Rendering Above:
North Elevation

Rendering Above:
South Elevation

C.2 Street Entries
The First Street entrance has a large suspended canopy marking the bottom of the entry atruim. Materials at the entry change from solid masonry to a glass wall system. This showcases the stairway encouraging guests and residents to take the stairs instead of the elevator. There is generous room beneath the canopy for guest and resident bicycle parking. The First Street entrance is marked by a masonry wall with building entry signage and a lighted public accessway lined by container plantings. Bikes can be parked at this entrance under a canopy.

C.3 Windows
The large glazed areas are characteristic of naturally lighted early industrial buildings with a strong repetitive rhythm. Alternating bays have been designed to express the nature of the interior spaces on the exterior. That is, the large glazed areas with doors are clearly living spaces leading out onto the balconies, the much smaller single windows mark secondary rooms or utility spaces. The whole composition of sizes and projections, while organized, provides a complex and visually interesting facade.

C.5 Materials
The lower three story repeating bays are clad in rain-screen brick identifying them as structural building elements. Above the projecting brick bays and on portions of the south and east facades are light colored horizontally seamed steel cladding systems. The balconies are shop fabricated coated steel bolted to the facade after cladding materials are applied.

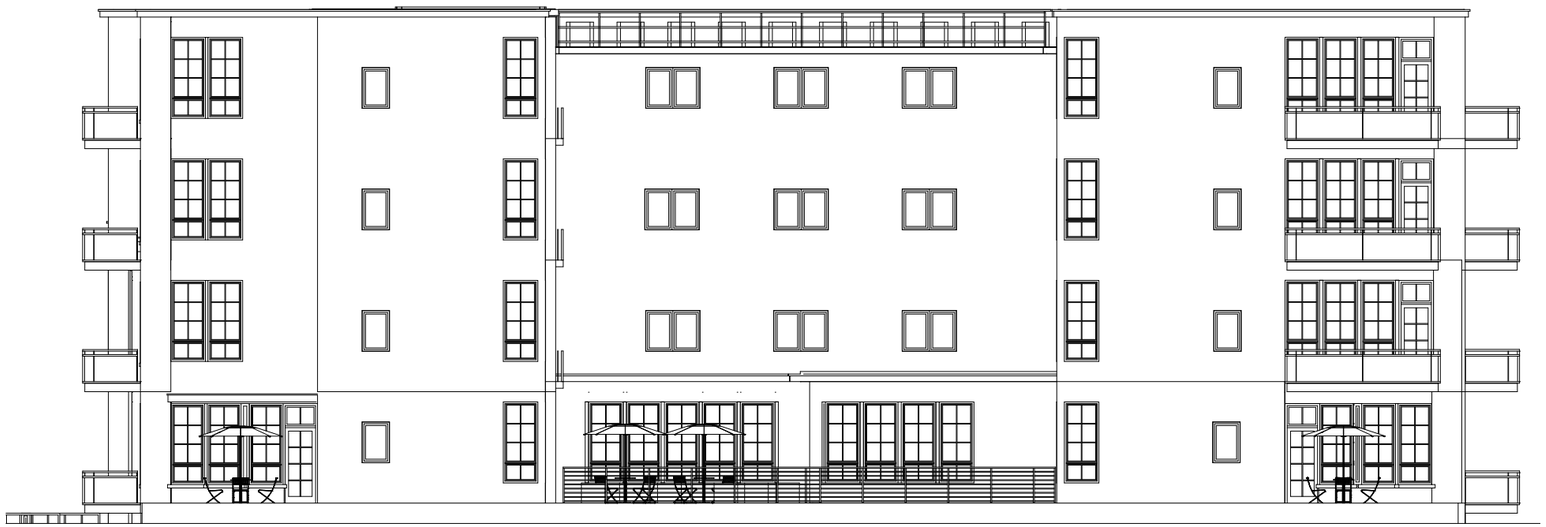
The upper stories are clad in metal panels in a neutral color similar in value to a photographer's "grey card." This neutral value reduces the contrast between the upper stories and a bright sunny or overcast sky. The metal clad bays alternate with a dark colored fiber cement panel system.

C.6 Building Operational Systems
Solid waste is located in a screened area accessed from the parking area. The only time that the waste containers will be visible is on the day of pickup. The mechanical equipment HVAC compressors are located on a portion of the roof which is lower than the overall roof. This not only screens the equipment from neighboring properties, but reduces the noise levels for upper level residences and neighboring buildings.

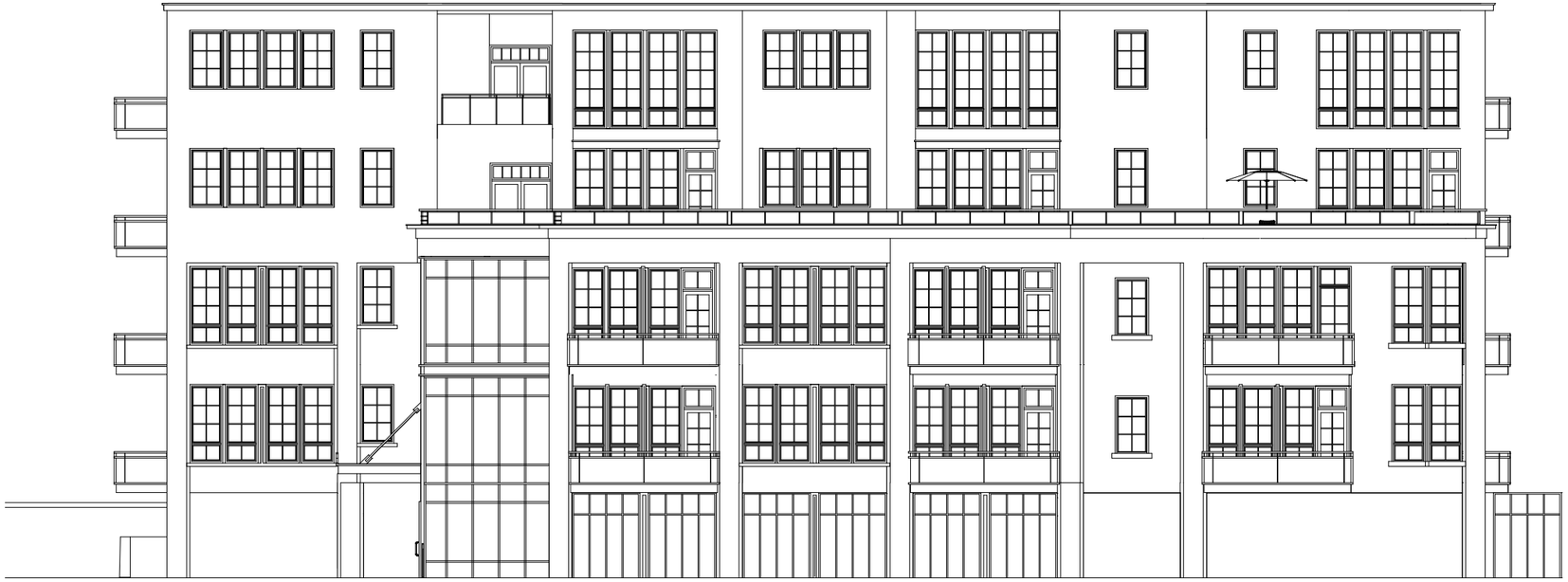
C.7 Sustainability in Building Elements
Because this is a wood building, wall and roof insulation R values can be higher than in multifamily units of other construction types resulting in lower heat gain and losses. West facing glazing will be glass with a high coefficient of shading reducing air conditioning loads. All units will have operable windows and balcony doors for natural ventilation.

Rendering At Left:
North Elevation

Rendering At Left:
South Elevation



Rendering At Left:
East Elevation

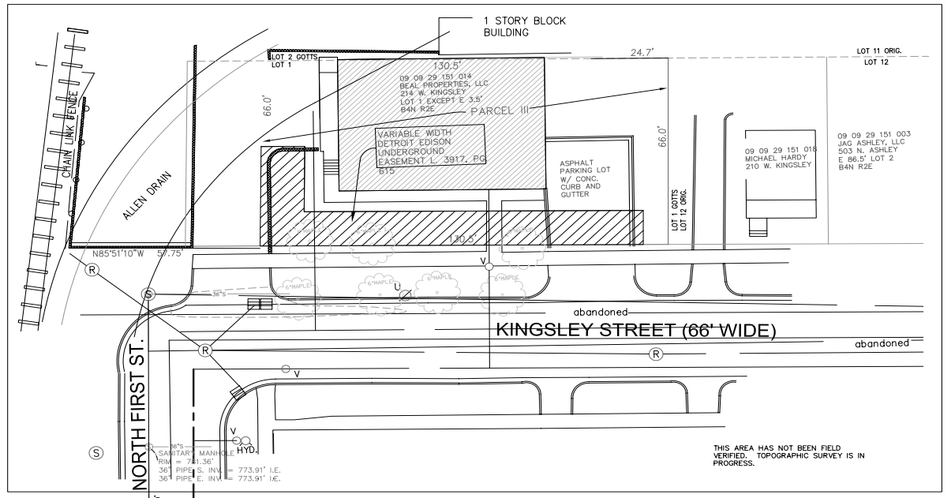


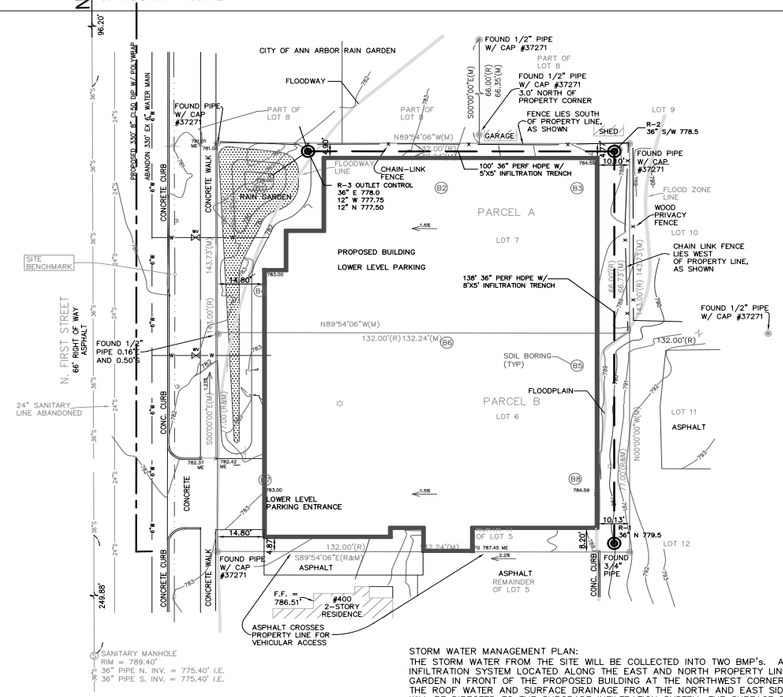
Rendering At Left:
West Elevation

Rendering Above:
Cross Secition

LEGEND

- SET 1/2" REBAR WITH CAP P.S. 47976
- FOUND MONUMENT (AS NOTED)
- (R&M) RECORD AND MEASURED DIMENSION
- (R) RECORD DIMENSION
- (M) MEASURED DIMENSION
- 000.0 GROUND POINT
- ELECTRIC METER
- UTILITY POLE
- GAS METER
- ROUND CATCH BASIN
- WATER VALVE
- AIR CONDITIONING UNIT
- LIGHTPOST/LAMP POST
- PARKING METER
- SINGLE POST SIGN
- TREE
- PARCEL BOUNDARY LINE
- PLATTED LOT LINE
- EASEMENT (AS NOTED)
- BUILDING
- BUILDING OVERHANG
- CONCRETE CURB
- EDGE OF CONCRETE (CONC.)
- EDGE OF ASPHALT (ASPH.)
- EDGE OF BRICK
- EDGE OF GRAVEL
- FENCE (AS NOTED)
- WALL (AS NOTED)
- OVERHEAD UTILITY LINE
- G GAS LINE
- S SANITARY LINE
- D STORM LINE
- W WATER LINE
- CONTOUR MAJOR
- CONTOUR MINOR
- PROP WATER MAIN
- PROP STORM LINE
- PROP SANITARY LINE
- PROP MANHOLE





PROPOSED OVERALL SITE

Total Site Area =	0.44 ac	
Total Site Area Excluding "Self-Crediting" BMP's =		0.36 ac **TBD**

W1: POST EDVELOPMENT COVER TYPES, AREAS, CURVE NUMBERS AND RUNOFF COEFFICIENTS

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coefficient (c)	(C)(Area)
Building Roof	B	13,713	0.315	0.95	0.30
Pavement	B	656	0.015	0.95	0.01
Pervious Pavement	B	0	0.000	0.85	0.00
Pervious	B	4,642	0.107	0.30	0.03
Pond	B	0	0.000	1.00	0.00
			Total = Sum (C)(A)		0.35
			Area Total = Sum A (ac)		0.44
			Weighted C = Sum (C)(A) Area Total		0.79

NRCS Variables Pervious

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Lawn	B	4,353	0.100	61	6
Rain Garden	B	289	0.007	78	1
Pervious Pavement	B	0	0.000	85	0
			Total = Sum (CN)(A)		6.61
			Area Total = Sum A (ac)		0.11
			Weighted CN = Sum (CN)(A)/Area Total		62

NRCS Variables Impervious

Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Building Roof	B	13,713	0.315	98	31
Pavement	B	656	0.015	98	1
Pond	B	0	0.000	98	0
			Total = Sum (CN)(A)		32.33
			Area Total = Sum A (ac)		0.33
			Weighted CN = Sum (CN)(A)/Area Total		98

W2: STANDARD METHOD RUNOFF VOLUME CALCULATIONS

First Flush Runoff Calculations (Vff)

Vff=(1")(1/12")(43560sf/1ac)/AC =	Vff =	1,023 cf

W3: STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pre-development Bankfull Runoff Calculations (Vbf-pre)

2 yr/24 hr storm event	P=	2.35 in
Pre-development Land Cover	CN =	58
S=(1000/CN)-10	S =	7.24 in
Q=(P-0.2S)^2/(P+0.8S)	Q =	0.10 in
Total site area (sf) excluding self crediting	A =	15,507 sf
Vbf-pre=Q(1/12)Area	Vbf-pre =	129 cf

W4: STANDARD METHOD RUNOFF VOLUME CALCULATION

Pervious Cover Post-Development Bankfull Runoff Calculations (Vbf-per-post)

2 yr/24 hr storm event	P=	2.35 in
Pervious Cover CN from WS1	CN =	62
S=(1000/CN)-10	S =	6.11 in
Q=(P-0.2S)^2/(P+0.8S)	Q =	0.18 in
Pervious Cover Area from WS1	A =	4,642 sf
Vbf-per-post=Q(1/12)Area	Vbf-per-post =	68 cf

W5: STANDARD METHOD RUNOFF VOLUME CALCULATION

Impervious Cover Post-Development Bankfull Runoff Calculations (Vbf-imp-post)

2 yr/24 hr storm event	P=	2.35 in
Impervious Cover CN from WS1	CN =	98
S=(1000/CN)-10	S =	0.20 in
Q=(P-0.2S)^2/(P+0.8S)	Q =	2.12 in
Impervious Cover Area from WS1	A =	14,369 sf
Vbf-imp-post=Q(1/12)Area	Vbf-imp-post =	2,541 cf

W6: STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Pervious Cover Post-Development 100-yr Storm Runoff Calculations (V100-per-post)

100-yr Storm Event	P=	5.11 in
Pervious Cover CN from WS1	CN =	62
S=(1000/CN)-10	S =	6.11 in
Q=(P-0.2S)^2/(P+0.8S)	Q =	1.51 in
Pervious Cover Area from WS1	A =	4,642 sf
V100-per-post=Q(1/12)Area	V100-per-post =	584 cf

W7: STANDARD METHOD RUNOFF VOLUME CALCULATION

Impervious Cover Post-Development 100-yr Storm Runoff Calculations (V100-imp-post)

100-yr Storm Event	P=	5.11 in
Impervious Cover CN from WS1	CN =	98
S=(1000/CN)-10	S =	0.20 in
Q=(P-0.2S)^2/(P+0.8S)	Q =	4.87 in
Impervious Cover Area from WS1	A =	14,369 sf
V100-imp-post=Q(1/12)Area	V100-imp-post =	5,835 cf

W8: STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Determine Time of Concentration for Applicable Flow Types (Tc-hrs)

Flow Type	K	Change in Elevation	Length (L)	Slope% (S)	S^0.5	V=KS^0.5	Tc=L/3600 V		
Sheet Flow (<300')	0.48	5	100	0.05	0.22	0.11	0.26		
Waterway	1.2	1	10	10	3.16	3.79	0.00		
Waterway	1.2	1	10	10	3.16	3.79	0.00		
Small Tributary	2.1	1	10	10	3.16	6.64	0.00		
Small Tributary	2.1	1	10	10	3.16	6.64	0.00		
				Total Time of Concentration (Tc-hrs)=			0.26	hrs	

W9: STANDARD METHOD RUNOFF VOLUME CALCULATIONS

Runoff Summary & Onsite Infiltration Requirement

Runoff Summary from Previous Worksheets

First Flush

Pre-development Bankfull Runoff Volume	Vff-pre =	1,023 cf	
Pervious Cover Post Development Bankfull Volume	Vbf-per-post =	68 cf	**Total BF Volume (Vbf-post) 2,608 cf**
Impervious Cover Post-Development Bankfull Volume	Vbf-imp-post =	2,541 cf	
Pervious Cover Post Development 100-yr Volume	V100-per-post =	584 cf	**Total100-yr Volume (V100-post) 6,419 cf**
Impervious Cover Post-Development 100-yr Volume	V100-imp-post =	5,835 cf	

Determine Onsite Infiltration Requirement

Subtract the Pre-Development Bankfull from the Post-Development Bankfull olume

Total Post Development Bankfull Volume	Vbf-post=	2,608 cf
Pre-development Bankfull Runoff Volume	Vbf-pre=	129 cf
Bankfull Volume Difference		2,479 cf

Compare Bankfull Volume Difference with the First Flush Volume.

Bankfull Volume Difference =	2,479 cf	greater	
First Flush Volume =	1,023 cf		
Onsite Infiltration Requirement (Vinf)		Vinf =	2,479 cf

W10: STANDARD METHOD RUNOFF VOLUME CALCULATION

Detention/Retention Requirement

Detention

Qp=238.67c^.82	Qp=	717.60 cfs/in-mi^2
Total Site Area Excluding Self Crediting	A =	0.36 ac
Q100=Q100 per<Q100-imp (W6 and W7)	Q100 =	6.38 in
Peak Flow (PF)=Qp*Q100*A/640	PF=	2.55 cfs
D=PF.1/3*A	D=	2.49 cfs
Vdet=(D/PF)*V100-Vinf	Vdet=	3,806 cf

Retention

Vret=2"/V100	Vret = n/a	

W11: STANDARD METHOD RUNNOFF CALCULATIONS

Determine Applicable BMPs and Associated Volume Credits

Proposed BMP	Area (sf)	Storage Volume (cf)	Ave. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm (cf)	Total Volume Reduction (cf)
Porous Pavement					
Infiltration Basin					
Subsurface Infiltration Bed	1,645	3,679	1.00	823	4,502
Infiltration Trench					
Rain Garden/Bioretention	448	1,622	1.00	224	1,846
Dry Well					
Bioswale					
Vegetated Filter Strip					
Green Roof					
	Total Volume Reduction Credit by BMPs =				6,347 cf
	Runoff Volume Infiltration Requirement Vinf from WS9 =				2,479 cf
	Runoff Volume Credit =				3,868 cf

Porous Pavement

Minimum Infiltration Area = Contributing Impervious Area/5	Contributing Area =	0 sf
	Minimum Infiltration Area =	0 sf
	Infiltration Area Provided =	0 sf
Runoff Volume=depth*area*void space (30%)	Depth =	0.00 ft
	Area =	0 sf
	Volume =	0 cf
Infiltration Volume = Area*infiltration rate*6 ft*1/12"	Area =	0 sf
	Infiltration Rate =	1.00 in/hr
	Infiltration Rate w/ Safety Factor 2 =	0.50 in/hr
	Infiltration Period	6.00 hr
	Infiltration Volume =	0 cf

Rain Garden

Area of Garden at Ponding Depth =	896 sf	
Area of Garden at Bottom =	0 sf	
Infiltration Area =	448 sf	
Surface Storage Volume = Area*Depth	Area =	448 sf
	Depth =	3 ft
	Volume =	1344 cf
Soil Storage Volume = length*width*depth*void ratio	Length =	75 ft
	Width =	4 ft
	Depth =	1 ft
	Voids =	0.3
	Volume =	90 cf
	Volume Entire Rain Garden=	277.5
Infiltration Volume = Area*infiltration rate*6 ft*1/12"	Area =	448 sf
	Infiltration Rate =	2.00 in/hr
	Infiltration Rate w/ Safety Factor 2 =	1.00 in/hr
	Infiltration Period	6.00 hr
	Infiltration Volume =	224 cf
	Total Rain Garden Volume =	1,846 cf

Subsurface Storage

Minimum Infiltration Area = Contributing Impervious Area/5	Contributing Area =	10,000 sf
	Minimum Infiltration Area =	2,000 sf
	Infiltration Area Provided =	1,645 sf
Infiltration Volume = Area*infiltration rate*6 ft*1/12"	Area =	1,645 sf
	Infiltration Rate =	2.00 in/hr
	Infiltration Rate w/ Safety Factor 2 =	1.00 in/hr
	Infiltration Period	6.00 hr
	Infiltration Volume =	823 cf
Storage Volume Pipe = Length * Area of Pipe	Area 36" Pipe =	7,065 sf
	Length of Pipe =	245 ft
	Volume =	1,731 cf
Storage Volume Aggregate = Volume Storage - Volume Pipe * Voids Ratio	Volume Storage =	8,225 cf
	Volume Pipe =	1,731 cf
	Volume Aggregate =	6,494 cf
	Voids Ratio =	0.30
	Volume Aggregate Storage =	1,948 cf
	Total Subsurface Storage =	4,502 cf

5'X105' 8'X140'

5'X105'6" 8'X140'6"

W12: NATURAL FEATURES INVENTORY

Existing Natural Resources	Mapped	Total Area (ac)	Protected or Undisturbed Area (ac)
Waterbodies			
Floodplains	yes	0.42	0.08
Riparian Areas			
Wetlands			
Woodlands			
Natural Drainage Area			
Steep Slopes 15%-25%			
Steep Slopes over 25%			
Special Habitat Areas			
Other			
TOTAL EXISTING (ac)		0.42	0.08

STORM WATER MANAGEMENT PLAN:
THE STORM WATER FROM THE SITE WILL BE COLLECTED INTO TWO BMP's. A SUBGRADE INFILTRATION SYSTEM LOCATED ALONG THE EAST AND NORTH PROPERTY LINES AND A RAIN GARDEN IN FRONT OF THE PROPOSED BUILDING AT THE NORTHWEST CORNER OF THE SITE. THE ROOF WATER AND SURFACE DRAINAGE FROM THE NORTH AND EAST SIDES OF THE SITE WILL BE DIRECTED TO THE SUBGRADE INFILTRATION SYSTEM. THE SURFACE DRAINAGE FROM THE SOUTH AND WEST SIDES OF THE SITE WILL BE DIRECTED TO THE RAIN GARDEN.

THE INVERT OF THE SUBGRADE INFILTRATION AND THE RAIN GARDEN HAVE BEEN SET AT THE SAME ELEVATION AND BOTH DRAIN TO AN OUTLET STRUCTURE LOCATED ALONG THE NORTH PROPERTY LINE ADJACENT TO THE CITY'S RAIN GARDEN. AT THIS TIME WE ARE COORDINATING WITH THE CITY FOR AN OUTLET AND/OR IMPROVEMENTS TO THE OVERALL STORM WATER SYSTEM.

PRELIMINARY
NOT FOR CONSTRUCTION

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

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEE 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 HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES OTHER THAN THE STRUCTURES INVENTORY SHOWN HEREON.

PERIMETER ENGINEERING LLC
11245 BOYCE ROAD
CHELSEA, MI 48118
734-216-9941

PERIMETER

Notice:
Construction site safety is the sole responsibility of the CONTRACTOR; neither the owner nor the engineer shall have responsibility for any safety responsibility for safety of the work, for the means, methods, techniques, sequences or procedures, or for any safety precautions and programs in connection with the work, for the acts or omissions of the CONTRACTOR, SUBCONTRACTORS or any other persons performing any of the work, or for any other persons at the site or otherwise performing work.

SECTION 12
TOWN 2 NORTH, RANGE 2 EAST
CITY OF ANN ARBOR
WASHTENAW COUNTY

CLIENT
HURON CONTRACTING LLC

408-412 N. FIRST ST.
STORM WATER MANAGEMENT

DATE 10-9-14
SCALE 1" = 20'
DR. K.K. CH. K.K.
P.M.
BOOK
SHEET NO.
SHEET NO. SP-06