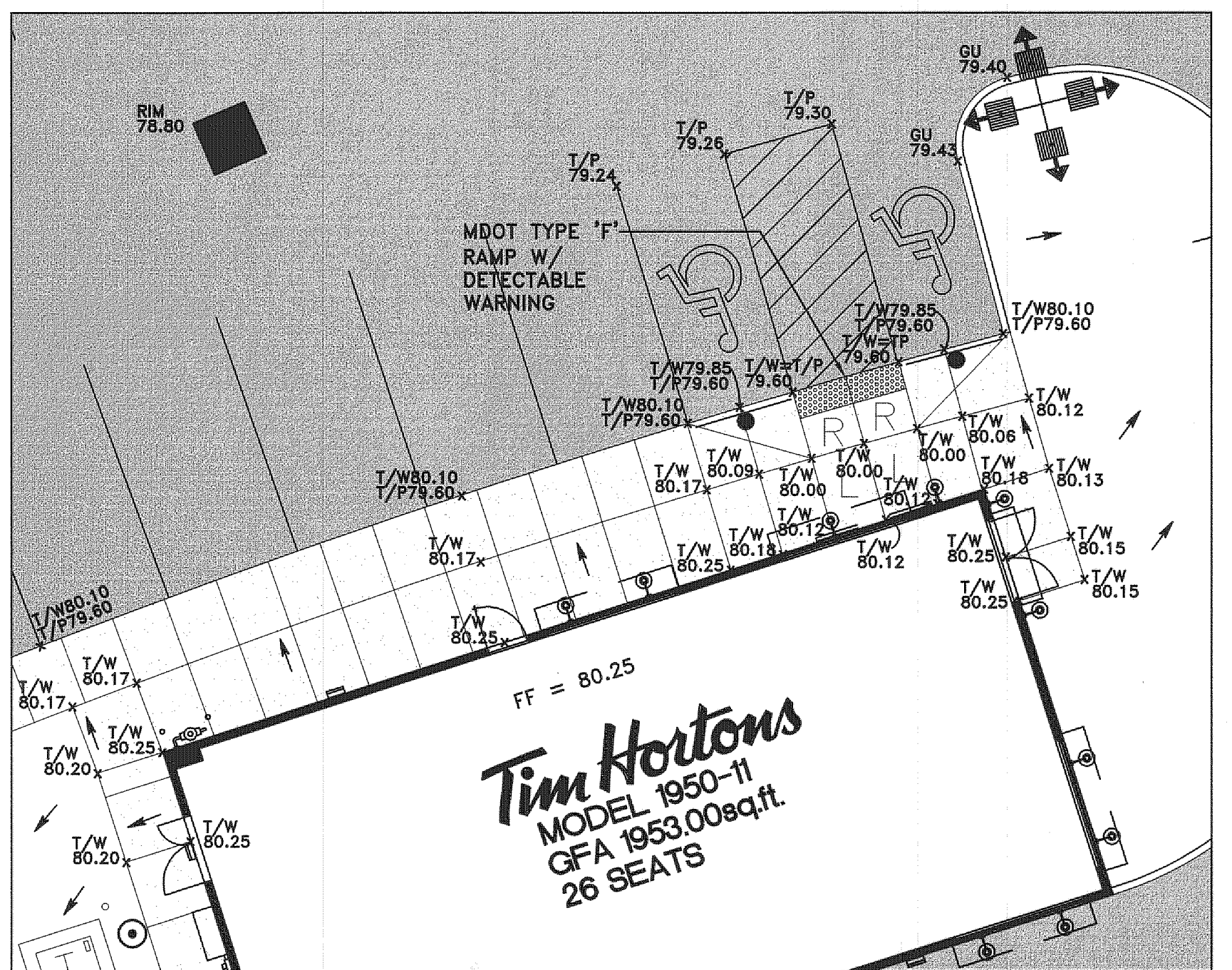


- BENCH MARKS**
- 1) ARROW ON EASTERLY HYDRANT ADJACENT TO SITE ON SOUTH SIDE OF ADAMS ROAD. ELEV. 878.27
 - 2) ARROW ON WESTERLY HYDRANT ADJACENT TO SITE ON SOUTH SIDE OF ADAMS ROAD. ELEV. 881.60
- DATUM: NAVD 29
- NOTE: BENCHMARKS ESTABLISHED FROM BENCHLOOP OF 1990 BY ZWA TAKEN FROM FEMA BENCHMARKS.



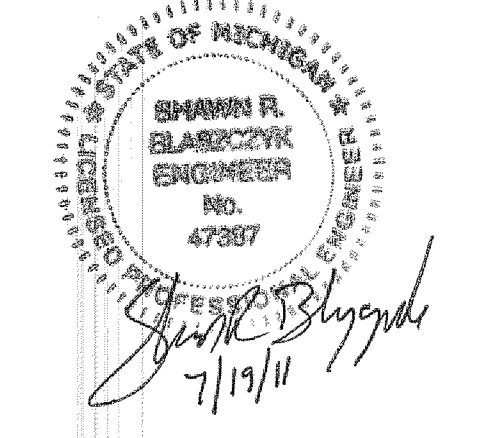
BARRIER FREE ACCESS GRADING
SCALE: 1"=10'

NOTES:

1. EXISTING TOPOGRAPHY SHOWN AS PROVIDED BY AIR-LAND SURVEYS AERIAL TOPOGRAPHY AND SUPPLEMENTED AS SURVEYED BY ZWA.
2. SEED AND MULCH ALL AREAS DISTURBED DUE TO GRADING. PEAT, OR ANY OTHER UNSUITABLE 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.
3. ALL WORK WITHIN THE CONSTRUCTION LIMITS SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY.
4. ALL PROPOSED GRADES SHOWN IN PAVED AREAS ARE TOP OF PAVEMENT (T/P) UNLESS SPECIFIED OTHERWISE.
5. ADD 800.00 TO PROPOSED GRADES TO OBTAIN SITE DATUM ELEVATION.

LEGEND:

EXISTING	PROPOSED
○ MANHOLE	● MANHOLE
□ CATCH BASIN	■ CATCH BASIN
⊕ INLET	⊕ INLET
⊙ CLEANOUT	⊙ CLEANOUT
⊔ END SECTION	⊔ END SECTION
◇ ROOF DRAIN	◇ ROOF DRAIN
⊕ GATE VALVE	⊕ GATE VALVE
⊕ HYDRANT	⊕ HYDRANT
⊕ WATER SHUT-OFF	⊕ WATER SHUT-OFF
⊕ UTILITY POLE	⊕ TREE REMOVAL
⊕ GUY ANCHOR	⊕ SANITARY SEWER
⊕ LIGHT POLE	⊕ STORM SEWER
⊕ SIGN	⊕ WATER MAIN
⊕ TREE	⊕ RETAINING WALL
⊕ TREE LINE	⊕ CONTOUR MAJOR
⊕ SANITARY SEWER	⊕ CONTOUR MINOR
⊕ STORM SEWER	⊕ PROPOSED GRADE
⊕ WATER MAIN	⊕ 99.0
⊕ GAS MAIN	R = RAMP
⊕ ELECTRIC CABLE	L = LANDING
⊕ CONTOUR MAJOR	T/C = TOP OF CURB
⊕ CONTOUR MINOR	GU = GUTTER
⊕ SPOT ELEVATION	T/W = TOP OF WALK
	T/P = TOP OF PAVEMENT
	G = GROUND
	TWL = TOP OF WALL
	BWL = BOTTOM OF WALL
	FG = FINISH GRADE
	FF = FINISH FLOOR



NOT FOR CONSTRUCTION
CITY FILE NO. 11-002

H:\Projects\11065\dwg\11065.dwg, GRADING SP. 7/19/11 10:17:03 AM, SBBlaszczk

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY REVIEW	7/19/11	SRB									

ZEMET WOZNAK & ASSOCIATES
Civil Engineers & Land Surveyors
5580 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48165
P: (248) 437-3099 F: (248) 437-3222 www.zemetwozniak.com

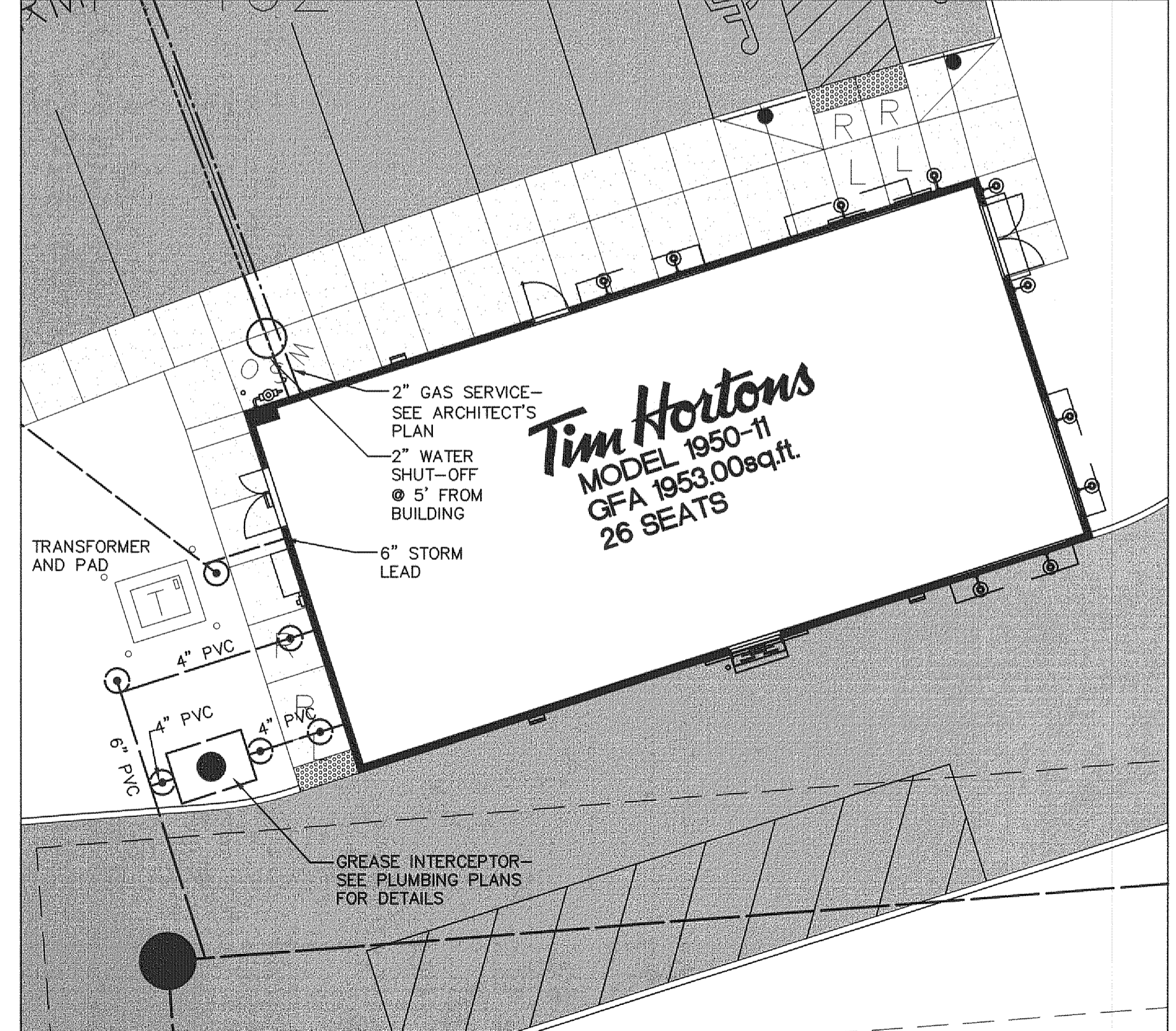
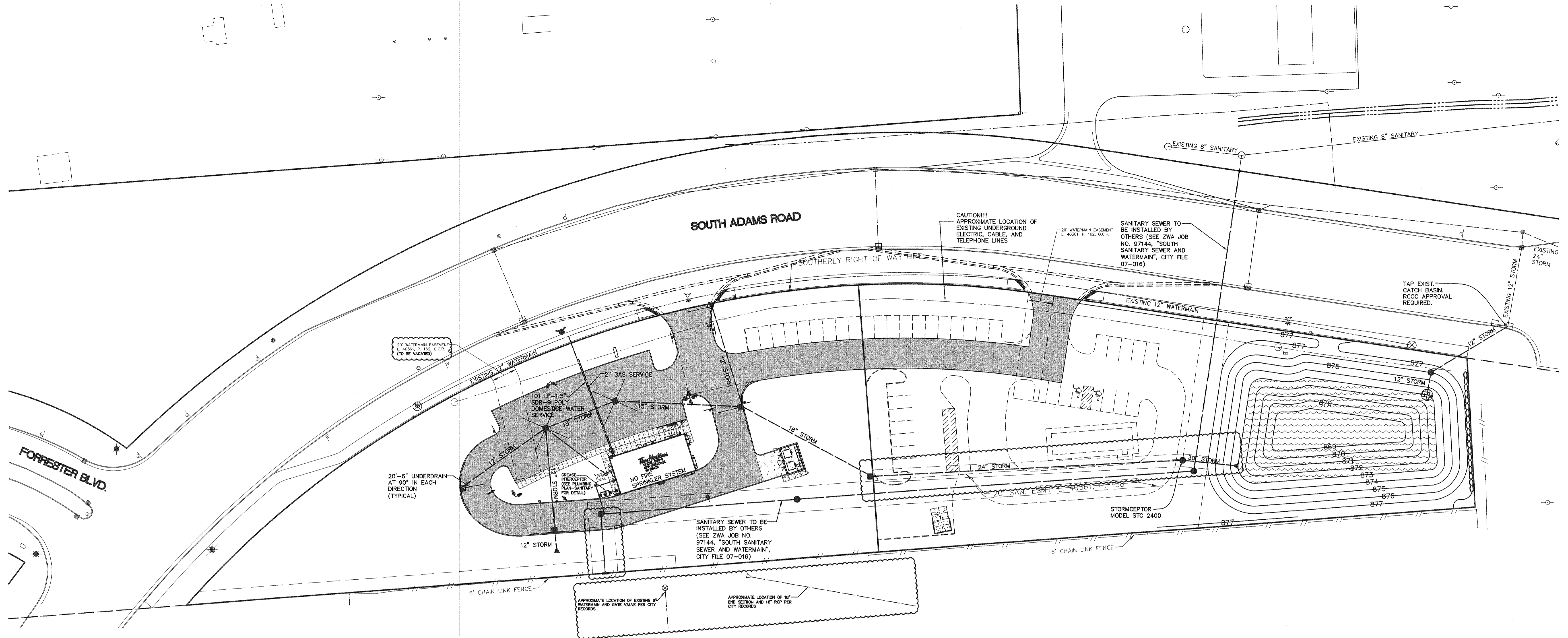
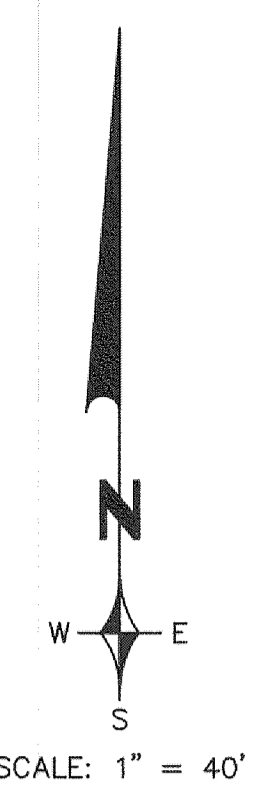
MISS DIG SYSTEM, INC.
1-800-482-7171

PROJECT SPONSOR:
TIM HORTON'S USA, INC.
565 EAST GRAND RIVER, SUITE 101
BRIGHTON, MI 48116 (810) 844-2747

GRADING PLAN
TIM HORTON'S
ROCHESTER HILLS, MICHIGAN

DATE	4/25/11	SCALE	HOR: 1" = 40'
DESIGNED BY	SRB	JOB NO.	11108
DRAWN BY	SRB	SHEET	SP-2

© COPYRIGHT 2011



ON-SITE SANITARY SEWER BASIS OF DESIGN

A. CONTRIBUTION TO STUB AT EXISTING MANHOLE:

BLDG. DESIGNATION	BLDG. USE	AREA (SF)	SEATS	UNIT FACTOR	UNITS
Tim Hortons	Restaurant	1953	26	0.13/seat	3.38
Future	Restaurant	1245	22	0.13/seat	2.86
No. of people = 3.5ppu x 6.24 units = 21.84 people					6.24

Average daily flow = $\frac{100 \text{ people} \times 21.84 \text{ people}}{7.5 \times 24 \times 3600} = 0.003 \text{ cfs}$

Peak daily flow = $4 \times 0.003 = 0.012 \text{ cfs}$

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

See Overall Sanitary Sewer Basis of Design and sketch on Sheet SP-6.

FIRE DEPARTMENT NOTES:

- FOR COMMERCIAL BUILDINGS OVER 30-FFEET HIGH OR 3 STORIES REQUIRE TWO OR MORE SEPARATE FIRE ACCESS ROADS AT LEAST 26-FFEET WIDE. AT LEAST ONE ROAD SHALL BE WITHIN A MINIMUM 15-FFEET AND A MAXIMUM 30-FFEET FROM THE BUILDING AND SHALL BE POSITIONED PARALLEL TO ONE ENTIRE SIDE OF THE BUILDING.
- FIRE LANES SHALL BE CONSPICUOUSLY POSTED ON BOTH SIDES OF THE FIRE LANE. WITH FIRE LANE SIGNS SPACED NOT MORE THAN 100 FEET APART, FIRE LANE SIGNS SHALL READ "NO STOPPING, STANDING, PARKING, FIRE LANE", AND IN CONFORMANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
- A 3-FOOT CLEAR SPACE SHALL BE MAINTAINED AROUND FIRE HYDRANTS.
- FIRE DEPARTMENT CONNECTIONS, WHEN REQUIRED, SHALL BE LOCATED VISIBLY ON THE STREET FRONT OF THE BUILDING, WITHIN 50-FFEET OF AN APPROVED FIRE DEPARTMENT ACCESS ROAD AND A FIRE HYDRANT SHALL BE LOCATED WITHIN 100-FFEET OF THE F.D.C.
- FIRE DEPARTMENT CONNECTIONS SHALL NOT BE OBSCURED OR OBSTRUCTED BY LANDSCAPING, PARKING OR BY ANY OTHER PERMANENT OR TEMPORARY MATERIALS OR DEVICE.
- CONSTRUCTION SHALL BE SAFEGUARDED IN ACCORDANCE WITH IFC CHAPTER 14.
- 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 PREPARATION OF MORTAR SHALL BE WITHIN CITY OF ROCHESTER HILLS BURN PERMIT GUIDELINES. CONTACT ROCHESTER HILLS FIRE DEPARTMENT FOR PERMIT INFORMATION.
- A "KNOX" KEY SYSTEM MAY BE REQUIRED IN A LOCATION APPROVED BY THE FIRE CODE OFFICIAL. ORDERING INFORMATION IS AVAILABLE FROM THE FIRE DEPARTMENT.

HYDRANT REQUIREMENTS:

- BUILDING CONSTRUCTION— TYPE V-B
 - BUILDING AREA— 1953 SF
 - REQUIRED FIRE FLOW— 1200 GPM
 - REQUIRED HYDRANTS— 1 WITH 500' AVERAGE SPACING
- * REQUIRED FIRE FLOW AND HYDRANTS TAKEN FROM TABLES B105.1 AND C105.1 IN THE CITY OF ROCHESTER HILLS ENGINEERING DESIGN STANDARDS.

WATERMAIN BASIS OF DESIGN

INITIAL SERVICE CONNECTIONS-	0
TOTAL SERVICE CONNECTIONS-	10.5 (NUMBER OF PEOPLE)
INITIAL DESIGN AVERAGE DAY FLOW-	0 MGD
INITIAL MAXIMUM DAY FLOW-	0 MGD
TOTAL DESIGN AVERAGE DAY FLOW-	$10.5 \times 1201,000,000 = 0.001 \text{ MGD}$
TOTAL MAXIMUM DAY FLOW-	$3 \times 0.001 = 0.003 \text{ MGD}$

SANITARY SEWER NOTES:

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

WATERMAIN NOTES:

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

STORM SEWER NOTES:

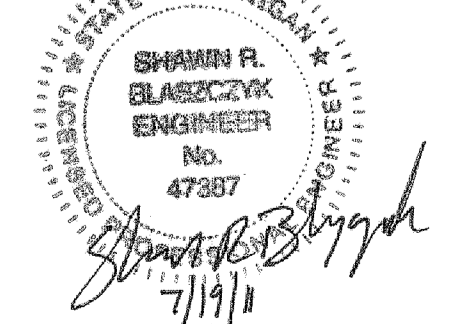
- PROPOSED STRUCTURE COVERS/GRATES SHALL BE PROVIDED AS REQUIRED ON THE CITY OF ROCHESTER HILLS STANDARD DETAIL SHEETS.
- EDGE DRAIN TO BE 20" IN EACH DIRECTION AT 90° ANGLES FROM INLET STRUCTURES LOCATED IN PAVED AREAS.
- STRUCTURAL CALCULATIONS AND SHOP DRAWINGS, SIGNED AND SEALED BY A PROFESSIONAL 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.
- PROPOSED ROOF DRAINS SHALL BE SCHEDULE 40 PVC PIPE WITH CHEMICALLY WELDED JOINTS.
- PROPOSED STORM SEWER PIPE SHALL BE REINFORCED CONCRETE CLASS IV WITH RUBBER GASKETS AND CLASS B BEDDING.

UTILITY LEGEND:

EXISTING	PROPOSED
○ MANHOLE	● MANHOLE
□ CATCH BASIN	■ CATCH BASIN
⊠ INLET	⊠ INLET
⊙ CLEANOUT	⊙ CLEANOUT
⊔ END SECTION	⊔ END SECTION
⊕ ROOF DRAIN	⊕ ROOF DRAIN
⊖ 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
— TREE LINE	— TREE LINE
— SANITARY SEWER	— SANITARY SEWER
— STORM SEWER	— STORM SEWER
— WATER MAIN	— WATER MAIN
— GAS MAIN	— GAS MAIN
— ELECTRIC CABLE	— ELECTRIC CABLE
— DITCH	— DITCH

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 ON 1 SLOPE OF EXISTING OR PROPOSED PAVEMENT.
- ALL CONTRACTORS SHALL NAME ZEIMET-WOZNIAK & ASSOCIATES AS ADDITIONALLY INSURED ON ALL INSURANCE POLICIES.



NOT FOR CONSTRUCTION
CITY FILE NO. 11-002

REVISIONS	DATE	BY	REVISIONS	DATE	BY	REVISIONS	DATE	BY
PER CITY REVIEW	7/19/11	SRB						

ZEIMET WOZNIAK & ASSOCIATES
Civil Engineers & Land Surveyors
5580 GRAND RIVER AVE., SUITE 100
NEW HUDSON, MICHIGAN 48166
P: (248) 437-5099 F: (248) 437-5222 www.zeimetwozniak.com

MISS DIG SYSTEM, INC.
1-800-882-7171
THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM

PROJECT SPONSOR:
TIM HORTON'S USA, INC.
565 EAST GRAND RIVER, SUITE 101
BRIGHTON, MI 48116 (810) 844-2747

UTILITY PLAN
TIM HORTON'S
ROCHESTER HILLS, MICHIGAN

DATE	4/25/11	SCALE	HOR: 1" = 40' VER: 1" = N/A
DESIGNED BY	SRB	JOB NO.	11108
DRAWN BY	SRB	SHEET	SP-3

H:\Projects\11108\dwg\11108_site_plan.dwg, UTILITY SP, 7/19/2011 10:17:08 AM, SBlaszczk

© COPYRIGHT 2007