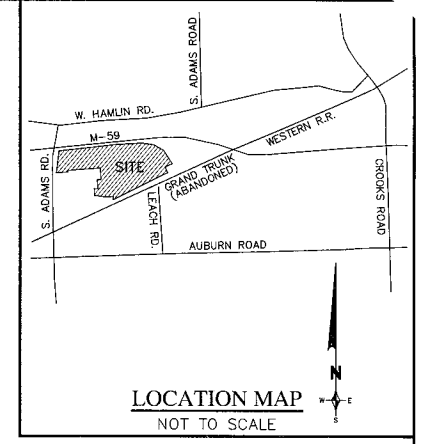


SITE IMPROVEMENTS FOR PROPOSED RETAIL BUILDING "A" ROCHESTER HILLS, MICHIGAN



PLAN ISSUED FOR:	DATE
PRELIMINARY REVIEW	_____
GOVERNMENTAL REVIEW	_____
BIDS	_____
CONSTRUCTION	_____
S.E.S.C. PERMIT #RHC/2005-1571/30/CO	9-27-05
MDEQ LWMD PERMIT #06-63-0005-P	6-16-06

- BENCH MARKS**
- 4 THE "+" STAMPED IN PAVEMENT OF NEW ADAMS ROAD AT STA. 99+00 ELEVATION 844.67 U.S.G.S.
 - 5 BENCH TIE NAIL ON NORTH FACE OF 18" COTTONWOOD TAG #2327 ELEVATION 840.80 U.S.G.S.
 - 6 BENCH TIE NORTH SIDE OF MOST NORTHERLY POWER POLE ELEVATION 855.75 U.S.G.S.

NOTE:
These plans are the property of Zeimet-Wozniak & Associates, Inc. No construction staking or construction inspection or constructive use of these plans shall be made by anyone without the written authorization below.

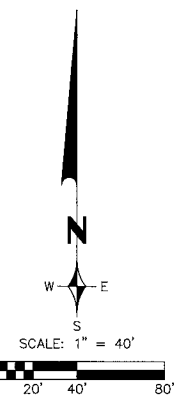
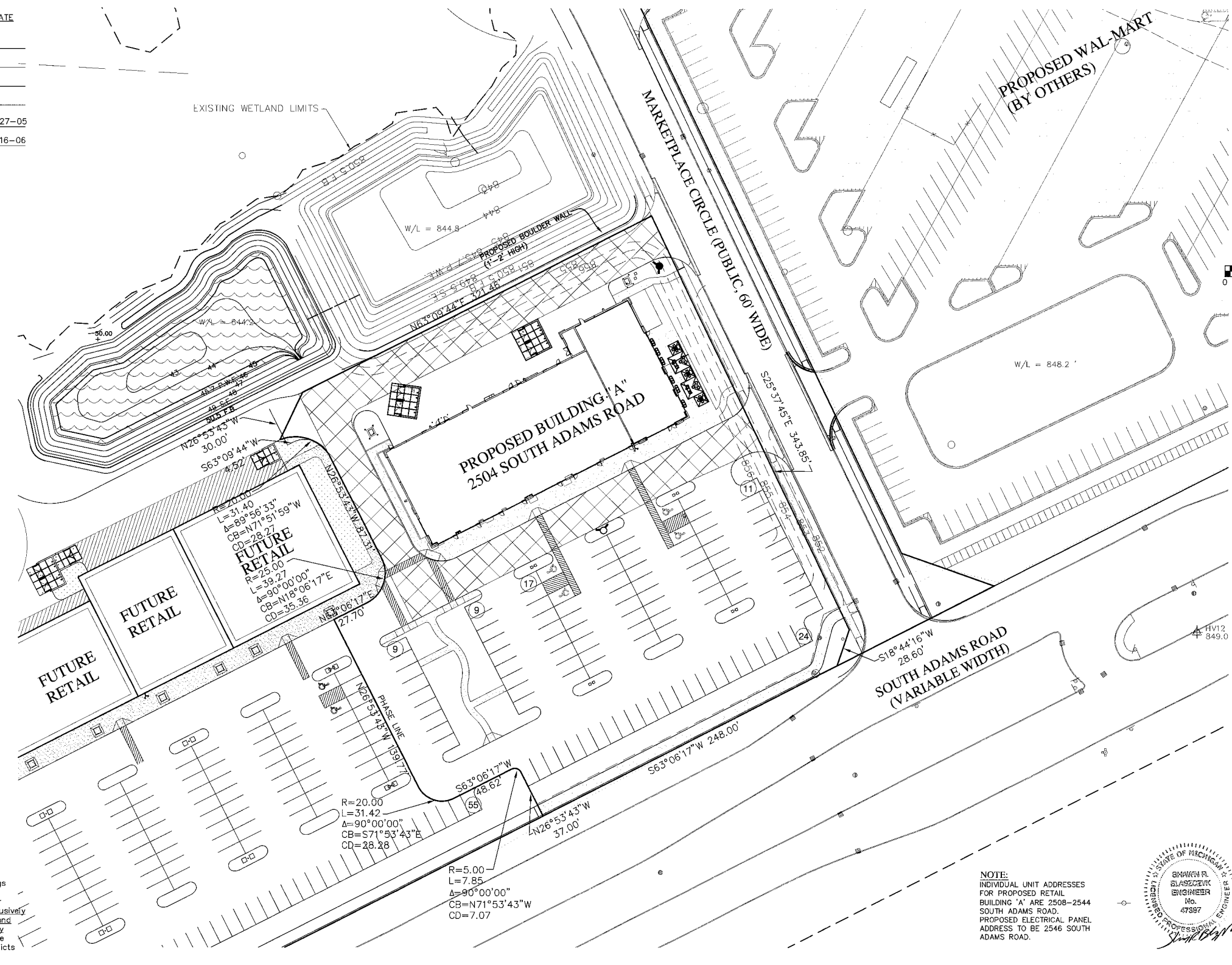
Authorization by: _____

Zeimet-Wozniak & Associates, Inc. shall not be responsible for means, methods, procedures, techniques, or sequences of construction, nor for safety on the job site, nor shall Zeimet-Wozniak & Associates, Inc. be responsible for the contractor's failure to carry out the work in accordance with the contract documents.

The Contractor shall indemnify and save harmless the Owner and Engineer from all liabilities for injury to persons, or damage to or loss of property, or any other loss, cost or expense, as a result of the actions of the Contractor, his employees, agents, or subcontractors.

All contractors shall name Zeimet-Wozniak & Associates, Inc. as additionally insured on all insurance policies.

The location and elevation of existing underground utilities as shown on these drawings are only approximate. No guarantee is either expressed or implied as to the completeness or accuracy thereof. The Contractor shall be exclusively responsible for determining the exact location and elevation of existing utilities and proposed utility crossings in the field prior to construction. The Contractor shall notify the Engineer if any conflicts are apparent or if the location or depth differs significantly from the plans.



Sheet Index

COVER	ARCHITECTURAL SITE PLAN
CE-1	GRADING & SOIL EROSION
CE-2	UTILITY PLAN
CE-3	STORM SEWER PROFILES
CE-4	STORMWATER MANAGEMENT
CE-5	STORM DRAINAGE AREA PLAN
CE-6	PAVING & SIGNAGE PLAN
CE-7	ALTA-ACSM SURVEY

STANDARD DETAIL SHEETS

A	WATERMAIN DETAILS
B	WATERMAIN DETAILS
E	STORM SEWER DETAILS
F	EROSION CONTROL DETAILS

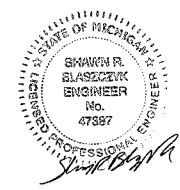
BUILDING A PHASE DESCRIPTION

A PARCEL OF LAND LOCATED IN PART OF THE SOUTH-EAST 1/4 OF SECTION 30, T. 3 N., R. 11 E., CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN, MORE PARTICULARLY DESCRIBED AS:

COMMENCING AT THE EAST 1/4 CORNER OF SECTION 30 AND PROCEEDING ALONG THE EAST AND WEST 1/4 LINE OF SECTION 30 S. 85°45'03" W. 942.80 FEET AND S. 32°42'01" E. 26.68 FEET AND S. 65°18'11" W. 258.97 FEET AND S. 24°35'28" E. 35.10 FEET TO A POINT ALONG THE NORTHERLY RIGHT-OF-WAY OF ADAMS ROAD (VARIABLE WIDTH) AND ALONG SAID RIGHT-OF-WAY S. 63°06'17" W. 859.04 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID RIGHT-OF-WAY S. 63°06'17" W. 248.00 FEET; THENCE N. 26°53'43" W. 37.00 FEET; THENCE 7.85 FEET ALONG THE ARC OF A CURVE TO THE LEFT, RADIUS 5.00 FEET, CENTRAL ANGLE 90°00'00"; AND A CHORD THAT BEARS N. 71°53'43" W. 7.07 FEET; THENCE S. 63°06'17" W. 48.62 FEET; THENCE 31.42 FEET ALONG THE ARC OF A CURVE TO THE RIGHT, RADIUS 20.00 FEET, CENTRAL ANGLE 90°00'00"; AND A CHORD THAT BEARS N. 71°53'43" W. 28.28 FEET; THENCE N. 26°53'43" W. 139.77 FEET; THENCE N. 63°06'17" E. 27.70 FEET; THENCE 39.27 FEET ALONG THE ARC OF CURVE TO THE LEFT, RADIUS 25.00 FEET, CENTRAL ANGLE 90°00'00"; AND A CHORD THAT BEARS N. 18°06'17" E. 35.36 FEET; THENCE N. 26°53'43" W. 87.31 FEET; THENCE 31.40 FEET ALONG THE ARC OF A CURVE TO THE LEFT, RADIUS 20.00 FEET, CENTRAL ANGLE 89°56'33"; AND A CHORD THAT BEARS N. 71°53'43" W. 28.27 FEET; THENCE S. 63°09'44" W. 4.52 FEET; THENCE N. 26°53'43" W. 30.00 FEET; THENCE N. 63°09'44" E. 321.46 FEET; THENCE S. 25°37'45" E. 343.85 FEET; THENCE S. 18°44'16" W. 28.60 FEET TO THE POINT OF BEGINNING, CONTAINING 2.64 ACRES, BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OF RECORD.

WATERMAIN QUANTITIES		STORM SEWER QUANTITIES	
RELOCATE HYDRANT	1 EA.	4" CATCH BASIN	4 EA.
HYDRANT	1 EA.	6" CATCH BASIN	1 EA.
6" CL 54 DUCTILE IRON PIPE	112 LF.	6" OVERFLOW MANHOLE	1 EA.
6" GATE VALVE & BOX	1 EA.	7" CATCH BASIN	1 EA.
		8" MANHOLE	2 EA.
		30" END SECTION	2 EA.
		36" CMP STANDPIPE	1 EA.
		42" END SECTION	1 EA.
		48" END SECTION	1 EA.
		12" CL IV PIPE	16 LF.
		15" CL IV PIPE	224 LF.
		21" CL IV PIPE	75 LF.
		24" CL IV PIPE	63 LF.
		30" CMP PIPE	43 LF.
		36" CL IV PIPE	10 LF.
		42" CL III PIPE	18 LF.
		42" CL IV PIPE	95 LF.
		48" CL IV PIPE	318 LF.

NOTE:
QUANTITIES SHOWN ABOVE ARE FOR PERMIT PURPOSES ONLY. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING THE ACTUAL SCOPE OF WORK IN ACCORDANCE WITH THESE CONTRACT DOCUMENTS.



NOTE:
INDIVIDUAL UNIT ADDRESSES FOR PROPOSED RETAIL BUILDING 'A' ARE 2508-2544 SOUTH ADAMS ROAD. PROPOSED ELECTRICAL PANEL ADDRESS TO BE 2546 SOUTH ADAMS ROAD.

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY											

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
4024 GRAND RIVER AVE, SUITE 100
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MISS DIG SYSTEM, INC.
1-800-482-7171
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PROJECT SPONSOR:
GRAND SAKWA PROPERTIES
28470 THIRTEEN MILE ROAD, SUITE 220
FARMINGTON HILLS, MI (248) 855-5500

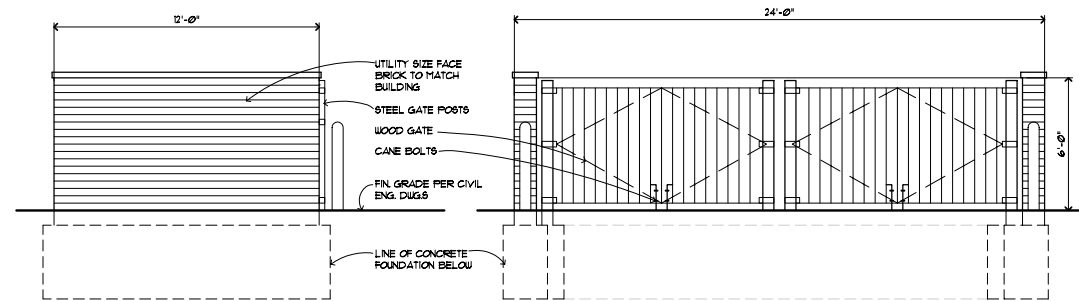
ADAMS MARKETPLACE

COVER
PROPOSED RETAIL BUILDING "A"
ROCHESTER HILLS, MICHIGAN

CITY FILE 05-030.5

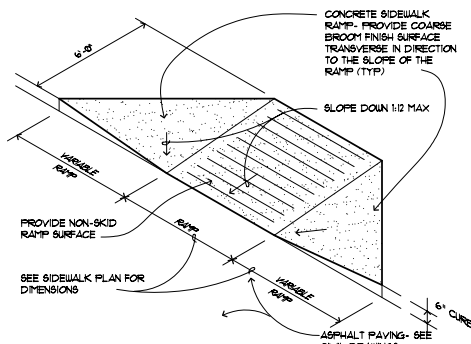
DATE: 01/03/07	SCALE: HOR: 1" = 40'
DESIGNED BY: SRB	VER: 1" = N/A
DRAWN BY: BMD	JOB NO. 97144
	SHEET

G:\Drawings\02053\02 Schem\SPA - Retail A\SPA - 07-0221\02053 SITE 07-0221.dwg, 2/23/2007 1:25:48 PM, svetlana

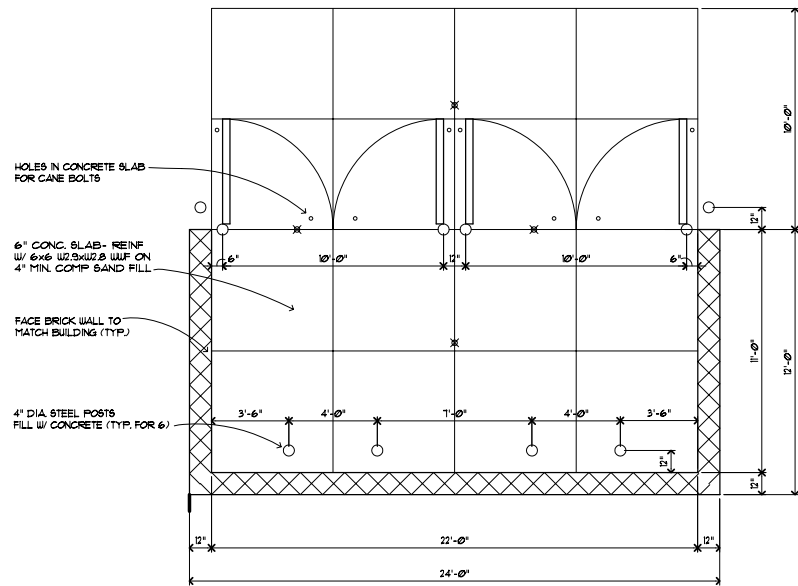


Double Dumpster Side Elevation
Scale: 1/4"=1'-0"

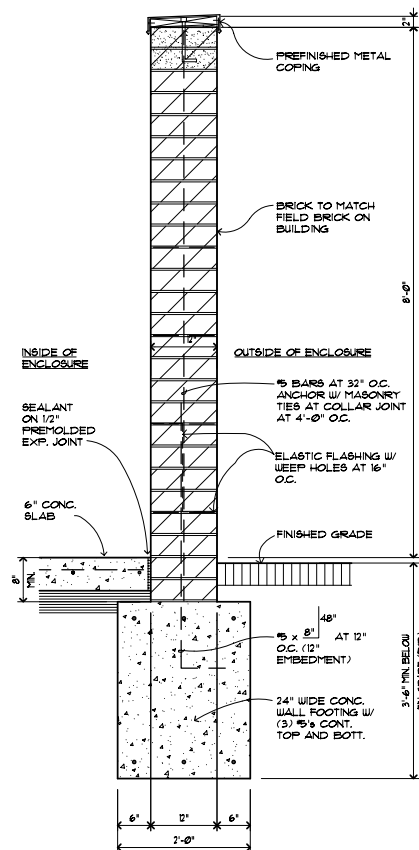
Double Dumpster Front Elevation
Scale: 1/4"=1'-0"



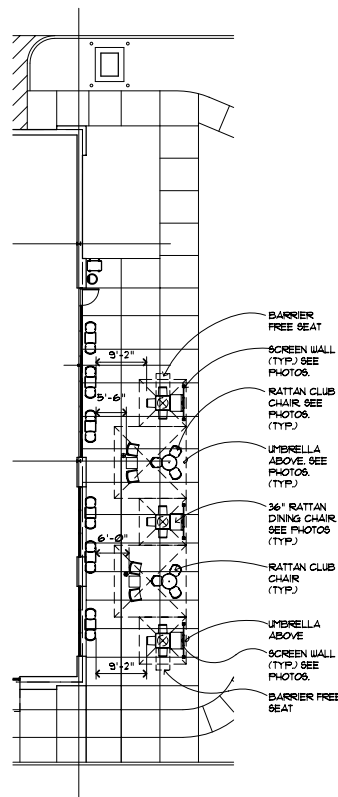
Typical Barrier Free Concrete Sidewalk Ramp Isometric - No Scale
RAMPS AND CURB RAMPS SHALL COMPLY WITH ICC/ANSI A117.1-1998 SECTION 405 AND 406 RESPECTFULLY



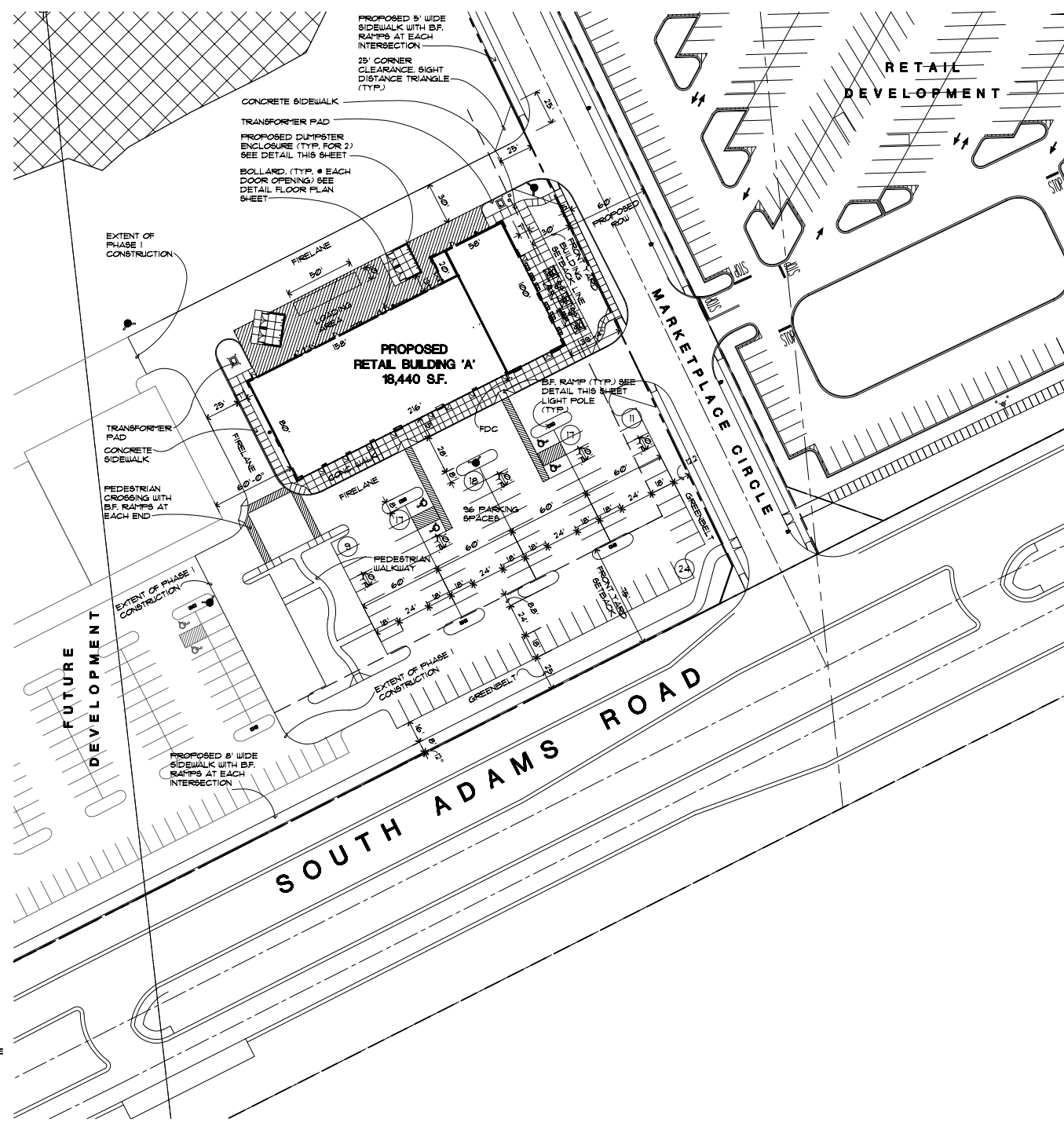
Double Dumpster Enclosure Plan Scale: 1/4"=1'-0"



Dumpster Enclosure/Screen Wall Section
3/4"=1'-0"



OUTDOOR SEATING AREA PLAN
SCALE: 1/16" = 1'-0"
TOTAL BEATS PROVIDED: 34
TOTAL BARRIER FREE SEATS: 2



SITE PLAN - PHASE I
SCALE: 1"=50'-0"

GENERAL NOTES:

- 1.) THE SITE IS GOVERNED BY CONSENT JUDGEMENT AS OF APRIL 3, 2003 AND AMENDED ON MAY 26, 2004.
- 2.) ALL EXTERIOR LIGHTING SHALL BE SHIELDED AND DIRECTED AWAY FROM ADJACENT PROPERTIES.
- 3.) ALL TRASH RECEPTACLES SHALL BE SCREENED BY MASONRY WALLS TO MATCH REAR BUILDING WALLS AND HAVE SOLID WOOD GATES. THIS SCREENING SHALL BE AT LEAST SIX FEET IN HEIGHT OR THE MINIMUM HEIGHT OF THE STORAGE RECEPTACLES AND MEET ALL ORDINANCE REQUIREMENTS.
- 4.) TRANSFORMERS SHALL BE LOCATED BEHIND THE BUILDINGS AS INDICATED ON THE SITE PLAN, AND SHALL BE SCREENED USING LANDSCAPING. THE SCREENING SHALL MEET ALL ORDINANCE REQUIREMENTS.
- 5.) ASPHALT SURFACING SHALL BE USED FOR ALL PARKING AREAS AND DRIVEWAYS, AND SHALL MEET ALL ORDINANCE REQUIREMENTS.
- 6.) ALL BUILDING AND SITE SIGNAGE SHALL BE SUBMITTED FOR REVIEW AT A LATER DATE AND WILL BE IN CONFORMANCE WITH THE CITY OF ROCHESTER HILLS REPORTS, AND A SEPARATE SIGN PERMIT WILL BE OBTAINED FROM THE BUILDING DEPT.
- 7.) BARRIER FREE RAMPS WILL BE PROVIDED AT ALL SIDEWALK APPROACHES.
- 8.) ALL ROOF TOP MECHANICAL EQUIPMENT WILL BE SCREENED BY BUILDING PARAPET WALLS.
- 9.) TYPICAL PARKING SPACE SIZE IS 10'X18', WITH A MINIMUM 24 FOOT WIDE AISLE.
- 10.) TYPICAL BARRIER FREE PARKING SPACE DIMENSION IS 8'X16' WITH EITHER A 5'X16' ACCESS SPACE BETWEEN OR A 8'X16' VAN ACCESSIBLE SPACE BETWEEN PER THE "MICHIGAN BARRIER FREE DESIGN MANUAL". ALL B.F. SPACES SHALL BE MARKED WITH AN ABOVE GRADE SIGN.
- 11.) THE SITE PLAN SHALL BE SUBJECT TO WRITTEN APPROVAL BY THE CITY'S FIRE MARSHAL.
- 12.) THE SITE PLAN SHALL BE SUBJECT TO WRITTEN APPROVAL BY THE CITY'S ENGINEER.
- 13.) FIRE LANES SHALL BE DESIGNATED BY THE FIRE CODE OFFICIAL, AND SHALL BE CONSPICUOUSLY POSTED ON BOTH SIDES OF THE FIRE LANE WITH FIRE LANE SIGNS, SPACED NOT MORE THAN 100 FEET APART. (NO STOPPING, STANDING, PARKING, FIRE-LANE), AND IN CONFORMANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. (FIRE PREVENTION ORDINANCE CHAPTER 58, SEC. 90.142).
- 14.) ALL PORTIONS OF A BUILDING SHALL BE WITHIN 150 FEET OF AN APPROVED FIRE DEPARTMENT ACCESS ROAD.
- 15.) FIRE DEPARTMENT ACCESS ROADS SHALL BE A MINIMUM 20' WIDE AND PAVED.
- 16.) FDC'S SHALL NOT BE OBSCURED OR OBSTRUCTED BY LANDSCAPING, PARKING OR BY ANY OTHER PERMANENT OR TEMPORARY MATERIALS OR DEVICE. SHALL BE LOCATED VISIBLY ON THE STREET FRONT OF THE BUILDING, AND WITHIN 100 FEET OF A FIRE HYDRANT. (FIRE PREVENTION ORDINANCE CHAPTER 58, DEC. 100.111 4 SEC. 98-93.)
- 17.) EXIT DOORS SHALL REMAIN FREE OF OBSTRUCTIONS AT ALL TIMES. GUARD POSTS SHALL BE USED TO PROTECT EXIT DOORS OPENING ONTO DRIVES AND PARKING AREAS. (UFC 1003).
- 18.) OPEN BURNING IS NOT PERMITTED INCLUDING THE BURNING OF TRASH, DEBRIS OR LAND CLEARING MATERIALS. OPEN BURNING FOR WARMING OF SAND AND/OR WATER FOR THE PREPARATION OF MORTAR SHALL BE WITHIN THE CITY OF ROCHESTER HILLS BURN PERMIT GUIDELINES. (FIRE PREVENTION ORDINANCE CHAPTER 58, SE. 100.2.2 4 100.2.3.)
- 19.) CONSTRUCTION SITE SHALL BE SAFEGUARDED IN ACCORDANCE WITH UFC ART. 87 SEC. 870. THIS INCLUDES MAINTAINING FIRE DEPARTMENT ACCESS ROADS AND FIRE HYDRANTS OPERATIONAL PRIOR TO BUILDING CONSTRUCTION. ALL FIRE HYDRANTS WILL BE OPERATIONAL PRIOR TO BUILDING CONSTRUCTION BASED ON THE UNIFORM FIRE CODE. (UFC 1994)
- 20.) FIRE HYDRANT REQUIREMENTS WILL BE BASED ON CONSTRUCTION TYPE AND SQUARE FOOTAGE OF THE BUILDING.
- 21.) DIMENSIONS FOR PARKING SPACES AND MANEUVERING LANES ARE MEASURED FROM FACE OF CURB.
- 22.) THERE WILL BE NO INDUSTRIAL WASTE OR PROPANE TANKS LOCATED ON-SITE.
- 23.) ALL BUILDINGS SHALL HAVE AUTOMATIC SPRINKLER SYSTEMS.
- 24.) ALL CURBED PARKING LOT ISLANDS SHALL BE 2-3 FEET SHORTER THAN THE ADJACENT PARKING SPACES AND DRIVEWAYS.
- 25.) A "KNOX" KEY SYSTEM SHALL BE INSTALLED, IN A LOCATION APPROVED BY THE FIRE CODE OFFICIAL.
- 26.) AT LEAST THREE CONTIGUOUS COMMERCIAL ESTABLISHMENTS WILL BE LOCATED WITHIN THE PROPOSED RETAIL BUILDING.
- 27.) SEE PHOTOMETRIC PLAN FOR EXACT LOCATION OF PROPOSED LIGHT POLES.
- 28.) GROSS FLOOR AREA OF RESTAURANTS WILL NOT EXCEED 25% WITHIN THE PROPOSED STRUCTURE.
- 29.) IT IS INTENDED THAT THIS SITE WILL BE A LAND LEASE.
- 30.) ACCESS TO PROPOSED CONSTRUCTION SITE SHALL BE PROVIDED AND MAINTAINED FROM BOTH NEW ADAMS ROAD AND HILLS PARKWAY.

PARKING / BUILDING DATA:

BUILDING CODE	
MICHIGAN BUILDING CODE - 2003 EDITION	
MICHIGAN PLUMBING CODE - 2003 EDITION	
MICHIGAN MECHANICAL CODE - 2003 EDITION	
OCCUPANCY	
"M" - MERCANTILE	(S 308.1)
CONSTRUCTION CLASSIFICATION	
II-E - NON-COMBUSTIBLE / UNPROTECTED	(T 606)
	SPRINKLED
ZONING: CONSENT JUDGMENT	

BUILDING AREA:	
PROPOSED RETAIL	18,440 SF.
TOTAL PROPOSED BUILDING AREA :	18,440 SF.

PARKING REQUIRED :	
SHOPPING CENTER :	
(5 SPACES / 1000 G.L.A.)	
18,440 SF. / 1000 x 5	
TOTAL PARKING REQUIRED :	92 SPACES

PARKING PROVIDED :	
	96 SPACES
RATIO:	5.21 SPACES/1000 SF.

developer:
GRAND SAKAWA PROPERTIES, L.L.C.
28470 THIRTEEN MILE ROAD SUITE 200 FARMINGTON HILLS, MI 48334 (248) 855-5500 (248) 855-0915 fax

issued for:
REVISED 11 JULY 06
REVISED 12 JULY 06
REVISED 18 JULY 06
REVISED 19 AUG 06
SITE PLAN REVIEW 18 AUG 06
REVISED 22 SEPT 06
SITE PLAN REVIEW 25 SEPT 06
REVISED 18 OCT 06
SITE PLAN REVIEW 30 OCT 06
REVISED 28 JAN 07
SITE PLAN REVIEW 1 FEB 07
FINAL SITE PLAN 22 FEB 07

project:

PROPOSED
Adams Marketplace
RETAIL BUILDING 'A'
ROCHESTER HILLS, MICHIGAN

ROGVOY
ARCHITECTS

38500 TELEGRAPH ROAD SUITE 250 BINGHAM FARMS, MICHIGAN 48025-2404
PH 248.540.7700 FX 248.540.2710 ARCHITECTS@ROGVOY.COM

drawing:
ARCHITECTURAL SITE PLAN PHASE I

DO NOT SCALE DRAWING

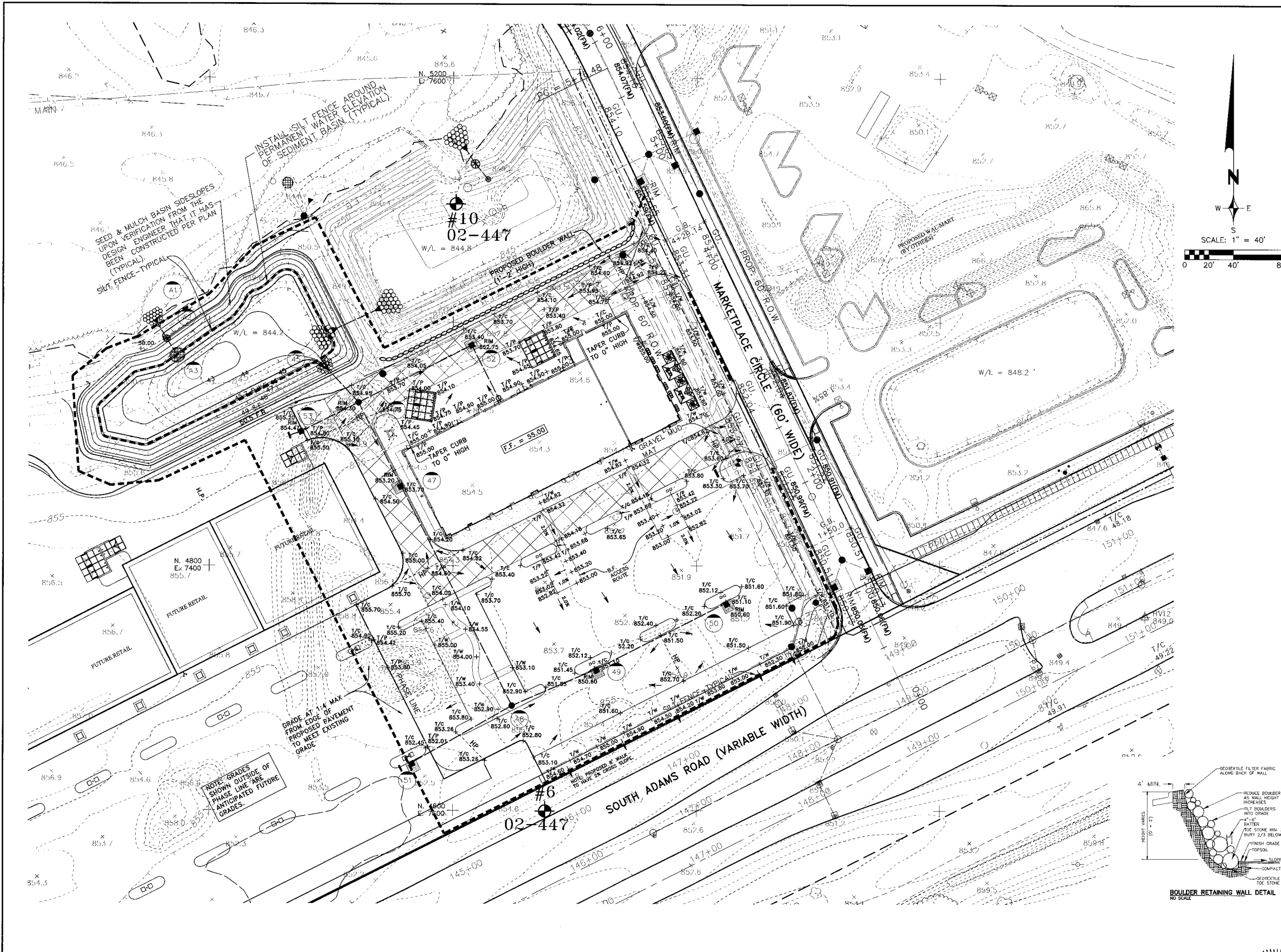
Issue date: 11 JULY 06
drawn: S.V.
checked: M.D.
approved: M.D.

file number: 02053

sheet: CITY FILE NO. 05-030.5 SEC. 30

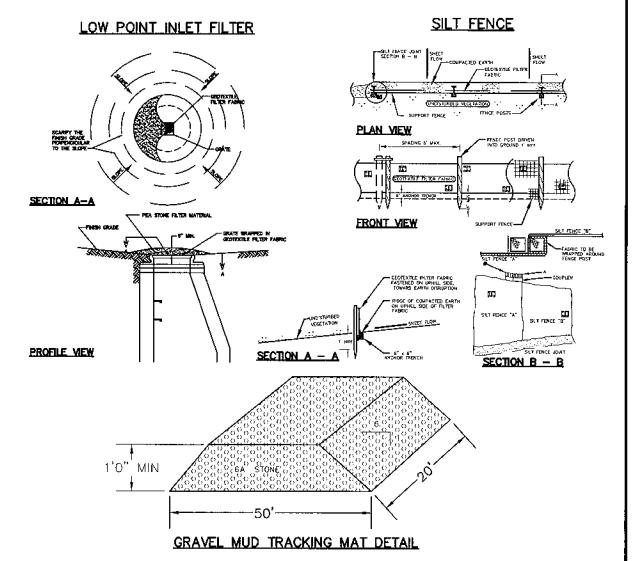
SP-1.1
02053 SITE 07-0221

NOT TO BE USED AS CONSTRUCTION DRAWINGS



BENCH MARKS		EROSION CONTROL LEGEND	
4	THE "4" STAMPED IN PAVEMENT OF NEW ADAMS ROAD AT STA. 99+00 ELEVATION 844.67 U.S.G.S.	---	GEOTEXTILE SILT FENCE
5	BENCH TIE NAIL ON NORTH FACE OF 18" COTTONWOOD TAG #2327 ELEVATION 840.80 U.S.G.S.	■	GRAVEL MUD TRACKING MAT
6	BENCH TIE NORTH SIDE OF MOST NORTHERLY POWER POLE ELEVATION 855.75 U.S.G.S.	○	LOW POINT INLET FILTER
		○	SEDIMENT BASIN OUTLET FILTER

GRADING LEGEND:		EXISTING		PROPOSED	
T/C	= TOP OF CURB	○	MANHOLE	●	MANHOLE
T/W	= TOP OF WALK	□	CATCH BASIN	■	CATCH BASIN
T/P	= TOP OF PAVEMENT	□	INLET	□	INLET
T/B	= TOP OF BANK	□	CLEANOUT	□	CLEANOUT
G	= GROUND	○	END SECTION	○	END SECTION
D	= DITCH	○	GATE VALVE	○	GATE VALVE
GU	= GUTTER	○	HYDRANT	○	HYDRANT
F.G.	= FINISH GRADE	○	WATER SHUT-OFF	○	WATER SHUT-OFF
F.F.	= FINISH FLOOR	○	UTILITY POLE	○	UTILITY POLE
BF	= BASEMENT FLOOR	○	GUY ANCHOR	○	GUY ANCHOR
BL	= BRICK LEDGE	○	LIGHT POLE	○	LIGHT POLE
		○	SIGN	○	SIGN
		○	TREE	○	TREE
		○	SANITARY SEWER	○	SANITARY SEWER
		○	STORM SEWER	○	STORM SEWER
		○	WATER MAIN	○	WATER MAIN
		○	GAS MAIN	○	GAS MAIN
		○	ELECTRIC CABLE	○	ELECTRIC CABLE
		○	CONTOUR MAJOR	○	CONTOUR MAJOR
		○	CONTOUR MINOR	○	CONTOUR MINOR
		○	SPOT ELEVATION	○	SPOT ELEVATION



- ### CONSTRUCTION AND SOIL EROSION WORK SCHEDULE
1. PLACE SILT FENCE AS SHOWN ON THIS PLAN.
 2. INSTALL GRAVEL MUD TRACKING MAT NEAR ENTRANCE WHERE INDICATED.
 3. MASS GRADE PARKING AREA AND CONSTRUCT BUILDING PAD.
 4. INSTALL SANITARY, STORM AND WATERMAIN COMPLETE. INSTALL LOW POINT INLET FILTERS ON ALL DRAINAGE STRUCTURES AND RIP-RAP AT ALL END SECTIONS.
 5. INSTALL ALL PAVEMENT, REPAIR OR REPLACE LOW POINT INLET FILTERS AS REQUIRED. LOW POINT INLET FILTERS AS REQUIRED. SEED & MULCH ALL AREAS DISTURBED BY CONSTRUCTION.
 6. UPON STABILIZATION OF SITE, REMOVE ACCUMULATED SEDIMENT FROM BASIN AND TEMPORARY STANDPIPE. SEED AND MULCH ANY DISTURBED AREA.
 7. IT SHALL BE THE DEVELOPER'S RESPONSIBILITY TO INSURE THAT ALL EROSION CONTROL DEVICES ARE MAINTAINED AS REQUIRED THROUGHOUT THE CONSTRUCTION AND THAT THE STREETS ARE KEPT FREE OF MUD AND CONSTRUCTION DEBRIS. THE ACCUMULATED SEDIMENT MUST BE REMOVED FROM THE SEDIMENT BASINS PERIODICALLY THROUGHOUT THE CONSTRUCTION OF THIS PROJECT.

- ### CITY OF ROCHESTER HILLS SESC NOTES:
1. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO STANDARDS AND SPECIFICATIONS OF THE OAKLAND COUNTY DRAIN COMMISSIONER.
 2. ALL TEMPORARY AND PERMANENT (POST CONSTRUCTION) SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL CONFORM TO THE CITY OF ROCHESTER HILLS CURRENT M54 PERMIT. ANY CONFLICT BETWEEN THESE STANDARDS AND THE M54 PERMIT, THE PERMIT'S CONDITIONS SHALL TAKE PRECEDENCE.
 3. DAILY INSPECTIONS SHALL BE MADE BY THE CONTRACTOR FOR EFFECTIVENESS OF EROSION AND SEDIMENTATION CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
 4. ANY SEDIMENTATION FROM CONSTRUCTION ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS.
 5. CONTRACTOR SHALL APPLY TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES WHEN REQUIRED AND AS DIRECTED ON THESE PLANS. HE SHALL REMOVE TEMPORARY MEASURES AS SOON AS PERMANENT STABILIZATION OF SLOPES, DITCHES, AND OTHER EARTH CHANGES HAVE BEEN ACCOMPLISHED. THIS WOULD INCLUDE TEMPORARY SEDIMENTATION PONDS AND TEMPORARY SO2 FILTERS.
 6. STAGING THE WORK WILL BE DONE BY THE CONTRACTOR AS DIRECTED IN THESE PLANS AND AS REQUIRED TO ENSURE PROGRESSIVE STABILIZATION OF DISTURBED EARTH.
 7. SOIL EROSION CONTROL PRACTICES SHALL BE ESTABLISHED IN THE EARLY STAGES OF CONSTRUCTION BY THE CONTRACTOR. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.

NOTE:
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE MANNER 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 AGREES 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.

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.

NOTES:
1. SEE SHEET CE-6 FOR PROPOSED PAVING SECTIONS AND DETAILS.
2. EXISTING TOPOGRAPHY SHOWN AS PROVIDED BY AIR-LAND SURVEYS INC., JOB NO. 01408.
3. SEED & MULCH ALL DISTURBED AREAS DUE TO GRADING.
4. PEAT, OR ANY OTHER INSULATABLE MATERIALS ENCOUNTERED IN CONSTRUCTION AREAS SHALL BE REMOVED AND BACKFILLED WITH COMPACTED SUITABLE MATERIAL (95% DENSITY). ALL ON-SITE WORK SHALL CONFORM AT A MINIMUM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS.
5. ALL WORK SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF ROCHESTER HILLS.

NOTE:
THIS PLAN ILLUSTRATES THE MINIMUM EROSION CONTROLS NEEDED TO PREVENT SILTS FROM LEAVING THE SITE AND IS SUBJECT TO CHANGE AS CONDITIONS IN THE FIELD WARRANT.

NOTE:
THIS PLAN IS INTENDED AS AN AMENDMENT TO THE EXISTING ODCD SOIL EROSION PERMIT #RHC/2005-1571/30/CO



REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY	1/22/07	DAB									

ZEMET WOZNAK
Civil Engineers & Land Surveyors
40024 GRAND RIVER AVE, SUITE 100
NOVI, MICHIGAN 48375
P: (248) 442-1100 F: (248) 442-1341 www.zemetwozniak.com

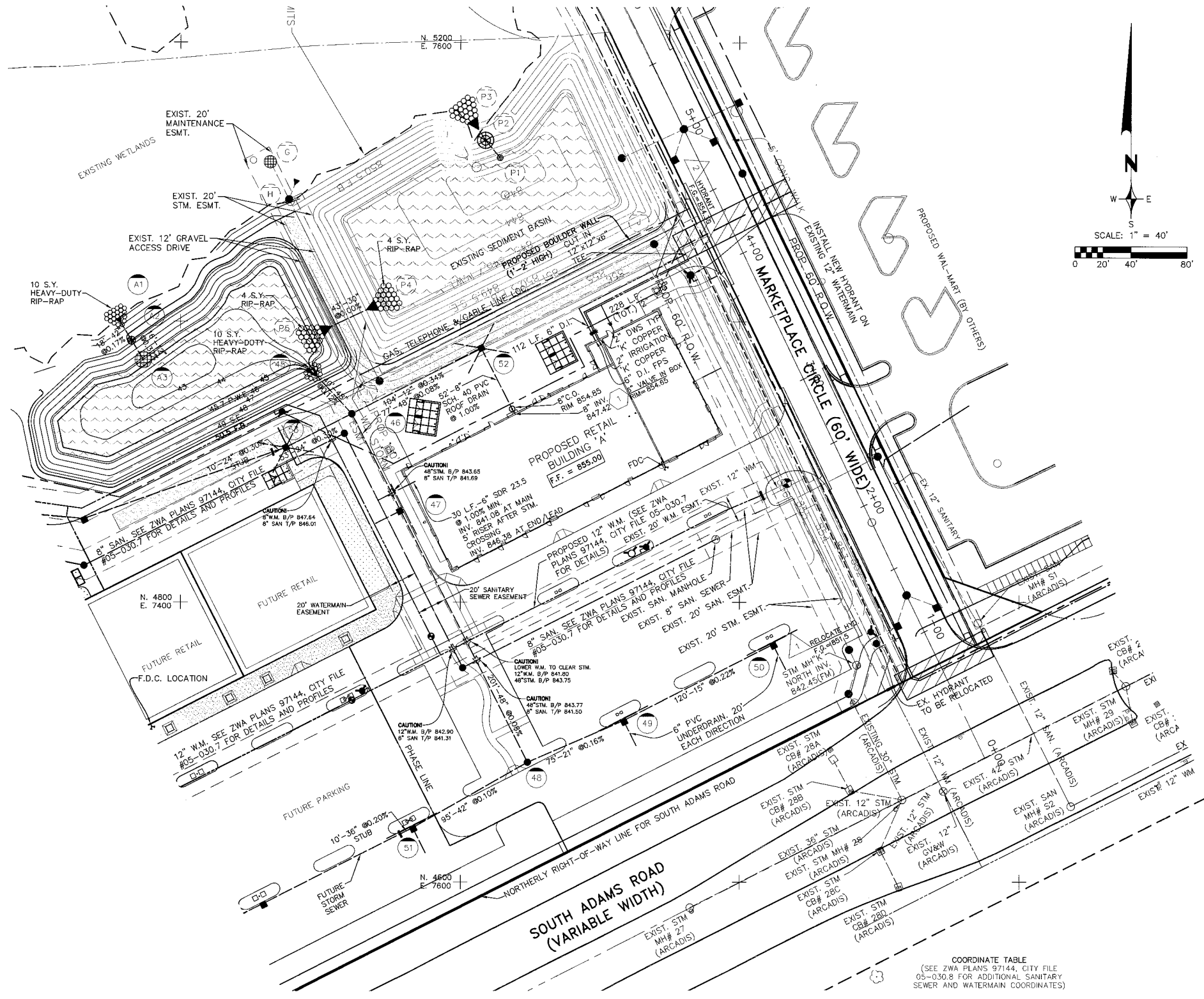
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PROJECT SPONSOR:
GRAND SAKWA PROPERTIES
28470 THIRTEEN MILE ROAD, SUITE 220
FARMINGTON HILLS, MI (248) 855-5500

ADAMS MARKETPLACE
GRADING & SOIL EROSION
PROPOSED RETAIL BUILDING "A"
ROCHESTER HILLS, MICHIGAN

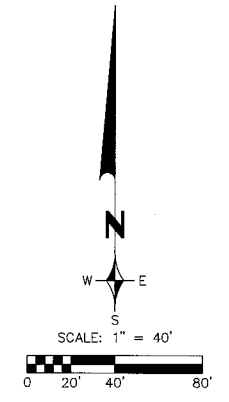
CITY FILE 05-030.5
DATE: 01/03/07 SCALE: HOR: 1" = 40' VER: 1" = N/A
DESIGNED BY: SRB JOB NO.: 97144
DRAWN BY: SHEET: CE-1

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BENCH MARKS

- 4 THE "L" STAMPED IN PAVEMENT OF NEW ADAMS ROAD AT STA. 89+00 ELEVATION 844.67 U.S.G.S.
- 5 BENCH TIE NAIL ON NORTH FACE OF 18" COTTONWOOD TAG #2327 ELEVATION 840.80 U.S.G.S.
- 6 BENCH TIE NORTH SIDE OF MOST NORTHERLY POWER POLE ELEVATION 855.75 U.S.G.S.



LEGEND

EXISTING	PROPOSED
○ MANHOLE	● MANHOLE
□ CATCH BASIN	■ CATCH BASIN
⊗ INLET	⊗ INLET
⊘ CLEANOUT	⊘ CLEANOUT
⊙ END SECTION	⊙ END SECTION
⊕ GATE VALVE	⊕ GATE VALVE
⊖ HYDRANT	⊖ HYDRANT
⊗ WATER SHUT-OFF	⊗ WATER SHUT-OFF
⊘ UTILITY POLE	⊘ UTILITY POLE
⊙ GUY ANCHOR	⊙ GUY ANCHOR
⊕ LIGHT POLE	⊕ LIGHT POLE
⊖ SIGN	⊖ SIGN
⊗ TREE	⊗ TREE
— SANITARY SEWER	— SANITARY SEWER
— STORM SEWER	— STORM SEWER
— WATER MAIN	— WATER MAIN
— GAS MAIN	— GAS MAIN
— ELECTRIC CABLE	— ELECTRIC CABLE
	⊗ UTILITY CROSSING

SANITARY SEWER NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE AGENCY HAVING JURISDICTION OVER THAT WORK.
2. ALL SANITARY SEWER BUILDING LEADS WILL BE SOLID WALL ABS SDR 23.5 PIPE.
3. SANITARY SEWER DROP CONNECTIONS MUST BE EXTERNAL TYPE.
4. THE MINIMUM SLOPE FOR 6" SANITARY BUILDING LEADS IS 1.00%.
5. ALL PROPOSED SEWERS SHALL HAVE CHEMICALLY WELDED JOINTS.

WATERMAIN NOTES:

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE AGENCY HAVING JURISDICTION OVER THAT WORK.
2. ALL HYDRANTS, INCLUDING NOZZLES AND PROJECTIONS SHALL BE 3" MINIMUM FROM EDGE OF SIDEWALK, OR 6" MINIMUM FROM BACK OF CURB.
3. THE WATERMAIN WILL HAVE A MINIMUM OF 6 FEET OF COVER.
4. THE CONTRACTOR SHALL DETERMINE DEGREE OF BEND FOR THE WATERMAIN FITTINGS. PIPE DEFLECTIONS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S MAXIMUM ALLOWABLE DEFLECTION.
5. WATERMAIN SHALL BE CEMENT-LINED (DOUBLE THICKNESS), DUCTILE IRON PIPE, CLASS 54.
6. A VERTICAL SEPARATION OF 18 INCHES MUST BE MAINTAINED BETWEEN THE WATERMAIN AND SANITARY SEWERS, STORM SEWERS, OR OTHER PROPOSED UTILITIES.
7. ALL GATE VALVES SHALL BE RESILIENT WEDGE OR SEATED TYPE GATE VALVES (E.I.L.W. OR U.S. PIPE).
8. PER THE SOIL BORINGS, ALL WATERMAIN SHALL REQUIRE POLYWRAP.
9. RESTRAINED JOINTS SHALL BE USED AT ALL VERTICAL BENDS. THE NUMBER OF RESTRAINED JOINTS REQUIRED SHALL BE DETERMINED BY THE MANUFACTURER, SUBJECT TO APPROVAL BY THE CITY ENGINEER.
10. USE HYDRANT CONNECTION DETAIL 'A' (STANDARD DETAIL SHEET A)

STORM SEWER NOTES:

1. PROPOSED STRUCTURE COVERS/GRATES SHALL BE PROVIDED AS REQUIRED ON THE CITY OF ROCHESTER HILLS STANDARD DETAIL SHEETS.
2. EDGE DRAIN TO BE 20" IN EACH DIRECTION AT 90° ANGLES FROM INLET STRUCTURES LOCATED IN PAVED AREAS.
3. STRUCTURAL CALCULATIONS AND SHOP DRAWINGS, SIGNED AND SEALED BY A PROFESSIONAL ENGINEER (REGISTERED IN THE STATE OF MICHIGAN) SHALL BE SUBMITTED TO THE CITY FOR REVIEW PRIOR TO CONSTRUCTION OF ALL STORM SEWER STRUCTURES GREATER THAN 6 FEET IN DIAMETER.
4. PROPOSED ROOF DRAINS SHALL BE SCHEDULE 40 PVC PIPE WITH CHEMICALLY WELDED JOINTS.
5. PROPOSED STORM SEWER PIPE SHALL BE REINFORCED CONCRETE CLASS IV WITH RUBBER GASKETS AND CLASS B BEDDING.

GENERAL NOTES:

M.D.O.T. CLASS II BACKFILL TO BE COMPACTED IN 6" LAYERS TO 95% OF MAXIMUM UNIT WEIGHT.

ABOVE REQUIRED UNDER OR WITHIN A 1:1 ON 1 SLOPE OF EXISTING OR PROPOSED PAVEMENT

ALL CONTRACTORS SHALL NAME ZEMET-WOZNAK & ASSOCIATES AS ADDITIONALLY INSURED ON ALL INSURANCE POLICIES.

NOTE:

PROPOSED UTILITIES IN ADAMS ROAD ARE SHOWN PER PLANS BY ARCADIS FPS, JOB NO. 47981, DATED 1/06/06. CONTRACTOR TO COORDINATE WITH ADAMS ROAD CONTRACTOR AND VERIFY LOCATION OF UTILITY CONNECTIONS TO THE ADAMS ROAD UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR TO CONTACT THE DESIGN ENGINEER IMMEDIATELY IN THE EVENT OF ANY DISCREPANCIES.

SANITARY SEWER BASIS OF DESIGN

A. CONTRIBUTION TO MANHOLE 19:

BLDG. DESIGNATION	BLDG. USE	AREA (SF)	SEATS	UNIT FACTOR	UNITS
Building 'A'	Retail	18,440		0.20/1000sf	3.69

No. of people = 3.5ppu x 3.69 units = 12.92 people
 (7.5 x 24 x 3600)

Average daily flow = $\frac{100 \text{ gpd} \times 12.92 \text{ people}}{(7.5 \times 24 \times 3600)} = 0.0026 \text{ cfs}$

Peak daily flow = $4 \times 0.002 = 0.008 \text{ cfs}$

An 8" sewer at 0.40% (minimum) has a capacity of 0.76cfs.

WATERMAIN BASIS OF DESIGN

INITIAL SERVICE CONNECTIONS-	0
TOTAL SERVICE CONNECTIONS-	12.92 (NUMBER OF PEOPLE)
INITIAL DESIGN AVERAGE DAY FLOW-	0 MGD
INITIAL MAXIMUM DAY FLOW-	0 MGD
TOTAL DESIGN AVERAGE DAY FLOW-	$\frac{12.92 \times 1.12}{24} = 0.002 \text{ MGD}$
TOTAL MAXIMUM DAY FLOW-	$\frac{12.92 \times 3.0}{24} = 0.016 \text{ MGD}$

COORDINATE TABLE
 (SEE ZWA PLANS 97144, CITY FILE 05-030.8 FOR ADDITIONAL SANITARY SEWER AND WATERMAIN COORDINATES)

STRUCTURE	NORTHING	EASTING
RELOCATED HYDRANT 1	4778.8231	7894.1789
HYDRANT 2	5033.3873	7765.0617
6" VALVE IN BOX 1	4991.8362	7894.1184
SANITARY SEWER:		
6" CLEANOUT	4900.4303	7560.4143
STORM SEWER:		
END SECTION 45	4963.064	7495.3864
MANHOLE 46	4934.1235	7522.3579
CATCH BASIN 47	4865.2204	7557.3074
MANHOLE 48	4685.8376	7648.2950
CATCH BASIN 49	4715.5918	7717.2093
CATCH BASIN 50	4769.8752	7824.2295
CATCH BASIN 51	4638.8613	7565.9344
CATCH BASIN 52	4981.0758	7615.1560
CATCH BASIN 53	4910.1959	7475.0666
6" CLEANOUT	4937.7717	7637.1209

PROPOSED HYDRANT RELOCATION:

1. REMOVE EXISTING HYDRANT, SHUT-OFF, AND ASSEMBLY, PLUS EXISTING TAP.
2. TAP EXISTING 12" WATERMAIN WITH NEW 6" HYDRANT LEAD.
3. REINSTALL HYDRANT, SHUT-OFF, AND ASSEMBLY IN NEW LOCATION PER CITY HYDRANT DETAIL "C".

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 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.

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 AGREES 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.

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY	1/22/07	DAB									
REVISE WATER SERVICES	2/7/07	JMB									

ZEMET WOZNAK & ASSOCIATES
 Civil Engineers & Land Surveyors
 40024 GRAND RIVER AVE, SUITE 100
 NOVI, MICHIGAN 48275
 P: (248) 442-1101 F: (248) 442-1261 www.zemetwozniak.com

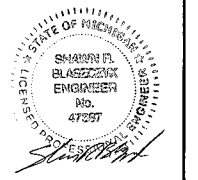
MISS DIG SYSTEM, INC.
 1-800-482-7171

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 28470 THIRTEEN MILE ROAD, SUITE 220
 FARMINGTON HILLS, MI (248) 855-5500

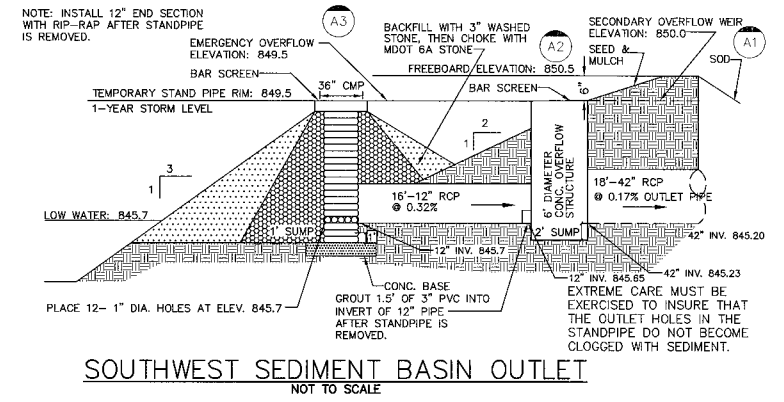
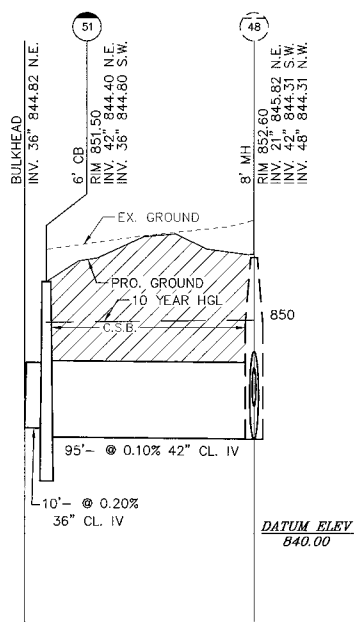
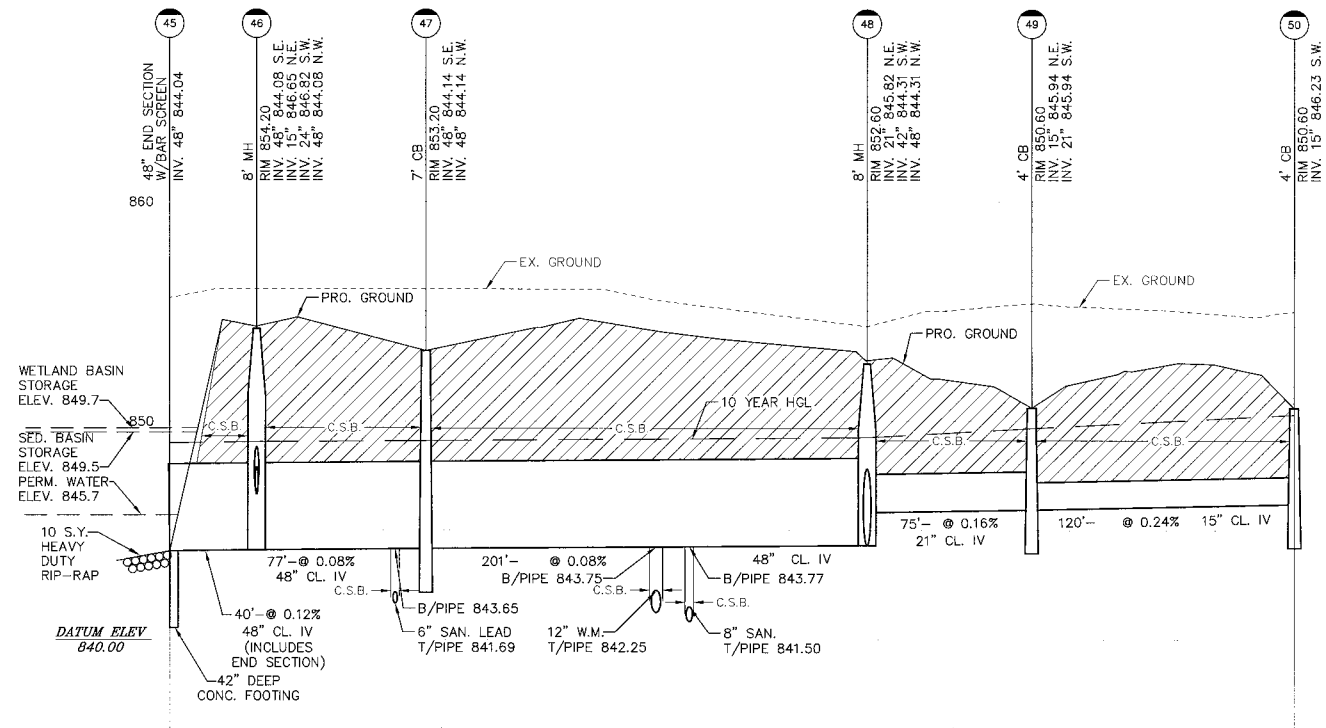
ADAMS MARKETPLACE CITY FILE 05-030.5

UTILITY PLAN
PROPOSED RETAIL BUILDING "A"
 ROCHESTER HILLS, MICHIGAN

DATE: 01/03/07 SCALE: HOR: 1" = 40' VER: 1" = N/A
 DESIGNED BY: SRB JOB NO.: 97144
 DRAWN BY: SHEET: CE-2

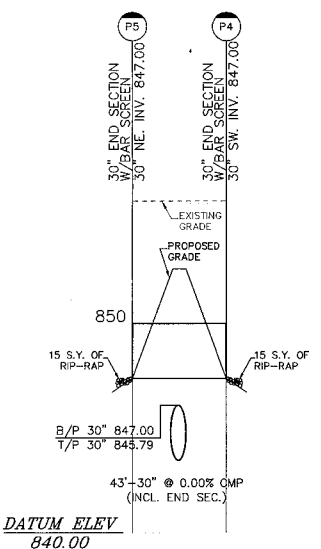
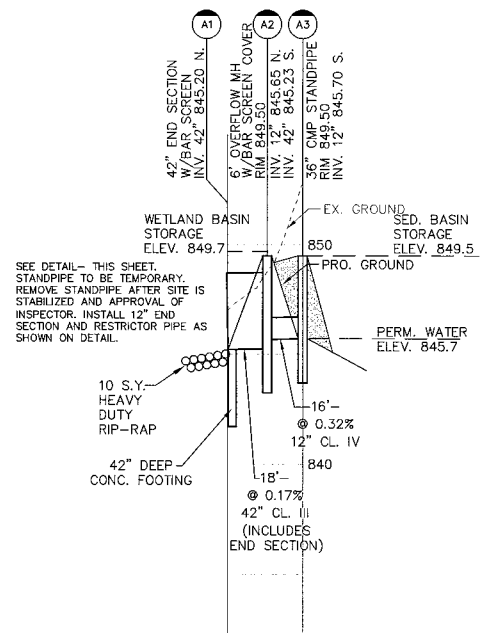
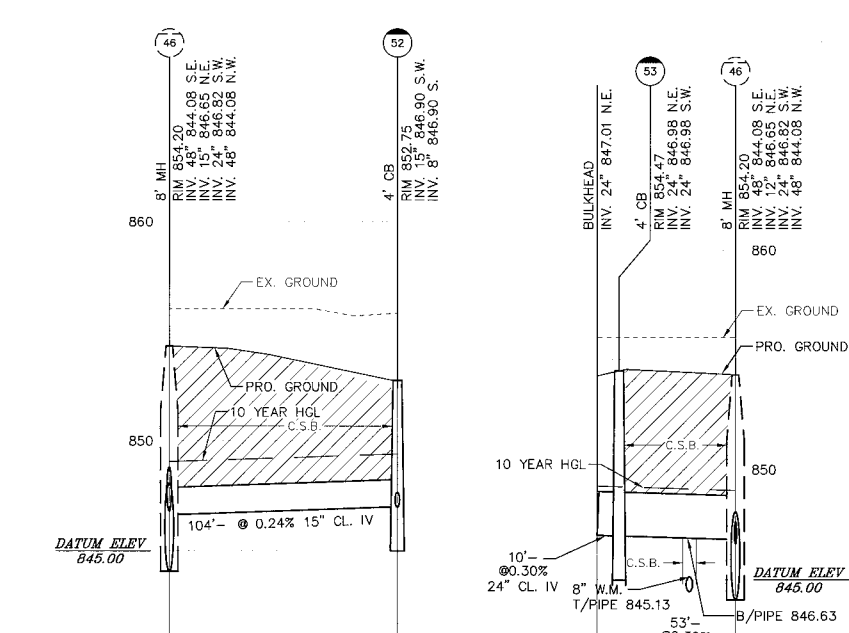


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SOUTHWEST SEDIMENT BASIN OUTLET
NOT TO SCALE

- NOTE:**
1. PROPOSED STORM SEWER TO HAVE CLASS B BEDDING MINIMUM.
 2. THE STARTING ELEVATION FOR THE HYDRAULIC GRADE LINE IS THE DESIGN HIGH WATER ELEVATION OF THE SEDIMENT BASIN.
 3. CONTRACTOR SHALL HIRE A LICENSED STRUCTURAL ENGINEER TO PROVIDE SIGNED AND SEALED SHOP DRAWINGS FOR APPROVAL BY THE CITY OF DRAINAGE STRUCTURES LARGER THAN 6 FEET IN DIAMETER.

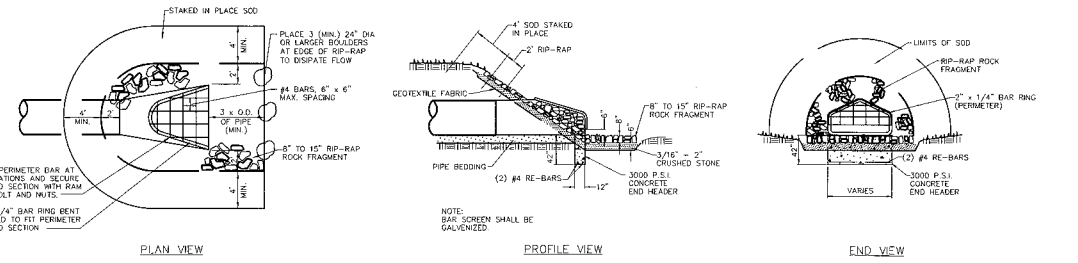


C.S.B. NOTES:

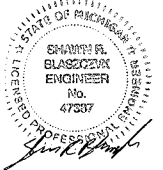
C.S.B. DENOTES SAND BACKFILL COMPACTED IN 6" LAYERS TO 95% OF MAXIMUM UNIT WEIGHT.

C.S.B. REQUIRED UNDER OR WITHIN A 1 ON 1 SLOPE OF EXISTING OR PROPOSED PAVEMENT AND AT ALL UTILITY CROSSINGS.

CAUTION!!
EXISTING GAS MAINS AND EXISTING UTILITIES ARE SHOWN PER BEST AVAILABLE RECORDS. CONTRACTOR SHALL VERIFY MAIN LOCATIONS & ELEVATIONS IN FIELD AT ALL PROPOSED CROSSINGS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL HAVE A REPRESENTATIVE OF THE PIPELINE OR UTILITY CO. PRESENT WHEN CROSSINGS ARE MADE.



END SECTION AND BAR SCREEN DETAIL
NO SCALE



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REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY											
	1/22/07	DAB									

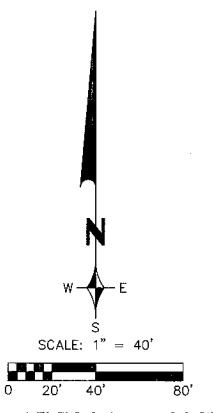
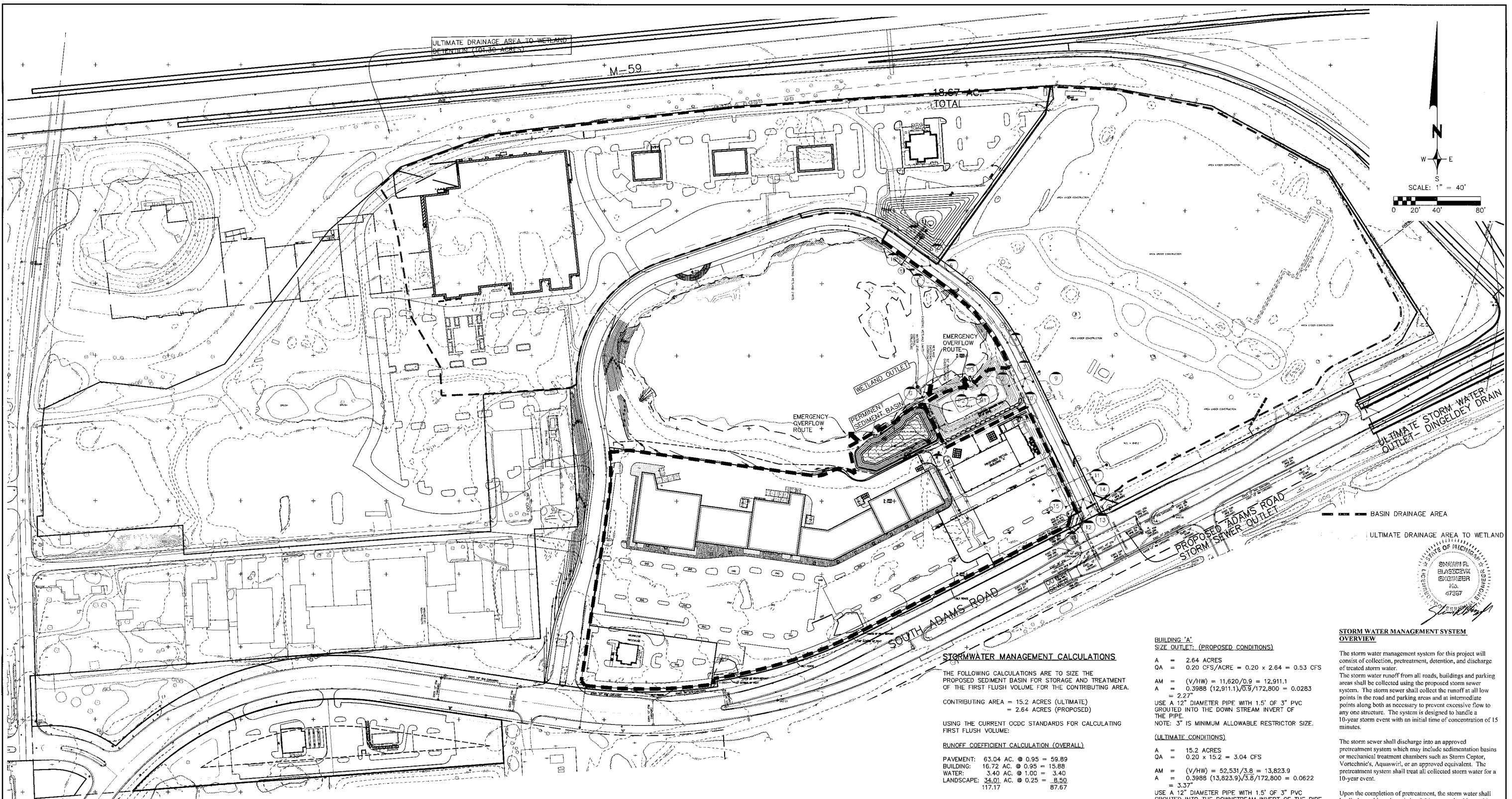
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THREE FULL WORKING DAYS BEFORE YOU RING, CALL THE MISS DIG SYSTEM
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1-800-482-7171

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28470 THIRTEEN MILE ROAD, SUITE 220
FARMINGTON HILLS, MI (248) 855-5500

ADAMS MARKETPLACE
STORM SEWER PROFILES
PROPOSED RETAIL BUILDING "A"
ROCHESTER HILLS, MICHIGAN

CITY FILE 05-030.5
DATE: 01/03/07 SCALE: HOR: 1" = 40'
DESIGNED BY: SRB VER: 1" = 4'
JOB NO.: 97144
DRAWN BY: SHEET CE-3



STORM WATER MANAGEMENT SYSTEM OVERVIEW

The storm water management system for this project will consist of collection, pretreatment, detention, and discharge of treated storm water. The storm water runoff from all roads, buildings and parking areas shall be collected using the proposed storm sewer system. The storm sewer shall collect the runoff at all low points in the road and parking areas and at intermediate points along both as necessary to prevent excessive flow to any one structure. The system is designed to handle a 10-year storm event with an initial time of concentration of 15 minutes.

The storm sewer shall discharge into an approved pretreatment system which may include sedimentation basins or mechanical treatment chambers such as Stormceptor, Vortechs, Aquaswirl, or an approved equivalent. The pretreatment system shall treat all collected storm water for a 10-year event.

Upon the completion of pretreatment, the storm water shall be discharged into the existing 8.36 acre wetland located in the central portion of the site. The wetland is capable of storing more than a 100-year storm without any detrimental impact to adjacent properties. This allows us to provide further treatment of the storm water improving both its quality and quantity. The large storage volume also reduces the chances of downstream flooding as well. A controlled outlet will be placed within the wetland to slowly discharge the treated storm water to the proposed storm sewer in Adams Road that ultimately discharges to the existing MDOOT storm water system.

By discharging treated water to and storing within the existing wetland, the hydrologic condition of the wetland will be greatly improved. Note that the temporary sedimentation/detention basins are permitted under MDEQ Permit #05-63-0278-P. The MDEQ issued permit #06-63-0005-P on June 16, 2006 for the permanent sediment basins and wetland storage.

STORMWATER MANAGEMENT CALCULATIONS

THE FOLLOWING CALCULATIONS ARE TO SIZE THE PROPOSED SEDIMENT BASIN FOR STORAGE AND TREATMENT OF THE FIRST FLUSH VOLUME FOR THE CONTRIBUTING AREA.

CONTRIBUTING AREA = 15.2 ACRES (ULTIMATE)
= 2.64 ACRES (PROPOSED)

USING THE CURRENT OCDC STANDARDS FOR CALCULATING FIRST FLUSH VOLUME:

RUNOFF COEFFICIENT CALCULATION (OVERALL)

PAVEMENT: 63.04 AC. @ 0.95 = 59.89
BUILDING: 16.72 AC. @ 0.95 = 15.88
WATER: 3.40 AC. @ 1.00 = 3.40
LANDSCAPE: 24.01 AC. @ 0.25 = 6.00
117.17 87.67

$C = 87.67/117.17 = 0.75$ USE 0.80

$VH = 4320 \times A \times C = 4320 \times 15.2 \times 0.80 = 52,531 \text{ CF REQUIRED}$

RESTRICTOR CALCULATION AT 10 YEAR OVERFLOW STRUCTURE

$Q_0 = 0.15(101.3) = 15.20 \text{ cfs.}$
 15.20
 $0.62 \sqrt{64.4(3.85)} = \frac{15.20}{0.82} = 1.55 \text{ S.F.}(144) = 222.76 \text{ S.I.}$

$R = \frac{222.76}{144} = 8.42(2) = 16.8" \text{ DIA.}$

THEREFORE USE A 15" RESTRICTOR PIPE.

VOLUME PROVIDED:

ELEV.	AREA(SF)	AVG. AREA (SF)	DEPTH (FT)	VOL.(CF)
849.5	20,194			
849	18,985	19,590	0.5	9,795
848	16,650	17,818	1.0	17,818
847	14,425	15,538	1.0	15,538
846	12,307	13,366	1.0	13,366
845.7	11,693	12,000	0.3	3,600
				60,117 CF

AT ELEVATION 849.5 A STORAGE VOLUME OF 60,117 CF IS PROVIDED.

BUILDING 'A' SIZE OUTLET: (PROPOSED CONDITIONS)

A = 2.64 ACRES
QA = 0.20 CFS/ACRE = 0.20 x 2.64 = 0.53 CFS

AM = (V/HW) = 11,620/0.9 = 12,911.1
A = 0.3988 (12,911.1)/0.9/172,800 = 0.0283 = 2.27"

USE A 12" DIAMETER PIPE WITH 1.5' OF 3" PVC GROUTED INTO THE DOWN STREAM INVERT OF THE PIPE.

NOTE: 3" IS MINIMUM ALLOWABLE RESTRICTOR SIZE.

(ULTIMATE CONDITIONS)

A = 15.2 ACRES
QA = 0.20 x 15.2 = 3.04 CFS

AM = (V/HW) = 52,531/3.8 = 13,823.9
A = 0.3988 (13,823.9)/3.8/172,800 = 0.0622 = 3.37"

USE A 12" DIAMETER PIPE WITH 1.5' OF 3" PVC GROUTED INTO THE DOWNSTREAM INVERT OF THE PIPE.

SIZE HOLES IN STANDPIPE:

HW = 3.8'
AM = (V/HW) = 52,531/3.8 = 13,823.9
A = 0.3988 (13,823.9)/3.8/172,800 = 0.0622

A 1" HOLE HAS AN AREA = 0.0055 SF

NO. OF 1" HOLES = 0.0622/0.0055 = 11.3

USE 12-1" DIAMETER HOLES AT ELEV. 845.7

SIZE OVERFLOW WEIR (100-YR.)

$Q = C L H^{3/2}$
C = 3.33, H = 0.5'
Q = Q100 = CIA = 0.80(6.87)(15.2) = 83.5 CFS
83.5 = 3.33L (0.5)^{3/2} L = 70.9 SAY 71'

DETENTION CALCULATIONS WITHIN EXISTING WETLAND 10 YEAR STORM.

AREA = 101.3 Ac.

$Q_0 = 0.15(101.3) = 15.20 \text{ cfs.}$

$Q_0 = \frac{0.15(101.3)}{0.80(101.3)} = \frac{15.20}{81.04} = 0.19$

$T = -25 + \sqrt{6562.5/0.19} = 160.80$

$V_s = \frac{10500(160.80)}{100(869.25)} - 40(0.19)(160.80) = 7865.10$

$V_t = 7865.1(0.80)(101.30) = 637,388 \text{ C.F. REQUIRED}$
655,084 C.F. PROVIDED AT ELEV. 847.85

100 YEAR STORM

AREA = 101.30 Ac.

$Q_0 = 0.15(101.30) = 15.20 \text{ cfs.}$

$Q_0 = \frac{0.15(101.30)}{0.80(101.30)} = \frac{15.20}{81.04} = 0.19$

$T = -25 + \sqrt{\frac{10312.5}{0.19}} = 207.90$

$V_s = \frac{18500(207.90)}{100(869.25)} - 40(0.19)(207.90) = 13,148.80$

$V_t = 13,148.8(0.80)(101.30) = 1,065,578 \text{ C.F. REQUIRED}$
1,105,275 C.F. PROVIDED AT ELEV. 849.00

ELEVATION	AREA	AVG. S.F.	DEPTH	TOTAL C.F.
853.20	501,961 S.F.	498,866	0.20FT	99,733
853.00	495,770 S.F.	486,820	1 FT	486,820
852.00	477,870 S.F.	470,792	1 FT	470,792
851.00	463,714 S.F.	456,036	1 FT	456,036
850.00	448,357 S.F.	424,444	1 FT	424,444
849.00	400,531 S.F.	393,617	1 FT	393,617
848.00	386,703 S.F.	377,159	1 FT	377,159
847.00	367,614 S.F.	255,063	1 FT	255,063
846.00	142,512 S.F.	75,346	1 FT	75,346
845.00	8,179 S.F.	4,090	1 FT	4,090
844.00	-	-	-	-
TOTAL STORAGE VOLUME				TOTAL 3,043,140

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY											

ZIMET WOZNAK ASSOCIATES
Civil Engineers & Land Surveyors
4024 GRAND RIVER AVE, SUITE 100
NOVI, MICHIGAN 48375
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MISS DIG SYSTEM, INC.
1-800-482-7171

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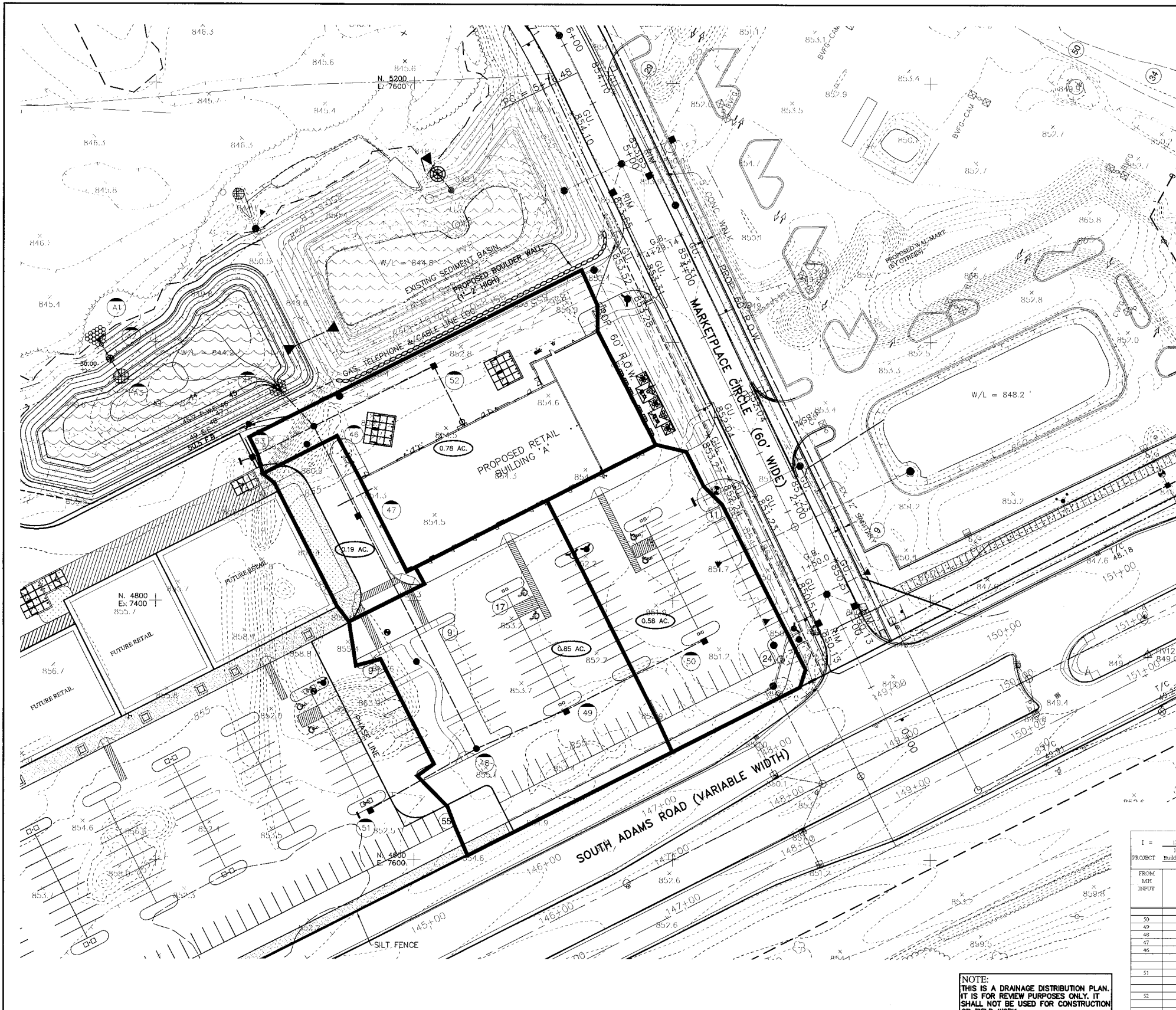
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ADAMS MARKETPLACE
STORMWATER MANAGMENT
PROPOSED RETAIL BUILDING "A"
ROCHESTER HILLS, MICHIGAN

CITY FILE 05-030.5

DATE: 01/03/07 SCALE: HCR: 1" = 40' VER: 1" = N/A
DESIGNED BY: SRB JOB NO.: 97144
DRAWN BY: SHEET: CE-4

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GRADING LEGEND:		EXISTING		LEGEND		PROPOSED	
T/C = TOP OF CURB	○	MANHOLE	●	MANHOLE	●	MANHOLE	●
T/W = TOP OF WALK	□	CATCH BASIN	■	CATCH BASIN	■	CATCH BASIN	■
T/P = TOP OF PAVEMENT	⊗	INLET	⊗	INLET	⊗	INLET	⊗
T/B = TOP OF BANK	⊙	CLEANOUT	⊙	CLEANOUT	⊙	CLEANOUT	⊙
G = GROUND	—	END SECTION	—	END SECTION	—	END SECTION	—
D = DITCH	—	GATE VALVE	—	GATE VALVE	—	GATE VALVE	—
GU = GUTTER	—	HYDRANT	—	HYDRANT	—	HYDRANT	—
F.G. = FINISH GRADE	—	WATER SHUT-OFF	—	WATER SHUT-OFF	—	WATER SHUT-OFF	—
F.F. = FINISH FLOOR	—	UTILITY POLE	—	UTILITY POLE	—	UTILITY POLE	—
BL = BRICK LEDGE	—	GUY ANCHOR	—	GUY ANCHOR	—	GUY ANCHOR	—
		LIGHT POLE	—	LIGHT POLE	—	LIGHT POLE	—
		SIGN	—	SIGN	—	SIGN	—
		TREE	—	TREE	—	TREE	—
		SANITARY SEWER	—	SANITARY SEWER	—	SANITARY SEWER	—
		STORM SEWER	—	STORM SEWER	—	STORM SEWER	—
		WATER MAIN	—	WATER MAIN	—	WATER MAIN	—
		GAS MAIN	—	GAS MAIN	—	GAS MAIN	—
		ELECTRIC CABLE	—	ELECTRIC CABLE	—	ELECTRIC CABLE	—
		CONTOUR MAJOR	—	CONTOUR MAJOR	—	CONTOUR MAJOR	—
		CONTOUR MINOR	—	CONTOUR MINOR	—	CONTOUR MINOR	—
		SPOT ELEVATION	—	SPOT ELEVATION	—	SPOT ELEVATION	—

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 AGREES 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.

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NOTE:
 THIS IS A DRAINAGE DISTRIBUTION PLAN. IT IS FOR REVIEW PURPOSES ONLY. IT SHALL NOT BE USED FOR CONSTRUCTION OR FIELD WORK.

FROM MH INPUT	TO MH	INCREMENT ACRES (A)	C	EQUIV. AREA 100% ACRES CA	TOTAL AREA 100% ACRES SDA CA	T TIME (MIN)	Q PER HOUR	Q-COA CFS FLOW	CAPACITY OF SEWER (CFS)	DIAM. OF PIPE (IN)	LENGTH OF LINE (FT)	SLOPE OF PIPE (%)	SLOPE OF HO (%)	VEL. OF FLOW (FT/SEC)	TIME OF FLOW (MIN)	HQ ELV. UPPER END	OR. ELV. UPPER END	LOWER END	INV. ELV. UPPER END	LOWER END
50	49	0.58	0.50	0.52	0.52	15.00	4.38	2.38	3.2	15	120	0.24	0.18	2.6	0.8	50.25	50.60	50.60	46.25	45.94
49	48	0.85	0.50	0.77	1.29	15.80	4.29	5.52	6.3	21	74	0.16	0.16	2.6	0.5	49.66	50.00	52.80	45.94	45.82
48	47	8.41	0.50	7.75	9.04	20.30	3.97	34.98	40.6	48	200	0.08	0.07	3.2	1.0	49.24	52.80	53.30	44.51	44.15
47	46	0.19	0.50	0.17	0.21	21.20	3.79	34.98	40.6	48	77	0.08	0.07	3.2	0.4	49.10	53.20	54.30	44.15	44.08
46	45	3.52	0.50	3.53	12.74	21.60	3.76	47.82	49.8	48	40	0.12	0.12	4.0	0.2	49.05	54.30	54.30	44.08	44.04
						21.80									49.00					
51	48	8.61	0.50	7.75	7.75	19.70	3.91	30.54	31.8	42	95	0.10	0.10	3.3	0.5	49.74	51.50	52.80	44.40	44.31
						20.30									49.64					
52	46	0.78	0.50	0.70	0.70	15.00	4.38	3.07	3.3	15	104	0.24	0.24	2.6	0.7	49.30	52.75	54.30	46.50	46.65
						15.70									49.90					
53	46	3.39	0.50	3.05	3.05	18.40	4.03	13.30	12.4	24	53	0.30	0.30	3.9	0.2	49.21	54.47	54.30	46.58	46.87
						18.60									49.05					

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
	1/22/07	DAB									

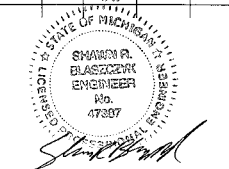
ZEIMET WOZNAK & ASSOCIATES
 Civil Engineers & Land Surveyors
 40024 GRAND RIVER AVE, SUITE 100
 Novi, Michigan 48275
 P: (248) 442-1101 F: (248) 442-1241 www.zeimetwozniak.com

THREE FULL WORKING DAYS BEFORE YOU DRUG, CALL THE MISS DRUG SYSTEM
MISS DRUG SYSTEM, INC.
 1-800-482-7171

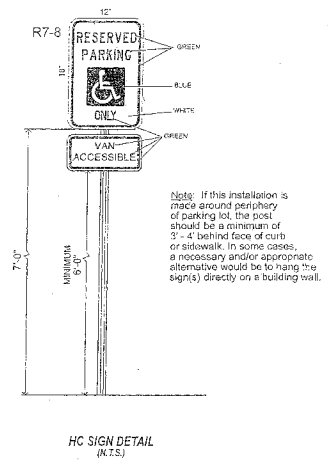
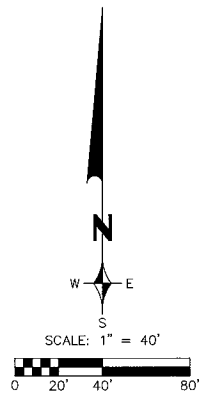
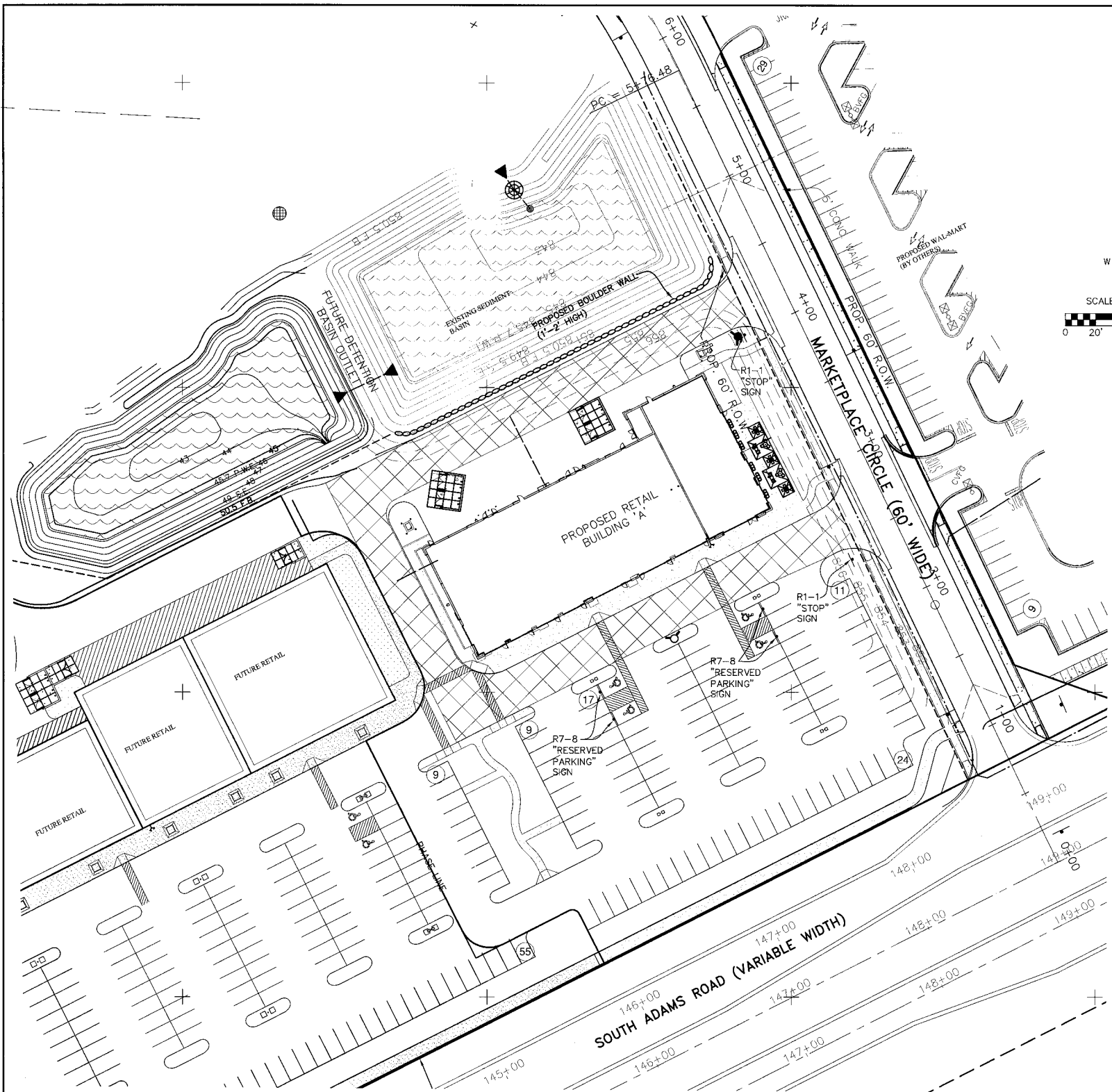
PROJECT SPONSOR:
 GRAND SAKWA PROPERTIES
 28470 THIRTEEN MILE ROAD, SUITE 220
 FARMINGTON HILLS, MI (248) 855-5500

ADAMS MARKETPLACE CITY FILE 05-030.5
STORM DRAINAGE AREA PLAN
PROPOSED RETAIL BUILDING "A"
 ROCHESTER HILLS, MICHIGAN

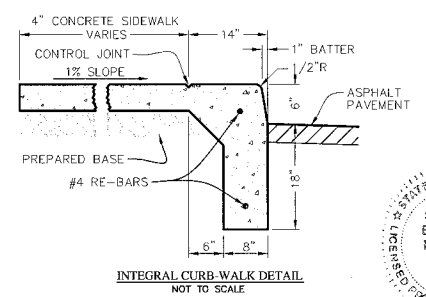
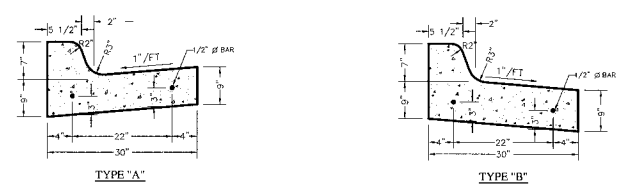
DATE 01/03/07 SCALE HOR: 1" = 40'
 DESIGNED BY SRB VER: 1" = N/A
 JOB NO. 97144
 DRAWN BY DB SHEET CE-5



H:\projects\0714\adams\adams\Storm Drainage Area Plan_2/22/2007 9:47:56 AM_SBlaszczyk



- HEAVY DUTY PAVEMENT (TRUCK ROUTE)**
 - 1.5" M.D.O.T. HMA 5E3, 20AA
 - 2.0" M.D.O.T. HMA 3C, 20AA
 - 2.5" M.D.O.T. HMA 3C, 20AA
 - 10" M.D.O.T. 21AA
 - SUBGRADE COMPACTED TO 95% MAXIMUM UNIT DENSITY.
 - USE PG 64-22 BINDER FOR PAVEMENT MIXES.
- STANDARD PAVEMENT (PARKING)**
 - 1.5" M.D.O.T. HMA 4C, 20AA
 - 2.5" M.D.O.T. HMA 3C, 20AA
 - 10" M.D.O.T. 21AA
 - SUBGRADE COMPACTED TO 95% MAXIMUM UNIT DENSITY.
 - USE PG 64-22 BINDER FOR PAVEMENT MIXES.
 - (PAVEMENT SECTION SUBJECT TO RECOMMENDATION OF A QUALIFIED GEOTECHNICAL ENGINEER)
- DUMPSTER PAD**
 - 6" REINFORCED CONCRETE ON 6" COMPACTED 22A SUBGRADE COMPACTED TO 95% MAXIMUM UNIT DENSITY.
- SIDEWALKS**
 - 4" NON-REINFORCED CONCRETE ON 4" COMPACTED SAND. SUBGRADE COMPACTED TO 95% MAXIMUM UNIT DENSITY.



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REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY											
	1/22/07	DAB									

ZEIMET WOZNAK & ASSOCIATES
Civil Engineers & Land Surveyors
40024 GRAND RIVER AVE, SUITE 100
NOVI, MICHIGAN 48375
P: (248) 442-1101 F: (248) 442-1241 www.zeimetwozniak.com

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FARMINGTON HILLS, MI (248) 855-5500

ADAMS MARKETPLACE
PAVING & SIGNAGE PLAN
PROPOSED RETAIL BUILDING "A"
ROCHESTER HILLS, MICHIGAN

CITY FILE 05-030.5
DATE: 01/03/07 SCALE: HOR: 1" = 40' VER: 1" = N/A
DESIGNED BY: SRB JOB NO.: 97144
DRAWN BY: DE/AJ SHEET: CE-6

I:\Projects\07144\NewBuilding\07144 Building A\Drawing & Signage\Plan_07/20/07\648 32.dwg 5/16/2007 8:48:32 AM SBR/etm/ak

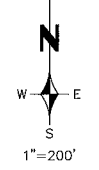
N.E. CORNER
SEC. 25
T.3N., R.10E.

N.W. CORNER SEC. 30
T.3N., R.11E.
(FIB)
L.C.R.C. LI. 10244,
PA. 009, O.C.R.

N. 1/4 CORNER
SEC. 30
(FIP 3/4" DIA.)
L.C.R.C. LI. 13523,
PA. 850, O.C.R.

N.E. CORNER
SEC. 30
(FIP IN WELL)
L.C.R.C. LI. 9127,
PA. 496, O.C.R.

M-59 (EAST BOUND LANE)



LOCATION MAP
NOT TO SCALE

LEGAL DESCRIPTION
DETROIT EDISON EXCESS AREA
"PER TITLE COMMITMENT"

PART OF THE SOUTH 1/2 OF SECTION 30, T.3N., R.11E., AVON TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: BEGINNING AT A POINT ON THE NORTHERLY LINE OF THE GRAND TRUNK WESTERN RAILROAD RIGHT-OF-WAY (100 FEET WIDE) DISTANT N. 1007.25 FEET ALONG THE WEST LINE OF SAID SECTION 30 (ACCORDING TO SUPERVISOR'S PLAT NO. 16, LIBER 28, PAGE 46, OAKLAND COUNTY RECORDS) AND N. 65°11'20" E. 2096.42 FEET ALONG THE NORTHERLY LINE OF SAID RAILROAD RIGHT-OF-WAY; THENCE N. 65°11'20" E. 1179.23 FEET ALONG THE NORTHERLY LINE OF SAID RAILROAD RIGHT-OF-WAY; THENCE N. 03°55'25" E. 625.90 FEET ALONG THE WESTERLY LINE OF LOT 37 OF "AUBURN HIGHLANDS SUBDIVISION" LIBER 40, PAGE 19, OAKLAND COUNTY RECORDS; THENCE S. 88°06'40" W. 1420.07 FEET, ALONG THE EAST AND WEST 1/4 LINE OF SAID SECTION 30 (AS OCCUPIED IN THE FIELD), TO A POINT HEREAFTER KNOWN AS POINT "A"; THENCE SOUTH 01°11'50" E. 392.70 FEET; THENCE S. 88°48'10" W. 120.00 FEET; THENCE S. 01°11'50" E. 300.13 FEET; THENCE N. 88°48'10" E. 259.25 FEET; THENCE S. 01°11'50" E. 198.14 FEET; THENCE N. 88°48'10" E. 230.00 FEET; THENCE S. 01°11'50" E. 199.45 FEET TO THE POINT OF BEGINNING. CONTAINING 28.679 ACRES OF LAND.

LEGAL DESCRIPTION
DETROIT EDISON EXCESS AREA

A PARCEL OF LAND LOCATED IN PART OF THE SOUTH 1/2 OF SECTION 30, T. 3 N., R. 11 E., CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN MORE PARTICULARLY DESCRIBED AS: BEGINNING AT THE S.W. CORNER OF SECTION 30 AND PROCEEDING ALONG THE WEST LINE OF SECTION 30 (AS MONUMENTED), AND ADAMS ROAD CENTERLINE (66 FEET WIDE) N. 02°03'12" W. 1007.09 FEET MEASURED (1007.25 FEET RECORD); THENCE ALONG THE NORTH LINE OF ABANDONED GRAND TRUNK RAILROAD (100 FEET WIDE) N. 03°10'09" E. 2096.62 FEET TO THE POINT OF BEGINNING; THENCE N. 03°08'53" W. 199.45 FEET; THENCE S. 85°49'15" W. 229.94 FEET; THENCE N. 03°09'26" W. 198.14 FEET; THENCE S. 86°49'32" W. 229.25 FEET; THENCE N. 03°14'14" W. 299.77 FEET; THENCE N. 86°44'50" E. 120.00 FEET; THENCE N. 03°15'02" W. 380.30 FEET MEASURED (382.70 FEET RECORD); THENCE ALONG THE EAST AND WEST 1/4 LINE OF SECTION 30 N. 85°49'02" E. 907.86 FEET TO THE CENTER OF SECTION 30; THENCE CONTINUING ALONG THE EAST AND WEST 1/4 LINE N. 85°45'03" E. 512.09 FEET; THENCE ALONG THE WEST LINE OF "AUBURN HIGHLANDS" RECORDED IN LIBER 40 PAGE 19 OAKLAND COUNTY RECORDS S. 05°55'34" E. 630.94 FEET; THENCE ALONG SAID ABANDONED NORTH LINE OF THE GRAND TRUNK RAILROAD S. 63°10'09" W. 1179.23 FEET TO THE POINT OF BEGINNING CONTAINING 28.709 ACRES MORE OR LESS.

NOTE: IT IS THIS SURVEYOR'S OPINION THAT THE LEGAL DESCRIPTION SUPPLIED WITH THE TITLE COMMITMENT AND THE LEGAL DESCRIPTION CERTIFIED IN THIS SURVEY DESCRIBE THE SAME PARCEL OF PROPERTY.

LEGAL DESCRIPTION
PARCELS 1, 2 & 3

LEGAL DESCRIPTION PER TITLE COMMITMENT METROPOLITAN TITLE CO. COMM. NO. 0-541359
LAND IN THE CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS FOLLOWS:
PARCEL 1
PART OF SOUTHWEST 1/4 SECTION 30, TOWN 3 NORTH, RANGE 11 EAST, POINT DISTANT SOUTH 849.33 FEET FROM WEST 1/4 CORNER, THENCE NORTH 87 DEGREES 46 MINUTES 00 SECONDS EAST 400 FEET, THENCE SOUTH 100 FEET, THENCE SOUTH 87 DEGREES 46 MINUTES 00 SECONDS WEST 400 FEET, THENCE NORTH 100 FEET TO BEGINNING.
PARCEL 2
PART OF WEST 1/2 OF SOUTHWEST 1/4 SECTION 30, TOWN 3 NORTH, RANGE 11 EAST, BEGINNING AT POINT DISTANT SOUTH 750.36 FEET FROM WEST 1/4 CORNER, THENCE NORTH 87 DEGREES 46 MINUTES 00 SECONDS EAST 1010 FEET, THENCE SOUTH 87 DEGREES 46 MINUTES 00 SECONDS WEST 30.00 FEET, THENCE SOUTH 168.60 FEET, THENCE SOUTH 87 DEGREES 46 MINUTES 00 SECONDS WEST 30.00 FEET, THENCE SOUTH 168.60 FEET, THENCE SOUTH 87 DEGREES 46 MINUTES 00 SECONDS WEST 90.00 FEET, THENCE SOUTH 168.60 FEET, THENCE NORTH 87 DEGREES 46 MINUTES 00 SECONDS EAST 400 FEET, THENCE NORTH 100 FEET, THENCE SOUTH 87 DEGREES 46 MINUTES 00 SECONDS EAST 400 FEET, THENCE NORTH 98.97 FEET ALONG WEST SECTION LINE TO BEGINNING.
PARCEL 3
PART OF SOUTHWEST 1/4 SECTION 30, TOWN 3 NORTH, RANGE 11 EAST, BEGINNING AT POINT DISTANT SOUTH 680.31 FEET FROM WEST 1/4 CORNER, THENCE NORTH 70.05 FEET, THENCE NORTH 87 DEGREES 46 MINUTES 00 SECONDS EAST 1010 FEET, THENCE SOUTH 98.97 FEET, THENCE SOUTH 87 DEGREES 46 MINUTES 00 SECONDS WEST 168.60 FEET, THENCE SOUTH 168.60 FEET, THENCE NORTH 87 DEGREES 46 MINUTES 00 SECONDS EAST 314.39 FEET, THENCE NORTH 01 DEGREES 04 MINUTES 25 SECONDS WEST 337.43 FEET, THENCE SOUTH 87 DEGREES 46 MINUTES 00 SECONDS WEST 1288.01 FEET TO BEGINNING EXCEPT, BEGINNING AT POINT DISTANT NORTH 2149.93 FEET FROM SOUTHWEST CORNER THENCE NORTH 87 DEGREES 41 MINUTES 40 SECONDS EAST 1287.99 FEET, THENCE NORTH 01 DEGREES 11 MINUTES 50 SECONDS WEST 70 FEET, THENCE SOUTH 87 DEGREES 41 MINUTES 40 SECONDS WEST 1286.53 FEET, THENCE SOUTH 70.05 TO BEGINNING.

(AS SURVEYED)
A PARCEL OF LAND LOCATED IN PART OF THE SOUTHWEST 1/4 OF SECTION 30, T. 3 N., R. 11 E., CITY OF ROCHESTER HILLS, OAKLAND COUNTY, MICHIGAN MORE PARTICULARLY DESCRIBED AS: BEGINNING AT A POINT DISTANT THE FOLLOWING TWO (2) COURSES ALONG THE WEST LINE OF SAID SECTION 30 S. 01°30'03" E. 385.17 FEET AND S. 02°03'12" E. 365.39 FEET FROM THE WEST 1/4 CORNER OF SAID SECTION 30 THENCE FROM SAID POINT OF BEGINNING N. 85°38'28" E. (1287.99 FEET RECORD) 1289.38 FEET MEASURED; THENCE S. 03°10'24" E. (267.43 FEET RECORD) 267.41 FEET MEASURED; THENCE S. 85°38'28" W. (1293.85 FEET RECORD) 1294.81 FEET MEASURED TO A POINT ON THE SAID WEST LINE OF SECTION 30; THENCE N. 02°03'12" W. 267.57 FEET ALONG SAID WEST LINE TO THE POINT OF BEGINNING CONTAINING 7.93 ACRES OF LAND BEING SUBJECT TO EASEMENTS AND RESTRICTIONS OR RECORD.

REVISIONS table with columns: ITEM, DATE, BY

ALTA-ACSM SURVEY table with columns: CLIENT, SCALE, SHEET NO., DATE

E. 1/4 CORNER
SEC. 25
T.3N., R.10E.
W. 1/4 CORNER
SEC. 30 T.3N., R.11E.
CITY OF ROCHESTER
HILLS (FIB IN WELL)
L.C.R.C. LI. 12273,
PA. 478, O.C.R.

S.W. CORNER SEC. 30
(FIB IN WELL)
L.C.R.C. LI. 11762,
PA. 148, O.C.R.

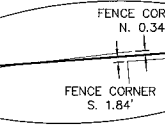
CENTER OF SEC. 30
T.3N., R.11E. CITY OF
ROCHESTER HILLS
(S.C.I. FROM RECORDED
WITNESS TIES)
L.C.R.C. LI. 14455,
PA. 108, O.C.R.

E. 1/4 CORNER
SEC. 30
(FD CONC. MON. IN SWAMP)
L.C.R.C. LI. 7732,
PA. 469, O.C.R.

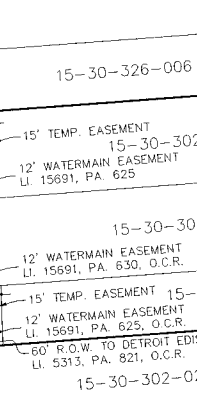
CURVE DATA

- 1 R = 7680.00', A = 118.92', CB = 564.04'40"W, C = 118.92'
- 2 R = 7680.00', A = 51.98', CB = 563.26'24"W, C = 51.98'
- 3 R = 7680.00', A = 115.16', CB = 563.40'04"E, C = 115.16'
- 4 R = 7830.00', A = 61.42', CB = 563.40'04"E, C = 61.42'
- 5 R = 7680.00', A = 123.54', CB = 564.59'56"E, C = 123.54'

FENCE DETAIL



EASEMENT DETAIL



- NOTES:
1. CONSUMERS POWER COMPANY RIGHT-OF-WAY RECORDED IN LIBER 589 PAGE 22 OAKLAND COUNTY RECORDS DOES NOT APPEAR TO BE OVER SUBJECT PARCEL.
2. DETROIT EDISON COMPANY RIGHT-OF-WAY RECORDED IN LIBER 5 PAGE 18 OAKLAND COUNTY RECORDS DOES NOT APPEAR TO BE OVER SUBJECT PARCEL.

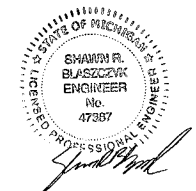
CERTIFICATION
TO GRAND-SAKWA PROPERTIES, METROPOLITAN TITLE INSURANCE COMPANY, TICOR TITLE INSURANCE COMPANY AND GRAND SAKWA ADAMS LLC.

THIS IS TO CERTIFY TO METROPOLITAN TITLE CO. AND TICOR TITLE INSURANCE CO. THAT THIS MAP OR PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH "MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS," JOINTLY ESTABLISHED AND ADOPTED BY ALTA, ACSM AND NSPS IN 1999, PURSUANT TO THE ACCURACY STANDARDS AS ADOPTED BY ALTA, NSPS, AND ACSM AND IN EFFECT ON THE DATE OF THIS CERTIFICATION. UNDERSIGNED FURTHER CERTIFIES THAT PROPER FIELD PROCEDURES, INSTRUMENTATION, AND ADEQUATE SURVEY PERSONNEL WERE EMPLOYED IN ORDER TO ACHIEVE RESULTS COMPARABLE TO THOSE OBTAINED IN THE "MINIMUM ANGLE, DISTANCE, AND CLOSURE REQUIREMENTS FOR SURVEY MEASUREMENTS WHICH CONTROL LAND BOUNDARIES FOR ALTA/ACSM LAND TITLE SURVEYS."

DATE: RICHARD A. HOFFESS
PROFESSIONAL SURVEYOR NO. 47955
ZEMET/WOZNAK & ASSOCIATES
28450 FRANKLIN ROAD, SOUTHFIELD, MI. 48034
PH: (248) 352-6850 FAX: (248) 352-1346

NOT FOR CONSTRUCTION
CITY FILE NO. 05-030.3

- LEGEND
BOUNDARY LINE
PARCEL LINE
SECTION LINE
EASEMENTS
FENCE LINE
SECTION CORNER
F.M., F.C.I., F.I.B., F.P., F.P.K.
FOUND MONUMENT
FCI FOUND CAPPED IRON
FIB FOUND IRON BAR
FIP FOUND IRON PIPE
FPK FOUND "P.K." NAIL
M MEASURED
R RECORDED
C CENTERLINE
R.O.W. RIGHT OF WAY

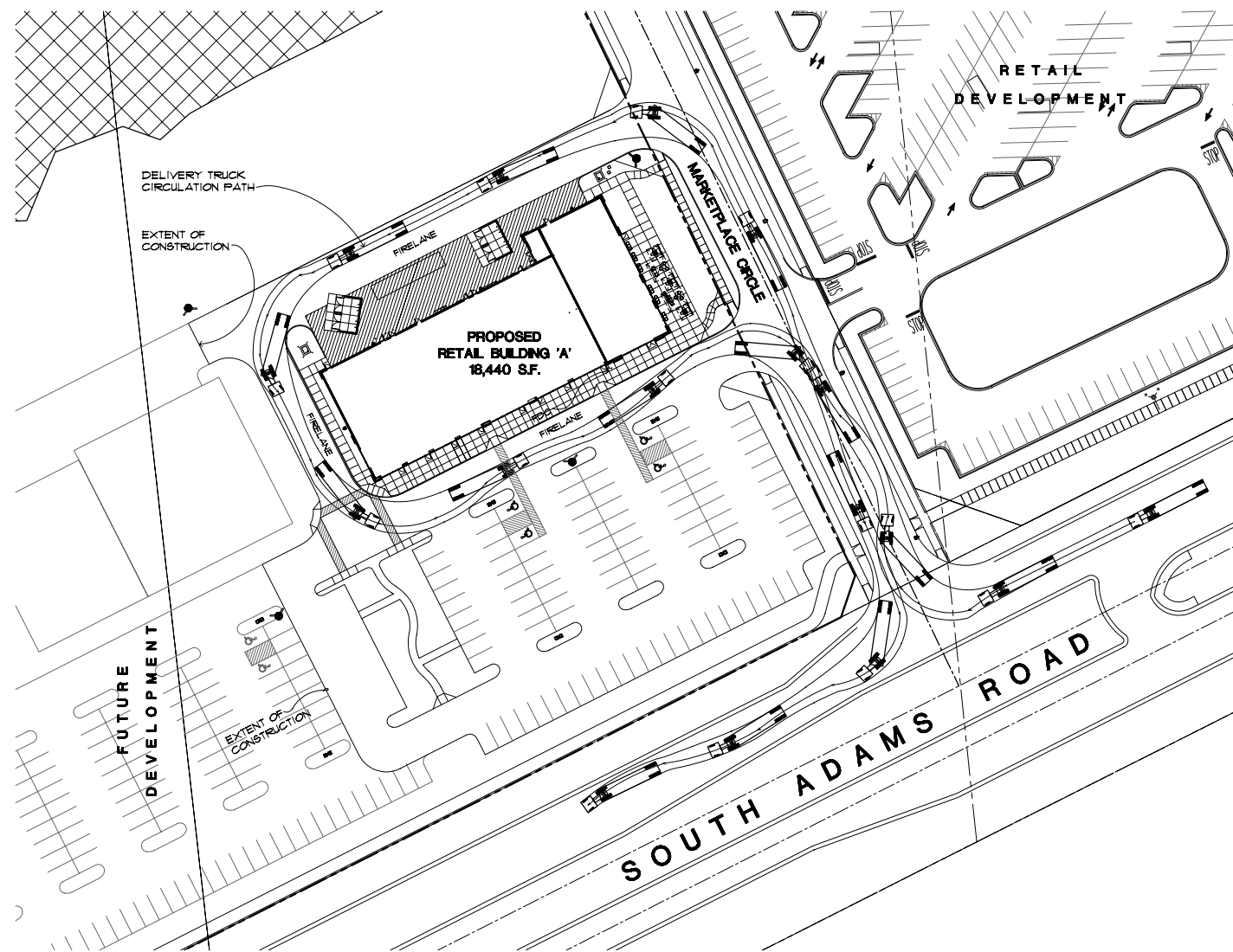


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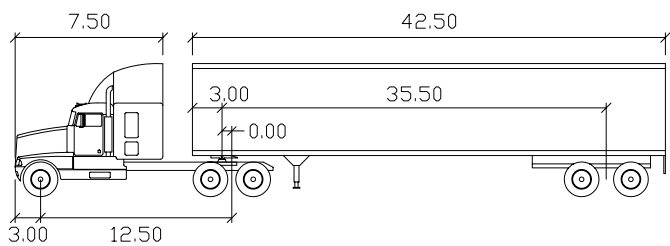
Adams Marketplace

PROPOSED RETAIL BUILDING 'A'

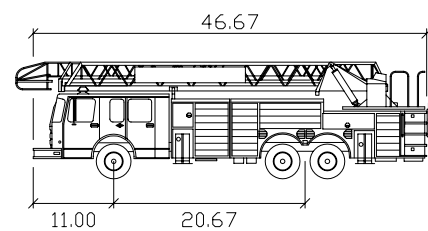
Rochester Hills, Michigan



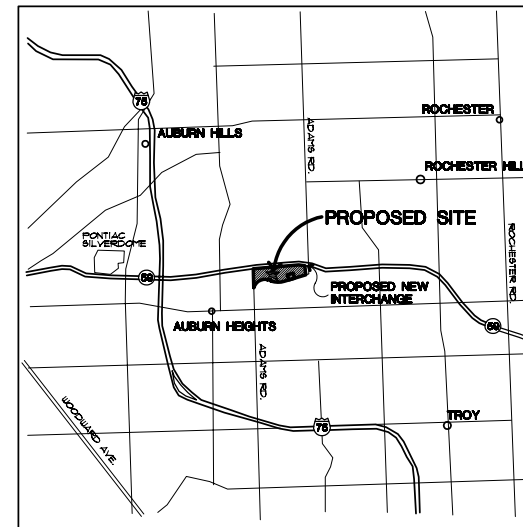
SITE DIAGRAM - PHASE I
SCALE: 1"=50'-0"



WB-50 feet
Tractor Width : 8.00 Lock to Lock Time : 6.00
Trailer Width : 8.50 Steering Angle : 17.70
Tractor Track : 8.00 Articulating Angle : 70.00
Trailer Track : 8.50



FIRE TRUCK - feet
Width : 8.50
Track : 8.50
Lock to Lock Time : 6.00
Steering Angle : 42.50



LOCATION MAP
NOT TO SCALE

Issued for:
REVISED 11 JULY 06
REVISED 12 JULY 06
REVISED 18 JULY 06
REVISED 19 AUG 06
SITE PLAN REVIEW 18 AUG 06
REVISED 20 SEPT 06
NO REVISIONS
SITE PLAN REVIEW 20 SEPT 06
REVISED 28 JAN 07
SITE PLAN REVIEW 1 FEB 07
FINAL SITE PLAN 22 FEB 07

project:

PROPOSED
Adams Marketplace
RETAIL BUILDING 'A'
ROCHESTER HILLS, MICHIGAN



32500 TELEGRAPH ROAD
SUITE 250
BINGHAM FARMS, MICHIGAN
48025-2404
PH 248.540.7700 FX 248.540.2710
ARCHITECTS@ROGVOY.COM

OWNER : ROCHESTER HILLS MARKETPLACE LLC 28470 THIRTEEN ROAD, SUITE 200 FARMINGTON HILLS, MICHIGAN 48334 (248) 855-5500 CONTACT: GARY COOPER	CIVIL ENGINEER : ZEIMET / WOZNIAK AND ASSOC. 40024 Grand River Avenue, Suite 100 Novi, Michigan 48375 (248) 442-1101 CONTACT: RICK HOFES
LANDSCAPE ARCHITECT : ALLEN DESIGN L.L.C. 957 CARPENTER NORTHVILLE, MICHIGAN 48161 (248) 461-4668 CONTACT: JIM ALLEN	ARCHITECT : ROGVOY ARCHITECTS 32500 TELEGRAPH ROAD SUITE 250 BINGHAM FARMS, MI 48025 (248.540-7700 CONTACT: MARK DRANE, AIA.

SHEET INDEX :	
SP-1.0	COVER
SP-3.1	LANDSCAPE PLAN & DETAILS
SP-3.2	SITE PHOTOMETRIC PLAN
SP-3.3	IRRIGATION PLAN
SP-4.1	FLOOR PLAN
SP-4.2	BUILDING ELEVATIONS

drawing:

**COVER
PHASE 1**

DO NOT SCALE DRAWING

Issue date: 11 JULY 06
drawn: S.V.
checked: M.D.
approved: M.D.

file number: 02053

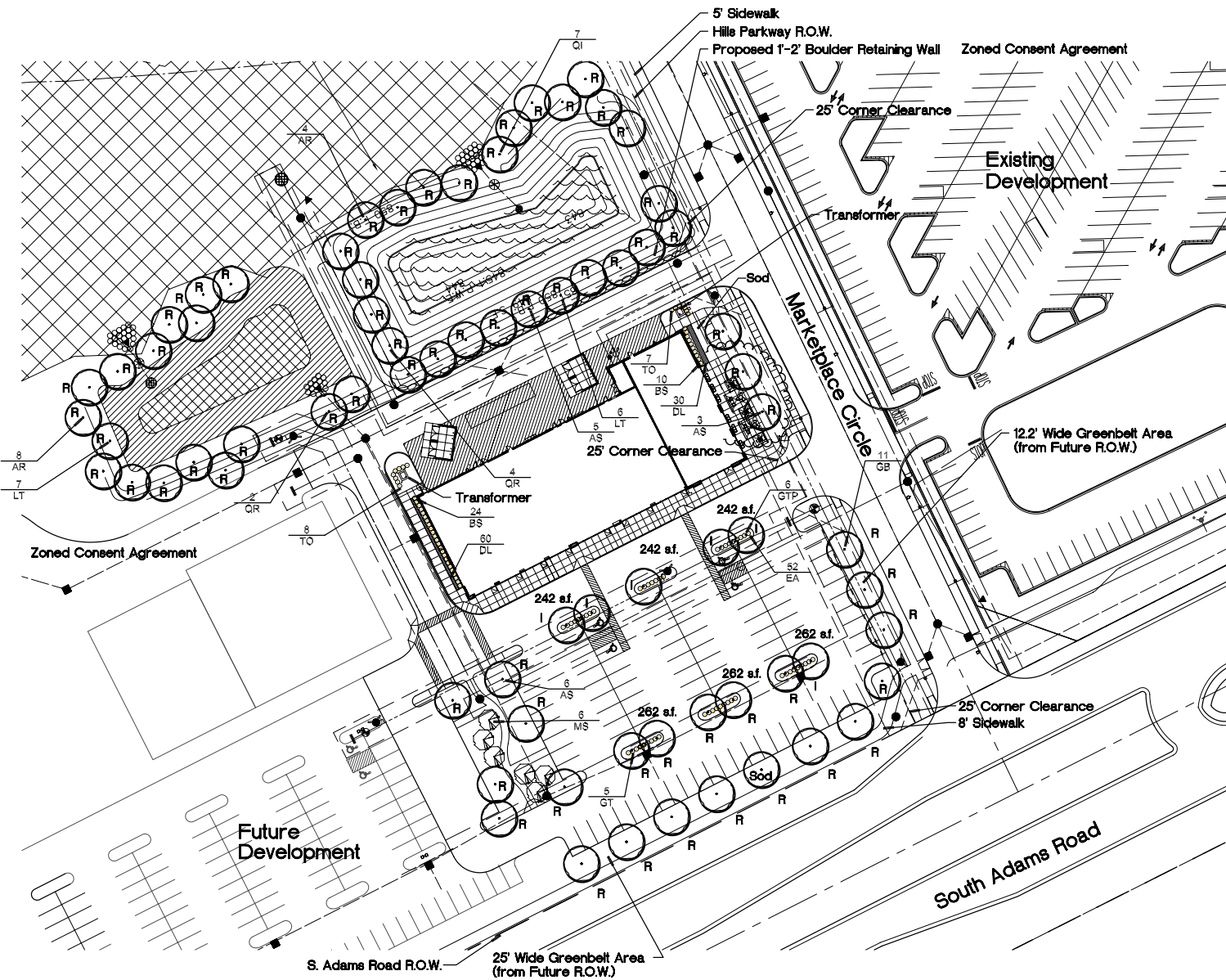
sheet:
CITY FILE NO. 05-030.5 SEC. 30

SP-1.0
02053 COVER 07-0221

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Planting Zone A

4,244 s.f. of Plants for 1 to 3 Feet of Water
 Plants Shall be Placed 18" o.c. and Planted in Small Colonies of Like Plants
 Bur Reed Roots 300 Roots
 Cattail Roots 300 Roots
 River Bulrush Roots 300 Roots
 Softstem Bulrush Roots 300 Roots
 Sweet Flag Roots 300 Tubers
 Wapato Duck Potato Tubers 300 Tubers
 3"-6" of Topsoil or Wetland Mulch Shall be Placed in this Area.

Planting Zone B

8,151 s.f. of Wet Meadow Plants
 28 lbs. of Seed Placed at the Rate of 150 lbs. per Acre
 The Seed Mix Shall Include:
 Bluejoint Grass
 Bottoburnt Sedge
 Creeping Spike Rush
 Flowering Rush
 Great Blue Lobelia
 Lake Sedge
 Marsh Milkweed
 Prairie Cord Grass
 Soft Rush
 Torrey's Rush
 Water Plantain
 Woolgrass
 3"-6" of Topsoil or Wetland Mulch Shall be Placed in this Area.

Landscape Summary

Parking Lot Landscaping
 Spaces Shown 96 Spaces
 Landscape Area Required (150 s.f. per 10 Spaces) 1,500 s.f.
 Landscape Area Shown 1,512 s.f.
 Trees Required (1 Tree per 300 s.f.) 6 Trees
 Trees Shown 6 Trees

• As measured from the back of curb and Excluding Sidewalks.

Environmental Statement

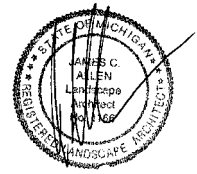
No natural features exist. This site is currently a temporary detention pond and has been recently mass graded.

PLANT LIST

sym.	qty.	botanical name	common name	caliper	spacing	root	height	price	total
Parking Lot Island Trees									
GTP	6	Gleditsia triacanthos var. Inermis	Honeylocust	3.0"	as shown	B&B		\$ 425.00	\$ 2,550.00
							Sub Total		\$ 2,550.00
Replacement Trees									
AR	12	Acer rubrum	Red Maple	3.0"	as shown	B&B		\$ 425.00	\$ 5,100.00
AS	14	Acer saccharum 'Majesty'	Sugar Maple	3.0"	as shown	B&B		\$ 425.00	\$ 5,950.00
GB	11	Ginkgo biloba	Ginkgo	3.0"	as shown	B&B		\$ 425.00	\$ 4,675.00
GT	5	Gleditsia triacanthos var. Inermis	Honeylocust	3.0"	as shown	B&B		\$ 425.00	\$ 2,125.00
LT	13	Liriodendron tulipifera	Tulip Tree	3.0"	as shown	B&B		\$ 425.00	\$ 5,525.00
OI	7	Quercus imbricaria	Shingle Oak	3.0"	as shown	B&B		\$ 425.00	\$ 2,975.00
QR	6	Quercus rubra	Red Oak	3.0"	as shown	B&B		\$ 425.00	\$ 2,550.00
		68 trees, 136 credits					Sub Total		\$ 28,900.00
General Plantings									
BS	34	Buxus microphylla 'Wintergreen'	Wintergreen Boxwood		as shown	B&B	24"	\$ 45.00	\$ 1,530.00
DL	90	Hemerocallis 'Stella D'Oro'	Stella D'Oro Day Lilly				Full, well rooted 1 gal.	\$ 15.00	\$ 1,350.00
EA	52	Euonymus alta 'Compact'	Compact Burning Bush		as shown	B&B	30"-36"	\$ 50.00	\$ 2,600.00
MS	6	Malus 'Spring Snow'	Spring Snow Crab	2.0"	as shown	B&B		\$ 200.00	\$ 1,200.00
TO	15	Thuja occidentalis 'Emerald Green'	Emerald Green Arborvitae		as shown	B&B	6'	\$ 175.00	\$ 2,625.00
		1,516 Kentucky Blue Grass, (S.Y.)						\$ 4.00	\$ 6,064.00
		1,372 Detention Pond Plantings						\$ 5.00	\$ 6,860.00
							Sub Total		\$ 22,229.00

- Additional Notes:**
- All Landscaped Areas shall be irrigated with an Automatic, Underground System.
 - Mulch Shall be Sod.
 - Owner Shall be Responsible for Replacing Damaged Plant Material Due to Utility Maintenance.
 - Prior to the release of the Performance Bond, the City of Rochester Hills Forestry Division must inspect all landscape plantings including but not limited to existing trees, replacement trees, buffer plantings, and parking lot islands and the Forestry Division must inspect all right-of-ways to identify any plantings new or existing that pose a hazard to the safe use of the right-of-way. Forestry may require the developer to remove and possibly replace any such trees.
 - All trees and shrubs must be planted at least 10' from the edge of a public roadway. Shade trees and shrubs must be planted at least 8' from the edge of a public roadway. Evergreen and ornamental trees must be planted at least 10' from the edge of a public roadway. All trees and shrubs must be planted at least 10' from any fire hydrant. Shade and evergreen trees must be planted at least 15' from the nearest overhead wire and at least 10' from the nearest underground utility.
 - No tree or shrub may be planted within the triangular area formed at the intersection of any street right-of-way at a distance of 25' from their point of intersection. No tree or shrub may be planted in the triangular area formed at the intersection of any driveway with a public sidewalk at a distance along each line of 10' from their point of intersection.
 - Prior approval is required to plant any tree or shrub in the public right-of-way.
 - No substitutions or changes of location or plant types shall be made without the approval of the developer and the City of Rochester Hills Landscape Architect.
 - The developer and/or the City of Rochester Hills Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans or specifications.
 - Replacement trees may not be planted within the drip line of existing trees.
 - Trees must be at least 10' from underground utilities and 10' from overhead utilities.
 - Trees may not be planted within 4' of any property line.

Seal: _____



Title: **Landscape Plan**

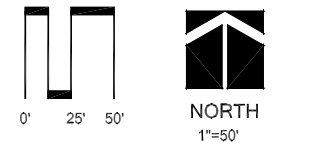
Project: **Adams Marketplace Retail Building A**
 Rochester Hills, Michigan

Prepared for: Grand Sakwa
 28470 Thirteen Mile Road, Suite 220
 Farmington Hills, Michigan 48334
 248.855.5500

Revision: _____ Issued: _____
 Site Plan August 18, 2006
 Revised per City September 25, 2006
 Revised per City October 20, 2006
 Revised per Client January 31, 2007

Job Number: 06-022

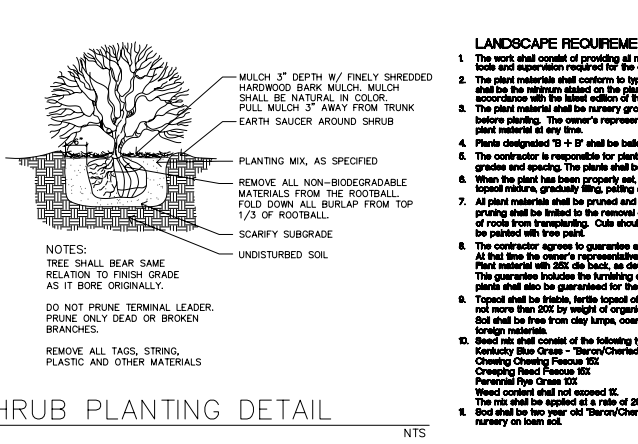
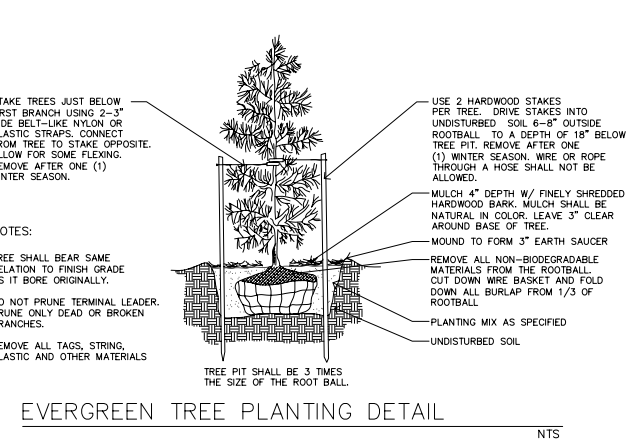
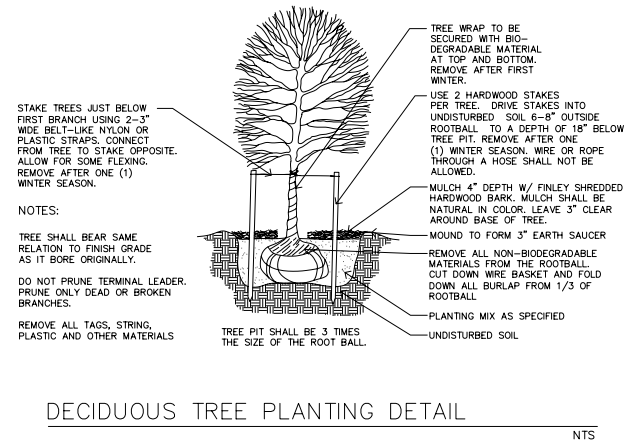
Drawn By: jca Checked By: jca



Overhead Line Statement:
 No Overhead Lines Exist

Loading Area Statement:
 Proposed Landscaping and/or Materials Adequately Boreen Loading Areas from Public R.O.W.

Not to be Used as Construction Drawings

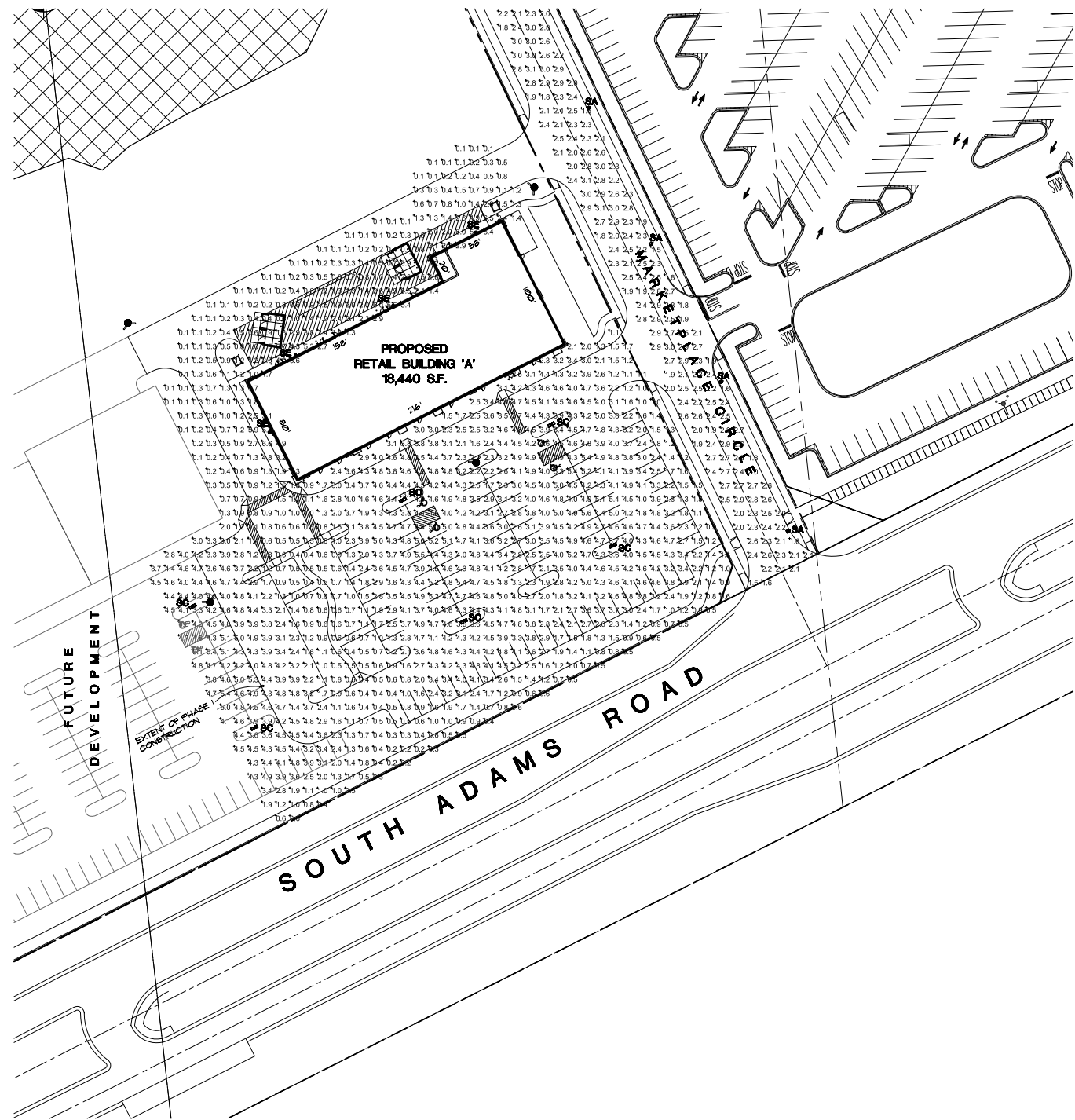


DECIDUOUS TREE PLANTING DETAIL

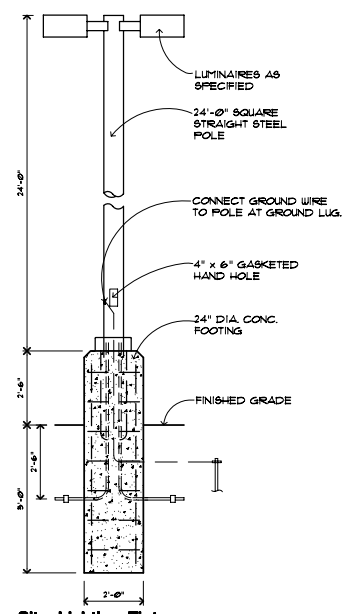
EVERGREEN TREE PLANTING DETAIL

SHRUB PLANTING DETAIL

Sheet No. _____



PHOTOMETRIC PLAN - PHASE I
SCALE: 1"=50'-0"



Site Lighting Fixture Detail 3/8" x 1'-0"
NOTE:
THIS DESIGN IS BASED ON GOOD SOIL CONDITIONS HAVING 3,000 PSI CAPACITY OR BETTER. IF SOIL OF THIS CAPACITY IS NOT PRESENT AT THE LOCATIONS REQUIRED, DO NOT PROCEED. CONTACT THE ARCHITECT FOR DIRECTION.

STATISTICS						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
parking/retail drive	+	2.7 fc	6.6 fc	0.1 fc	66.0:1	26.5:1
Ring Road	+	2.3 fc	4.6 fc	0.3 fc	15.3:1	7.7:1

LUMINAIRE SCHEDULE									
Symbol	Label	Qty	Catalog Number	Description	Lamp	File	Lumens	LLF	Watts
SA	SA	25	MSVA0400HFPx3-GS	MAGNUSQUARE - MSV SERIES - ARCHITECTURAL REFL: SPECULAR ALUMINUM ENCL: CLEAR, FLAT GLASS	400W MET. HAL. ED 37, CLEAR	HP08643.IES	40000	0.81	460
SB	SB	1	MSVA0400HFPx3-GS	MAGNUSQUARE - MSV SERIES - ARCHITECTURAL REFL: SPECULAR ALUMINUM ENCL: CLEAR, FLAT GLASS	400W MET. HAL. ED 37, CLEAR	HP08643.IES	40000	0.81	920
SC	SC	6	MSVA0400H-FW-x	MAGNUSQUARE - MSV SERIES - ARCHITECTURAL REFL: SPECULAR ALUMINUM ENCL: CLEAR, FLAT GLASS	400W MET. HAL. ED 37, CLEAR	HP08645.IES	40000	0.81	920
SE	SE	3	NK2-H25-H3-F	NEWARK 2 SQUARE AREA LIGHT TYPE III REFLECTOR CLEAR FLAT GLASS LENS	250W CLEAR ED28 METAL HALIDE, HORIZONTAL POSITION	L4903NKP.ies	20000	0.81	250

- NOTES
1. SEE LUMINAIRE LOCATIONS FOR MOUNTING HEIGHTS.
 2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
 3. CALCULATIONS ARE SHOWN AT GRADE.

THE LIGHTING PATTERN REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY

developer:
GRAND SAKAWA PROPERTIES, L.L.C.
28470 THIRTEEN MILE ROAD SUITE 200 FARMINGTON HILLS, MI 48334 (248) 855-5500 (248) 855-0915 fax

NOT TO BE USED AS CONSTRUCTION DRAWINGS

- Issued for:
- REVISED 11 JULY 06
 - REVISED 17 JULY 06
 - REVISED 18 JULY 06
 - REVISED 19 AUG 06
 - SITE PLAN REVIEW 18 AUG 06
 - REVISED (background only) 20 SEPT. 06
 - SITE PLAN REVIEW 25 SEPT. 06
 - REVISED (BACKGROUND ONLY) 19 OCT. 06
 - SITE PLAN REVIEW 20 OCT. 06
 - FINAL SITE PLAN 21 FEB 07

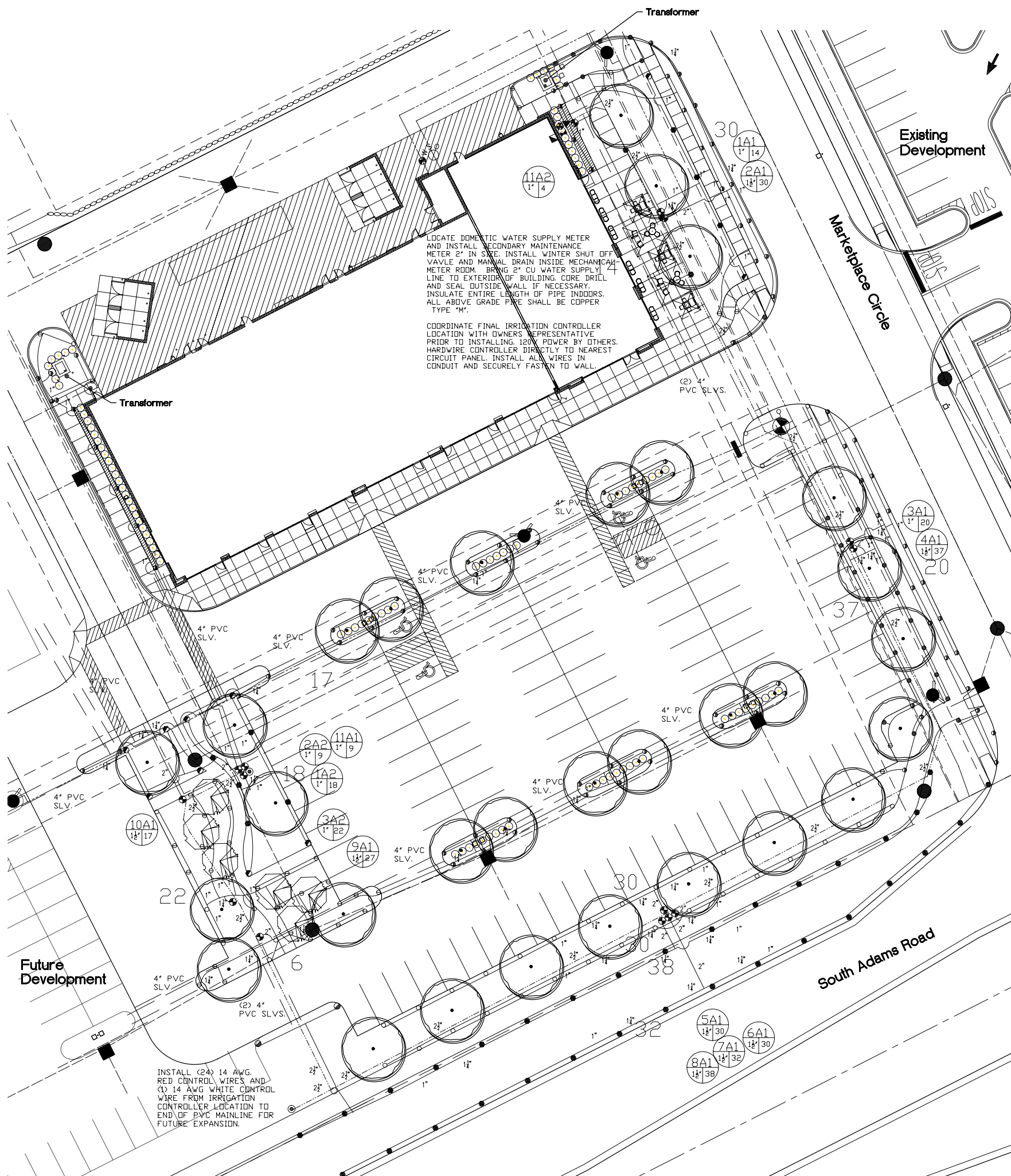
project:
PROPOSED Adams Marketplace
RETAIL BUILDING 'A'
ROCHESTER HILLS, MICHIGAN

ROGVOY ARCHITECTS
32800 TELEGRAPH ROAD SUITE 200 BINGHAM FARMS, MICHIGAN 48025-2404
PH 248.540.7700 FX 248.540.2710 ARCHITECTS@ROGVOY.COM

drawing:
PHOTOMETRIC PLAN

DO NOT SCALE DRAWING
Issue date: 11 JULY 06
drawn: S.V.
checked: M.D.
approved: M.D.

file number: 02053
sheet: CITY FILE NO. 05-0305 SEC. 30
SP-3.2
02053 LTG 06-0221



IRRIGATION LEGEND:

FIXED SPRAY POP-UP (4") 10 Series 12 Series 15 Series Strip Series	Rainbird 1804 Toro 570-4P PROS-04	Rainbird Hunter
FIXED SPRAY POP-UP (12") 10 Series 12 Series 15 Series Strip Series	Rainbird 1812 Toro 570-12P PROS-12	Rainbird Hunter
FIXED SPRAY POP-UP (12") w/ 2" radius nozzle	Rainbird 1812 Toro 570-12P PROS-12	Rainbird Hunter
GEAR DRIVEN ROTARY POP-UP 1.5 GPM 3.0 GPM 6.0 GPM	Rainbird 5004 Weathermatic T3 Hunter PGP	Rainbird Hunter
GEAR DRIVEN ROTARY POP-UP 1.0 GPM 2.0 GPM	Rainbird 3004 Toro 300series Hunter PGI	Rainbird Hunter
ELECTRIC VALVE	Rainbird PGA Series Toro P220 Series ICV-Series	Rainbird Hunter
QUICK COUPLER VALVE	Rainbird 4RC Toro 474-01 QVC-100	Rainbird Hunter
ELECTRIC CONTROLLER	Rainbird ESP24M CCM24 ICC24M	Rainbird Hunter
PRESSURE VACUUM BREAKER	FEBCO 765P200	Rainbird Hunter
RAIN SENSOR DEVICE (Install at all controller locations)	Mini-Click II (wireless)	Rainbird Hunter
POINT OF CONNECTION TO WATER SOURCE	See note this sheet	Rainbird Hunter

VALVE DESIGNATION:
 Controller and Station Number
 Valve Size Gallons Per Minute

WATER REQUIREMENTS: 60 GPM @ 65 PSI
(COURTESY OF 10798299 PLS. A/D, B/D, C/D, D/D, E/D, F/D, G/D, H/D, I/D, J/D, K/D, L/D, M/D, N/D, O/D, P/D, Q/D, R/D, S/D, T/D, U/D, V/D, W/D, X/D, Y/D, Z/D)

- NOTES:**
- Refer to the specifications for installation details and descriptions, as well as, construction methods which will be accepted.
 - All work shall be in compliance with all local, state, and federal codes and ordinances.
 - All electrical connections shall be made using 3m DBY splice kits.
 - All control wiring downstream of the controller shall be single strand copper 14-AWG UL approved for direct bury.
 - All clamps shall be stainless steel worm gear type clamps. Pipes 1-1/2" or larger shall be double clamped.
 - Pipe routing is schematic. All heads are to be field adjusted to within 2" to take into consideration any obstruction. Final head placements are subject to the landscape architect's approval.
 - All sprinkler heads shall be mounted on 2 elbow poly swing joints as specified.
 - Contractor to verify final controller location with owner's authorized representative prior to installation.
 - All pipe not sized downstream of control valve is 1".
 - All sleeves shall be PVC 1/2" (see specifications).
 - Irrigation contractor's point of connection to water source shall be as noted on this sheet. Locate and connect to indicated water source. All pipe installed above grade shall be copper type "M".
 - 120v power to the controller locations should be provided owner. Coordinate with owner's representative. Hardwire controller directly to nearest circuit panel. Place all wires in conduit per code.
 - Design pressure does not take into account seasonal supply fluctuations. Periods of drought may cause temporary pressure losses to the city water supply resulting in inadequate irrigation system performance. Irrigation design is based on normal weather conditions and typical municipal water supply abilities.
 - Irrigation contractor shall be responsible for determining and maintaining the irrigation schedule during the project construction and throughout the length of the warranty period. The irrigation schedule shall deliver 1" of precipitation per week +/- natural rainfall quantities for turf grass. Landscape material shall receive adjusted amounts of precipitation to maintain proper plant health.
 - Landscape and turf grass shall be irrigated separately.
 - Rotors and spray zones may not be combined to operate at the same time.

Liquid Assets, LLC
 Irrigation Design & Water Management
 323 Princeton
 South Lyon, Michigan 48178
 Tel. (877) 851-8700
 Fax (248) 446-2074

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

Seal: _____

Title:
Irrigation Plan

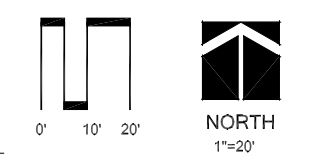
Project:
**Adams Marketplace
 Retail Building A
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Prepared for:
 Grand Sakwa Properties
 28470 Thirteen Mile Road, Suite 220
 Farmington Hills, Michigan 48334
 248.855.5500

Revision: _____ Issued: _____
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 06-022

Drawn By: _____ Checked By: _____
 AJB jca



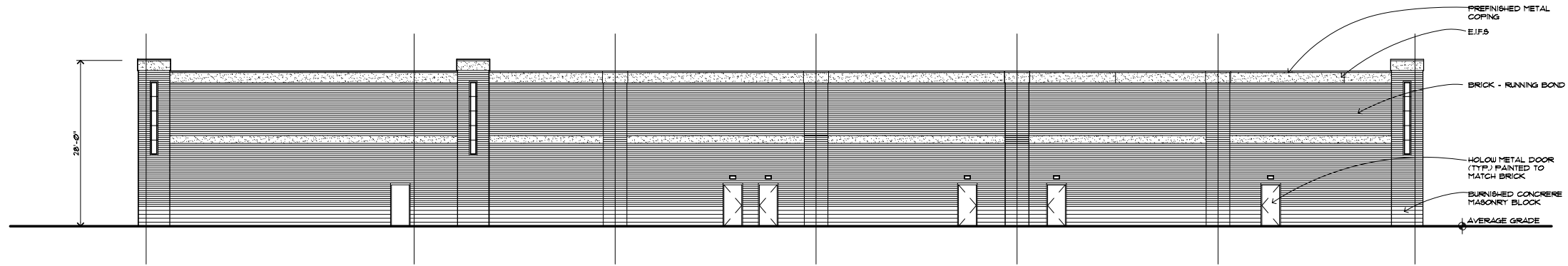
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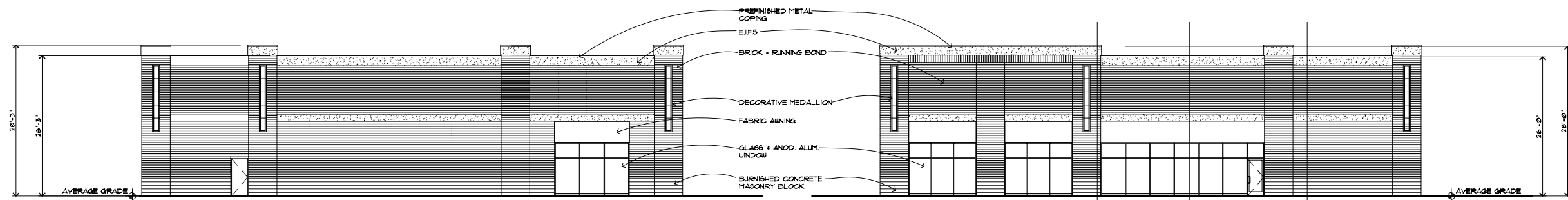
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project:

PROPOSED
Adams Marketplace
 RETAIL BUILDING 'A'
 ROCHESTER HILLS, MICHIGAN

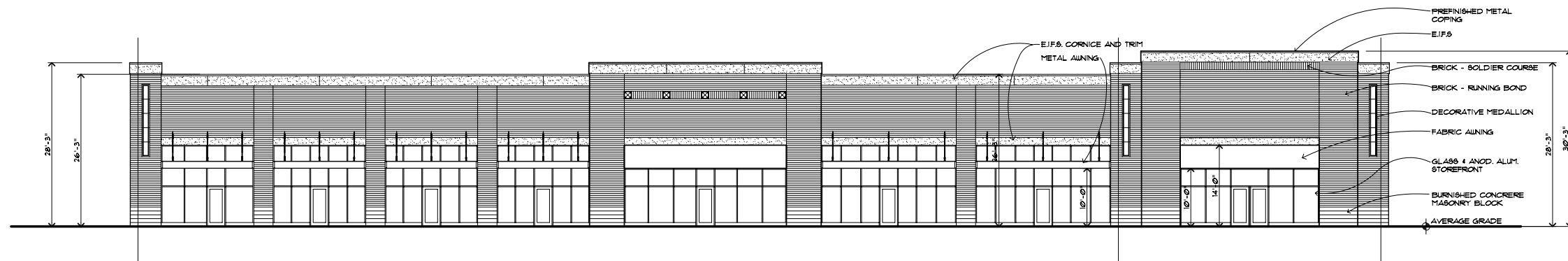


REAR (NORTH) ELEVATION



SIDE (WEST) ELEVATION

SIDE (EAST) ELEVATION



FRONT (SOUTH) ELEVATION

Exterior Materials				
Mark	Location	Mfg.	Color / Model	Size / Finish
METAL COPING	PARAPET	PAC-CLAD	SIERRA TAN	
BRICK	ALL ELEVATIONS	GRAND BLANC CEMENT	SED. BLEND	4" x 4" x 16" (NOM.)
MASONRY BLOCK BASE	ALL ELEVATIONS AT THE BASE	GRAND BLANC CEMENT	"FAUN"	8" x 8" x 16" (NOM.)
EIFS 1	CORNICE, GABLE TRIM	DRYVIT	#13 AMARILLO WHITE	SANDELAST FINISH
STOREFRONT GLASS	STOREFRONT	VIROCON INC.	--	1" INSULATED GLAZING
STOREFRONT FRAME	STOREFRONT	KAWNEER	CLEAR ANOD. ALUM.	
PAINT	H/M DOORS	SHERWIN WILLIAMS	#0001 "CORDOUS AMBER"	

GENERAL NOTES:

- 1) THE ALLOWABLE BUILDING HEIGHT AS STATED IN THE CONSENT JUDGEMENT IS 40 FEET PLUS UP TO 5 FEET FOR PARAPET.
- 2) ALL ROOFTOP UNIT SHALL BE SCREENED BY THE BUILDING PARAPET WALLS.
- 3) ALL GROUND SIGNS AND BUILDING MOUNTED SIGNS SHALL BE IN CONFORMANCE WITH THE CITY OF ROCHESTER HILLS REQUIREMENTS AND ARE NOT A PART OF THE SITE PLAN APPROVAL. SEPARATE SIGN PERMIT WILL BE OBTAINED FROM THE BUILDING DEPARTMENT.
- 4) THE DIMENSIONED HEIGHT OF EACH BUILDING IS IN ACCORDANCE WITH THE DEFINITIONS OF "BUILDING HEIGHT" AND "AVERAGE GRADE" CONTAINED WITHIN THE ROCHESTER HILLS ZONING ORDINANCE.
- 5) BRICK IS 4"x16" AS MANUFACTURED BY GRAND BLANC CEMENT COMPANY.

BUILDING ELEVATIONS

SCALE: 3/32"=1'-0"

drawing:

**FLOOR PLAN
 PHASE I**

DO NOT SCALE DRAWING

Issue date: 11 JULY 06
 drawn: S.V.
 checked: M.D.
 approved: M.D.

file number: 02053

sheet:
 CITY FILE NO. 05-0905 SEC. 30

SP-4.2
 02053 FLPLAN-ELEV 06-1020

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