAREST STORMWATER STRUCTURE.

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(734) 477-9400

PARK PLACE FIVE

PRELIMINARY SITE PLAN
UTILITY PLAN

05

JOB No. 15297

REVISIONS:
PER REVIEW COMMENTS — REV. DATE 3/4/16

DATE: 1/21/16
SHEET 5 OF 18
CADD: DAG, WAJ
ENG: MTH
PM: RJG
TECH:
15297UP1.dwg

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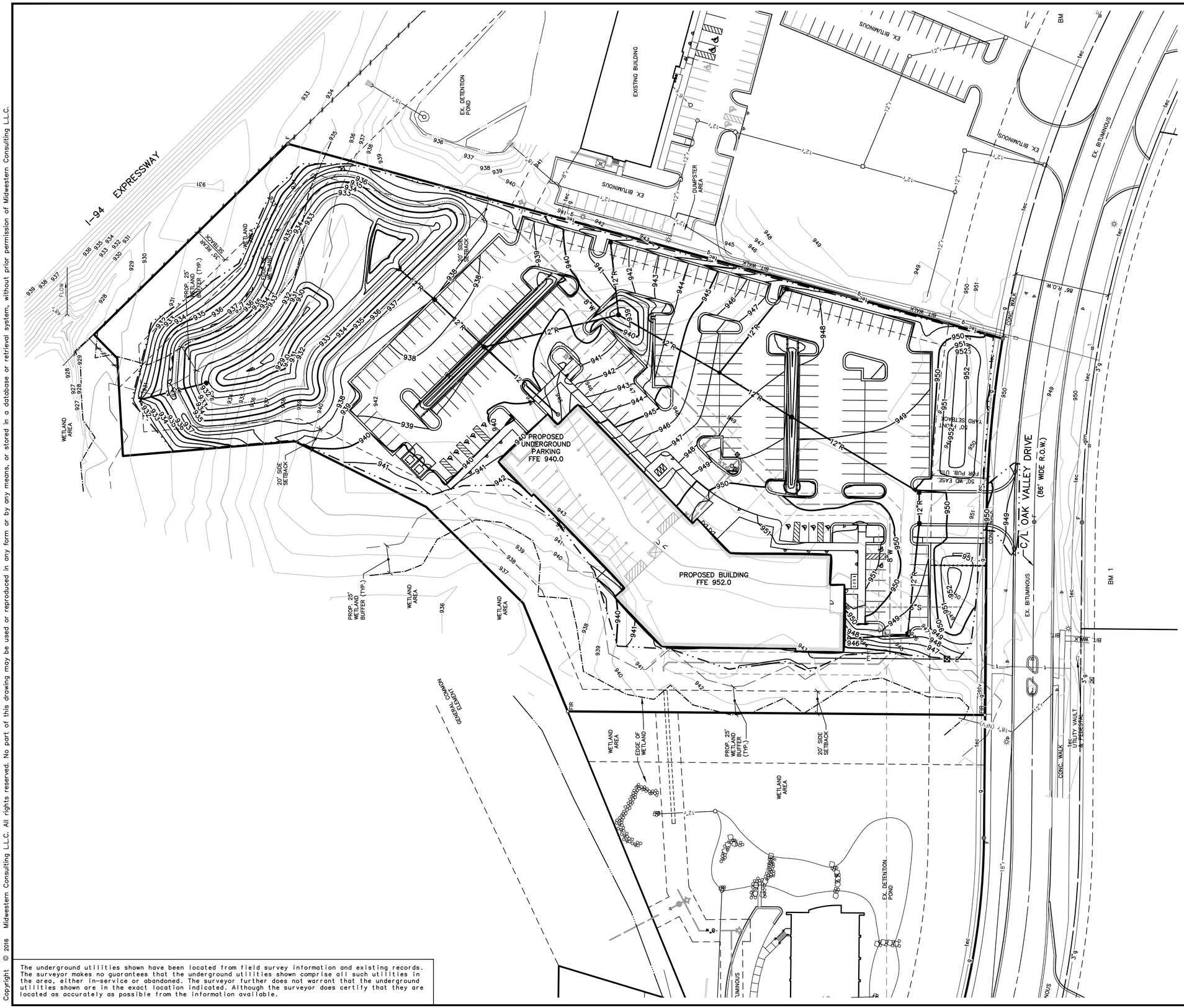

SCALE: 1" = 40'

0 40 80 120

LEGEND

838	EXIST. CONTOUR
838	PROP. CONTOUR
×836.2	EXIST. SPOT ELEVATION
36.60	PROP. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
	GUY WIRE
	ELEC. TRANSFORMER
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
	PROP. LIGHT POLE
t	EXIST. TELEPHONE LINE
e	EXIST. ELECTRIC LINE
g	EXIST. GAS LINE
g	EXIST. GAS VALVE
f.o.	EXIST. FIBER OPTIC LINE
w	EXIST. WATER MAIN
W	PROP. WATER MAIN
	EXIST. HYDRANT
	PROP. HYDRANT
	EXIST. GATE VALVE IN BOX
	PROP. GATE VALVE IN BOX
	EXIST. GATE VALVE IN WELL
	PROP. GATE VALVE IN WELL
	EXIST. CURB STOP & BOX
	PROP. CURB STOP & BOX
	REDUCER
	EXIST. BLOW-OFF
	PROP. BLOW-OFF
P.I.V.	POST INDICATOR VALVE
	THRUST BLOCK
KB	PROP. KNOXBOX
r	EXIST. STORM SEWER
R	PROP. STORM SEWER
	EXIST. CATCH BASIN OR INLET
	PROP. CATCH BASIN OR INLET
	EXIST. BEEHIVE INLET
	PROP. BEEHIVE INLET
RD	PROP. ROOF DRAIN
	END SECTION
	HEAD WALL
	CULVERT
dsp	EXIST. DOWNSPOUT
ds	PROP. DOWNSPOUT
s	EXIST. SANITARY SEWER
S	PROP. SANITARY SEWER
	EXIST. CLEANOUT
	PROP. CLEANOUT
	C/L OF DITCH
	DRAINAGE DIRECTION
	SIGN
	SINGLE TREE
	TREE OR BRUSH LIMIT
	FENCE
	SILTFENCE
	LIMITS OF DISTURBANCE
	CONSTRUCTION FENCE
FF	FINISH FLOOR ELEVATION
GF	GARAGE FLOOR ELEVATION
BFF	BASEMENT FINISH FLOOR ELEVATION

BENCH MARKS

1. GEAR PIN IN SW FACE OF TWIN 18" SHAGBARK HICKORY. ELEV.= 955.98, NGVD 29 (USGS)
2. N. SIDE OF RIM ON SANITARY SEWER MANHOLE s-167 ELEV.= 948.71, NGVD 29 (USGS)
3. N. SIDE OF RIM ON SANITARY SEWER MANHOLE s-168 ELEV.= 950.26, NGVD 29 (USGS)

NOTE: ADD 900.00 TO ALL PROPOSED SPOT ELEVATIONS TO OBTAIN NGVD 29 (USGS) DATUM.

VERTICAL DATUM NOTE

1. ALL ELEVATIONS DATUM IS PROVIDED IN NGVD 29.
2. LOWER ALL ELEVATIONS 0.32' TO OBTAIN NAVD 88 DATUM.

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PARK PLACE FIVE

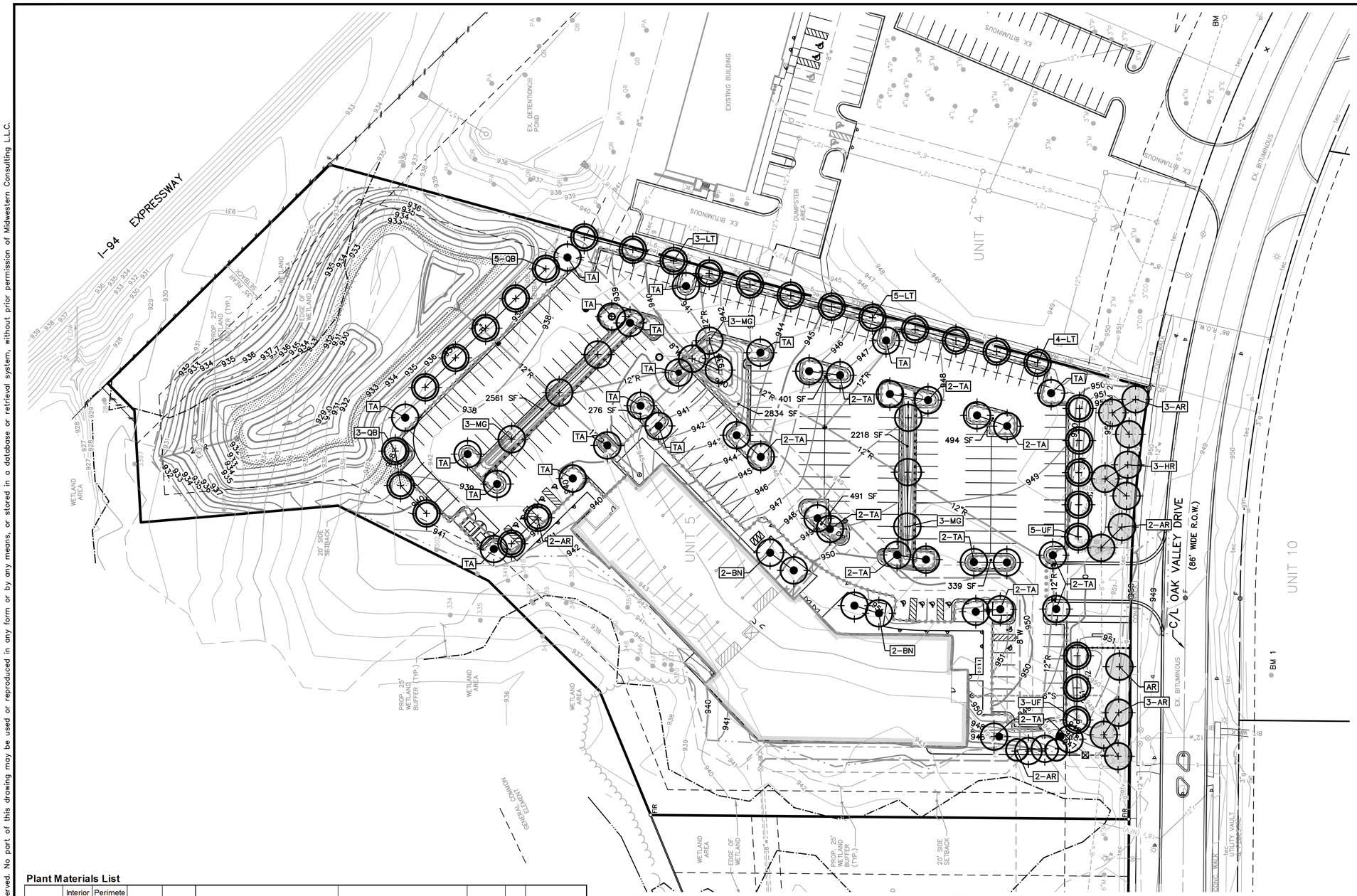
PRELIMINARY SITE PLAN
GRADING PLAN

06

DATE: 1/21/16
SHEET 6 OF 18
CADD: DAG, WAJ
ENG: MTH
PM: RJG
TECH:
15297GP1.dwg

JOB No. 15297

REVISIONS:	REV.	DATE
PER REVIEW COMMENTS		4/7/16
PER REVIEW COMMENTS		5/18/16



SCALE: 1" = 40'

0 40 80 120

LEGEND

- EXIST. CONTOUR
- PROP. CONTOUR
- EXIST. UTILITY POLE
- GUY WIRE
- ELEC. TRANSFORMER
- EXIST. OVERHEAD UTILITY LINE
- EXIST. LIGHT POLE
- PROP. LIGHT POLE
- EXIST. TELEPHONE LINE
- EXIST. ELECTRIC LINE
- EXIST. GAS LINE
- EXIST. GAS VALVE
- EXIST. FIBER OPTIC LINE
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN BOX
- PROP. GATE VALVE IN BOX
- EXIST. GATE VALVE IN WELL
- PROP. GATE VALVE IN WELL
- EXIST. CURB STOP & BOX
- PROP. CURB STOP & BOX
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- END SECTION
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- SINGLE TREE
- TREE OR BRUSH LIMIT
- LIMITS OF DISTURBANCE

LANDSCAPE LEGEND

- PROPOSED CANOPY TREE (MITIGATION)
- PROPOSED CANOPY TREE (PARKING LOT PERIMETER)
- PROPOSED CANOPY TREE (PARKING LOT INTERIOR)
- PROPOSED CANOPY TREE (GREENBELT)
- PROPOSED BIOSWALE NATIVE SEED
- EMERGENT WETLAND PLANTING
- PROPOSED EDGING
- VEHICULAR USE AREA LIMITS

Plant Materials List

Mitigation	Interior Parking Lot	Perimeter Parking Lot	Green Belt	Symbol	Botanical Name	Common Name	Size	Root	Remarks
Trees									
		4	12	AR	*Acer rubrum 'Autumn Blaze'*	Autumn Blaze Red Maple	2-2.5" cal.	bb	
	4			BN	*Betula nigra 'Herigage'*	Heritage River Birch	2-2.5" cal.	bb	multi-stem
		12		LT	*Liriodendron tulipifera*	Tulip Tree	2-2.5" cal.	bb	
		8		QB	*Quercus bicolor*	Swamp White Oak	2-2.5" cal.	bb	
	36			TA	*Tilia americana 'Redmond'*	Redmond American Basswood	2-2.5" cal.	bb	
		8		UF	*Ulmus x 'Frontier'*	Frontier Elm	2-2.5" cal.	bb	
9				MG	*Metasequoia glyptostroboides*	Dawn Redwood	2-2.5" cal.	bb	
Shrubs									
Bio-Retention/Swale Plug Mix									
				CV	*Carex vulpenoidea*	Brown Fox Sedge	plug	Cont.	12" o.c.
				IV	*Iris virginica*	Blue Flag Iris	plug	Cont.	24" o.c.
				LC	*Lobelia cardinalis*	Cardinal Flower	plug	Cont.	24" o.c.

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LANDSCAPE NOTES

1. Plant Materials: Plant materials are to be genus, species and varieties that are hardy in Washtenaw County; materials are to meet current American Association of Nurserymen Standards and pass all required state and federal inspections.
2. Planting Methods: methods shall be as detailed and in conformance with Pittsfield Township standards.
3. All lawn areas to receive minimum four (4) inches topsoil and seed / fertilizer / mulch.
   Lawn seed mix shall be as follows:
   - 15% Rugby Kentucky Bluegrass
   - 10% Park Kentucky Bluegrass
   - 40% Ruby Creeping Red Fescue
   - 15% Pennifine Perennial Ryegrass
   - 20% Scaldis Hard Fescue

   Seed shall be applied at the rate of five pounds (5 lbs) per 1000 sq ft.
   Fertilizer for the initial installation of lawns shall provide not less than one (1) pound of actual nitrogen per 1000 sq ft of lawn area and shall contain not less than two percent (2%) potassium and four percent (4%) phosphoric acid.
   After the first growing season, only fertilizers that contain no phosphorus shall be used on the site.
   Mulch within 24 hours with two (2) tons of straw per acre, or 71 bales of excelsior mulch per acre. Anchor straw mulch with spray coating of adhesive material applied at the rate of 150 gals./acre.
   Fertilizer for the initial installation of lawns shall provide not less than one (1) pound of actual nitrogen per 1000 sq ft of lawn area and shall contain not less than two percent (2%) potassium and four percent (4%) phosphoric acid.
   After the first growing season, only fertilizers that contain no phosphorus shall be used on the site.
4. All trees to be located a minimum of 10 feet from public utilities.

LANDSCAPE REQUIREMENTS

Parking Area:

Total Parking Area - minimum five percent (5%) interior landscaping
Required: 0.05 x 84,116 sq ft = 4,206 sq ft
Provided: 9,829 sq ft

Interior Trees - 1 tree per each 8 spaces
Required: 237 spaces / 8 = 30
Provided: 36TA + 4 BN = 40

Perimeter Trees – 1 per each 40 linear feet
Required: 1,135 l.f. / 40 = 29
Provided: 4AR +12LT + 8QB + 8UF = 32

Greenbelt Trees – 1 per each 30 linear feet
Required: 350 l.f. / 30 = 12
Provided: 12AR

Heritage Tree Replacement – 100% replacement, inch for inch
Removed: (1) 18" Black Walnut = 18 cal. inches replacement required.
Provided: 9MG x 2.5" cal. = 22.5"

Note: Screening between land uses not provided since the proposed use is neither incompatible or more intense that the adjacent land uses as defined by the Pittsfield Township Zoning Ordinance.

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PARK PLACE FIVE

PRELIMINARY SITE PLAN
LANDSCAPE PLAN

07

DATE: 1/21/16
SHEET 7 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: RJG
TECH:
15297LP1.dwg

JOB No. 15297

REVISIONS:	REV. DATE
PER REVIEW COMMENTS	3/14/16
PER REVIEW COMMENTS	5/18/16

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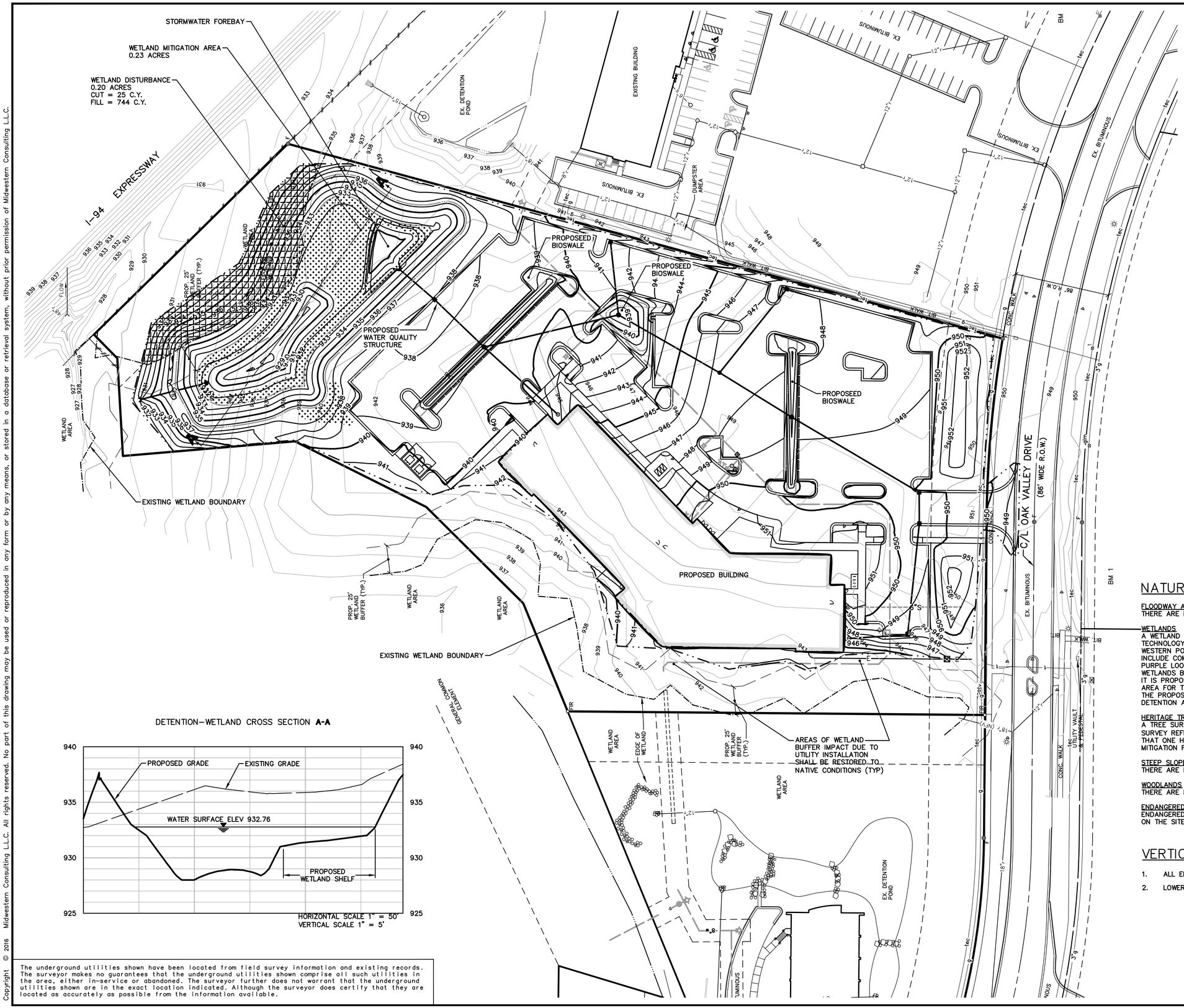

SCALE: 1" = 40'

0 40 80 120

LEGEND

- 838 EXIST. CONTOUR
- 838 PROP. CONTOUR
- EXIST. STORM SEWER
- R PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- EXIST. BEEHIVE INLET
- PROP. BEEHIVE INLET
- RD PROP. ROOF DRAIN
- END SECTION
- HEAD WALL
- CULVERT
- C/L OF DITCH
- DRAINAGE DIRECTION
- SIGN
- SINGLE TREE
- TREE OR BRUSH LIMIT
- FENCE
- SILTFENCE
- LIMITS OF DISTURBANCE
- CONSTRUCTION FENCE
- WETLAND DISTRUBANCE AREA
- WETLAND MITIGATION AREA

DETENTION–WETLAND CROSS SECTION **A-A**

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NATURAL FEATURES IMPACT STATEMENT

FLOODWAY AND FLOODPLAIN
THERE ARE NO FLOODWAY OR FLOODPLAIN NOTED ON THE SITE.

WETLANDS
A WETLAND DELINEATION WAS PERFORMED BY ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC. TWO WETLAND AREAS WERE NOTED ALONG THE NORTHERN AND WESTERN PORTIONS OF THE SITE RESPECTIVELY. COMMON SPECIES IN EACH WETLAND INCLUDE COMMON REED, BROAD-LEAVED CATTAIL, NARROW-LEAVED CATTAIL AND PURPLE LOOSESTRIFE. THE WETLAND AREAS ARE CONSIDERED LOW QUALITY WETLANDS BASED UP ONT HE VEGETATIVE COMMUNITY PRESENT.
IT IS PROPOSED THAT THE PROJECT WILL IMPACT THE NORTHERN IDENTIFIED WETLAND AREA FOR THE CONSTRUCTION OF A STORMWATER DETENTION AREA. MITIGATION FOR THE PROPOSED DISTURBANCE WILL BE CREATED WITHIN A WET SHELF WITHIN THE DETENTION AREA.

HERITAGE TREES
A TREE SURVEY WAS PERFORMED OF THE SITE. AN ASSESSMENT OF THE TREE SURVEY REFLECTED THE PRESENCE OF THREE (3) HERITAGE TREES. IT IS PROPOSED THAT ONE HERITAGE TREE WILL BE REMOVED WITH THE PROPOSED PROJECT AND MITIGATION FOR THE TREE WILL BE IN ACCORDANCE WITH TOWNSHIP GUIDELINES.

STEEP SLOPES
THERE ARE NO STEEP SLOPES LOCATED ON THE SITE.

WOODLANDS
THERE ARE NO IDENTIFIED WOODLAND AREAS PRESENT ON THE SITE.

ENDANGERED SPECIES
ENDANGERED, THREATENED OR SPECIAL CONCERN SPECIES ARE NOT KNOWN TO EXIST ON THE SITE.

VERTICAL DATUM NOTE

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2. LOWER ALL ELEVATIONS 0.32' TO OBTAIN NAVD 88 DATUM.

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PARK PLACE FIVE
PRELIMINARY SITE PLAN
NATURAL FEATURES

08

DATE: 1/21/16
SHEET 8 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: RJG
TECH: HTH
15297NF.dwg

JOB No. 15297
REVISIONS:
REV. DATE

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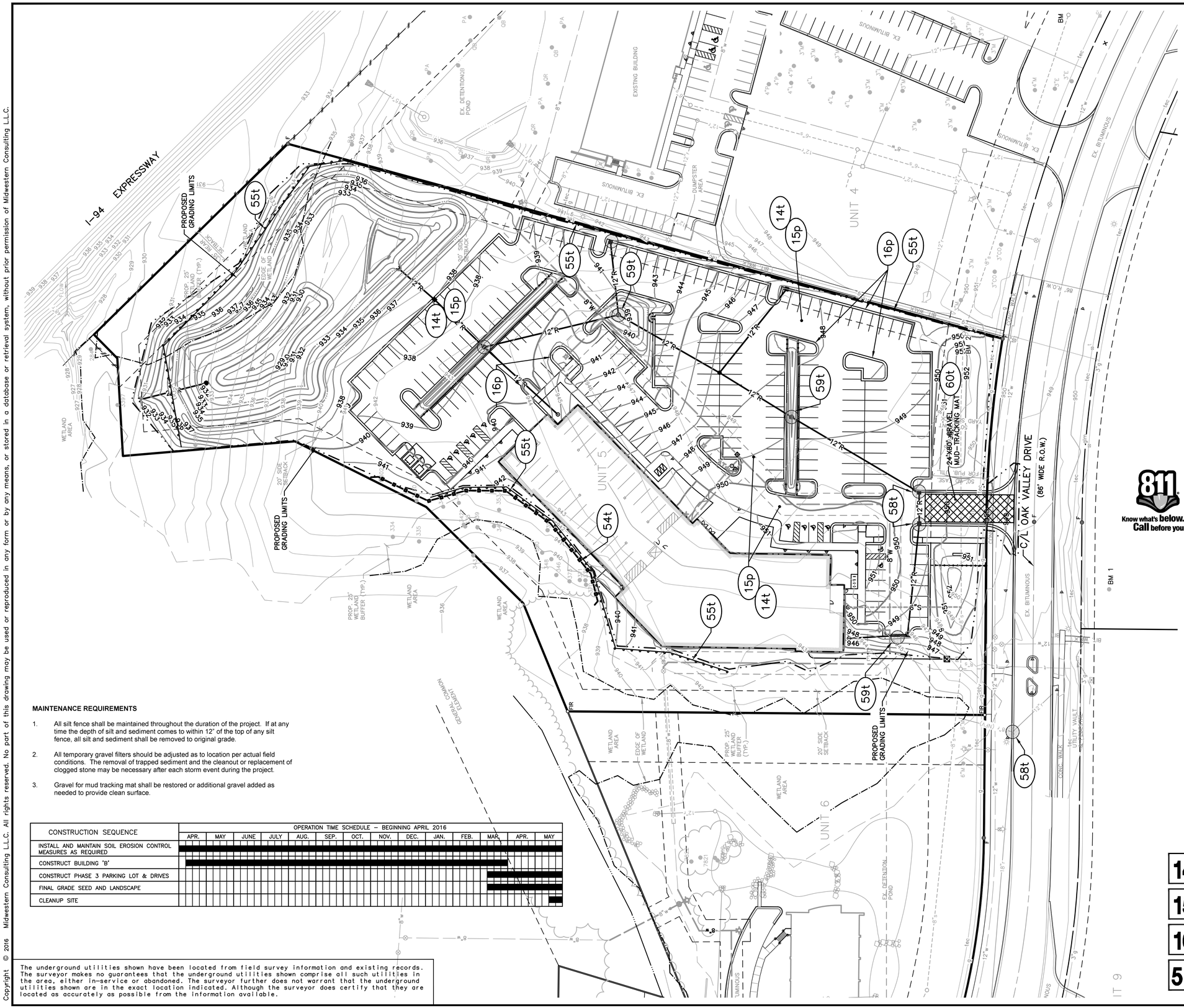

SCALE: 1" = 40'

0 40 80 120

LEGEND

- EXIST. CONTOUR
- PROP. CONTOUR
- EXIST. UTILITY POLE
- GUY WIRE
- ELEC. TRANSFORMER
- EXIST. OVERHEAD UTILITY LINE
- EXIST. LIGHT POLE
- PROP. LIGHT POLE
- EXIST. TELEPHONE LINE
- EXIST. ELECTRIC LINE
- EXIST. GAS LINE
- EXIST. GAS VALVE
- EXIST. FIBER OPTIC LINE
- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN BOX
- PROP. GATE VALVE IN BOX
- EXIST. GATE VALVE IN WELL
- PROP. GATE VALVE IN WELL
- EXIST. CURB STOP & BOX
- PROP. CURB STOP & BOX
- REDUCER
- EXIST. BLOW-OFF
- PROP. BLOW-OFF
- P.I.V. POST INDICATOR VALVE
- THRUST BLOCK
- KB PROP. KNOXBOX
- EXIST. STORM SEWER
- PROP. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- PROP. CATCH BASIN OR INLET
- EXIST. BEEHIVE INLET
- PROP. BEEHIVE INLET
- RD PROP. ROOF DRAIN
- END SECTION
- HEAD WALL
- CULVERT
- ds EXIST. DOWNSPOUT
- ps PROP. DOWNSPOUT
- EXIST. SANITARY SEWER
- PROP. SANITARY SEWER
- EXIST. CLEANOUT
- PROP. CLEANOUT
- C/L OF DITCH
- SIGN
- SINGLE TREE
- TREE OR BRUSH LIMIT
- FENCE
- SILTFENCE
- LIMITS OF DISTURBANCE
- CONSTRUCTION FENCE
- FF FINISH FLOOR ELEVATION
- GF GARAGE FLOOR ELEVATION
- BFF BASEMENT FINISH FLOOR ELEVATION

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

MAINTENANCE REQUIREMENTS

1. All silt fence shall be maintained throughout the duration of the project. If at any time the depth of silt and sediment comes to within 12" of the top of any silt fence, all silt and sediment shall be removed to original grade.
2. All temporary gravel filters should be adjusted as to location per actual field conditions. The removal of trapped sediment and the cleanout or replacement of clogged stone may be necessary after each storm event during the project.
3. Gravel for mud tracking mat shall be restored or additional gravel added as needed to provide clean surface.

CONSTRUCTION SEQUENCE	OPERATION TIME SCHEDULE – BEGINNING APRIL 2016													
	APR.	MAY	JUNE	JULY	AUG.	SEP.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY
INSTALL AND MAINTAIN SOIL EROSION CONTROL MEASURES AS REQUIRED														
CONSTRUCT BUILDING 'B'														
CONSTRUCT PHASE 3 PARKING LOT & DRIVES														
FINAL GRADE SEED AND LANDSCAPE														
CLEANUP SITE														

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SOIL EROSION CONTROL MEASURES

t = temporary p = permanent

14	AGGREGATE COVER	55	GEOTEXTILE SILT FENCE
15	PAVING	58	CURB INLET FILTER
16	CURB & GUTTER	59	C.B./INLET FILTER
54	CONSTRUCTION FENCE OR SNOW FENCE	60	MUD TRACKING MAT

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PARK PLACE FIVE

PRELIMINARY SITE PLAN
SOIL EROSION CONTROL PLAN

09

DATE: 1/21/16
SHEET 8 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: BJG
TECH:
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JOB No. 15297

REVISIONS:
PER REVIEW COMMENTS — REV. DATE 3/4/16

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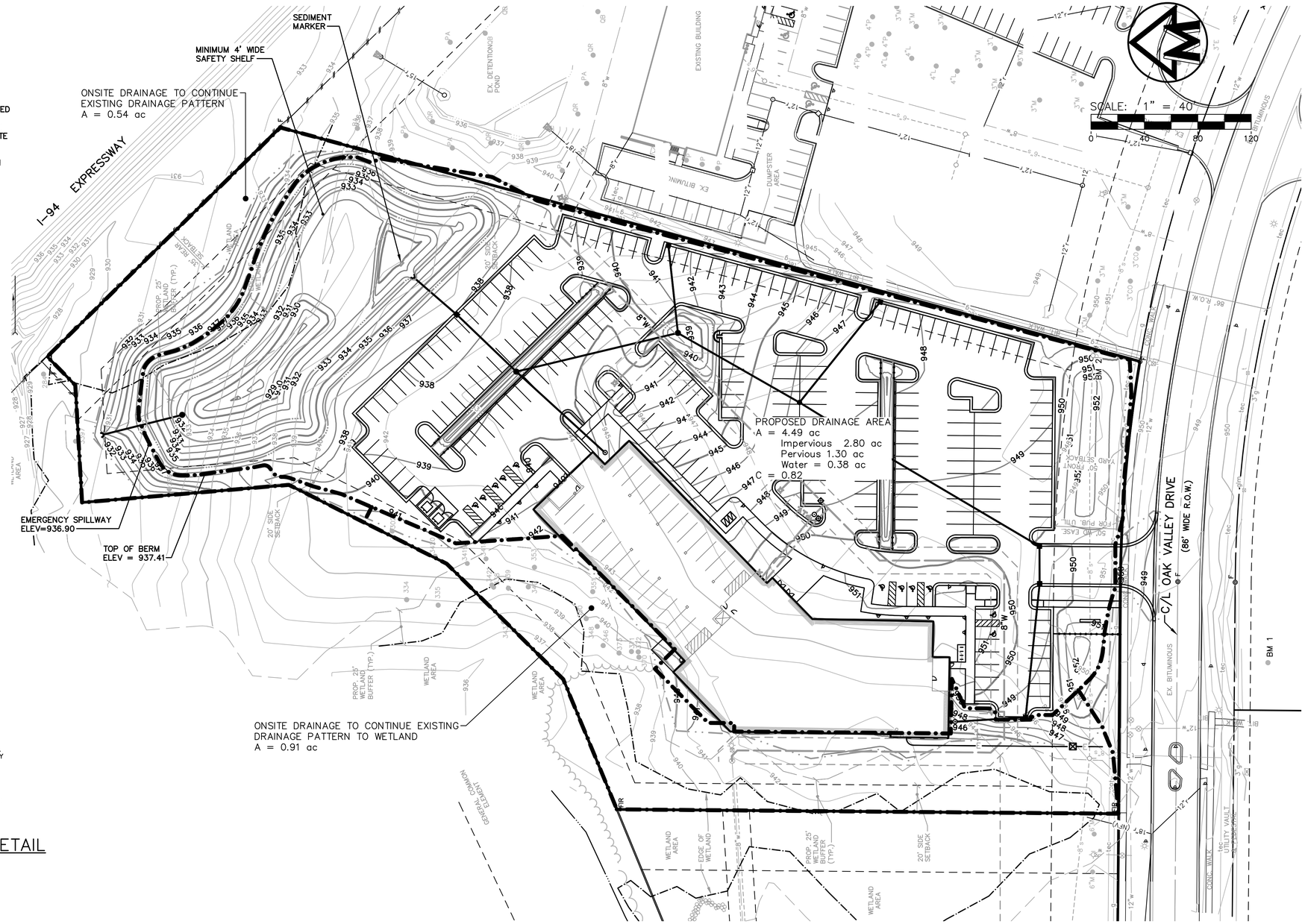
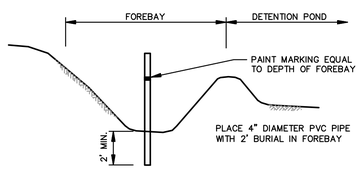
STORMWATER MANAGEMENT NARRATIVE

THE EXISTING SITE CONSISTS OF BRUSH COVERED LAND WITH GENTLY SLOPES WHICH ALLOWS WATER TO SHED TO THE NORTHERLY DIRECTION. THE SITE IS BOUNDED BY OAK VALLEY DRIVE TO THE SOUTH, INTERSTATE 84 TO THE NORTH, DEVELOPED COMMERCIAL PROPERTY TO THE EAST AND WETLAND AREAS TO THE WEST AND NORTHWEST.

THE PROPOSED STORMWATER DETENTION SYSTEM WILL PROVIDE STORMWATER DETENTION FOR THE 100-YEAR STORM EVENT IN COMPLIANCE WITH THE LATEST RULES OF WASHTENAW COUNTY WATER RESOURCES COMMISSIONER. BECAUSE THE SITE HAS EXHIBITED NO CAPACITY TO INFILTRATE STORMWATER, THERE WILL BE AN AN ADDITIONAL 20% STORAGE CAPACITY WITHIN THE OPEN WATER BASIN PLANTED WITH PLANTS TO PROMOTE TRANSPIRATION AND EVAPORATION. THE DETENTION WILL DISCHARGE AT CONTROLLED RATE UTILIZING A 3-TIER OUTLET CONTROL STRUCTURE.

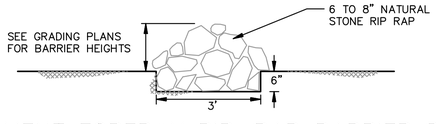
THE OUTFLOW FROM THE SITE DISCHARGES TO THE MALLETTS CREEK DRAIN, WHICH THEN DISCHARGES TO MALLETTS CREEK WHICH HAS BEEN IDENTIFIED AS AN AREA OF KNOWN FLOODING. THE SITE HAS BEEN PROPOSED TO INCORPORATE A PERMANENT RETENTION STORAGE OF THE 100-YEAR STORMWATER VOLUME BETWEEN THE EXISTING AND POST CONSTRUCTION RUNOFF VOLUMES.





SEDIMENT FOREBAY MARKER DETAIL

NO SCALE



SEDIMENT FOREBAY RIP-RAP BARRIER DETAIL

NO SCALE

LEGEND

838	EXIST. CONTOUR
×836.2	EXIST. SPOT ELEVATION
U.P.	EXIST. UTILITY POLE
OH	EXIST. OVERHEAD UTILITY LINE
	EXIST. LIGHT POLE
t	EXIST. TELEPHONE LINE
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	EXIST. CURB STOP & BOX
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r	EXIST. STORM SEWER
	EXIST. CATCH BASIN OR INLET
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	END SECTION
	HEAD WALL
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	C/L OF DITCH
	DRAINAGE DIRECTION
W	WELL
	SINGLE TREE
	TREE OR BRUSH LIMIT
SB-1	SOIL BORING LOCATION
FIR	FOUND IRON ROD
	CONTROL PT.
℄	CENTERLINE
	PROPERTY LINE
ds	EXIST. DOWNSPOUT

The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

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PARK PLACE FIVE

PRELIMINARY SITE PLAN
STORM WATER MANAGEMENT PLAN

10

DATE: 1/21/16
SHEET 9 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: BJG
TECH:
15297DA1.dwg

JOB No. 15297

REVISIONS:	REV. DATE
PER REVIEW COMMENTS	4/4/16
PER REVIEW COMMENTS	5/18/16

STORMWATER DETENTION CALCULATIONS

Post Development Cover Types, Areas, Curve Numbers, and Runoff Coefficients

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coeff.	C x A (ac)
Pond		16753	0.38	1	0.38
Paved Surface		122149	2.80	0.95	2.66
Buildings		0	0.00	0.95	0.00
Grass	A	0	0.00	0.2	0.00
Grass	B	0	0.00	0.3	0.00
Grass	C	0	0.00	0.35	0.00
Grass	D	56600	1.30	0.5	0.65
				Total of C x A	3.70
				Area Total	4.49
				Weighted C	0.82

NCRS Variables (Pervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	CN x A (ac)
Grass	A	0	0.00	39	0.00
Grass	B	0	0.00	61	0.00
Grass	C	0	0.00	74	0.00
Grass	D	56600	1.30	80	103.95
Total Area =		56600	1.30	Total of C x A	103.95
				Area Total	1.30
				Weighted C	80.00

NCRS Variables (Impervious)

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	CN x A
Building		0	0.00	98	0.00
Pavement		122149	2.80	98	274.81
Pond		16753	0.38	98	37.69
Total Area =		138902	3.19	Total of C x A	312.50
				Area Total	3.19
				Weighted C	98.00

First Flush Calculations

V_{ff} = 1" x (1'/12")x(43560 cf / 1 ac) x A x C

V_{ff} = 1" x (1'/12")x(43560 cf / 1 ac)x 4.49 x 0.82 = 13,424 cf

Pervious Cover Post-development Bankfull Runoff Calculations ($V_{bf\text{-}per\text{-}post}$)

2 year/ 24 hour event P = 2.35 in
Developed land
Pervious Cover, Weighted CN CN = 80.00
S = (1000/CN) - 10 S = 2.500
Q = (P - 0.2S)^2 /(P + 0.8S) Q = 0.787 in
Pervious Cover Area 56,600 sf
$V_{bf\text{-}per\text{-}post}$= Q (1/12) Area 3,711 cf

Impervious Cover Post-development Bankfull Runoff Calculations ($V_{bf\text{-}imp\text{-}post}$)

2 year/ 24 hour event P = 2.35 in
Weighted CN CN = 98
S = (1000/CN) - 10 S = 0.204
Q = (P - 0.2S)^2 /(P + 0.8S) Q = 2.122 in
Impervious Cover Area 138,902 sf
$V_{bf\text{-}imp\text{-}post}$ = Q (1/12) Area 24,559 cf

Pre-development 100 Year Runoff Calculations ($V_{100\text{-}pre}$)

100 year/ 24 hour event P = 5.11 in
Pre-developed land
Brush, Fair, HSG D CN = 77
S = (1000/CN) - 10 S = 2.987 in
Q = (P - 0.2S)^2 /(P + 0.8S) Q = 2.715 in
Total Site Area (sf) excluding Self-Crediting BMP's 195,502 sf
$V_{100\text{-}pre}$ = Q (1/12) Area 44,237 cf

Pervious Cover Post-development 100 Year Runoff Calculations ($V_{100\text{-}per\text{-}post}$)

100 year/ 24 hour event P = 5.11 in
Pervious Cover CN CN = 80
S = (1000/CN) - 10 S = 2.500
Q = (P - 0.2S)^2 /(P + 0.8S) Q = 2.989 in
Pervious Cover Area 56,600 sf
$V_{100\text{-}per\text{-}post}$ = Q (1/12) Area 14,098 cf

Impervious Cover Post-development 100 Year Runoff Calculations ($V_{100\text{-}imp\text{-}post}$)

100 year/ 24 hour event P = 5.11 in
Weighted CN CN = 98
S = (1000/CN) - 10 S = 0.204
Q = (P - 0.2S)^2 /(P + 0.8S) Q = 4.873 in
Pervious Cover Area 138,902 sf
$V_{100\text{-}imp\text{-}post}$ = Q (1/12) Area 56,406 cf

Time of Concentration

Due to small site size, Tc of 15 minutes will be used. 0.25 hours

Runoff Summary and Onsite Infiltration Requirement

Runoff Summary from Previous Worksheets

First Flush Volume	V_{ff} =	13,424	cf
Pervious Cover Post-Development Bankfull Volume	$V_{bf\text{-}per\text{-}post}$=	3,711	cf
Impervious Cover Post-Development Bankfull Volume	$V_{bf\text{-}imp\text{-}post}$ =	24,559	cf
Pre-Development 100-yr Volume	$V_{100\text{-}pre}$ =	44,237	cf
Pervious Cover Post-Development 100-yr Volume	$V_{100\text{-}per\text{-}post}$ =	14,098	cf
Impervious Cover Post-Development 100-yr Volume	$V_{100\text{-}imp\text{-}post}$ =	56,406	cf
Increase in 100-yr Volume (to be retained)	$\Delta V_{100\text{-}pre\ vs\ 100\text{-}post}$ =	26,267	cf
Retention Vol = greater of ΔV_{100} or 2.5 * V_{ff}	V_{ret} =	33,561	cf

Detention Requirement

Q_p= 238.6 * T_c^-0.82 744 cfs/in-mi2
Total Site Area Excluding "Self-Crediting" BMP's 4.49 ac
Q_{100} = $Q_{100\text{-}per}$ + $Q_{100\text{-}imp}$ 7.862 in
Peak Flow (PF) = (Q_p x Q_{100} x Area (ac)) / 640 PF 41.0 cfs
Δ = PF - 0.15 * Area (ac) = Δ = 40.3 cfs
V_{det} = Δ / PF x V_{100} = V_{det} = 69,346 cf
V_{det} with 20% infiltration penalty = V_{det} x 1.2 = $V_{det\ w/penalty}$ = 83,216 cf
Forebay Volume = Vfb = .05 * V_{det} = V_{fb} = 3,467 cf

STORMWATER DETENTION CALCULATIONS

Detention Outlet Calculations

A. Retention Volume 33,561 cf
First Flush Volume Required 13,424 cf 46,986 **(with Retention Vol)**
Bankfull (2 year/24-hour storm Required 28270 cf 61,831 **(with Retention Vol)**
100 - Year Storage Volume Required 83,216 cf 116,777 **(with Retention Vol)**

B. Forebay Sediment Volume

	Elev.	Area(sf)	Vol (cf)	Acc. Vol.(cf)
$Elev_b$ =	930.0	582		
	931.0	1059	809	809
	932.0	1660	1348	2157
	933.0	2540	2084	4241

Forebay Volume 933.0 - 932.0 = x - 932.0
4241 - 2157 3467 - 2157
x = $Elev_{fb}$ = 932.63

C. Detention Volume Proposed

	Elev.	Area(sf)	Vol (cf)	Acc. Vol.(cf)
$Elev_b$ =	928.0	133		
	929.0	1126	549	549
	930.0	5148	2894	3443
	931.0	11387	8064	11506
	932.0	11197	11292	22798
	933.0	16889	13946	36744
	934.0	20284	18561	55305
	935.0	24084	22157	77461
	936.0	28314	26170	103632
	937.0	32933	30594	134226
	Total:		134226 CF	

The following interpolations determine the pond water elevations for the three different storm events:

Retention Volume 933.0 - 932.0 = x - 932.0
36744 - 22798 33561 - 22798
x = $Elev_{Ret}$ = 932.77

First Flush: 934.0 - 933.0 = x - 933.0
55305 - 36744 46986 - 36744
x = $Elev_{ff}$ = 933.55

Bankfull Flood: 935.0 - 934.0 = x - 934.0
77461 - 55305 61831 - 55305
x = $Elev_{bf}$ = 934.29

100 Yr. Flood: 937.0 - 936.0 = x - 936.0
134226 - 103632 116777 - 103632
x = 936.43

These yield pond water elevations of 933.55 for the First Flush,
934.29 for the Bankfull Flood,
and 936.43 for the 100 Yr. Storm Event

D. Outflow Structure

The Detention Pond will have a 3-stage outlet. This will consist of a perforated manhole with a series of holes in three (3) tiers. The lower tier of holes will detain the first-flush volume in a timeframe to exceed 24 hours. The middle tier along with the lower tier will detain and drain the bankfull flood volume in a timeframe not-to-exceed 48 hours. The upper tier along with the middle and lower tiers will detain the runoff from the site. The perforated manhole will be surrounded by a stone filter.

1. First Flush:

The average allowable release rate for runoff is 1" over area of site in 24 hrs.

Q_{ff} = (1/24 hrs) x (1 hr./3600 sec) x 13424 CF = 0.155 CFS

Orifice area at Elev. 932.77 to produce this average discharge:

H = 0.78 FT
H_A = (2/3 H) = 0.52 FT
Area of
Orifice = Q_{ff} / (0.62 x (2xgxH_A)^0.5) = 0.04331 SF
Where, H = Head
H_A = Average Head
g = Gravitational Const (32.2 fps)
Area of 1.50 " hole = 0.0123 SF
No. of 1.50 " hole(s) = 0.0433 / 0.0123 = 3.53 hole(s)

Therefore, use

THREE (3) 1.50 " hole(s) at Elev. = 932.77

The detention time for

THREE (3) 1.50 " hole(s) is:
$Q(new)_{ff}$ = $A(new)_{ff}$ x (0.62(2gH_A)^0.5
$Q(new)_{ff}$ = (3 x 0.0123) x (0.62(2gH_A)^0.5
$Q(new)_{ff}$ = 0.132 CFS
$T(new)_{ff}$ = V_{ff} /$Q(new)_{ff}$
$T(new)_{ff}$ = 13424 /(0.132 x 3600) = 28.2 hrs.

2. Bankfull Flood:

The bankfull flood must be detained in 36-48 hrs, check the discharge through the first-flush orifice to see if additional holes are necessary:

H = 1.52 FT
H_A = (2/3 H) = 1.02 FT
Q_{ff} = 0.62 (3) holes x 0.0123 sf/hole x (2 x 32.2 x 1.02)^0.5
Q_{ff} = 0.185 CFS

Time to empty Basin at this discharge:

T_{ff} = (sec/ 0.185 CF) x (28270 CF) x (1 hr./3600sec)
T_{ff} = 42.5 hrs.

Since T_{ff} < 48 hrs, no additional holes are necessary for the bankfull storm.

3. 100 yr. Flood:

This basin is designed to pass the 100-year storm event without overtopping the basin.
Flow Required to pass:

Q_A = (0.15 x 4.49 Ac.) = 0.673 CFS

At the required 100-year detention volume elevation, the

THREE (3) 1.50 " hole(s) designed for the first flush will provide the flow of:

Q = 0.62(3 x 0.0123) x (2 x 32.2 x 5.62)^0.5 0.434 CFS
The remaining allowable outflow= 0.673 - 0.434 = 0.239 CFS
0.62(A)(2 x 32.2 x (936.43 - 934.29) ^ 0.5 = 0.239 CFS
A = 0.033 SF
Area of 1.50 " hole = 0.0123 SF
No. of 1.50 " hole(s) = 0.0329 / 0.0123 = 2.68 hole(s)

Therefore, use

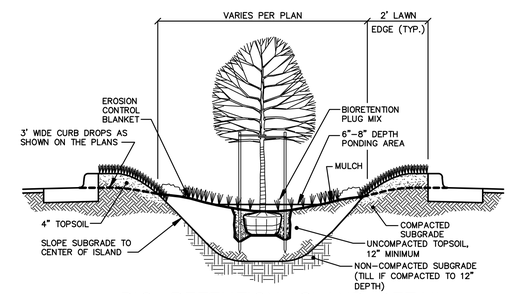
TWO (2) 1.50 " hole(s) at Elev. = 934.29

PERMANENT MAINTENANCE TASKS AND SCHEDULE- TO BE PERFORMED BY OWNER

TASKS	Streets	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Casings	Ditches & Swales	Outflow Control Structures	Bioretention Areas	Storm Detention Areas	Emergency Overflow	Schedule
Inspect for sediment accumulation		X	X		X	X	X	X		annually
Removal of sediment accumulation		X	X		X	X	X	X		every 2 yrs as needed
Inspect for floatables and debris				X	X	X	X	X		annually
Cleaning of floatables and debris				X	X	X	X	X		as needed
Clean Streets	X									semi-annually
Inspect stormwater system components during wet weather and compare to as-built plans (by professional engineer reporting to LaKRITZ-WEBER & CO.)		X	X	X	X	X	X	X	X	annually
Make adjustment or replacements as determined by annual wet weather inspection		X	X	X	X	X	X	X	X	as needed
Keep records of all inspections and maintenance activities and report to LaKRITZ-WEBER & CO.										annually
Keep records of all costs for inspections, maintenance and repairs. Report to LaKRITZ -WEBER & CO.										annually

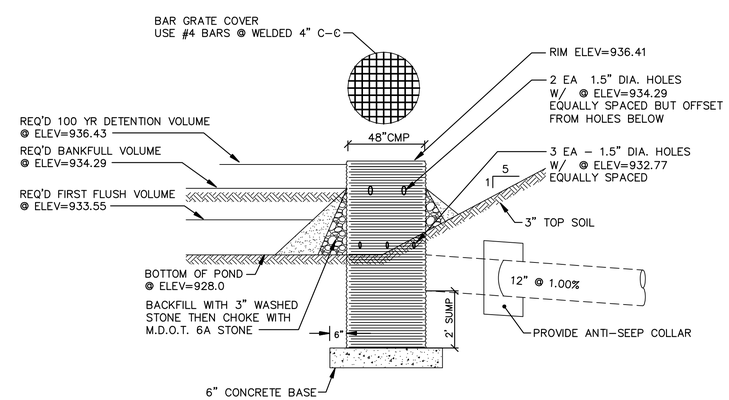
Maintenance Plan Budget

Annual inspection for sediment accumulation	$100.00
Removal of sediment accumulation every 2 years as needed	$500.00
Inspect for floatables and debris annually and after major storms	$100.00
Removal of floatables and debris annually and after major storms	$150.00
Inspect system for erosion annually and after major storms	$100.00
Re-establish permanent vegetation on eroded slopes as needed	$350.00
Replacement of stone	$100.00
Mowing 0-2 times per year	$400.00
Inspect structural elements during wet weather and compare to as-built plans every 2 years	$150.00
Make structural adjustments or replacements as determined by inspection as needed	$400.00
Have a professional engineer carry out emergency inspections upon identification of severe problems	$200.00
Total Annual Budget	**$2,550.00**



BIO-RETENTION ISLAND DETAIL

NOT TO SCALE



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

PROFILE

PROPOSED DETENTION POND OUTLET RISER (R-1)

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PARK PLACE FIVE
PRELIMINARY SITE PLAN
STORMWATER CALCULATIONS AND DETAILS

11

DATE: 1/21/16
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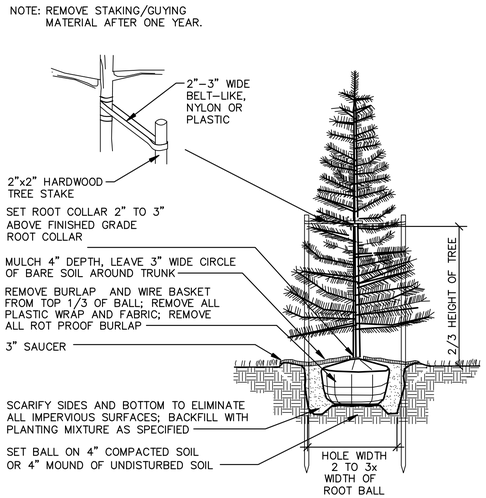
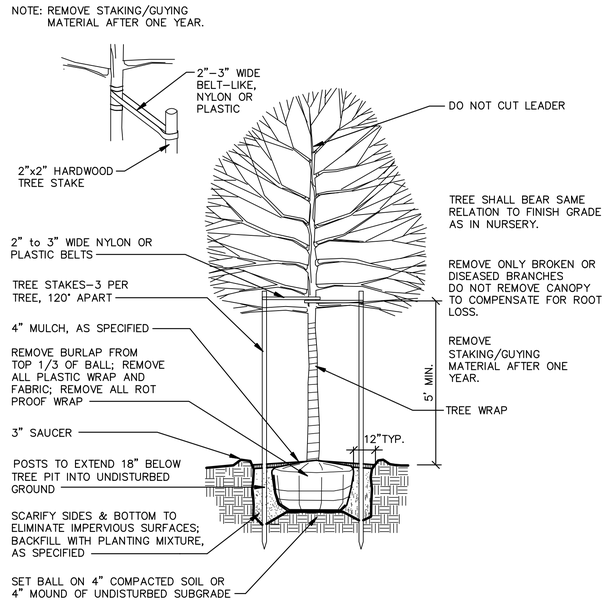
PER REVIEW COMMENTS	5/26/16



EVERGREEN TREE PLANTING DETAIL

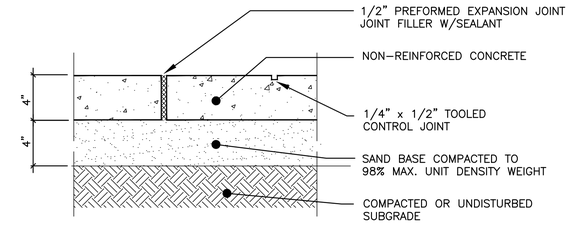
NOT TO SCALE



NOTE: NO STAKING IS REQUIRED FOR FLOWERING TREES.

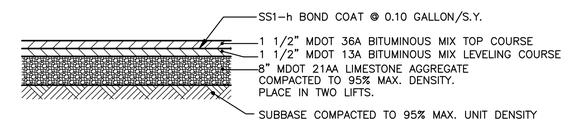
DECIDUOUS TREE PLANTING DETAIL

2–1/2" CAL. OR SMALLER NOT TO SCALE



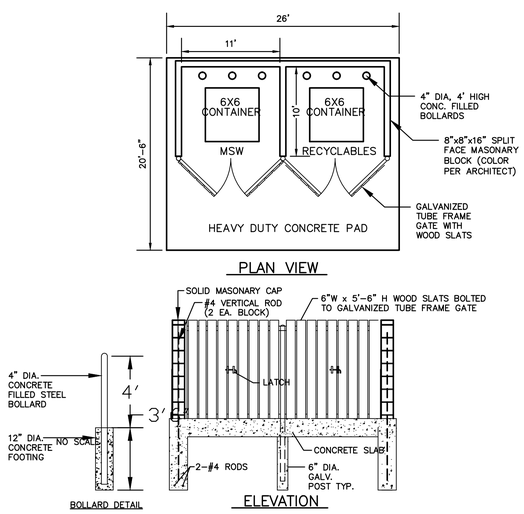
CONCRETE WALK DETAIL

NOT TO SCALE



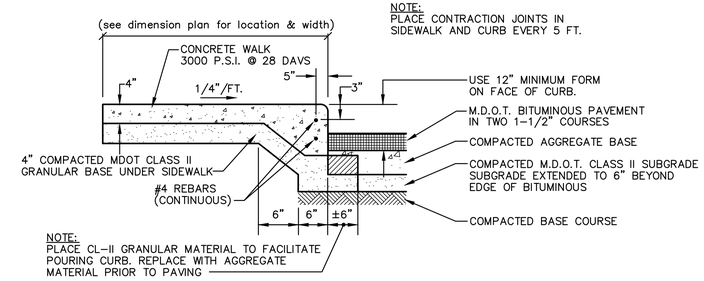
PAVEMENT SECTION ON SITE

NOT TO SCALE



REFUSE CONTAINER ENCLOSURE DETAIL

1"=8'–0"



TYPICAL INTEGRAL WALK & CURB

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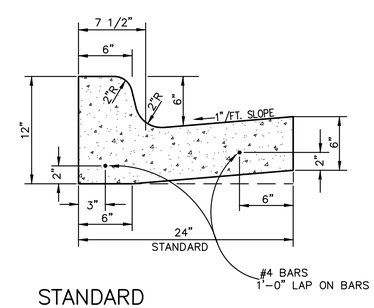

STANDARD SPILL–IN CURB & GUTTER

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PARK PLACE FIVE

PRELIMINARY SITE PLAN
MISCELLANEOUS DETAILS

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DATE: 1/21/16
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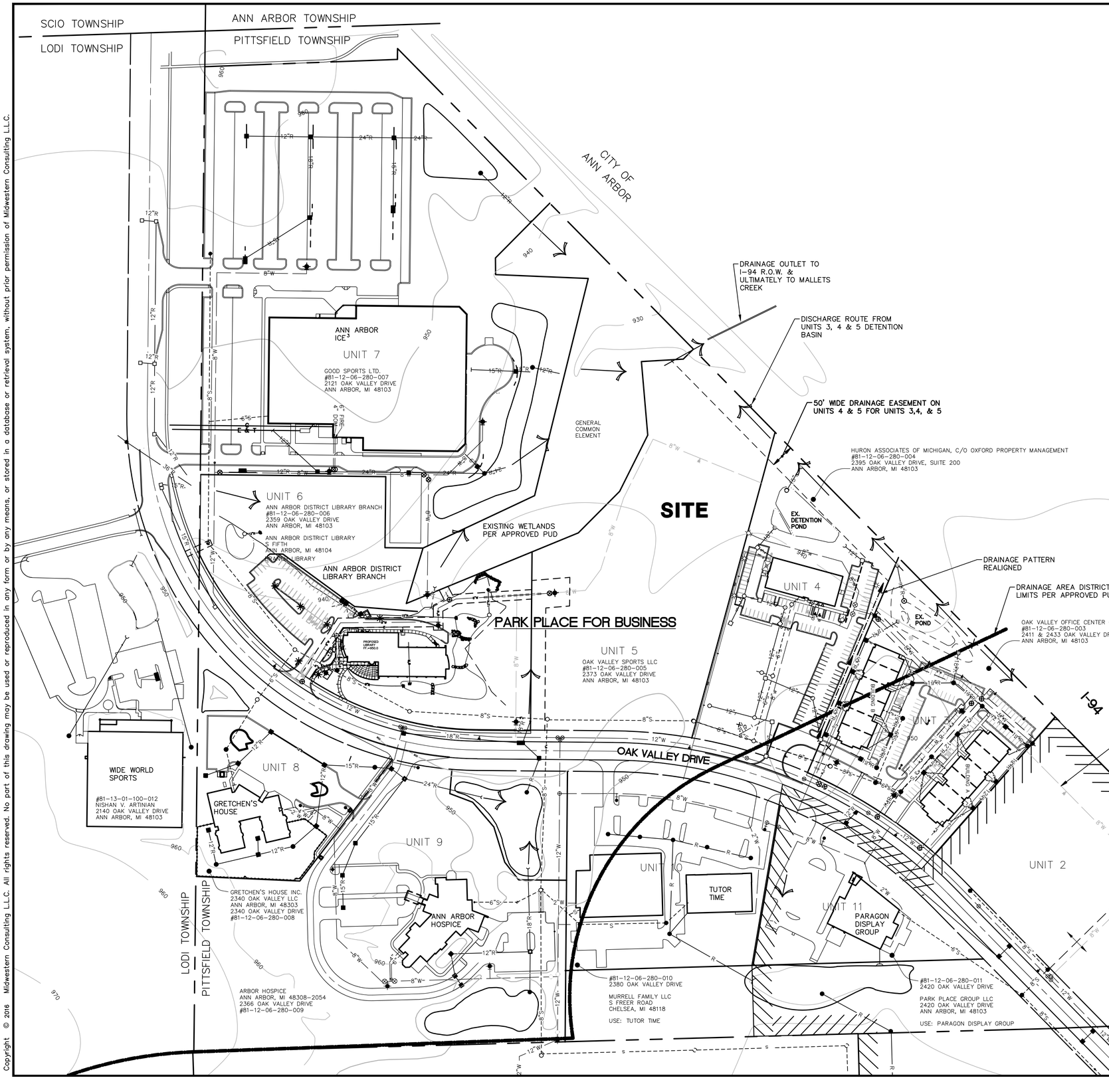

LEGEND

- 930 — EXIST. CONTOUR
- EXIST. WATER MAIN
- EXIST. HYDRANT
- EXIST. GATE VALVE IN WELL
- FUTURE WATER MAIN
- EXIST. STORM SEWER
- EXIST. CATCH BASIN OR INLET
- EXIST. SANITARY SEWER
- DRAINAGE DIRECTION
- DRAINAGE AREA DISTRICT LIMITS PER APPROVED PUD
- SANITARY SEWER DISTRICT LIMITS PER APPROVED PUD

SCALE: 1" = 100'

0 100 200 300

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

LEGAL DESCRIPTION
PARK PLACE FOR BUSINESS CONDOMINIUM
63.99 ACRES TOTAL IN THE NW 1/4 OF SECTION 6, T3S, R6E,
PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

Units 1-7:
A parcel of land located in the NW 1/4 of Section 6, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan, described as:

Commencing at the W 1/4 corner of Section 6, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan; thence N 00°38'20" E 1046.68 feet along the West line of said Section 6 to a point on the Northeasterly right-of-way line of Oak Valley Drive for a PLACE OF BEGINNING;

thence continuing N 00°38'20" E 1026.57 feet along said West line and the Easterly right-of-way line of said Oak Valley Drive;
thence N 87°50'16" E 427.27 feet along the Southerly right-of-way line of Scio Church Road;
thence S 44°31'30" E 2834.98 feet along the Southwesterly right-of-way line of Interstate 94 Expressway;
thence S 88°24'04" W 517.72 feet along the East-West 1/4 line of said Section 6;
thence the following four (4) courses along the Northerly right-of-way line of Oak Valley Drive:

N 44°28'15" W 434.07 feet;
819.71 feet along the arc of a 1043.00 foot radius circular curve to the left with a chord bearing N 66°59'08" W 798.77 feet;
N 89°30'01" W 285.03 feet;
727.60 feet along the arc of a 657.00 foot radius circular curve to the right with a chord bearing N 57°46'26" W 690.99 feet to the PLACE OF BEGINNING.
Being a part of the NW 1/4 of Section 6, containing 43.16 acres of land, more or less. Being subject to easements and restrictions of record, if any.

Units 8 - 11;
A parcel of land located in the NW 1/4 of Section 6, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan, described as:

Beginning at the W 1/4 corner of Section 6, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan,

thence N 00°38'20" E 886.26 feet along the West line of said Section 6;
thence the following four (4) courses along the Southerly right-of-way line of Oak Valley Drive:

678.61 feet along the arc of a 743.00 foot radius non-tangential circular curve to the left, with a chord bearing S 63°20'06" E 655.27 feet;
S 89°30'01" E 285.03 feet;
752.12 feet along the arc of a 957.00 foot radius circular curve to the right, with a chord bearing S 66°59'08" E 732.91 feet;
S 44°28'15" E 354.23 feet;

thence S 88°24'04" W 1803.91 feet along the East-West 1/4 line of said Section 6 to the PLACE OF BEGINNING, being a part of the NW 1/4 of said Section 6, containing 20.83 acres of land, more or less. Being subject to easements and restrictions of record, if any.

Survey Provided By Others

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JOB No. 15297

REVISIONS:	REV.	DATE
PER REVIEW COMMENTS		5/18/16
PER REVIEW COMMENTS		

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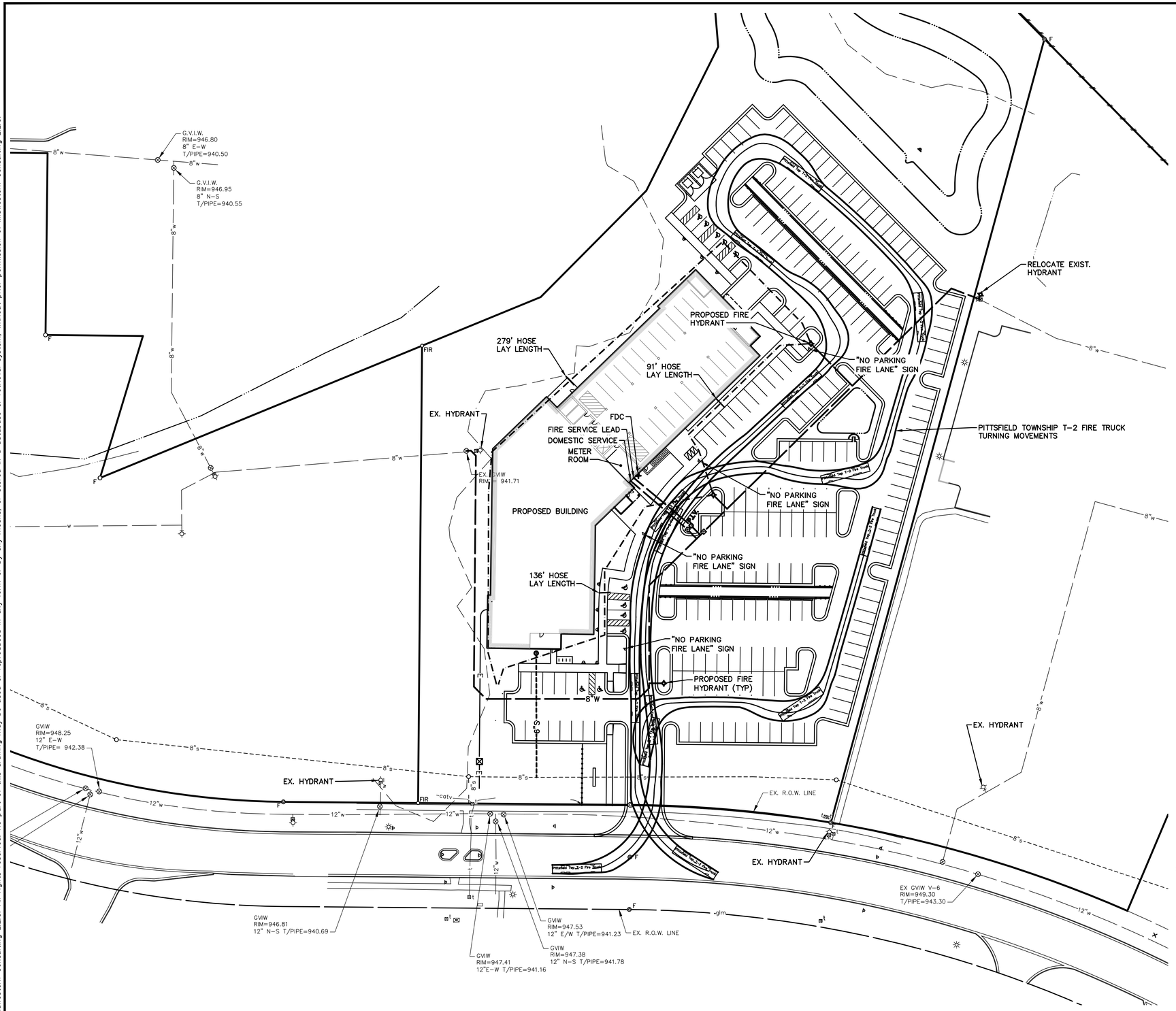


The underground utilities shown have been located from field survey information and existing records. The surveyor makes no guarantees that the underground utilities shown comprise all such utilities in the area, either in-service or abandoned. The surveyor further does not warrant that the underground utilities shown are in the exact location indicated. Although the surveyor does certify that they are located as accurately as possible from the information available.

NOTES

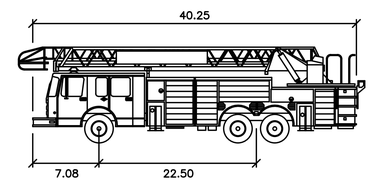
1. INTERIOR PARKING AREA WILL BE INCLUDED WITHIN THE BUILDING FIRE SUPPRESSIONS DESIGN.
2. BUILDING HEIGHT IS 2.5 STORIES/43 FT HT.
3. BUILDING USE WILL BE MEDICAL OFFICE AND GENERAL OFFICE.
4. NO TREES OR SHRUBS MAY BE LOCATED IN FRONT OF THE FDC, PIV OR ANY HYDRANTS.

SCALE: 1" = 40'

0 40 80 120

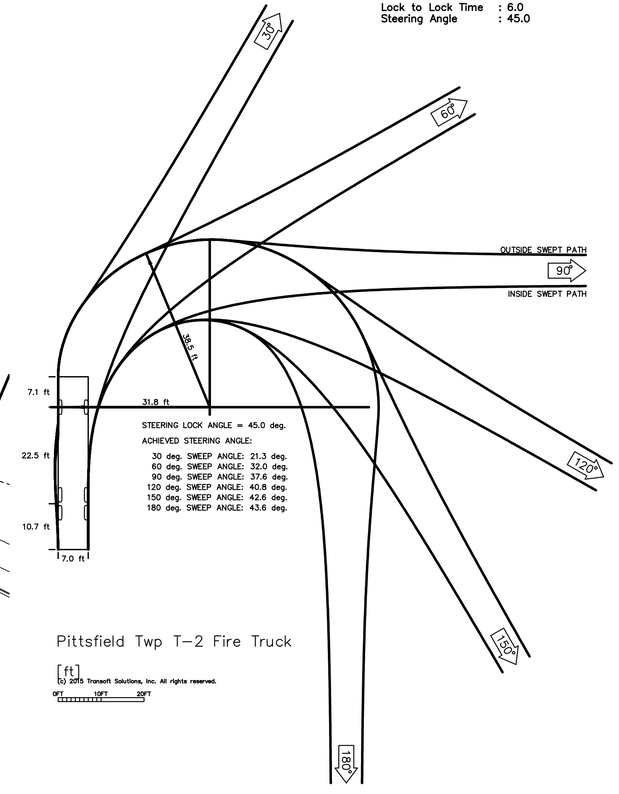
LEGEND

- EXIST. WATER MAIN
- PROP. WATER MAIN
- EXIST. HYDRANT
- PROP. HYDRANT
- EXIST. GATE VALVE IN WELL
- PROP. GATE VALVE IN WELL
- PROP. CURB STOP & BOX
- PROP. POST INDICATOR VALVE (P.I.V.)
- PROP. CURB STOP & BOX
- SIGN
- FENCE
- SINGLE TREE
- TREE OR BRUSH LIMIT
- HOSE LAY LENGTH
- HYDRANT COVERAGE RADIUS
- FIRE DEPARTMENT CONNECTION (FDC)



Pittsfield Twp T-2 Fire Truck

	feet
Width	: 7.00
Track	: 6.91
Lock to Lock Time	: 6.0
Steering Angle	: 45.0



STEERING LOCK ANGLE = 45.0 deg.

ACHIEVED STEERING ANGLE:

30 deg. SWEEP ANGLE: 21.3 deg.
60 deg. SWEEP ANGLE: 32.0 deg.
90 deg. SWEEP ANGLE: 37.6 deg.
120 deg. SWEEP ANGLE: 40.8 deg.
150 deg. SWEEP ANGLE: 42.6 deg.
180 deg. SWEEP ANGLE: 43.6 deg.

Pittsfield Twp T-2 Fire Truck

[ft]

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0FT 10FT 20FT

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PARK PLACE FIVE

PRELIMINARY SITE PLAN
FIRE PROTECTION PLAN

14

JOB No. 15297

DATE: 1/21/16
SHEET 12 OF 18
CADD: DAG, WAJ
ENG: HTH
PM: RJG
TECH:
15297PP1.dwg

REVISIONS:	REV. DATE
PER REVIEW COMMENTS	4/4/16
PER REVIEW COMMENTS	5/18/16
PER TWP. FIRE COMMENTS	7/13/16

Rentable Area Legend

- Building Common Area
- Major Vertical Penetration

Area Schedule

Area Type	Area
Building Common Area	5803 SF
Major Vertical Penetration	1937 SF
Office Area	50538 SF
Grand total	58279 SF

1 / A-1 Level 0 Plan

N

8' 16' 32'

1/16" = 1'-0"

Issue Date: 04/13/16

Released For: Revised Schematic Layout

Job Title: Promanas Park Place Five

Sheet Title: Level 0 Plan

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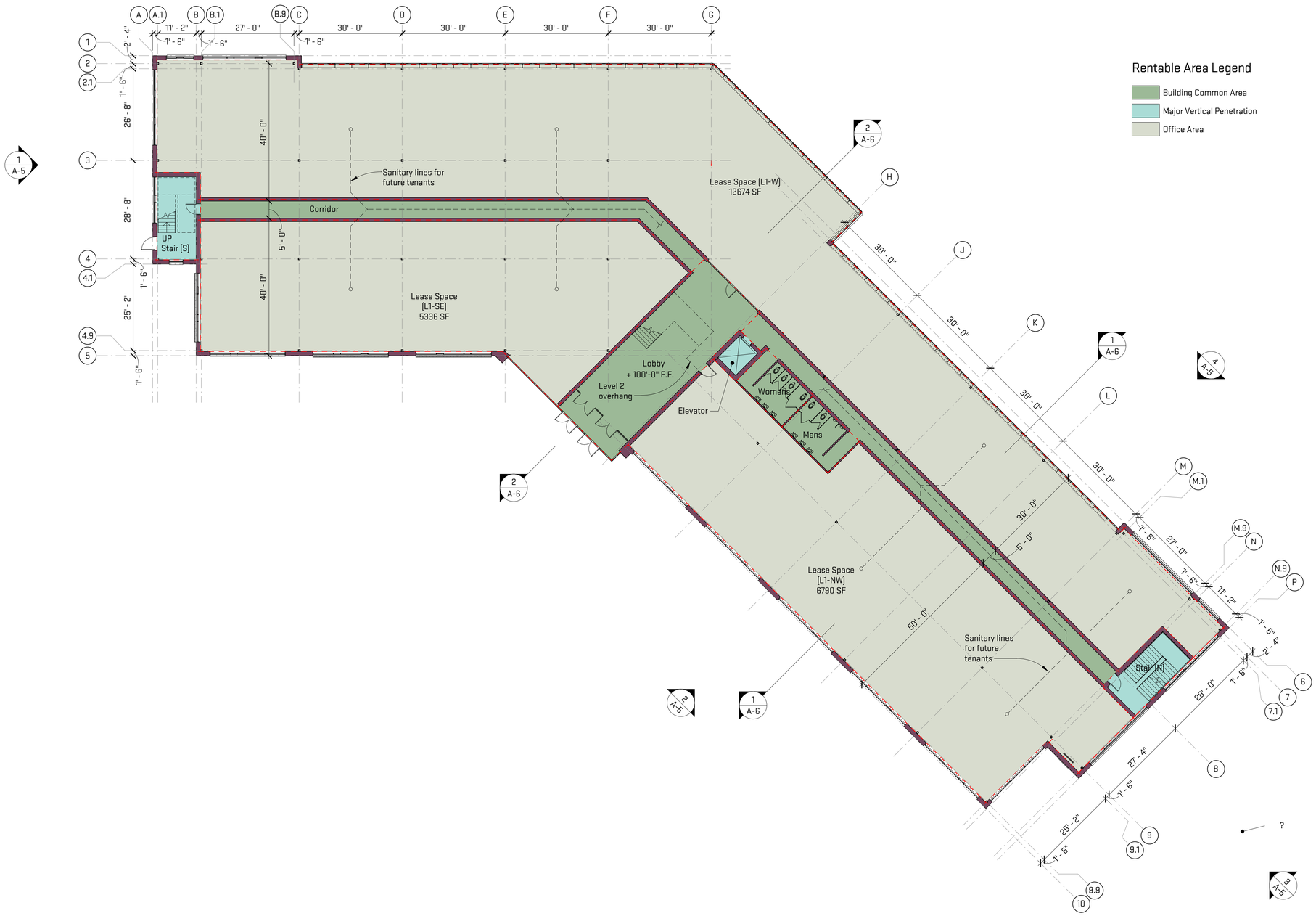
A-1

Scales listed are for 22x34 drawing size



Rentable Area Legend

- Building Common Area
- Major Vertical Penetration
- Office Area

Area Schedule

Area Type	Area
Building Common Area	5803 SF
Major Vertical Penetration	1937 SF
Office Area	50538 SF
Grand total	58279 SF

2 A-2 Level 1 Plan

N

1/16" = 1'-0"

8' 16' 32'

Issue Date: 04/13/16

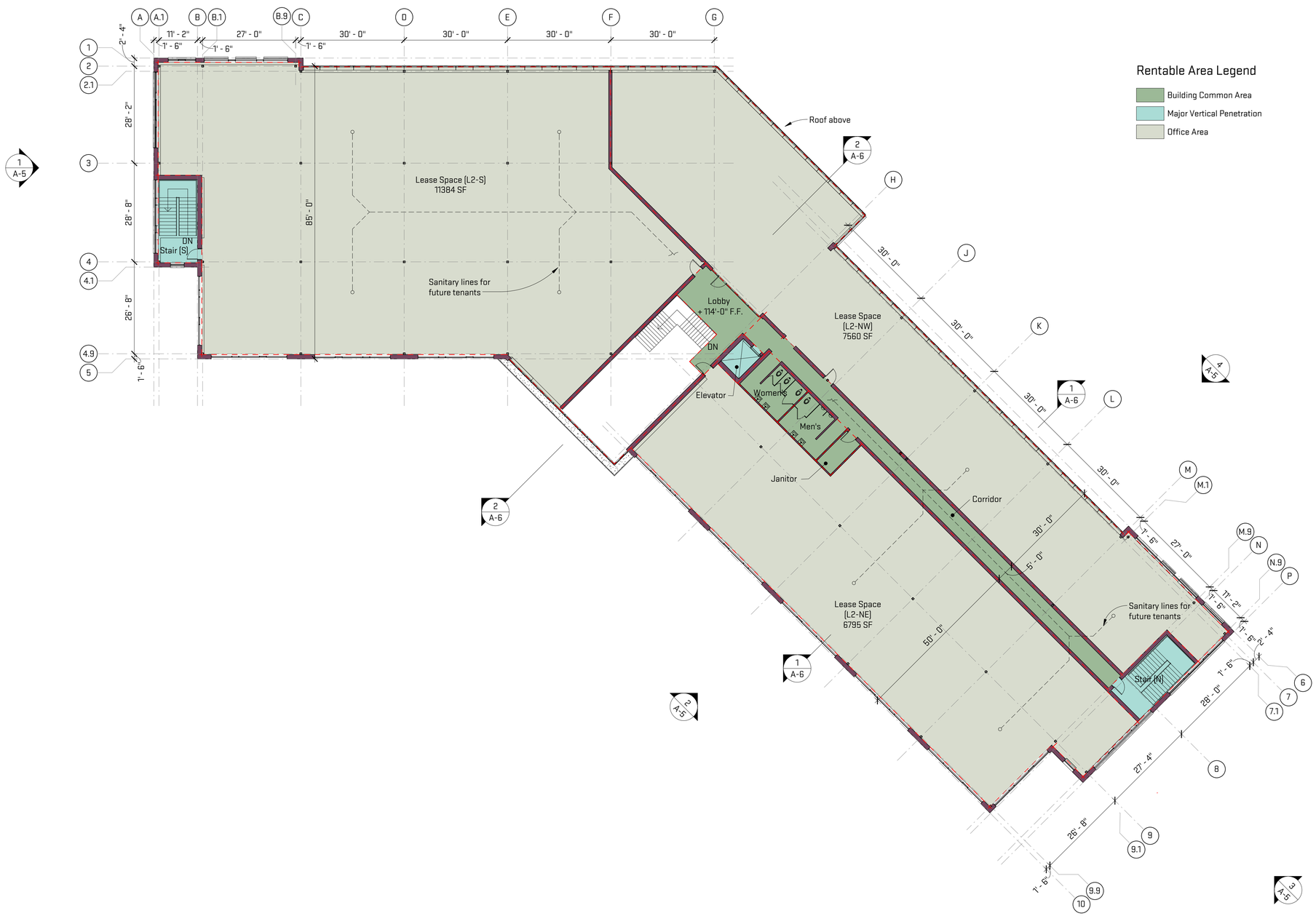
Released For: Revised Schematic Layout

Job Title: Promanas Park Place Five

Sheet Title: Level 1 Plan

A-2

Scales listed are for 22x34 drawing size



Rentable Area Legend

- Building Common Area
- Major Vertical Penetration
- Office Area

Area Schedule

Area Type	Area
Building Common Area	5803 SF
Major Vertical Penetration	1937 SF
Office Area	50538 SF
Grand total	58279 SF

2 A-3 Level 2 Plan

N

1/16" = 1'-0"

8' 16' 32'

Issue Date: 04/13/16

Released For: Revised Schematic Layout

Job Title: Promanas Park Place Five

Sheet Title: Level 2 Plan

A-3

Scales listed are for 22x34 drawing size

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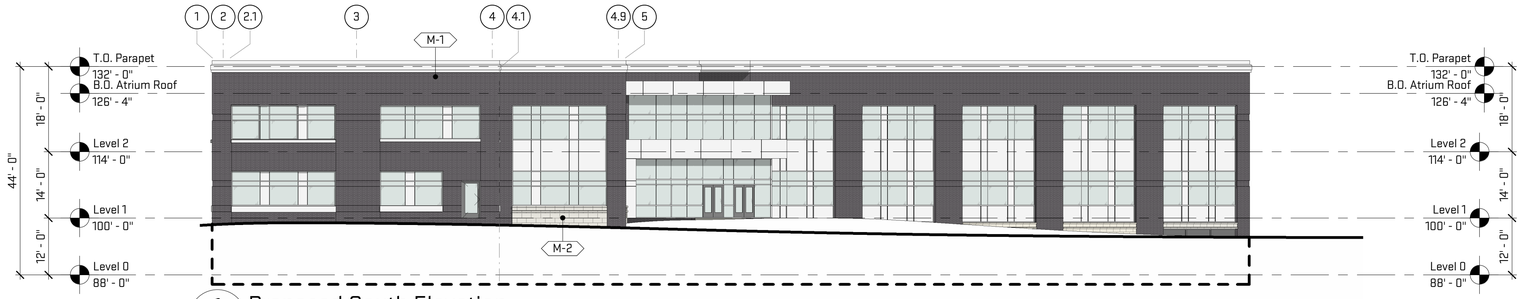
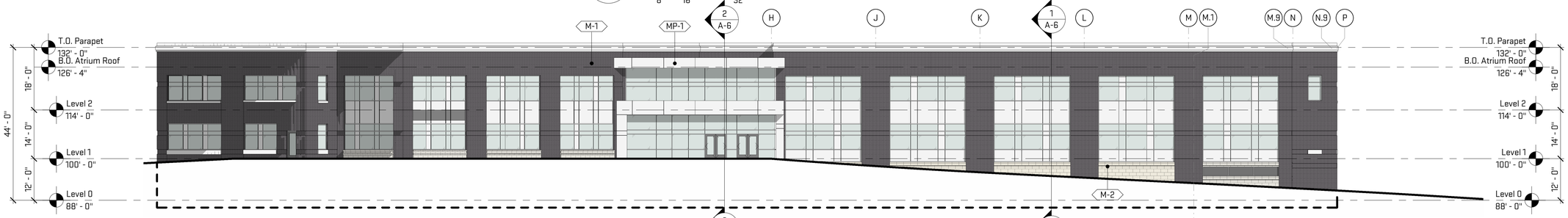
Finish Legend			
ID	Description	Manufacturer	Model
M-1	Face Brick, 1/3 Offset Bond	Belden	Black Diamond Velour, Norman
M-2	Manufactured Stone Masonry Veneer	Reading Rock	RockCast, 12"x24", "Crystal White," Smooth Face
MP-1	ACM Panel	Reynobond	Bright Silver Metallic
WD-1	Wood Siding	N/A	1X4 Cedar, S4S



1 A-5 Proposed South Elevation

1/16" = 1'-0"

8' 16' 32'



2 A-5 Proposed Southeast Elevation

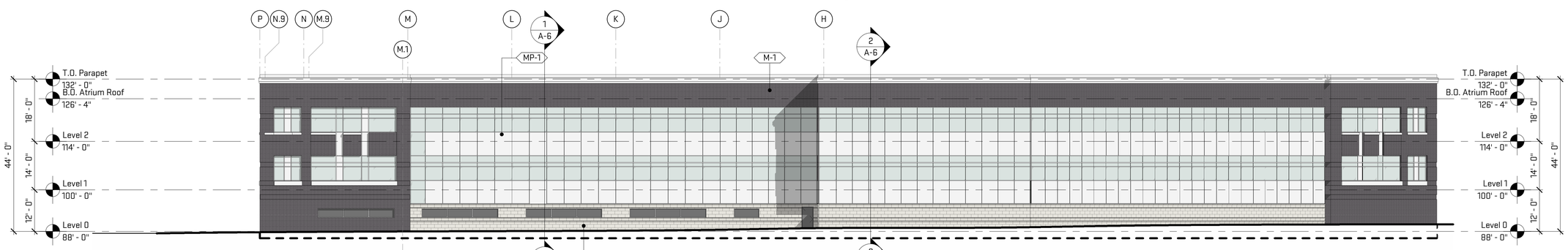
1/16" = 1'-0"

8' 16' 32'

3 A-5 Proposed North Elevation

1/16" = 1'-0"

8' 16' 32'



4 A-5 Proposed Northwest Elevation

1/16" = 1'-0"

8' 16' 32'

Issue Date: 04/13/16

Released For: Revised Schematic Layout

Job Title: Promanas Park Place Five

Sheet Title: Exterior Elevations

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A-4

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