EXISTING BANK BUILDING RENOVATION

6983 EAST MICHIGAN AVENUE, SALINE, MI 48176

SITE PLAN APPROVAL PACKAGE

PREPARED FOR

SALINE DEVELOPMENT GROUP LLC

SCALE IN FEET

500 250 0 500 1000

DRAWING SCALE: 1"=500'

OWNER

SALINE DEVELOPMENT GROUP LLC
4135 ATWOOD RD.
BRIDGEPORT, MI 48722

ENGINEER

KALABAT ENGINEERING
31333 SOUTHFIELD RD. SUITE 250
BEVERLY HILLS, MI 48025
IDEN KALABAT
IDEN@KALABAT.COM
248-600-8707

ARCHITECT

JSK DESIGN GROUP
31333 SOUTHFIELD RD. SUITE 250
BEVERLY HILLS, MI 48025
NATHAN KURMAS, RA
NATHAN@KALABAT.COM
248-600-8707

LEGAL DESCRIPTION

COMMENCING AT THE SOUTHWEST CORNER OF SECTION 28, T3S, R6E, PITTSFIELD TOWNSHIP,WASHTENAW COUNTY, MICHIGAN, THENCE N23°13'45" 341.05 FEET TO A POINT ON THE SOUTHERLYRIGHT-OF-WAY LINE OF MICHIGAN AVENUE, THENCE ALONG SAID RIGHT-OF-WAY LINE EASTERLY84.17 FEET ALONG THE ARC OF A 46778.21 FOOT RADIUS CIRCULAR CURVE TO THE RIGHT, THROUGHA CENTRAL LINE ANGLE OF 00°06'11', HAVING A CHORD WHICH BEARS N60°08'09"E 146.74 FEETCONTINUING ALONG SAID RIGHT-OF-WAY LINE, THENCE S24°19'55"E 476.41 FEET TO A POINT ONTHE SOUTH LINE OF SAID SECTION, THENCE N88°46'00"W 262.05 FEET ALONG SAID SOUTH LINE TO
THE POINT OF BEGINNING BEING A PART OF THE WEST 1/2 OF SOUTHWEST 1/4 OF SECTION 28, T3S,R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN AND CONTAINING 2.19 ACRES OF LAND,MORE OR LESS BEING SUBJECT TO EASEMENT RESTRICTIONS OF RECORD IF ANY

SHEET INDEX

SHEET NO.	SHEET TITLE
C0.0	TITLESHEET
C1.0	SITE PLAN
C2.0	FLOOR PLAN
C3.0	NORTH & SOUTH ELEVATIONS
C3.1	EAST & WEST ELEVATIONS
C 1-20 & A 16-20	STANDARD FEDERAL BANK RECORD DRAWINGS SET C.S.P.A. #03-26

CSPA 19-10 Bank Building Renovation

rec: 2019-06-17

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KALABAT ENGINEERING
CIVIL ENGINEERING & SITE DEVELOPMENT
31333 Southfield Road Suite 250
Beverly Hills, MI 48025
Ph 248.600.8707
F 248.594.5919
iden@kalabat.com

SEAL:

STATE OF MICHIGAN · IDEN KALABAT ENGINEER No. 6201062804 · LICENSED PROFESSIONAL ENGINEER

PROJECT NUMBER: CD18-210

DRAWN BY: C.GUNASEKARA

CHECKED BY: I. KALABAT

NO.	REVISION	DATE	NO.	REVISION	DATE
1	SITE PLAN APPROVAL	05-15-19	10		
2	SPA REVISIONS	06-14-19	11		
3			12		
4			13		
5			14		
6			15		
7			16		
8			17		
9			18		

CLIENT: SALINE DEVELOPMENT GROUP LLC
4135 ATWOOD RD
BRIDGEPORT, MI 48722

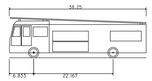
PROJECT: EXISTING BUILDING RENOVATION
6983 E MICHIGAN AVE
SALINE, MI 48176

SHEET TITLE: TITLESHEET

SHEET NUMBER: C0.0

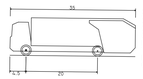
Z:\1a-DESIGN\1-Commercial\CD18-210_Denha - E Michigan - Saline\Site Plans\CD18-210_TITLESHEET.dwg - Last printed 6/14/2019 4:05 PM

VEHICLE TURNING MOVEMENT



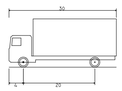
E-ONE COMBINATION UNIT

OVERALL LENGTH	38.250FT
OVERALL WIDTH	8.333FT
OVERALL BODY HEIGHT	11.250FT
MIN BODY GROUND CLEARANCE	1.592FT
TRACK WIDTH	8.333FT
LOCK-TO-LOCK TIME	6.00S
MAX WHEEL ANGLE	45.00°



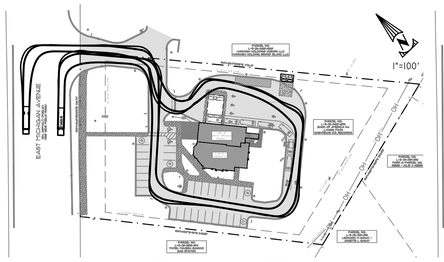
GARBAGE TRUCK

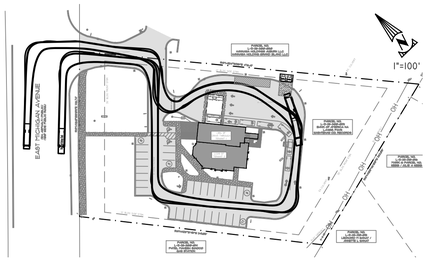
OVERALL LENGTH	35.000FT
OVERALL WIDTH	8.375FT
OVERALL BODY HEIGHT	10.546FT
MIN BODY GROUND CLEARANCE	1.000FT
TRACK WIDTH	8.375FT
LOCK-TO-LOCK TIME	6.00S
CURB TO CURB TURNING RADIUS	29.300FT

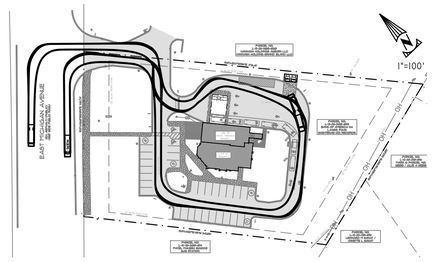


SU-30 - SINGLE UNIT TRUCK

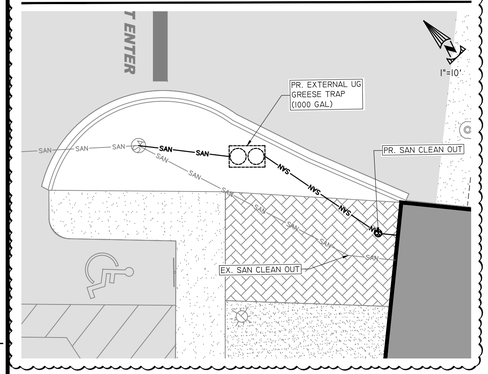
OVERALL LENGTH	30.000FT
OVERALL WIDTH	8.000FT
OVERALL BODY HEIGHT	13.500FT
MIN BODY GROUND CLEARANCE	1.367FT
TRACK WIDTH	8.000FT
LOCK-TO-LOCK TIME	5.00S
MAX STEERING ANGLE (VIRTUAL)	31.80°







PR. UG GREESE TRAP



SITE DATA

PARCEL ID : L-12-28-300-029
ZONE: C-2 (REGIONAL COMMERCIAL)
LAND AREA : 2.19 ACRES

BUILDING AREA:

DRIVE-THR. TENANT 1	1,884 SF
TENANT 2	2,519 SF
TOTAL	4,403 SF
BUILDING HEIGHT :	20'-4"
PR. PATIO AREA :	514 SF

PARKING REQUIREMENT:

RESTAURANT	
DRIVE-THRU WINDOW	= 10 SPACES
FAST FOOD RESTAURANT	
(1 PER 70 NET (562.75/70))	= 8 SPACES
TENANTS	
(1 PER 250 GROSS (2,519/250))	= 10 SPACES
PARKING REQUIRED:	28 SPACES
PARKING PROVIDED:	33 SPACES

GROSS LOT COVERAGE/
FLOOR AREA RATIO: 4,389/95,396
4.60%

REVISED WEIGHTED C FACTOR

TOTAL DRAINAGE AREA				
Land cover	C	Area	C x Area	Unit
Building	0.95	4,389.00	4169.55	
Pavement	0.95	41,353.00	39285.35	
Water	1.00	-	0.00	
Grass	0.35	49,654.00	17378.90	
		∑ (C x Area)	60833.80	
		∑ (Area)	95396.00	ft²
		Weighted run-off co-efficient (C)	0.6377	
		Total area (A)	2.190	acres

WEIGHTED C FACTOR PRIOR TO ADDITIONS = 0.6307

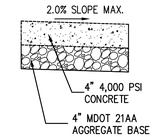
REVISED WEIGHTED C FACTOR = 0.6377

INCREASE IN C FACTOR = 0.6377 - 0.6307
= 0.007

INCREASE IN C FACTOR IS LESS THAN 0.01, THEREFORE, THE IMPACT ON THE EXISTING STORMWATER SYSTEM IS NEGLIGEABLE

LEGEND

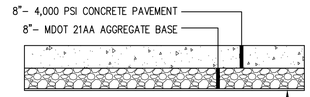
EX. CONC. SIDEWALK
EX. ASPHALT
PR. 8" CONCRETE
PR. 4" CONCRETE
PR. PAVEMENT STRIPING
EX. FIRE HYDRANT
EX. GATE VALVE
EX. SIGN
EX. CULVERT
EX. UT POLE
EX. LIGHTPOLE
EX. FLAG POLE
EX. BOLLARD
EX. CATCH BASIN
EX. WATER MANHOLE
EX. SANITARY MANHOLE
EX. GUY WIRE
EX. OH WIRE
PR. 18" CURB & GUTTER
BLDG SETBACKS
PROPERTY LINE



AGGREGATE BASE SHALL BE COMPACTED TO 95% MAXIMUM DENSITY IN ACCORDANCE WITH ASTM D-1557. CONTROL JOINTING SHALL BE IN ACCORDANCE WITH PLANS. EXPANSION JOINTS SHALL BE ½" THICK EXPANSION PAPER EXCEPT WHEN SPECIFIED AS 1" THICK AND SHALL BE SPACED NO GREATER THAN 50'.

TYPICAL SIDEWALK SECTION

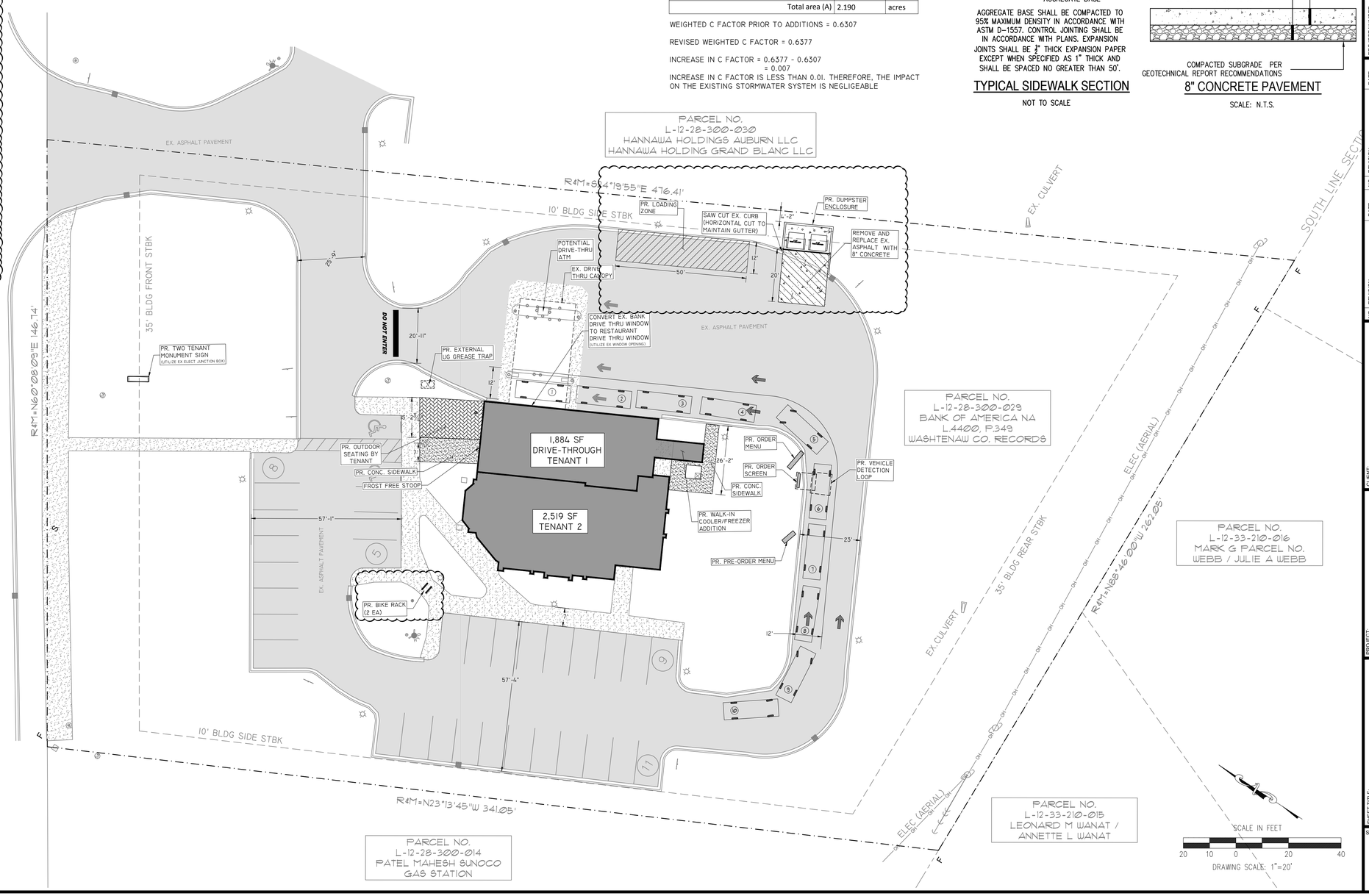
NOT TO SCALE

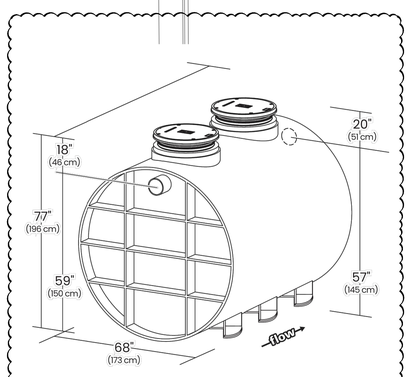


COMPACTED SUBGRADE PER GEOTECHNICAL REPORT RECOMMENDATIONS

8" CONCRETE PAVEMENT

SCALE: N.T.S.





GREASE INTERCEPTOR DETAIL

NOT TO SCALE

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KALABAT ENGINEERING
CIVIL ENGINEERING & SITE DEVELOPMENT
31333 Southfield Road Suite 250
Beverly Hills, MI 48025
Ph 248.600.8707
F 248.594.5919
iden@kalabat.com

SEAL: STATE OF MICHIGAN IDEN KALABAT ENGINEER No. 6201062804 LICENSED PROFESSIONAL ENGINEER

PROJECT NUMBER: CD18-210
DRAWN BY: C.GUNASEKARA
CHECKED BY: I. KALABAT

NO.	REVISION	DATE
1	SITE PLAN APPROVAL	05-15-19
2	SPA REVISIONS	06-14-19
3		
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16		
17		
18		

CLIENT: SALINE DEVELOPMENT GROUP LLC
4135 ATWOOD RD
BRIDGEPORT, MI 48722

PROJECT: EXISTING BUILDING RENOVATION
6983 E MICHIGAN AVE
SALINE, MI 48176

SHEET TITLE: REVISED SITE PLAN

SHEET NUMBER: C1.0

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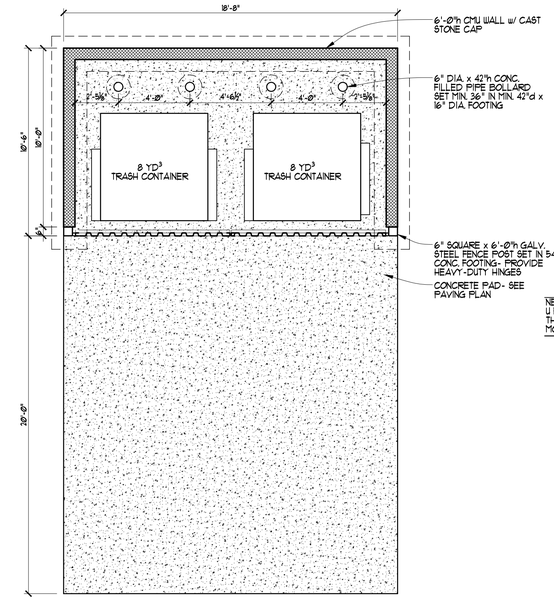
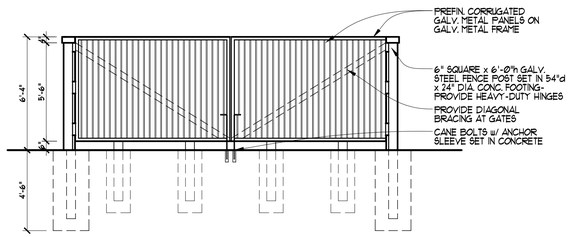


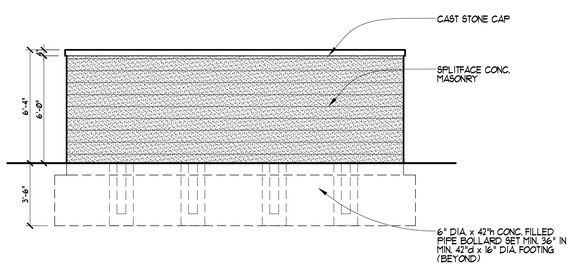
NEW GREASE INTERCEPTOR ON EXIST. 6" SEWER LINE BY TENANT

NEW GLAZING SHALL HAVE A U FACTOR NOT GREATER THAN .38, AND SHGC OF NOT MORE THAN .38

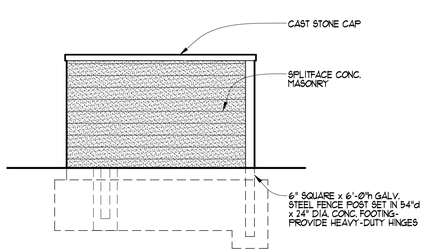
6/8 C-3.0 REFUSE ENCLOSURE PLAN
SCALE : 1/4" = 1'-0"



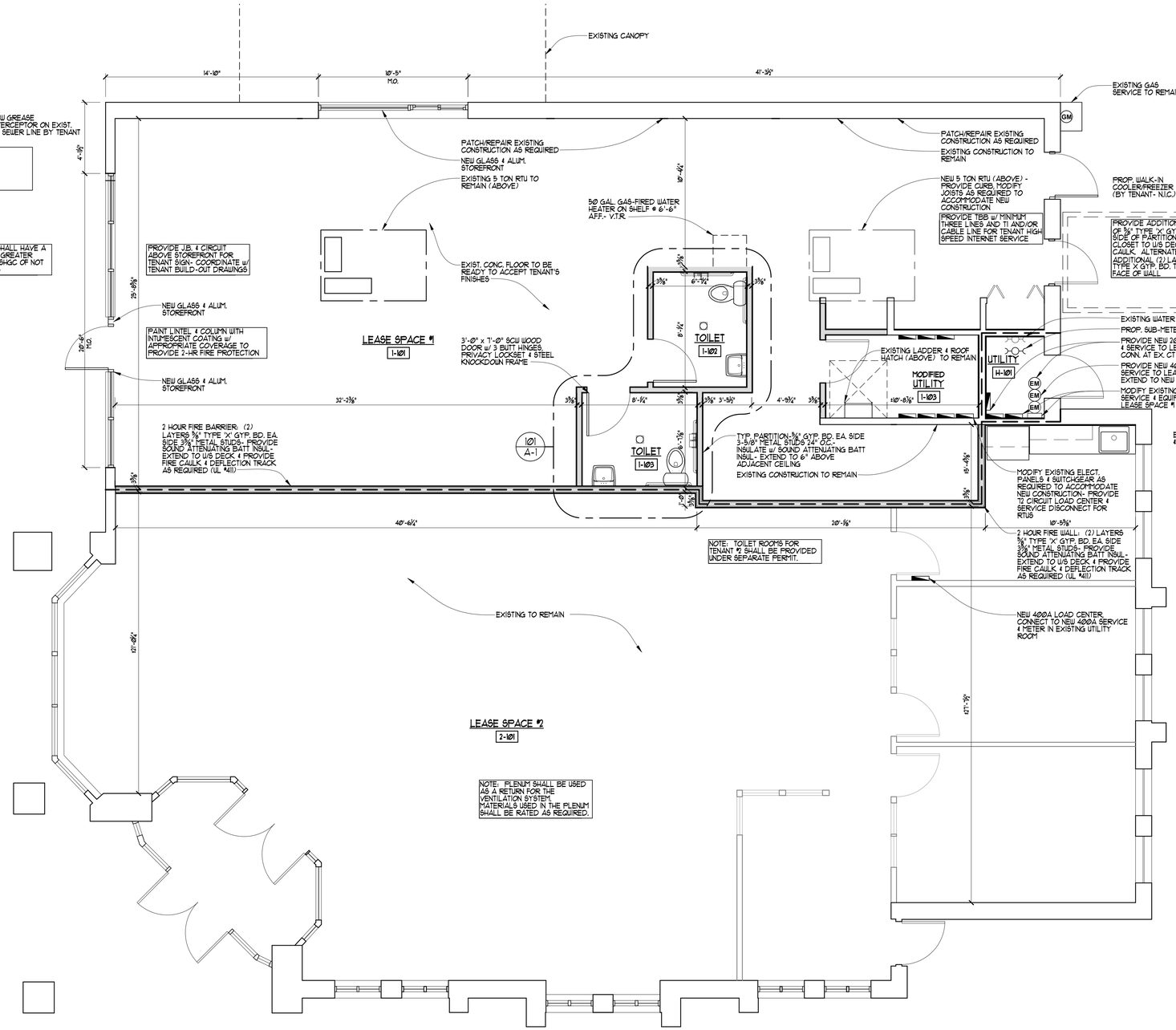
6/7 C-3.0 REFUSE ENCLOSURE ELEVATION
SCALE : 1/4" = 1'-0"



6/6 C-3.0 REFUSE ENCLOSURE ELEVATION
SCALE : 1/4" = 1'-0"



6/5 C-3.0 REFUSE ENCLOSURE ELEVATION
SCALE : 1/4" = 1'-0"



N FLOOR PLAN
SCALE : 1/4" = 1'-0"

LEASE SPACE 1-	1,756 S.F.
LEASE SPACE 2-	2,520 S.F.
UTILITY CLOSET-	54 S.F.
TOTAL AREA:	4,310 S.F.

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JSK Design Group
ARCHITECTURAL ENGINEERING
31333 Southfield Road
Suite 250
Beverly Hills, MI 48025
Ph 248.600.8707
F 248.594.5919

CONSULTANTS:

PROJECT:
EXISTING BANK BUILDING RENOVATION
6983 EAST MICHIGAN AVE.
SALINE, MI 48176-8918

CLIENT:
SALINE DEVELOPMENT GROUP LLC
4135 ATWOOD ROAD
BRIDGEPORT, MI 48722

NO.	DESCRIPTION	DATE
	SPA REVISIONS	6-14-19
	SITE PLAN APPROVAL	5-15-19

SEAL:
STATE OF MICHIGAN
IDEN KALABAT
ENGINEER
No. 6201062804
LICENSED PROFESSIONAL ENGINEER

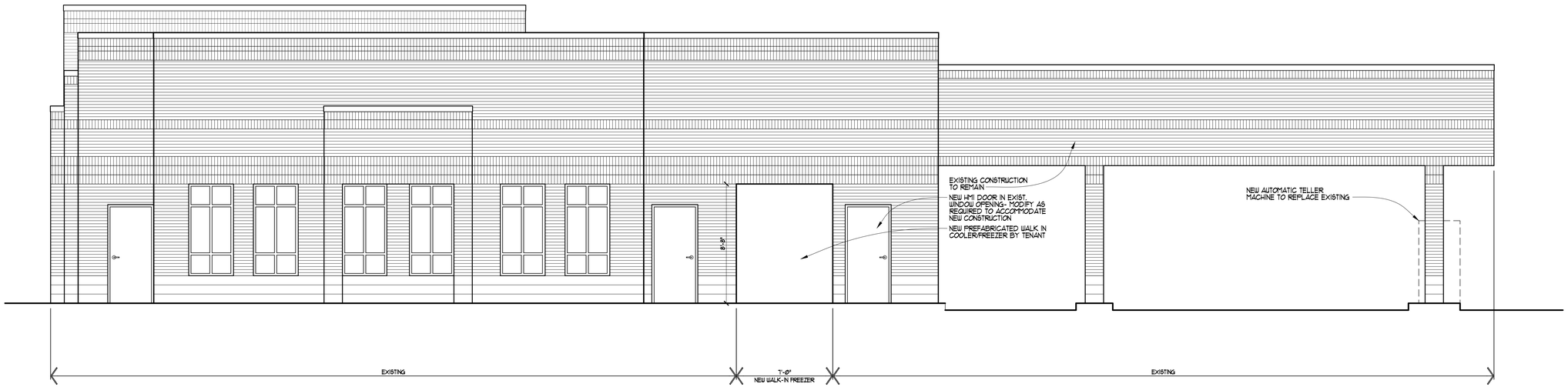
SHEET TITLE:
FLOOR PLAN

PROJECT NUMBER:
CD18-210

DRAWN BY:
NK

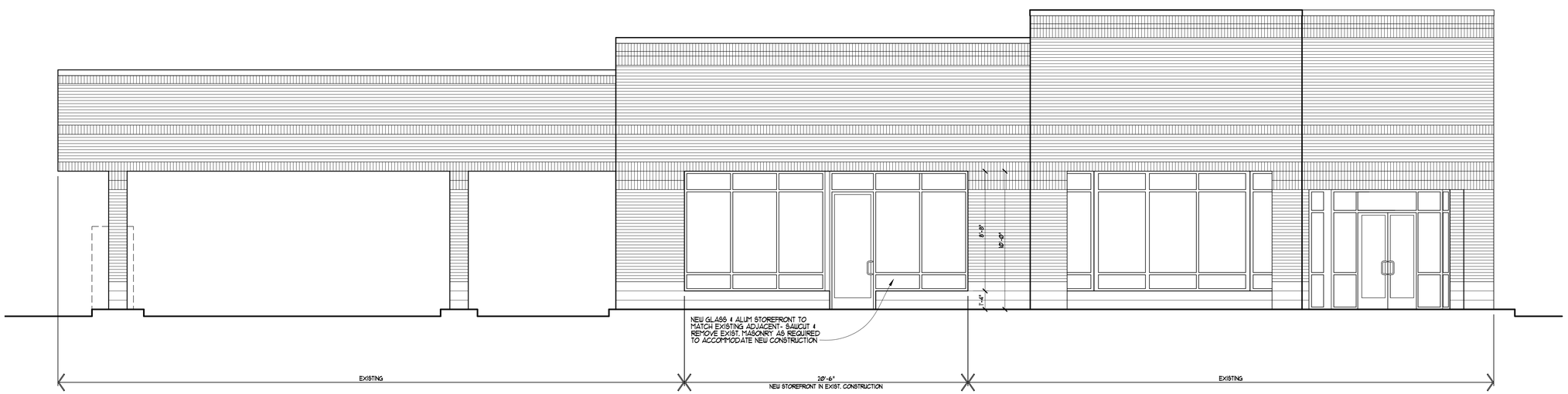
CHECKED BY:
NK

SHEET NUMBER:
C2.0



SOUTH ELEVATION

SCALE : 1/4" = 1'-0"



NORTH ELEVATION

SCALE : 1/4" = 1'-0"

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ARCHITECTURAL ENGINEERING

31333 Southfield Road
Suite 250
Beverly Hills, MI 48025
Ph 248.600.8707
F 248.594.5919

CONSULTANTS:

PROJECT:
EXISTING BANK BUILDING RENOVATION
6983 EAST MICHIGAN AVE.
SALINE, MI 48176-8918

CLIENT:
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4135 ATWOOD ROAD
BRIDGEPORT, MI 48722

NO.	DESCRIPTION	DATE
	SPA REVISIONS	6-14-19
	SITE PLAN APPROVAL	5-15-19

SEAL:
STATE OF MICHIGAN
IDEN KALABAT
ENGINEER
No. 6201062804
LICENSED PROFESSIONAL ENGINEER

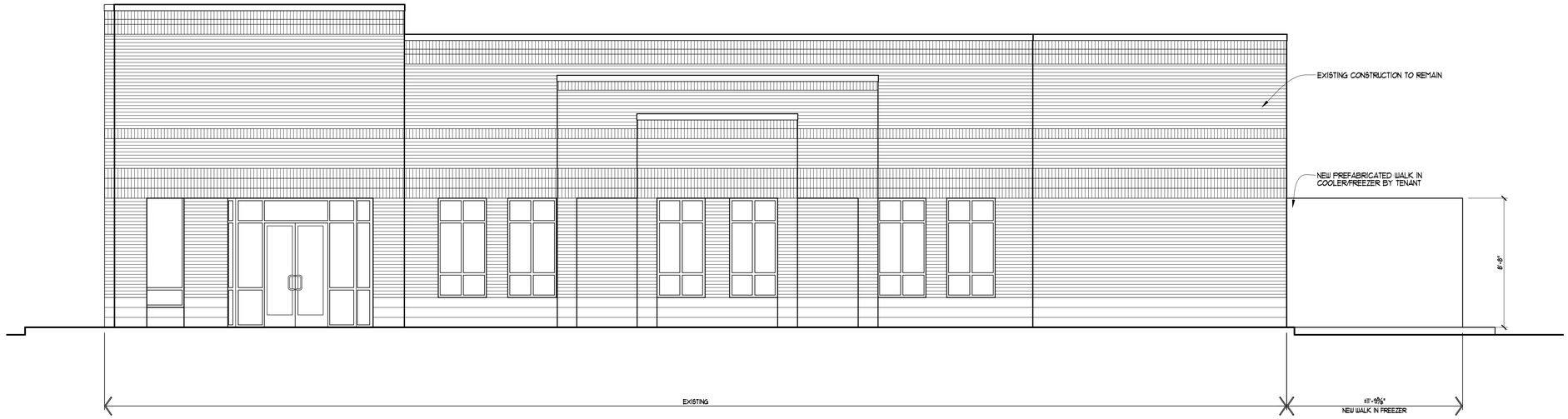
SHEET TITLE:
NORTH & SOUTH ELEVATIONS

PROJECT NUMBER:
CD18-210

DRAWN BY:
NK

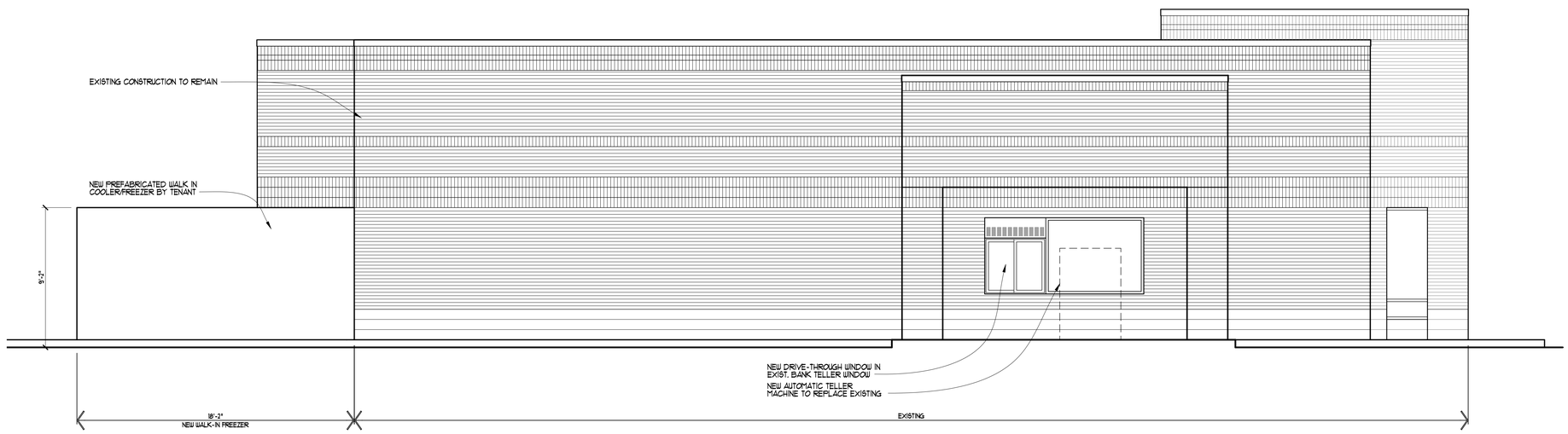
CHECKED BY:
NK

SHEET NUMBER:
C3.0



WEST ELEVATION

SCALE : 1/4" = 1'-0"



EAST ELEVATION

SCALE : 1/4" = 1'-0"

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SEAL:
STATE OF MICHIGAN
IDEN KALABAT
ENGINEER
No. 6201062804
LICENSED PROFESSIONAL ENGINEER

SHEET TITLE:
EAST & WEST ELEVATIONS

PROJECT NUMBER:
CD18-210

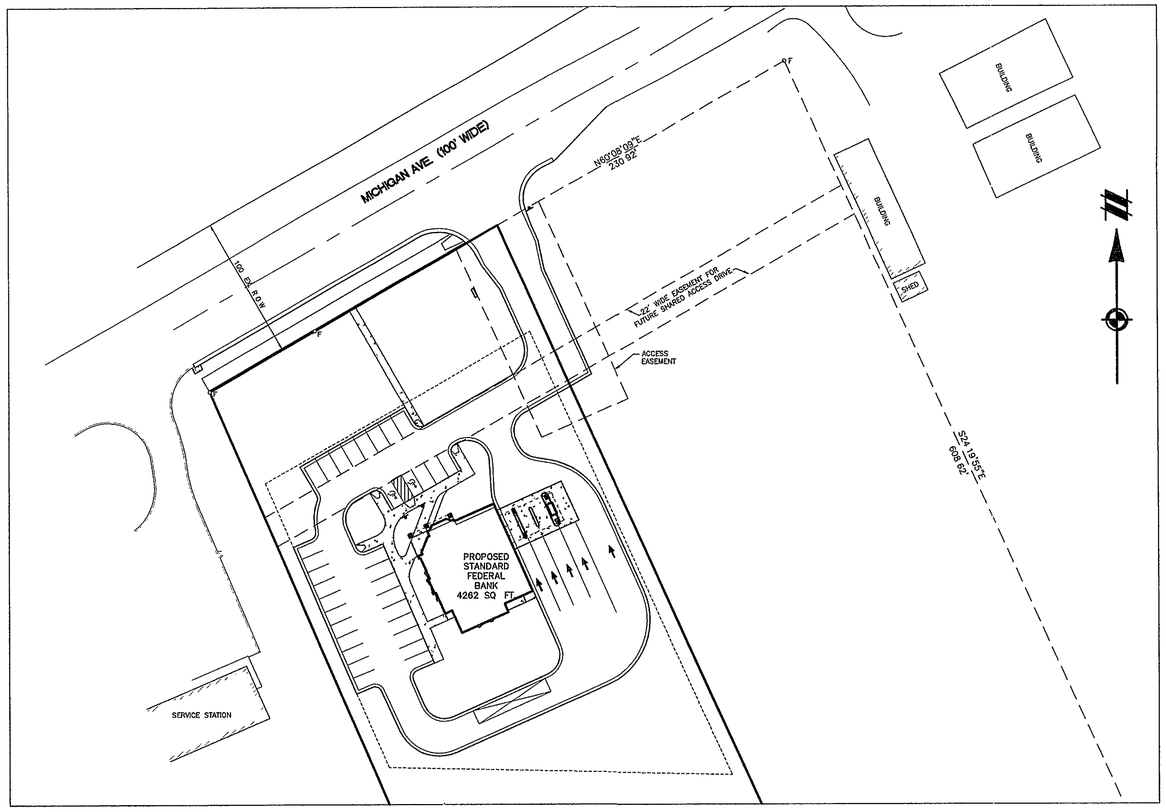
DRAWN BY:
NK

CHECKED BY:
NK

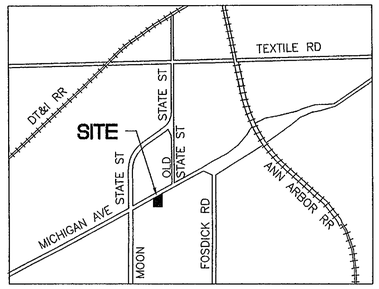
SHEET NUMBER:
C3.1

STANDARD FEDERAL BANK

RECORD DRAWING SET



OVERALL PLAN
SCALE 1" = 50'



VICINITY MAP
NO SCALE

SITE DATA

ZONE	C-2	
PROPOSED USE	BANK	
LEGAL DESCRIPTION	SEE SHEET 2	
LOT ACREAGE	NET/GROSS 2 19AC (95,398 SF)	
PROPOSED AREAS		
TOTAL FLOOR AREA	4,262 SF	
TOTAL GROUND FLOOR AREA	4,262 SF	
PAVEMENT (INCLUDES SIDEWALK)	40,364 SF	
	PERMITTED / REQUIRED	PROPOSED
LOT COVERAGE	25%	4 5%
FLOOR AREA RATIO	80%	4 5%
NET LOT COVERAGE (IMPERVIOUS/TOTAL)	60%	46 8%
NUMBER OF BUILDINGS		1
BUILDING HEIGHT	45'	18'
NUMBER OF FLOORS	3 STORIES	1 STORY
PARKING		
BANK 1/250 SF.	25	33 (Includes Barrier Free)
BARRIER FREE	2	2
YARDS		
FRONT	125'	125'
SIDE	10'	10'
REAR	35'	35'
REAR TRANSITION STRIP	15'	15'

GENERAL NOTES

1 ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH PITTSFIELD TOWNSHIP STANDARDS, SPECIFICATIONS AND REGULATIONS

2 STORM WATER SEDIMENTATION AND DETENTION WILL BE PROVIDED ON-SITE AND WITHIN THE ADJACENT PARCEL IN A COMBINED POND THAT WILL SERVE BOTH PARCELS THE STORMWATER WILL BE DIRECTED THROUGH UNDERGROUND STORM SEWERS INTO THE DETENTION POND THE POND WILL OUTLET ONTO THE PARCEL TO THE EAST AND ULTIMATELY DRAIN TO THE PITTSFIELD NO 5 DRAIN A SHARED DRAINAGE EASEMENT WILL BE OBTAINED

3 SITE SOILS ARE PREDOMINANTLY BLOUNT AND MORLEY LOAM

4 NEW SITE BENCHMARKS TO BE SET PRIOR TO CONSTRUCTION

OWNER: STANDARD FEDERAL BANK
2600 W BIG BEAVER ROAD
TROY, MI. 48084
(248) 643-9600

ARCHITECT: MICHAEL A BOGGIO ASSOC
30100 TELEGRAPH ROAD, SUITE 216
BINGHAM FARMS, MI 48025
(248) 258-5155

CIVIL ENGINEER/ LANDSCAPE ARCHITECTS: ATWELL-HICKS, INC
500 AVIS DRIVE, SUITE 100
ANN ARBOR, MI 48108
(734) 994-4000

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APR - 2 2007
PLANNING DEPARTMENT
PITTSFIELD CHARTER TOWNSHIP

RECORD SET

SHEET INDEX

C-1 COVER SHEET
C-2 TOPOGRAPHIC SURVEY
C-3 LAYOUT PLAN
C-4 GRADING, SOIL EROSION CONTROL, AND DRAINAGE AREA PLAN
C-5 UTILITY PLAN
C-6 LANDSCAPE PLAN
C-7 UTILITY PROFILES
C-8 DETAIL SHEET
C-9 DETENTION POND CALCULATIONS AND DETAILS
C-10 AREA-WIDE DRAINAGE AND UTILITY MAP
C-11 ACCESS MANAGEMENT PLAN
C-12 TRAFFIC CONTROL PLAN
C-13 PITTSFIELD TWP. STANDARD SPECIFICATIONS - SOIL EROSION CONTROL + EARTHWORK
C-14 PITTSFIELD TWP. STANDARD SPECIFICATIONS - STORM + SANITARY SEWER
C-15 PITTSFIELD TWP. STANDARD SPECIFICATIONS - WATER MAINS
A-16 A-1 BUILDING FLOOR PLAN
A-17 A-1P BUILDING PLUMBING PLAN
A-18 A-2 BUILDING ELEVATIONS
A-19 PE-1 SITE PHOTOMETRIC PLAN
A-20 PE-2 LIGHT FIXTURE INFORMATION

RECORD DRAWINGS
DATE COMPLETED 11/22/05
PREPARED BY MAI
CHECKED BY JAM
FIELDWORK PROVIDED BY BY STANTECH, INC

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
FOR THE LOCATION OF UNDERGROUND FACILITIES

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STANDARD FEDERAL BANK
C.S.P.A. # 03-26

SHEET NO 01

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SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET
COVER SHEET

RECORD SET

CAD FILE 300688RD-01-CV

REVISIONS

DATE 11/29/05

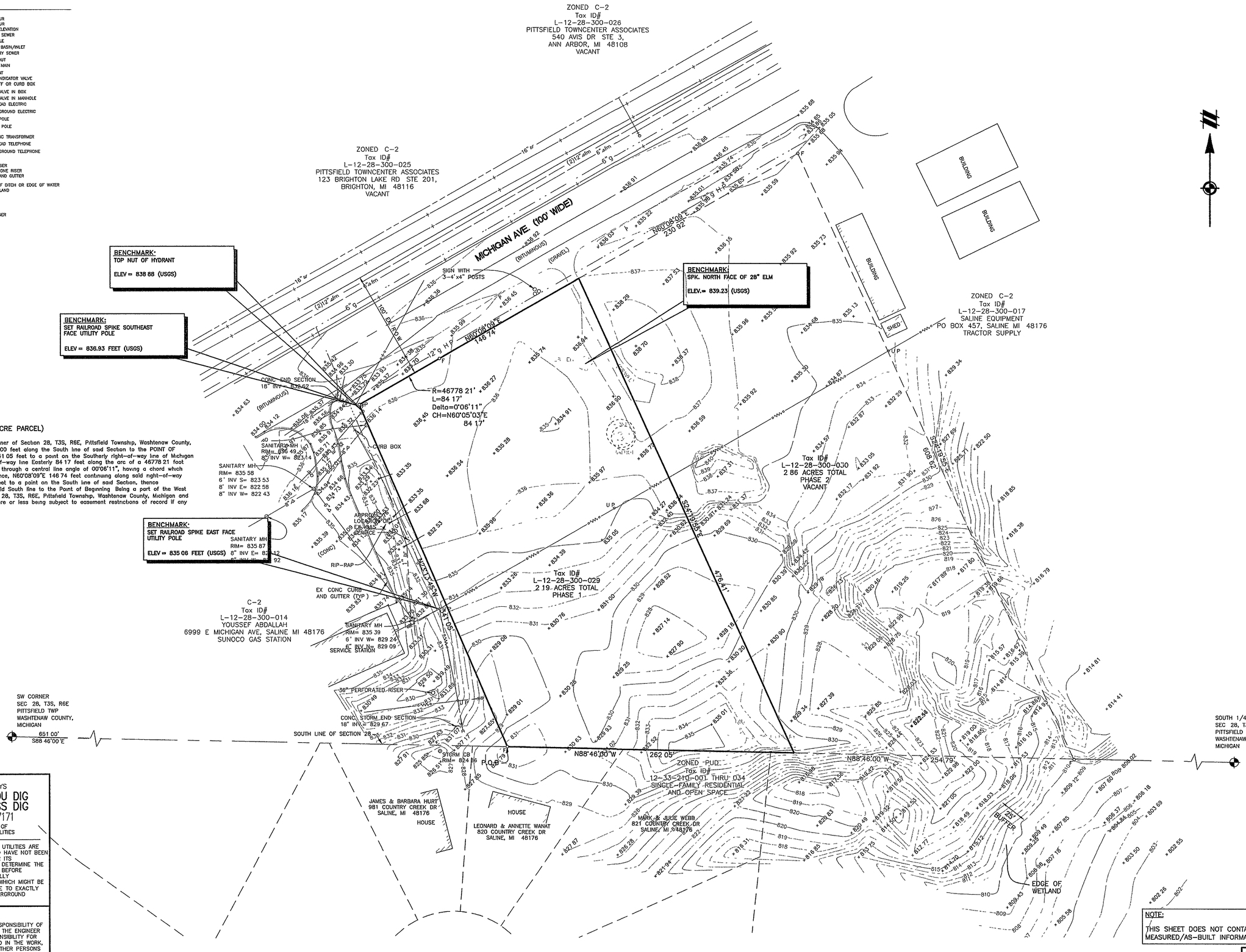
SCALE NO SCALE
DR MAI | CH ARW
P.M. M. PASCOE
BOOK --
JOB 300688
FILE NO 437-520-01

RECORD SET

K:\300688\Eng\Plan Set\Record E.dwg\u300288RD-01-CV.dwg 11/29/2005 2:26:16 PM mwilkins

LEGEND

- EXIST CONTOUR
- PROP CONTOUR
- EXIST SPOT ELEVATION
- EXIST STORM SEWER
- EXIST MANHOLE
- EXIST CATCH BASIN/INLET
- EXIST SANITARY SEWER
- EXIST CLEANOUT
- EXIST WATER MAIN
- EXIST HYDRANT
- EXIST POST INDICATOR VALVE
- EXIST SHUTOFF OR CURB BOX
- EXIST GATE VALVE IN BOX
- EXIST GATE VALVE IN MANHOLE
- EXIST OVERHEAD ELECTRIC
- EXIST UNDERGROUND ELECTRIC
- EXIST LIGHT POLE
- EXIST UTILITY POLE
- GUY WIRE
- EXIST ELECTRIC TRANSFORMER
- EXIST OVERHEAD TELEPHONE
- EXIST UNDERGROUND TELEPHONE
- EXIST GAS
- EXIST GAS RISER
- EXIST TELEPHONE RISER
- EXIST CURB AND GUTTER
- CENTERLINE OF DITCH OR EDGE OF WATER
- EDGE OF WETLAND
- EXIST SIGN
- SILT FENCE
- SECTION CORNER



LEGAL DESCRIPTION (2.19 ACRE PARCEL)

Commencing at the Southwest corner of Section 28, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan, thence S88 46'00"E 651 00 feet along the South line of said Section to the POINT OF BEGINNING, thence N23°13'45"W 341 05 feet to a point on the Southerly right-of-way line of Michigan Avenue, thence along said right-of-way line Easterly 84 17 feet along the arc of a 46778 21 foot radius circular curve to the right, through a central line angle of 00°06'11", having a chord which bears N60°05'03"E 84 17 feet thence, N60°08'09"E 146 74 feet continuing along said right-of-way line, thence S24°19'55 E 476 41 feet to a point on the South line of said Section, thence N88°46'00"W 262 05 feet along said South line to the Point of Beginning Being a part of the West 1/2 of Southwest 1/4 of Section 28, T3S, R6E, Pittsfield Township, Washtenaw County, Michigan and containing 2 19 acres of land, more or less being subject to easement restrictions of record if any

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SECTION 28
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WASHTENAW COUNTY, MICHIGAN

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STANDARD FEDERAL BANK
RECORD DRAWING SET
TOPOGRAPHIC SURVEY

CAD FILE
300688RD-02-T

REVISIONS

DATE
11/29/05

SCALE 0 20 40
1" = 40 FEET

DR	MAI	CH	JM
PM	M PASCOE		
BOOK	--		
JOB	300688		
FILE NO	437-520-02		

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LEGEND

- EXIST CONTOUR
- PROP CONTOUR
- EXIST SPOT ELEVATION
- PROP SPOT ELEVATION
- TOP OF CURB
- TOP OF PAVEMENT
- GUTTER
- EXIST STORM SEWER
- PROP STORM SEWER
- EXIST MANHOLE
- PROP MANHOLE
- PROP EDGE DRAIN
- EXIST CATCH BASIN/INLET
- PROP CATCH BASIN/INLET
- END SECTION
- CULVERT
- EXIST SANITARY SEWER
- PROP SANITARY SEWER
- EXIST CLEANOUT
- PROP CLEANOUT
- EXIST WATER MAIN
- PROP WATER MAIN
- EXIST HYDRANT
- PROP HYDRANT
- EXIST POST INDICATOR VALVE
- PROP POST INDICATOR VALVE
- EXIST SHUTOFF OR CURB BOX
- PROP SHUTOFF OR CURB BOX
- EXIST GATE VALVE IN BOX
- PROP GATE VALVE IN BOX
- EXIST GATE VALVE IN MANHOLE
- PROP GATE VALVE IN MANHOLE
- EXIST OVERHEAD ELECTRIC
- PROP OVERHEAD ELECTRIC
- EXIST UNDERGROUND ELECTRIC
- PROP UNDERGROUND ELECTRIC
- EXIST LIGHT POLE
- PROP LIGHT POLE
- EXIST UTILITY POLE
- PROP UTILITY POLE
- GUY WIRE
- EXIST ELECTRIC TRANSFORMER
- PROP ELECTRIC TRANSFORMER
- EXIST OVERHEAD TELEPHONE
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- EXIST UNDERGROUND TELEPHONE
- PROP UNDERGROUND TELEPHONE
- EXIST GAS
- PROP GAS
- EXIST GAS RISER
- EXIST TELEPHONE RISER
- EXIST CURB AND GUTTER
- PROP CURB AND GUTTER
- CENTERLINE OF DITCH OR EDGE OF WATER
- EDGE OF WETLAND
- EXISTING FENCE
- PROPOSED FENCE
- PROPERTY LINE
- CENTERLINE
- EXIST SIGN
- PROP SIGN
- DRAINAGE DIRECTION
- SIDEWALK RAMP
- FINISH FLOOR ELEV
- FINISH GRADE
- CONTROL POINT
- FOUND IRON PIPE
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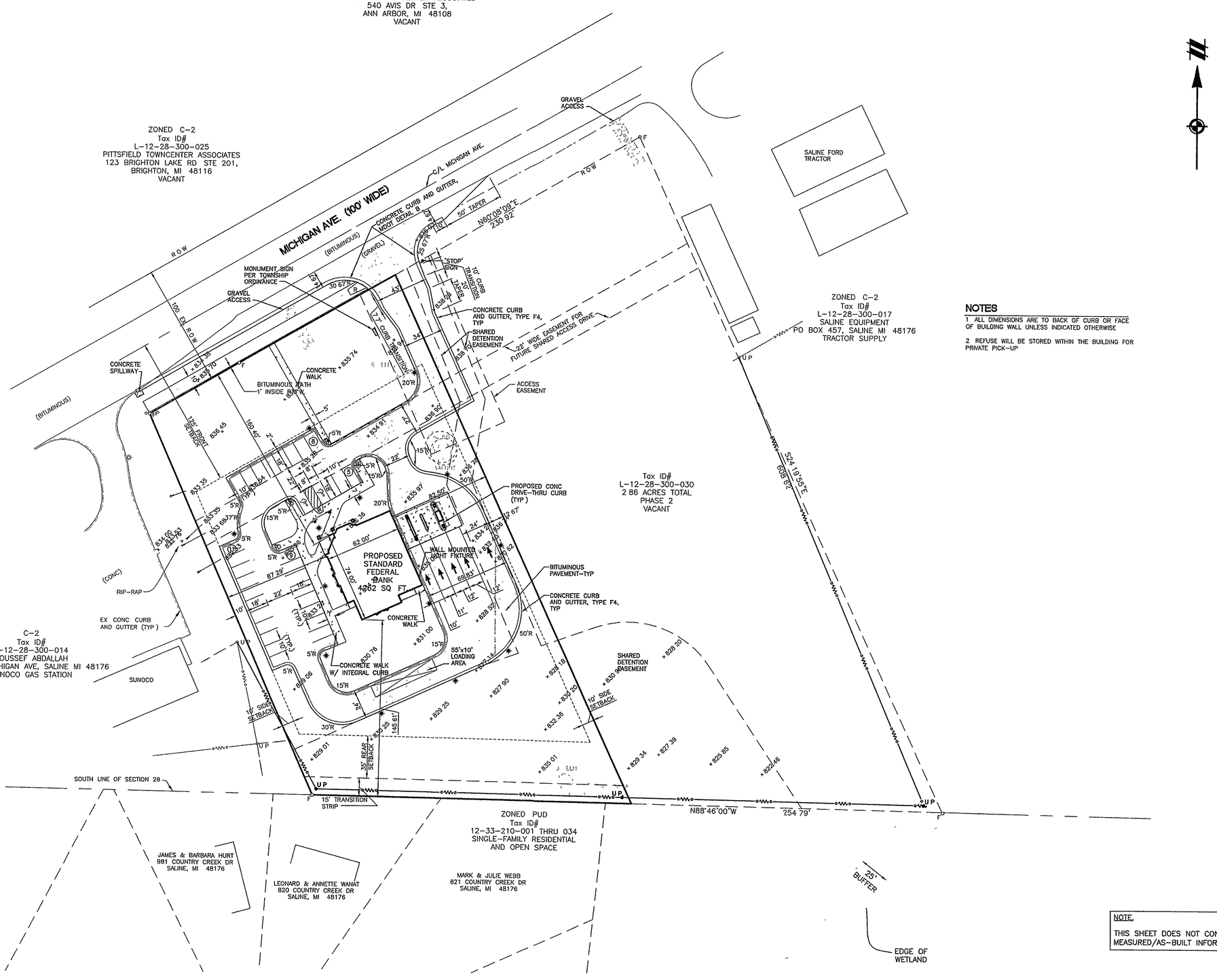
- EXIST CONIFEROUS TREE
- EXIST TREE OR BRUSH LIMIT
- SILT FENCE
- SECTION CORNER
- EXIST UTILITY UNSPECIFIED
- PROPOSED BITUMINOUS PAVEMENT
- PROPOSED CONCRETE PAVEMENT
- SPILL OUT CURB
- PROPOSED DRAINAGE BOUNDARY
- M.E. MATCH EXISTING
- INLET FILTER



NOTES

1 ALL DIMENSIONS ARE TO BACK OF CURB OR FACE OF BUILDING WALL UNLESS INDICATED OTHERWISE

2 REFUSE WILL BE STORED WITHIN THE BUILDING FOR PRIVATE PICK-UP

3 WORKING DAYS
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET

LAYOUT PLAN

CAD FILE 300688RD-03-L

REVISIONS

DATE 11/29/05

SCALE 0 20 40
1" = 40 FEET
DR. MAI | CH JM
P M. M. PASCOE
BOOK --
JOB 300688
FILE NO 437-520-03

SHEET NO 03

K:\300688\dwg\Plan Sets\Record Drawings\300688RD-03-L.dwg 11/29/2005 2:36:29 PM mallano

LEGEND

- EXIST CONTOUR
- PROP CONTOUR
- EXIST SPOT ELEVATION
- PROP SPOT ELEVATION
- TOP OF CURB
- TOP OF PAVEMENT
- GUTTER
- EXIST STORM SEWER
- PROP STORM SEWER
- EXIST MANHOLE
- PROP MANHOLE
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- PROP CATCH BASIN/INLET
- END SECTION
- CULVERT
- EXIST SANITARY SEWER
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- PROP CLEANOUT
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- PROP WATER MAIN
- EXIST HYDRANT
- PROP HYDRANT
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- EXISTING FENCE
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- PROPERTY LINE
- CENTERLINE
- EXIST SIGN
- PROP SIGN
- DRAINAGE DIRECTION
- SIDEWALK RAMP
- FF FINISH FLOOR ELEV
- FG FINISH GRADE
- CONTROL POINT
- FOUND IRON PIPE
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- EXIST DECIDUOUS TREE
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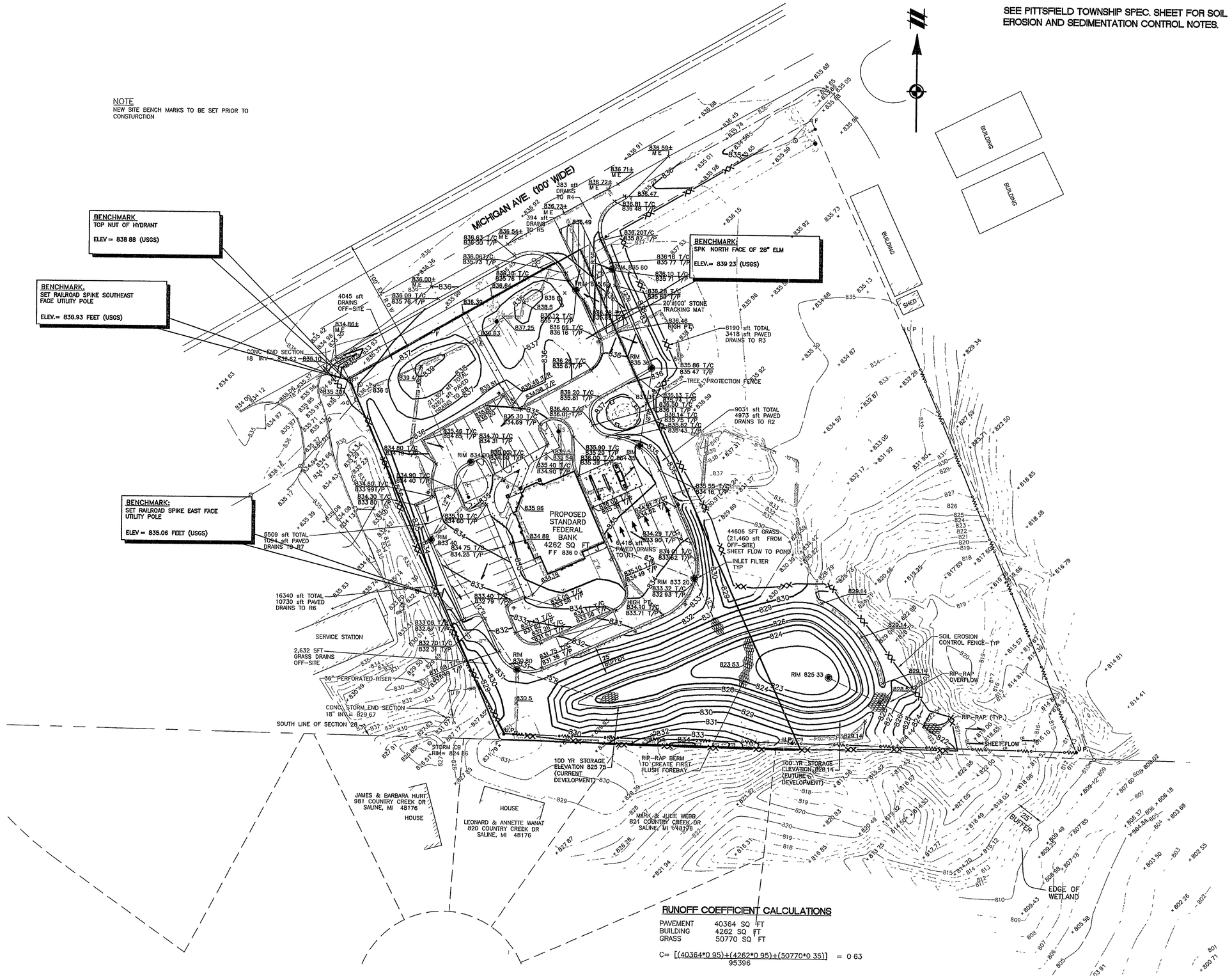
- SPILL OUT CURB
- PROPOSED DRAINAGE BOUNDARY
- M E MATCH EXISTING
- INLET FILTER

NOTE
NEW SITE BENCH MARKS TO BE SET PRIOR TO CONSTURCTION

SEE PITTSFIELD TOWNSHIP SPEC. SHEET FOR SOIL EROSION AND SEDIMENTATION CONTROL NOTES.



RUNOFF COEFFICIENT CALCULATIONS

PAVEMENT	40364 SQ FT
BUILDING	4262 SQ FT
GRASS	50770 SQ FT

$$C = \frac{[(40364*0.95)+(4262*0.95)+(50770*0.35)]}{95396} = 0.63$$

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GRADING, SOIL EROSION CONTROL, AND DRAINAGE AREA PLAN

CAD FILE 300688RD-04-GSE

REVISIONS

DATE 11/29/05

SCALE 0 20 40
1" = 40 FEET

DR MAI | CH JM
P M M PASCOE
BOOK --
JOB 300688
FILE NO 437-520-04

LEGEND

- EXIST CONTOUR
- PROP CONTOUR
- EXIST SPOT ELEVATION
- PROP SPOT ELEVATION
- TOP OF CURB
- TOP OF PAVEMENT
- GUTTER
- EXIST STORM SEWER
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- SIDEWALK RAMP
- FINISH FLOOR ELEV
- FINISH GRADE
- CONTROL POINT
- FOUND IRON PIPE
- SET IRON PIPE
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- PROPOSED CONCRETE PAVEMENT
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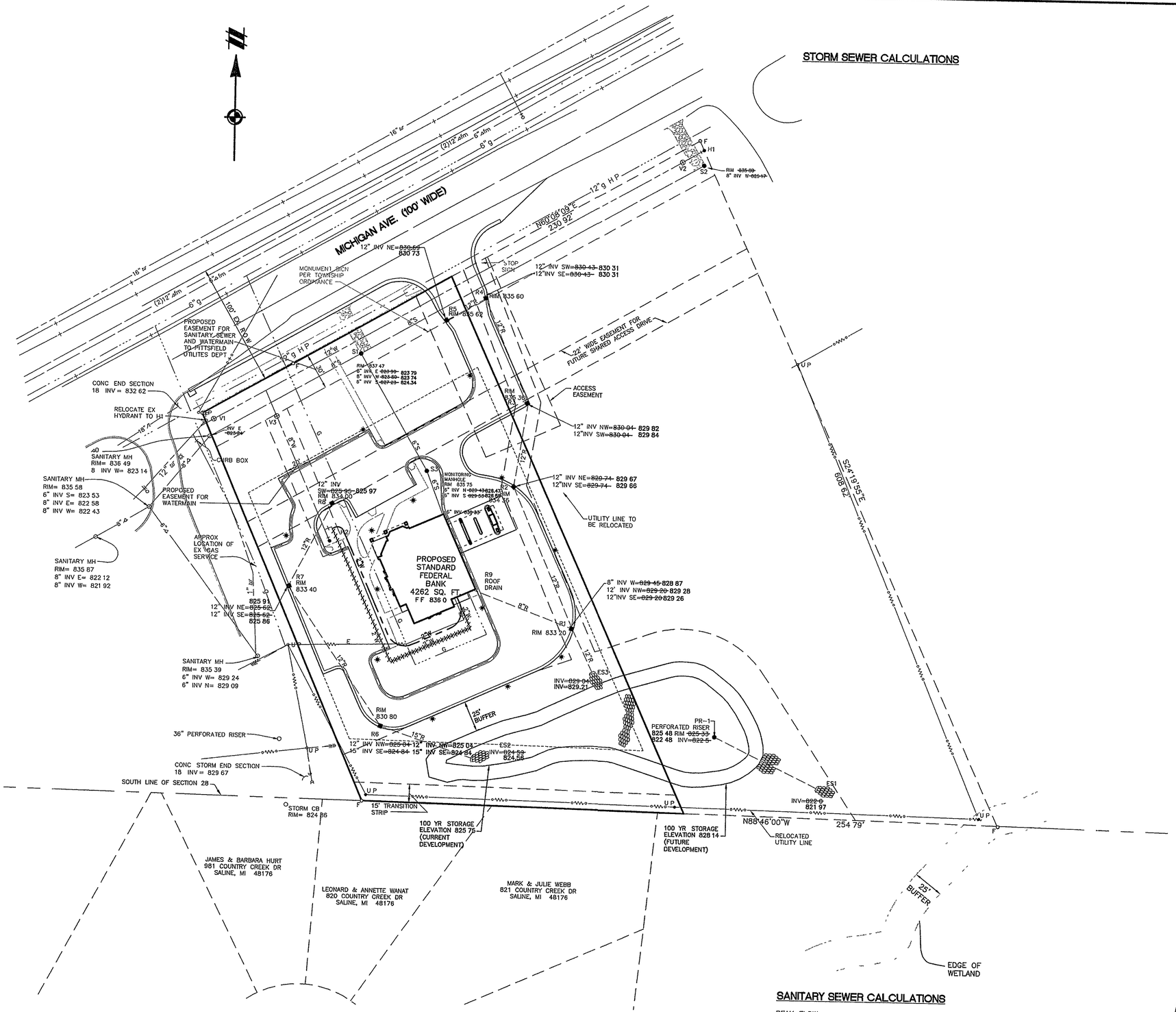
- M.E. MATCH EXISTING
- INLET FILTER



STORM SEWER CALCULATIONS

SANITARY SEWER CALCULATIONS

PEAK FLOW

STANDARD FEDERAL BANK= 0 40 UF/1,000 SQ FT

4,300 SQ FT / 1,000 SQ FT = 5

0 4 UF X 5= 2 REU

2 8 PEOPLE/REU X 2 REU = 5 6 PEOPLE

5 6 PEOPLE X 100GPD = 560GPD

PEAKING FACTOR = 4 00

560GPD X 4 00 X 1CF/7 48GAL X 1DAY/86,400SEC = 0 0035CFS

PIPE CAPACITY

CAPACITY OF A 6" PIPE @ 2 00%= 0 79 CFS

0 79 CFS > 0 0035 CFS

NOTE EASEMENTS FOR SANITARY SEWER AND WATER MAIN ARE GIVEN TO THE PITTSFIELD TWP UTILITIES DEPT

RECORD DRAWINGS
DATE COMPLETED 11/22/05
PREPARED BY MAI
CHECKED BY JAM
FIELDWORK PROVIDED BY. BY STANTECH, INC

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PITTSFIELD CHARTER TOWNSHIP

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Washington Twp., MI 586 786 9800
Naperville, IL 630 577 0800

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET
UTILITY PLAN

CAD FILE 300688RD-05-U

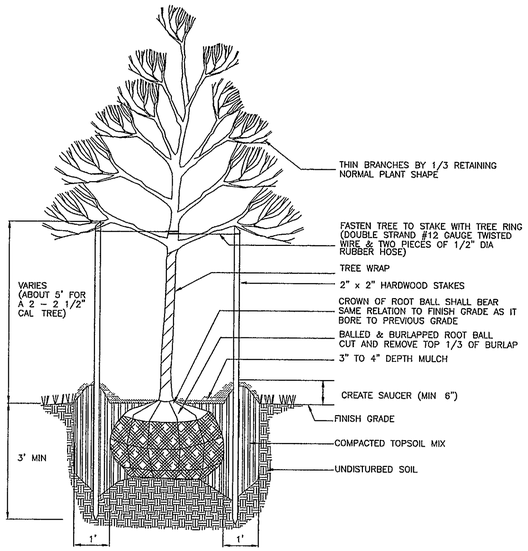
12/28/05 PER TWP
REVISIONS

DATE 11/29/05

SCALE 0 20 40
1" = 40 FEET

DR MAI | CH. JM
P.M. M PASCOE
BOOK ---

SHEET NO 05
JOB 300688
FILE NO 437-520-05

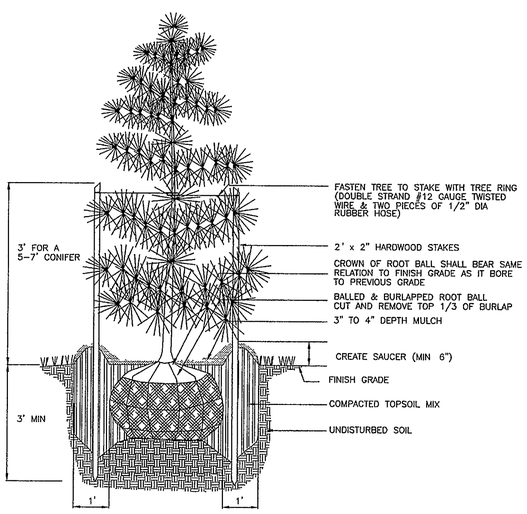


NOTES

1 DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2 DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE
3 REMOVE TREE RINGS, TREE WRAP AND STAKES TWO YEARS AFTER INSTALLATION
4 WATER TREE THOROUGHLY SUBSEQUENT TO INSTALLATION

DECIDUOUS TREE PLANTING DETAIL
BALLED AND BURLAPPED

NO SCALE



NOTES

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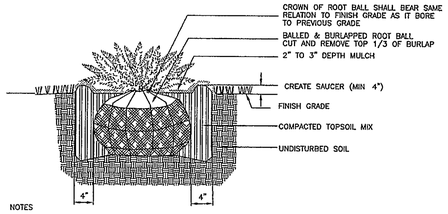
CONIFEROUS TREE PLANTING DETAIL
BALLED AND BURLAPPED

NO SCALE

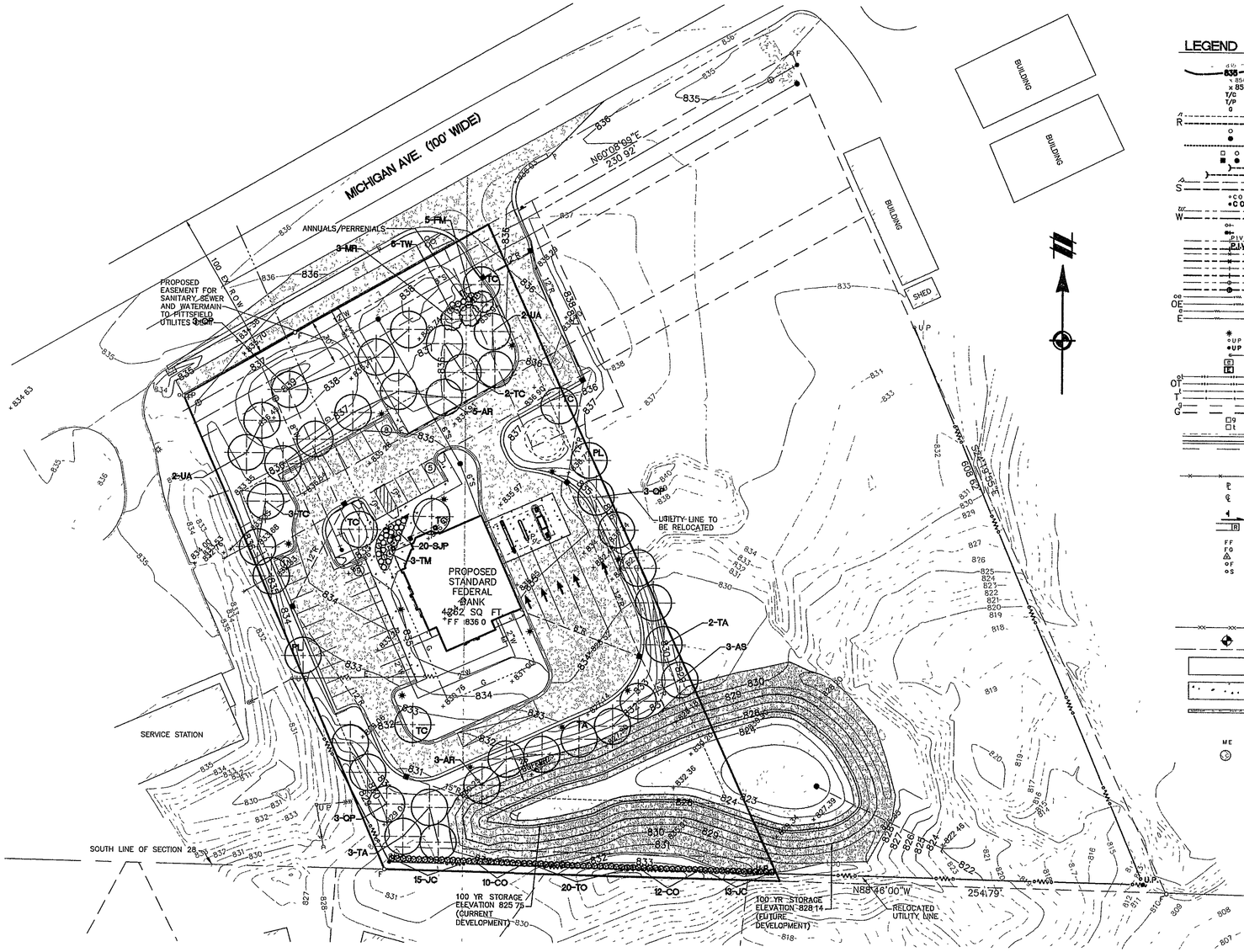


NOTES

1 DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2 WATER SHRUB THOROUGHLY SUBSEQUENT TO INSTALLATION

SHRUB PLANTING DETAIL

NO SCALE



LEGEND

838	EXIST CONTOUR
838	PROP CONTOUR
x 854.6	EXIST SPOT ELEVATION
x 854.6	PROP SPOT ELEVATION
T/C	TOP OF CURB
T/P	TOP OF PAVEMENT
G	GUTTER
R	EXIST STORM SEWER
R	PROP STORM SEWER
	EXIST MANHOLE
	PROP MANHOLE
	PROP EDGE DRAIN
	EXIST CATCH BASIN/INLET
	PROP CATCH BASIN/INLET
	END SECTION
	CULVERT
S	EXIST SANITARY SEWER
S	PROP SANITARY SEWER
CO	EXIST CLEANOUT
CO	PROP CLEANOUT
W	EXIST WATER MAIN
W	PROP WATER MAIN
	EXIST HYDRANT
	PROP HYDRANT
PIV	EXIST POST INDICATOR VALVE
PIV	PROP POST INDICATOR VALVE
	EXIST SHUTOFF OR CURB BOX
	PROP SHUTOFF OR CURB BOX
	EXIST GATE VALVE IN BOX
	PROP GATE VALVE IN BOX
	EXIST GATE VALVE IN MANHOLE
	PROP GATE VALVE IN MANHOLE
OE	EXIST OVERHEAD ELECTRIC
OE	PROP OVERHEAD ELECTRIC
E	EXIST UNDERGROUND ELECTRIC
E	PROP UNDERGROUND ELECTRIC
	EXIST LIGHT POLE
	PROP LIGHT POLE
UP	EXIST UTILITY POLE
UP	PROP UTILITY POLE
	GUY WIRE
E	EXIST ELECTRIC TRANSFORMER
E	PROP ELECTRIC TRANSFORMER
OT	EXIST OVERHEAD TELEPHONE
OT	PROP OVERHEAD TELEPHONE
T	EXIST UNDERGROUND TELEPHONE
T	PROP UNDERGROUND TELEPHONE
G	EXIST GAS
G	PROP GAS
G	EXIST GAS RISER
T	EXIST TELEPHONE RISER
	EXIST CURB AND GUTTER
	PROP CURB AND GUTTER
	CENTERLINE OF DITCH OR EDGE OF WATER
	EDGE OF WETLAND
	EXISTING FENCE
	PROPOSED FENCE
℄	PROPERTY LINE
℄	CENTERLINE
	EXIST SIGN
	PROP SIGN
	DRAINAGE DIRECTION
R	SIDEWALK RAMP
FF	FINISH FLOOR ELEV
FG	FINISH GRADE
	CONTROL POINT
F	FOUND IRON PIPE
S	SET IRON PIPE
	EXIST DECIDUOUS TREE
	EXIST CONIFEROUS TREE
	EXIST TREE OR BRUSH LIMIT
	SILT FENCE
	SECTION CORNER
	EXIST UTILITY UNSPECIFIED
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT
	SPILL OUT CURB
	PROPOSED DRAINAGE BOUNDARY
ME	MATCH EXISTING
	INLET FILTER

PLANT LIST

KEY	QTY	SPECIES	SIZE	SPECIFICATION
AR	8	Acer rubrum Red Maple	2 5" CAL	B&B
AS	3	Acer saccharum Sugar Maple	2 5" CAL	B&B
QP	9	Quercus palustris Pin Oak	2 5" CAL	B&B
PL	2	Plantanus x acerifolia London Planetree	2 5" CAL	B&B
TC	10	Tilia cordata Littleleaf Linden	2 5" CAL	B&B
MR	3	Malus 'Red Jewel' Red Jewel Crabapple	1 75" CAL	B&B
TW	6	Taxus x media 'Wardii' Ward's Yew	18-24" HT	B&B
FM	5	Fire Meadiland Fire Meadiland Rose	12" HT	#2 CONT
TO	20	Thuja occidentalis 'Techny' Techny Mission Arborviate	4-5' HT	B&B
JC	28	Juniperus chinesis 'Hetz Columnaris' Columnar Hetz Juniper	4-5' HT	B&B
CO	22	Chamaecyparis obtusa 'compacta' Compact False Cypress	4-5 HT	B&B
TA	6	Tilia americana 'Redmund' American Linden	3" cal (2 5' dbh)	B&B
UA	4	Ulmus americana American Elm	3" cal (2 5' dbh)	B&B
SJP	20	Spirea japonica v alpina 'Little Princess' Little Princess Spirea	12-18" HT	CONT
TM	3	Taxus x media 'Densiformis' Dense Yew	18-24" HT	B&B

Native meadow seed mix, JF New Economy prairie seed mix or equal, mix contains big blue stem (andropogon ternarius), little blue stem (schizachyrium scoparium), side oats grama (bouteloua curtipendula), prairie wild rye (elymus virgatum), prairie switch grass (panicum virgatum), indian grass (sorghastrum nutans), butterfly milkweed (asclepias tuberosa), NE Aster (aster nova-angliae), Purple coneflower (echinacea purpurea), blazing star (liastris aspera) and black eyed susan (rudbeckia hirta)

Wetland Seed Mix, as produced by J F New

LANDSCAPE NOTES

1 All landscaping shall be installed and maintained in accordance with Pittsfield Township standards and in accordance with current industry standards in a neat, healthy and weed free condition Any dead, diseased or damaged plant material is to be replaced within one year, or the next appropriate planting period, whichever comes first

2 All disturbed unpaved areas are to be spread with a minimum 4 inches of topsoil and hydro-seeded or sodded with MDOT class A seed or sod as noted on the plan Areas of individual trees and landscape beds are to be mulched with a minimum of 4 inches shredded hardwood bark Lawn trees are to be mulched with a 4' diameter shredded bark ring Bark is to be pulled away from the trunk of trees leaving a 3" clear area around the trunk

3 The landscape contractor shall be responsible for verification of all underground and overhead utilities Plant material is to be located such that it will not interfere with any underground or overhead utilities Canopy and evergreen trees shall not be planted within 10 feet of any underground or overhead utilities

4 All landscape areas shall be provided with a readily available water supply

5 Any plant substitutions shall have prior Township approval

6 Any discrepancy with the plan and plant list the number of symbols on the plan shall take precedent

LANDSCAPE CALCULATIONS

PARKING LOT (33 SPACES, 887 L F PERIMETER PARKING LOT)

REQUIREMENT	REQUIRED	PROVIDED
TREES @ 1/8 SPACES	5	6
TREES @ 1/40 L F	22	22
	TOTAL =	28

PARKING LOT ISLANDS (40,634 S.F. PARKING LOT & DRIVES)

REQUIREMENT	REQUIRED	PROVIDED
ISLANDS @ 5%	2032 S F	4939 S F

TRANSITION STRIP

REQUIREMENT	REQUIRED	PROVIDED
15' AT SOUTH PROPERTY LINE	4'-6' HT	4'-6' HT
4'-6' HT HEDGE	HEDGE	HEDGE

NOTE

THIS SHEET DOES NOT CONTAIN FIELD MEASURED/AS-BUILT INFORMATION.

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SECTION 28 TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT

LANDSCAPE PLAN

CAD FILE 300688RD-06-LS

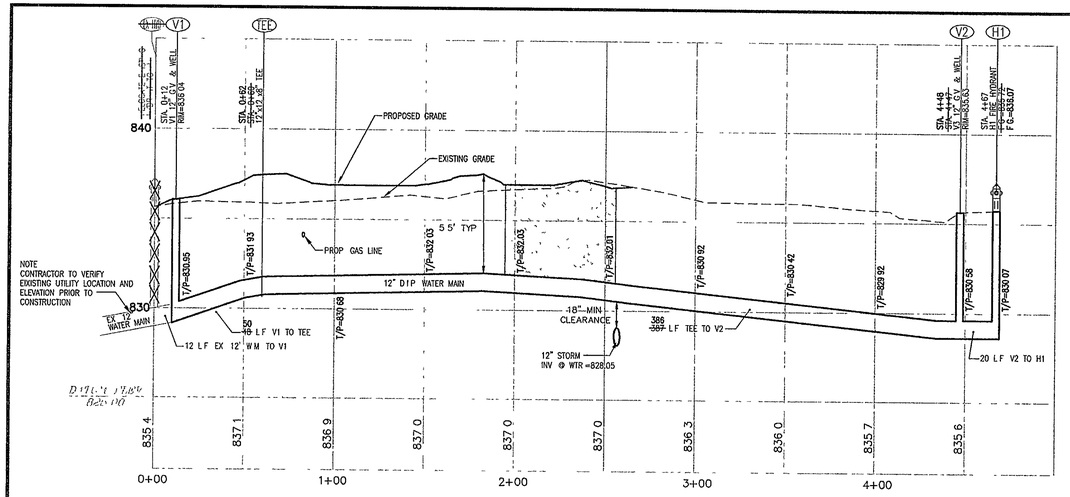
REVISIONS

DATE 11/29/05

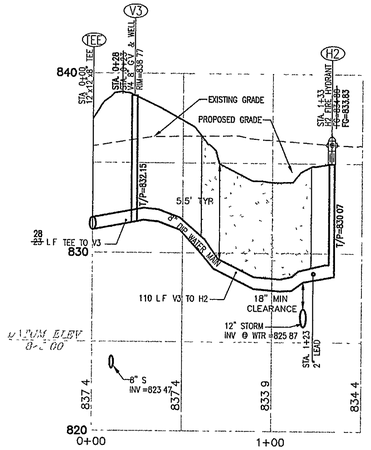
SCALE 0 20 40
1" = 40 FEET

DR MAI CH JM
P M M PASCOE
BOOK --
JOB 300688
FILE NO 437-520-06

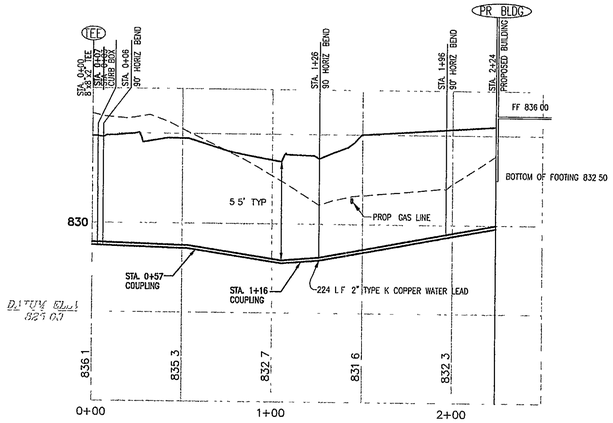
SHEET NO 06

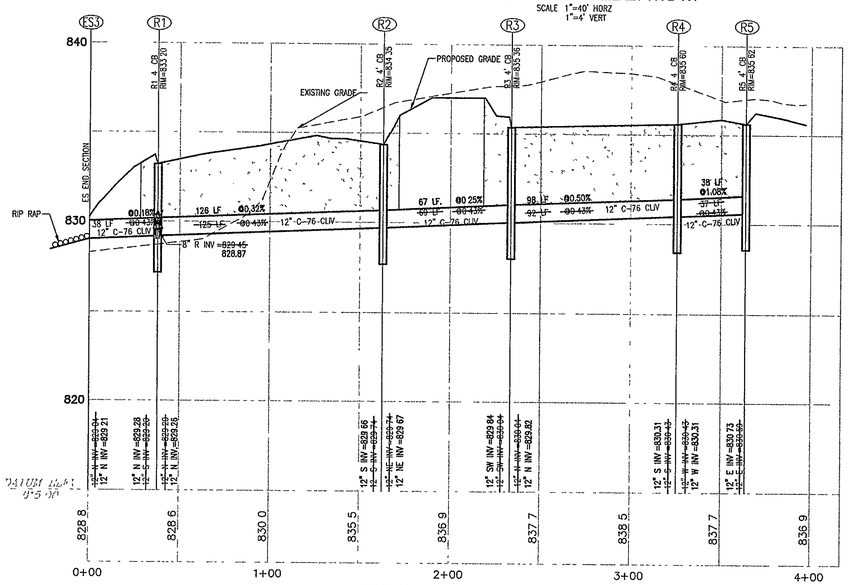


12" WATER MAIN PROFILE Ex HYD-H1
SCALE 1"=40' HORZ 1"=4' VERT



8" WATER MAIN PROFILE TEE-H2
SCALE 1"=40' HORZ 1"=4' VERT

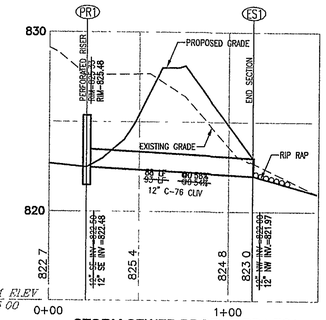




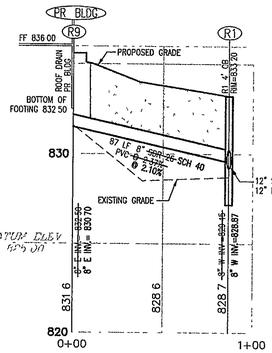
STORM SEWER PROFILE ES3-R5
SCALE 1"=40' HORZ 1"=4' VERT

NOTE

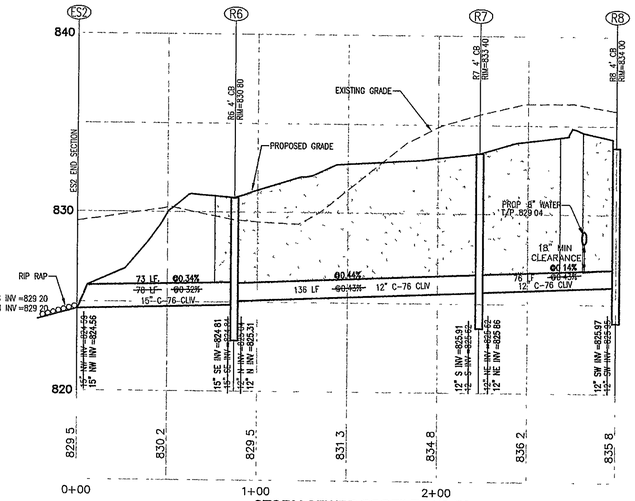
BACKFILL ALL UTILITY TRENCHES FULL DEPTH WITH MDOT CLASS II MATERIAL COMPACTED TO 97% MODIFIED PROCTOR DENSITY UNDER ALL PROPOSED PAVEMENTS AND WITHIN 1 1 INFLUENCE OF PROPOSED PAVEMENTS



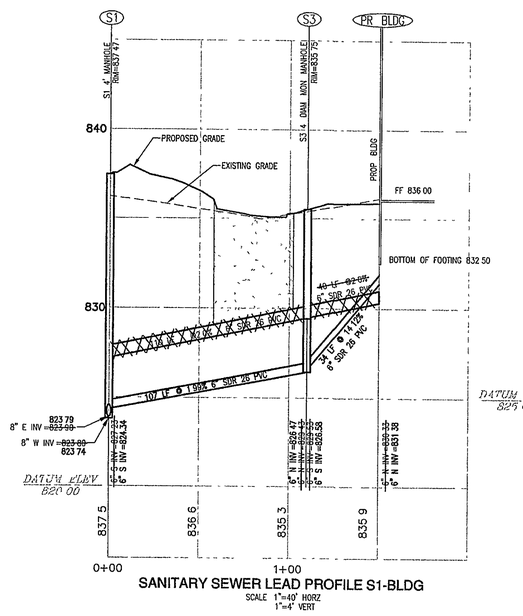
STORM SEWER PROFILE PR1-ES1
SCALE 1"=40' HORZ 1"=4' VERT



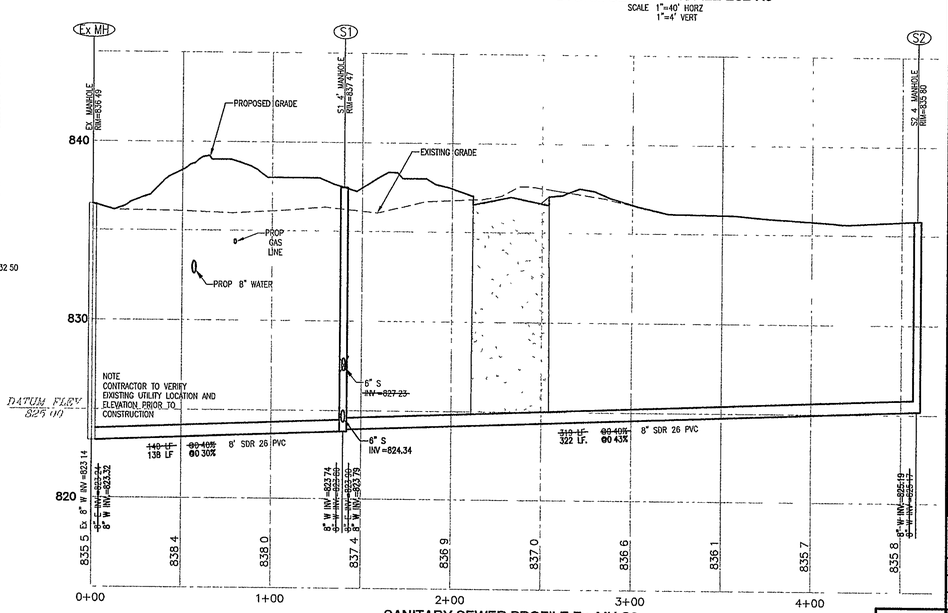
ROOF DRAIN PROFILE BLDG-R1
SCALE 1"=40' HORZ 1"=4' VERT



STORM SEWER PROFILE ES2-R8
SCALE 1"=40' HORZ 1"=4' VERT



SANITARY SEWER LEAD PROFILE S1-BLDG
SCALE 1"=40' HORZ 1"=4' VERT



SANITARY SEWER PROFILE Ex. MH-S2
SCALE 1"=40' HORZ 1"=4' VERT

RECORD DRAWINGS
DATE COMPLETED 11/22/05
PREPARED BY MAI
CHECKED BY JAM
FIELDWORK PROVIDED BY BY STANTECH, INC

STORM SEWER SCHEDULE

STRUCTURE NO	STRUCTURE TYPE	CASTING RIM ELEV	RIM ELEV	INVERT ELEV	ADD INVERTS	DEPTH INV	SUMP	DEPTH TO SUMP
R-1	4' Catch basin	7045M1	833 20	829 20	829 20 12"N 829 45 8"W	4 00	2'	6 00
R-2	4' Catch basin	7045M1	834 35	829 74	829 74 12"NE	4 61	2'	6 61
R-3	4' Catch basin	7045M1	835 36	830 04	830 04 12"N	5 32	2'	7 32
R-4	4' Catch basin	7045M1	835 60	830 43	830 43 12"W	5 17	2'	7 17
R-5	4' Catch basin	7045M1	835 62	830 59		5 03	2'	7 03
R-6	4' Catch basin	7045M1	830 80	824 84	825 04 12"N	5 96	2'	7 96
R-7	4' Catch basin	7045M1	833 40	825 62	825 62 12"NE	7 78	2'	9 78
R-8	4' Catch basin	7045M1	834 00	825 95		8 05	2'	10 05
R-9	Roof Drain			832 50				
ES-1	End Section			822 00				
ES-2	End Section			824 59				
ES-3	End Section			829 04				
PR-1	Perf Riser	Bar Grate	825 33	822 50		2 83	1'	3 83

SANITARY SEWER SCHEDULE

STRUCTURE NO	STRUCTURE TYPE	RIM ELEV	SIZE & DIR	INVERT ELEV	ADD INVERTS	DEPTH
Ex MH	4' Manhole	836 49	8" East	823 24		13 35
S-1	4' Manhole	837 47	8" East & West 6" South	823 80	823 90 827 23	13 67
S-2	4' Manhole	835 80	8" West	825 17		10 63
S-3	4' Manhole	835 75	6" North & South	829 43	829 53	6 32

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MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET

SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

UTILITY PROFILES

CAD FILE 300688RD-07-PR

12/28/05 PER TWP

REVISIONS

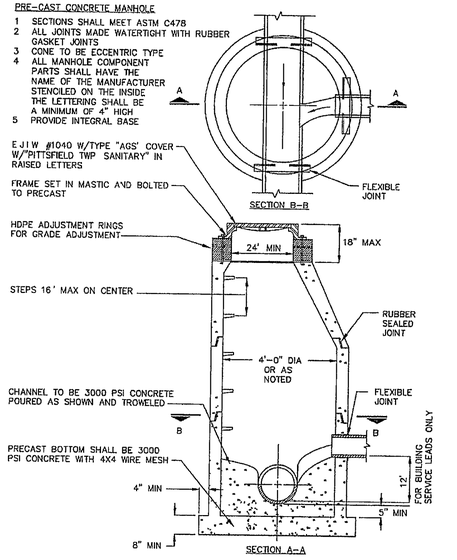
DATE 11/29/05

SCALE 0 20 40
1" = 40 FEET
DR. MAI | CH. JM
P M M PASCOE
BOOK --
JOB 300688
FILE NO 437-520-07

SHEET NO 07

PRE-CAST CONCRETE MANHOLE

1 SECTIONS SHALL MEET ASTM C478
2 ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3 CONE TO BE ECCENTRIC TYPE
4 ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE THE LETTERING SHALL BE A MINIMUM OF 4" HIGH
5 PROVIDE INTEGRAL BASE



SANITARY MANHOLE

S \CIVIL\DETAILS\PITTSFIELD SA-1 1/5/04

PRE-CAST CONCRETE MANHOLE

1 SECTIONS SHALL MEET ASTM C478
2 ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
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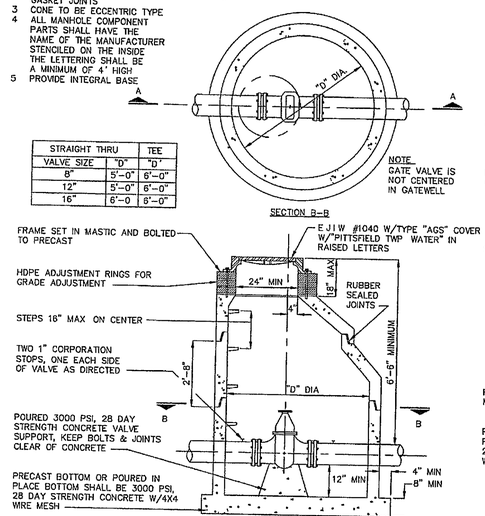
4 ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE THE LETTERING SHALL BE A MINIMUM OF 4" HIGH
5 PROVIDE INTEGRAL BASE

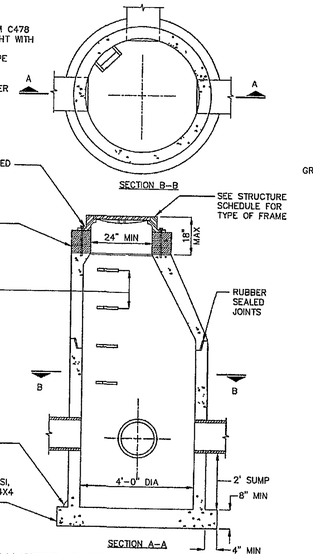


STRAIGHT THRU		TEE
VALVE SIZE	"D"	"D"
8"	5'-0"	6'-0"
12"	5'-0"	6'-0"
16"	6'-0	6'-0"

STANDARD GATE VALVE & WELL

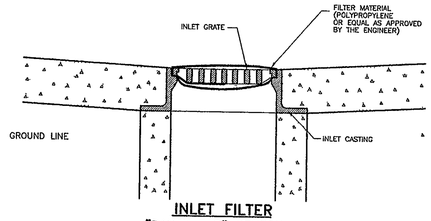
PRE-CAST CONCRETE MANHOLE

1 SECTIONS SHALL MEET ASTM C478
2 ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3 CONE TO BE ECCENTRIC TYPE
4 ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE THE LETTERING SHALL BE A MINIMUM OF 4" HIGH



4' DIAMETER CATCH BASIN

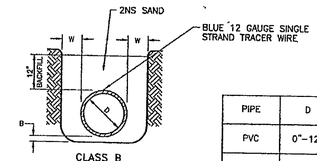
S \CIVIL\DETAILS\PITTSFIELD ST-1 1/5/04



INLET FILTER

"DANDY BAG" OR EQUAL

NO SCALE

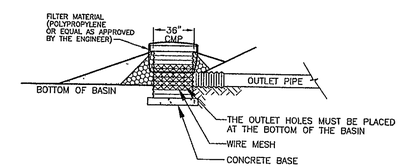


CLASS B
FIRST CLASS BEDDING

NOTES.
1 MINIMUM TRENCH WIDTH (SEE TABLE)
2 RECESS TRENCH TO RELIEVE THE BELL OFF ALL LOAD
3 GRANULAR BACKFILL TO DEPTH OF ONE FOOT ABOVE PIPE TAMPED LAYERS NOT TO EXCEED 6" IN DEPTH
4 ALL PIPE TO BE PLACED AND JOINTED IN A DRY TRENCH AND LAID ACCURATELY TO LINE AND GRADE WITH BELLS UPHILL
5 ALL CONCRETE ENCASEMENT AND CRADLING TO BE CLASS "A" CONCRETE

PIPE	D	W	B
PVC	0"-12'	12" MIN 18" MAX	4"
A-C,V C P	0"-12"	6" MIN 12" MAX	4"
DIP	0"-24"	6" MIN 12" MAX	4"
A-C,CONC	0"-24"	6" MIN 12" MAX	4"
CONC DIP	24" +	6" MIN 12" MAX	4'

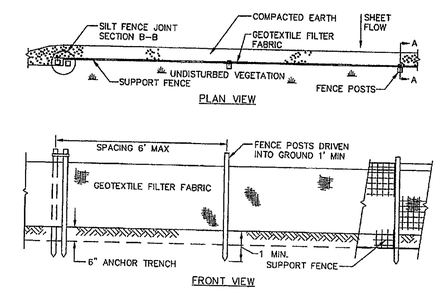
BEDDING

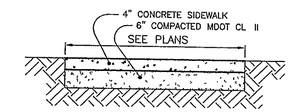


PERFORATED RISER FILTER

"DANDY SOCK" OR EQUAL

NO SCALE

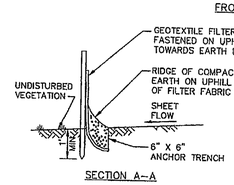




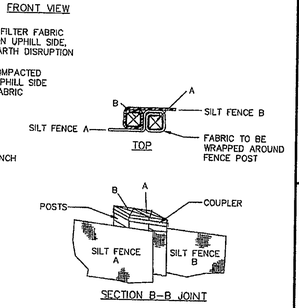
CONTRACTOR TO SUBMIT JOINTING PLAN

CONCRETE SIDEWALK

NO SCALE



SECTION A-A



SECTION B-B JOINT

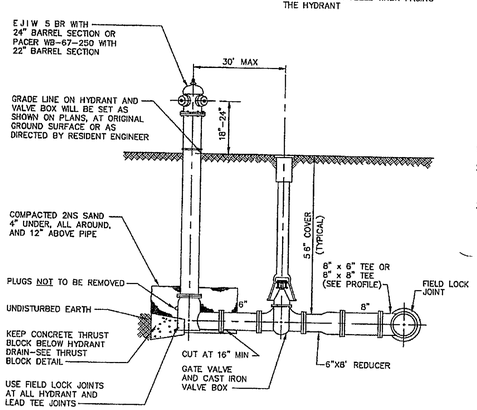
SILT FENCE

S \CIVIL\DETAILS\PITTSFIELD SE-4 1/5/04

NOTE

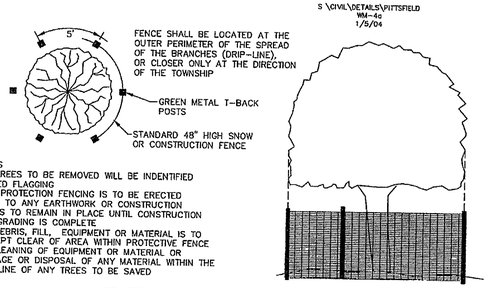
THIS SHEET DOES NOT CONTAIN FIELD MEASURED/AS-BUILT INFORMAION

NOTE.
IN PITTSFIELD TOWNSHIP PROVIDE ONE STORZ CONNECTION ON EACH HYDRANT ON THE LEFT NOZZLE WHEN FACING THE HYDRANT



STANDARD FIRE HYDRANT

S \CIVIL\DETAILS\PITTSFIELD WM1a 1/5/04

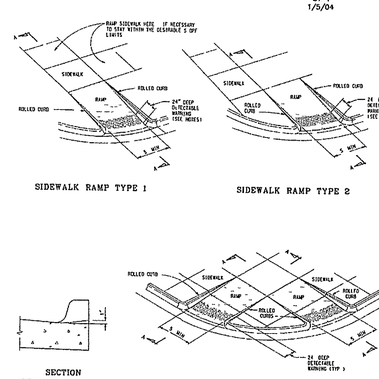


NOTES
1 ALL TREES TO BE REMOVED WILL BE INDENTIFIED BY RED FLAGGING
2 TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION AND GRADING IS COMPLETE
3 ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE NO CLEANING OF EQUIPMENT OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE DRIP LINE OF ANY TREES TO BE SAVED

TREE PROTECTION FENCE DETAIL

NOT TO SCALE

S \CIVIL\DETAILS\PITTSFIELD WM-4a 1/5/04



NOTES

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION OR RECONSTRUCTION OF STRECTS, CURBS, OR SIDEWALKS BY ALL PUBLIC AGENCIES AND BY ALL PRIVATE ORGANIZATIONS CONSTRUCTING FACILITIES FOR PUBLIC USE

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB RAMPS SHALL ALSO BE PROVIDED AT MALK LOCATIONS IN MID-BLOCK IN THE VICINITIES OF HOSPITALS, MEDICAL CENTERS, AND LARGE ATHLETIC FACILITIES

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE SLOPE OF RAMP

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP FREE OF SAGS AND SHORT GRADE CHANGES WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY

IF POSSIBLE, DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS EXCEPT WHERE EXISTING DRAINAGE STRUCTURES ARE BEING UTILIZED IN THE NEW CONSTRUCTION. LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER LOCATION OF DRAINAGE STRUCTURE

THE NORMAL GUTTER LINE PROFILE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE

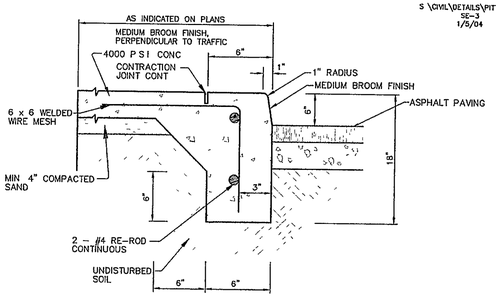
CROSSWALK AND STOP LINE MARKINGS IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES"

DETECTABLE WARNINGS SHALL EXTEND THE FULL WIDTH OF THE CURB RAMP THEY SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6" TO 8" FROM THE CURB LINE

M.D.O.T. HANDICAP RAMP DETAIL

NTS

S \CIVIL\DETAILS\PITTSFIELD SE-3 1/5/04

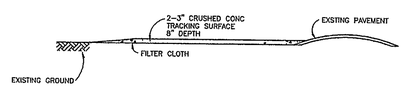


CONC. INTEGRAL CURB AND WALK

NOT TO SCALE

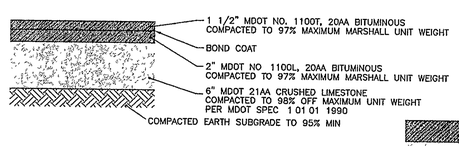
MDOT DETAIL B CURB & GUTTER

NO SCALE



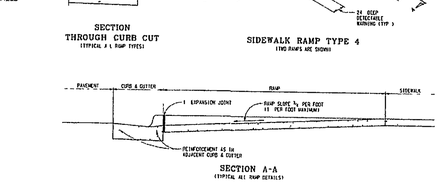
TRACKING SURFACE

NO SCALE



STANDARD BITUMINOUS PAVEMENT

NO SCALE



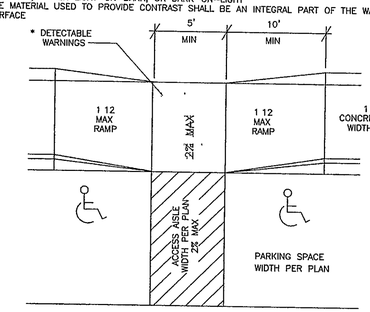
PITCH IN CURB

PITCH OUT CURB

F4 CURB DETAIL

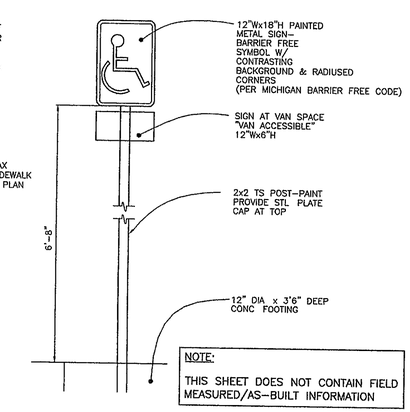
NO SCALE

* DETECTABLE WARNINGS SHALL CONSIST OF RAISED TRUNCATED DOMES WITH A DIAMETER OF NOMINAL 0 9 IN (23 MM), A HEIGHT OF NOMINAL 0 2 IN (5MM) AND A CENTER TO CENTER SPACING OF NOMINAL 2 35 IN (60MM) AND SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK, OR DARK-ON-LIGHT
THE MATERIAL USED TO PROVIDE CONTRAST SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE



BARRIER FREE RAMP DETAIL

NO SCALE



NOTE:

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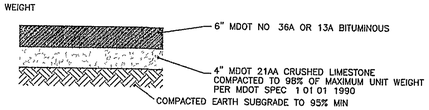
BARRIER FREE SIGN

(PER MICHIGAN BARRIER FREE CODE)

NO SCALE



PAVEMENT IN R.O.W.

NO SCALE

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SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET

DETAIL SHEET

CAD FILE
300688RD-08-DT

REVISIONS

DATE
11/29/05

SCALE
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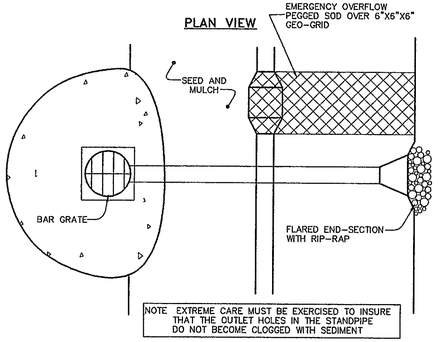
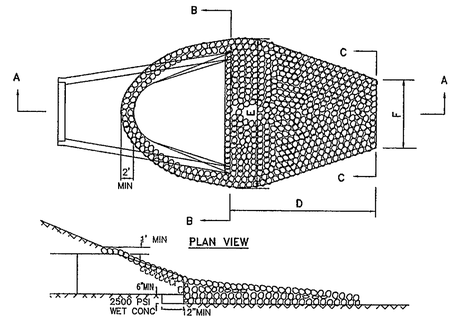
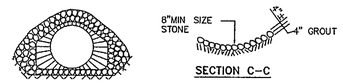
DR	MAI	CH	JM
P M	M PASCOE		
BOOK	--		
JOB	300688		
FILE NO	437-520-08		

SHEET NO
08



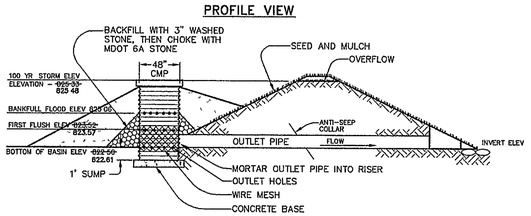




PIPE DIAM	D	E	F	S	Y
12"	5'-0"	6'-6"	3'-0"	4	

RIP-RAP BANK PROTECTION, WHERE CALLED FOR, SHALL BE GROUTED AND INSTALLED AS PROVIDED BY MDOT SPEC 6 01 08 RIP-RAP MATERIAL SHALL MEET THE REQUIREMENTS OF MDOT SPEC 8 19 02

STONE RIP-RAP
NO SCALE



OUTLET HOLES	NUMBER	SIZE	ELEVATION
BOTTOM OF BASIN	~~FIRST FLUSH~~ 5	1/2"	~~822 50~~ 822 61
FIRST FLUSH	~~BANKFULL~~ 3	1"	~~823 52~~ 823 57
BANKFULL	~~100 YEAR~~ 5	1 1/2"	825 06

PR-1 DETAIL
NO SCALE

Maintenance Tasks and Schedule During Construction

TASKS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASINGS	CHANNELS	OUTFLOW CONTROL STRUCTURES	RIP-RAP	FILTRATION BASIN	STORM DETENTION AREAS	WETLANDS	EMERGENCY OVERFLOW	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION	X	X		X	X	X	X	X	X		WEEKLY
REMOVAL OF SEDIMENT ACCUMULATION	X	X		X	X	X	X	X	X	X	AS NEEDED* AND PRIOR TO TURNOVER
INSPECT FOR FLOATABLES AND DEBRIS	X	X	X	X	X	X	X	X	X	X	QUARTERLY
CLEANING FOR FLOATABLES AND DEBRIS	X	X	X	X	X	X	X	X	X	X	QUARTERLY AND AT TURNOVER
INSPECTION FOR EROSION				X	X	X	X	X	X	X	WEEKLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES				X			X	X	X	X	AS NEEDED AND PRIOR TO TURNOVER
REPLACEMENT OF GRAVEL JACKETS					X						AS NEEDED*
MOWING				X			X	X		X	1 TIME PER YEAR
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)	X			X	X	X	X	X	X	X	ANNUALLY AND AT TURNOVER
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED	X			X	X	X	X	X	X	X	AS NEEDED

* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

Maintenance Plan Budget

ANNUAL INSPECTION FOR SEDIMENT ACCUMULATION	$200 00
REMOVAL OF SEDIMENT ACCUMULATION EVERY 5 YEARS AS NEEDED	$100 00
INSPECT FOR FLOATABLES AND DEBRIS ANNUALLY AND AFTER MAJOR STORMS	$50 00
REMOVAL OF FLOATABLES AND DEBRIS ANNUALLY AND AFTER MAJOR STORMS	$50 00
INSPECT SYSTEM FOR EROSION ANNUALLY AND AFTER MAJOR STORMS	$100 00
RE-ESTABLISH PERMANENT VEGETATION OF ERODED SLOPES AS NEEDED	$100 00
REPLACEMENT OF GRAVEL JACKETS EVERY 3-5 YEARS AS NEEDED	$100 00
MOWING ANNUALLY	$100 00
TOTAL ANNUAL BUDGET	$600 00

RECORD DRAWINGS
DATE COMPLETED 11/22/05
PREPARED BY MAI
CHECKED BY JAM
FIELDWORK PROVIDED BY BY STANTECH, INC

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Maintenance Tasks and Schedule

TASKS	STREETS	STORM DRAINAGE SYSTEM	CATCH BASIN SUMPS	CATCH BASIN INLET CASINGS	CHANNELS	OUTFLOW CONTROL STRUCTURES	RIP-RAP	FILTRATION BASIN	STORM DETENTION AREAS	WETLANDS	EMERGENCY OVERFLOW	SCHEDULE
INSPECT FOR SEDIMENT ACCUMULATION		X	X		X	X	X	X	X	X		ANNUALLY
REMOVAL OF SEDIMENT ACCUMULATION		X	X		X	X	X	X	X	X	X	EVERY 5-10 YEARS AS NEEDED*
INSPECT FOR FLOATABLES AND DEBRIS		X	X	X	X	X	X	X	X	X	X	ANNUALLY
CLEANING FOR FLOATABLES AND DEBRIS		X	X	X	X	X	X	X	X	X	X	ANNUALLY
INSPECTION FOR EROSION					X	X	X	X	X	X	X	ANNUALLY
REESTABLISH PERMANENT VEGETATION ON ERODED SLOPES					X		X	X	X	X	X	AS NEEDED
REPLACEMENT OF GRAVEL JACKETS						X						EVERY 3-5 YEARS AS NEEDED*
CLEAN STREETS AND PARKING LOTS	X											SEMI-ANNUALLY
MOWING					X			X	X		X	1 TIME PER YEAR
INSPECT STRUCTURAL ELEMENTS DURING WET WEATHER AND COMPARE TO AS-BUILT PLANS (BY A PROFESSIONAL ENGINEER REPORTING TO THE OWNER)		X			X	X	X	X	X	X	X	ANNUALLY
MAKE ADJUSTMENTS OR REPLACEMENTS AS DETERMINED BY ANNUAL WET WEATHER INSPECTION		X			X	X	X	X	X	X	X	AS NEEDED
KEEP RECORDS OF ALL INSPECTIONS AND MAINTENANCE ACTIVITIES AND REPORT TO OWNER		X	X	X	X	X	X	X	X	X	X	ANNUALLY
KEEP RECORDS OF ALL COSTS FOR INSPECTIONS, MAINTENANCE AND REPAIRS REPORT TO OWNER		X	X	X	X	X	X	X	X	X	X	ANNUALLY
REVIEW COST EFFECTIVENESS OF THE PREVENTATIVE MAINTENANCE PROGRAM AND MAKE ADJUSTMENTS AS NEEDED		X	X	X	X	X	X	X	X	X	X	ANNUALLY
OWNER TO HAVE A PROFESSIONAL ENGINEER CARRY OUT EMERGENCY INSPECTIONS UPON IDENTIFICATION OF SEVERE PROBLEMS		X	X	X	X	X	X	X	X	X	X	AS NEEDED

* "AS NEEDED" MEANS WHEN SEDIMENT HAS ACCUMULATED TO A MAXIMUM OF ONE FOOT DEPTH

CURRENT DEVELOPMENT – BANK SITE

STORM WATER MANAGEMENT CALCULATIONS
Pittsfield Township, Washtenaw County
Standard Federal Bank, AHI Job 300688
Design Basis Use the Washtenaw County Drain Commission standards, including "first flush", bankfull & 100 year storm event design measures

I Total Volume of Detention Area 100 Year storm

1) Developed area contributing runoff (a) = 2 19 acres

Surface	area	c factor	weighted c
building	4262	0 95	0 04
pavement	40384	0 95	0 40
water	0	1 00	0 00
grass	50770	0 35	0 19
	95396		0 63

Developed Runoff Coefficient (c) = 0 63

2) Maximum Allowable Runoff, Qa = (local req'mts)
Qa = a * 0 15 cfs/acre = 38cfs,
use a target of 2 3 cfs to account for off-site flow = 0 33 cfs

3) Calculate Qo = Qa / (a * c) = 0 24 cfs/acre imperv
(max outflow per acre impervious)

4) Max Storage Time, T = -25+sqrt(10312 5/Qo) = 182 75 minutes

5) Max Storage Required, Vs = ((16500*T) / (T+25)) - 40QoT = 12,768 cf / acre imperv

6) Total Storage Required, Vt = Vs * a * c = **17,635 c f**

II Storage volume to detain "first flush" runoff
volume of 0 5 inch rain over entire watershed
Volume = 1815 x acreage x relative imperv factor = **2,607 cf**

III Storage volume to control "bankfull" flood (1 5 year storm/24 hr event)
Volume = 8170 x acreage x relative imperv factor (c) = **11,284 cf**

IV Required Sediment Volume
Store 5% of the 100-year storm = **882** cf

V Basin volume provided
Storage Provided

Elev	Area	Avg Area	Height	Volume
822 5	0			0
		1,159	0 5	
823 0	2,317			579
		3,736	1 0	
824 0	5,155			4,315
		6,555	1 0	
825 0	7,955			10,870
		9,371	1 0	
826 0	10,787			20,241
		12,245	1 0	
827 0	13,702			32,486
		12,381	1 0	
828 0	16,806			44,866
		18,440	1 0	
829 0	20,074			63,306
		21,789	1 0	
830 0	23,503			85,095

Storage Elevations Xo = 822 50 Xff = 823 52
Xbf = 825 06 X100 = 825 33

Outlet Control Structure
1 Outlet pipe sizing (10 year un-restricted)
Use 12-inch pipe at min slope

2 Standpipe outlet holes sizing - "first flush" runoff
Qff = Vff / 24 hrs / 3600 sec Qff= 0 029 cfs
h = 2/3 x (Xff - Xo) h = 0 677 ft
A = Qff / 62 x sqrt(2*32 2*h) A= 0 007 sf
The area of a 1/2" orifice 0 0014 sf
Number of orifice holes = 5 holes at elev 822 50

3 Standpipe outlet holes sizing - "Bankfull flood" discharge
Bankfull should discharge within 36 to 48 hours
Release from first flush holes only
Q=a x 62 x sqrt(2x32 2x2/3h) = Q= 0 048 cfs
Tbf with first flush holes only= 69 hrs
Add holes at to decrease storage time
The first flush volume will discharge in 24 3 hrs
The volume between the Bankfull elevation and the First Flush Elevation
Vbf-Vff= 8,777 cf
should discharge (target 42 hour discharge time) in 17 7 hrs
Qbf= 0 14 cfs
A=area of bankfull holes 0 020 sf
The area of a 1" orifice 0 0055 sf
Number of orifice holes = 3 holes at elev 823 52
bankfull storage time check= 43 hrs

4 Standpipe outlet holes sizing - "100-yr flood" discharge
Q100=Qa Q100= 0 330 cfs
Release from above holes
hff = (X100-Xo) hff = 2 83 ft
hbf = (X100-Xff) hbf = 1 818 ft
Release from above holes
Q=a x 62 x sqrt(2x32 2xhff)+a x 62 x sqrt(2x32 2xhbf)= Q= 0 169 cfs
Remaining flow Q100-Q= 0 161 cfs
A = Q100 /(62 x sqrt(2*32 2*h)) A = 0 062 sf
The area of a 1 1/2" orifice is 0 0123 sf
Number of orifice holes = 5 holes at elev 825 06
Q100 = A*(62 x sqrt(2*32 2*h)) 0 16 cfs
Actual Design Peak Outlet Flow (Qff + Qbf + Q100 at 100 year elevation) = **0 33** cfs

FUTURE DEVELOPMENT – COMBINED SITES

STORM WATER MANAGEMENT CALCULATIONS
Pittsfield Township, Washtenaw County
Standard Federal Bank, AHI Job 300688
Design Basis Use the Washtenaw County Drain Commission standards, including "first flush", bankfull & 100 year storm event design measures

I Total Volume of Detention Area 100 Year storm

1) Developed area contributing runoff (a) = 5 05 acres

Surface	area	c factor	weighted c
building	15000	0 95	0 06
pavement	116987	0 95	0 51
water	0	1 00	0 00
grass	87991	0 35	0 14
	219978		0 71

Developed Runoff Coefficient (c) = 0 71

2) Maximum Allowable Runoff, Qa = (local req'mts)
Qa = a * 0 15 cfs/acre = 0 76 cfs
use a target of 2 3 cfs to account for off-site flow

3) Calculate Qo = Qa / (a * c) = 0 21 cfs/acre imperv
(max outflow per acre impervious)

4) Max Storage Time, T = -25+sqrt(10312 5/Qo) = 186 60 minutes

5) Max Storage Required, Vs = ((16500*T) / (T+25)) - 40QoT = 12,987 cf / acre imperv

6) Total Storage Required, Vt = Vs * a * c = **46,565 c f**

II Storage volume to detain "first flush" runoff
volume of 0 5 inch rain over entire watershed
Volume = 1815 x acreage x relative imperv factor = **6,508 cf**

III Storage volume to control "bankfull" flood (1 5 year storm/24 hr event)
Volume = 8170 x acreage x relative imperv factor (c) = **29,294 cf**

IV Required Sediment Volume
Store 5% of the 100-year storm = **2328** cf

V Basin volume provided
Storage Provided

Elev	Area	Avg Area	Height	Volume
822 5	0			0
		1,159	0 5	
823 0	2,317			580
		3,736	1 0	
824 0	5,155			4,316
		6,555	1 0	
825 0	7,955			10,871
		9,371	1 0	
826 0	10,787			20,242
		12,245	1 0	
827 0	13,702			32,487
		12,381	1 0	
828 0	16,806			44,868
		18,440	1 0	
829 0	20,074			63,308
		21,789	1 0	
830 0	23,503			85,097

Storage Elevations Xo = 822 50 Xff = 824 33
Xbf = 826 74 X100 = 828 14

Outlet Control Structure
1 Outlet pipe sizing (10 year un-restricted)
Use 12-inch pipe at min slope

2 Standpipe outlet holes sizing - "first flush" runoff
Qff = Vff / 24 hrs / 3600 sec Qff= 0 075 cfs
h = 2/3 x (Xff - Xo) h = 1 220 ft
A = Qff / 62 x sqrt(2*32 2*h) A= 0 014 sf
The area of a 3/4" orifice is 0 0031 sf
Number of orifice holes = 4 holes at elev 822 50

3 Standpipe outlet holes sizing - "Bankfull flood" discharge
Bankfull should discharge within 36 to 48 hours
Release from first flush holes only
Q=a x 62 x sqrt(2x32 2x2/3h) = Q= 0 104 cfs
Tbf with first flush holes only= 78 hrs
Add holes at to decrease storage time
The first flush volume will discharge in 26 5 hrs
The volume between the Bankfull elevation and the First Flush Elevation
Vbf-Vff= 22,786 cf
should discharge (target 42 hour discharge time) in 15 5 hrs
Qbf= 0 41 cfs
A=area of bankfull holes 0 048 sf
The area of a 2" orifice 0 0218 sf
Number of orifice holes = 2 holes at elev 824 33
bankfull storage time check= 43 hrs

4 Standpipe outlet holes sizing - "100-yr flood" discharge
Q100=Qa Q100= 0 760 cfs
Release from above holes
hff = (X100-Xo) hff = 5 64 ft
hbf = (X100-Xff) hbf = 3 810 ft
Release from above holes
Q=a x 62 x sqrt(2x32 2xhff)+a x 62 x sqrt(2x32 2xhbf)= Q= 0 570 cfs
Remaining flow Q100-Q= 0 190 cfs
A = Q100 /(62 x sqrt(2*32 2*h)) A = 0 032 sf
The area of a 2" orifice 0 0218 sf
Number of orifice holes = 1 holes at elev 826 74
Q100 = A*(62 x sqrt(2*32 2*h)) 0 13 cfs
Actual Design Peak Outlet Flow (Qff + Qbf + Q100 at 100 year elevation) **0 70** cfs

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SECTION 28 TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET
DETAIL SHEET

CAD FILE 300688RD-09-DT

12/28/05 PER TWP
REVISIONS

DATE 11/29/05

SCALE NO SCALE
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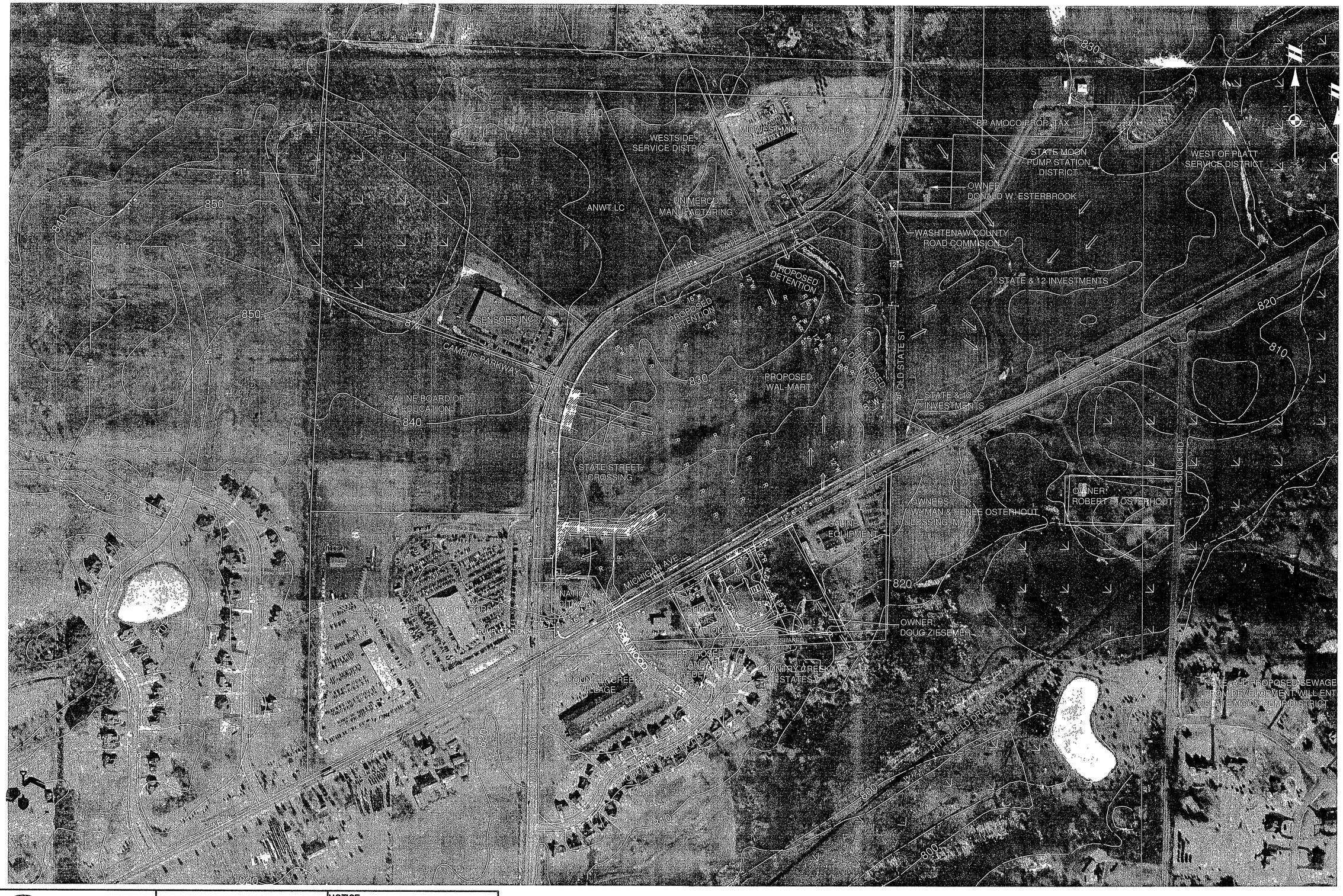
P M M PASCOE
BOOK --
JOB 300688
FILE NO 437-520-09

SHEET NO 09



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CLIENT

AREA WIDE DRAINAGE AND UTILITY MAP

CAD FILE 300688RD-10-AWU

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SCALE 0 100 200
1" = 200 FEET

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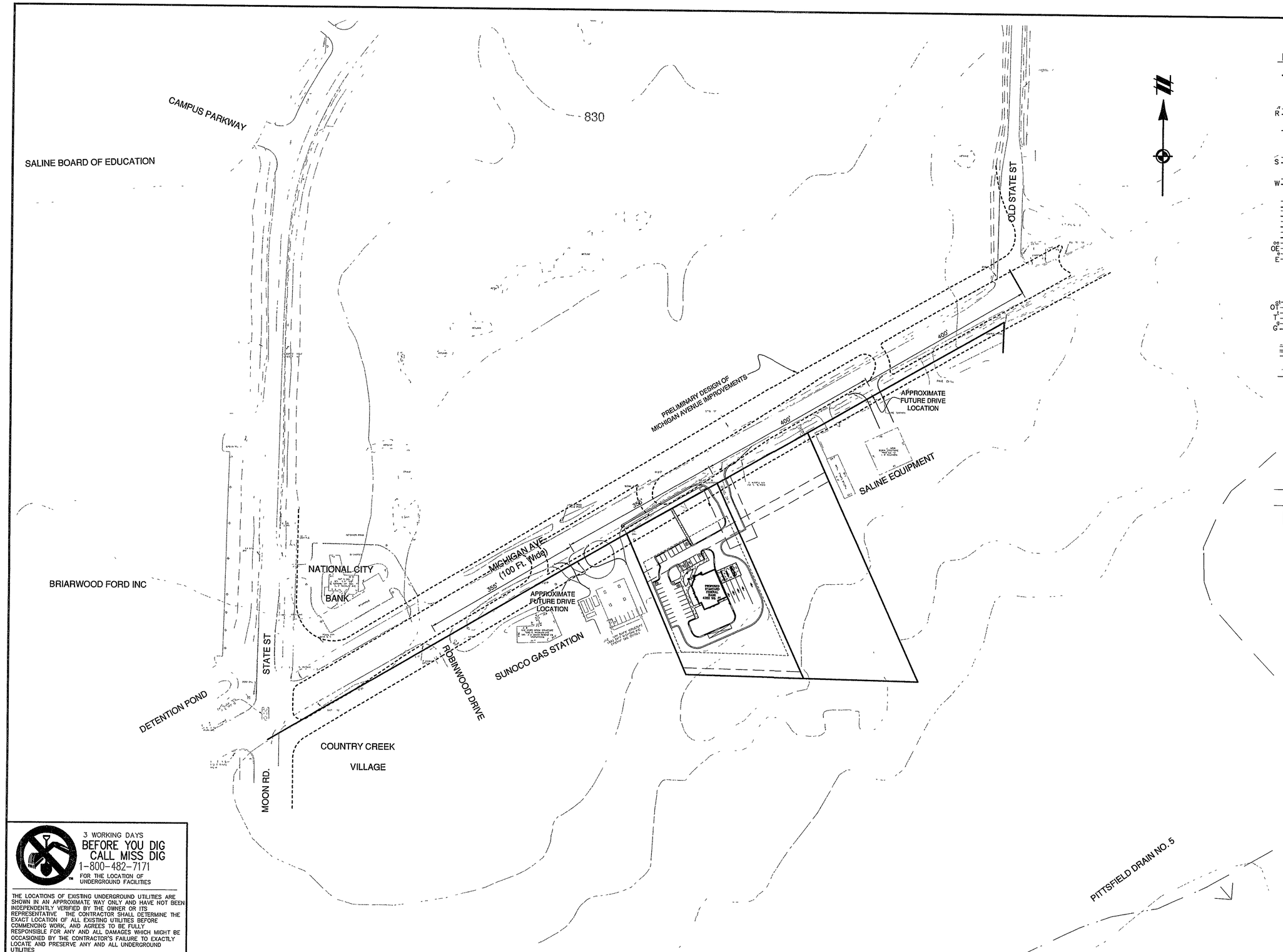
JOB 300688
FILE NO 437-520-10



LEGEND

836	EXIST CONTOUR
	PROP CONTOUR
× 854 6	EXIST SPOT ELEVATION
× 854 6	PROP SPOT ELEVATION
T/C	TOP OF CURB
T/P	TOP OF PAVEMENT
G	GUTTER
S R	EXIST STORM SEWER
	PROP STORM SEWER
	EXIST MANHOLE
	PROP MANHOLE
	PROP EDGE DRAIN
	EXIST CATCH BASIN/INLET
	PROP CATCH BASIN/INLET
	END SECTION
	CULVERT
S	EXIST SANITARY SEWER
	PROP SANITARY SEWER
C.O.	EXIST CLEANOUT
C.O.	PROP CLEANOUT
W	EXIST WATER MAIN
	PROP WATER MAIN
	EXIST HYDRANT
	PROP HYDRANT
P.I.V.	EXIST POST INDICATOR VALVE
P.I.V.	PROP POST INDICATOR VALVE
	EXIST SHUTOFF OR CURB BOX
	PROP SHUTOFF OR CURB BOX
	EXIST GATE VALVE IN BOX
	PROP GATE VALVE IN BOX
	EXIST GATE VALVE IN MANHOLE
	PROP GATE VALVE IN MANHOLE
OE	EXIST OVERHEAD ELECTRIC
	PROP OVERHEAD ELECTRIC
E	EXIST UNDERGROUND ELECTRIC
	PROP UNDERGROUND ELECTRIC
	EXIST LIGHT POLE
	PROP LIGHT POLE
U P	EXIST UTILITY POLE
U.P	PROP UTILITY POLE
	GUY WIRE
	EXIST ELECTRIC TRANSFORMER
	PROP ELECTRIC TRANSFORMER
OT	EXIST OVERHEAD TELEPHONE
	PROP OVERHEAD TELEPHONE
T	EXIST UNDERGROUND TELEPHONE
	PROP UNDERGROUND TELEPHONE
G	EXIST GAS
	PROP GAS
	EXIST GAS RISER
	EXIST TELEPHONE RISER
	EXIST CURB AND GUTTER
	PROP CURB AND GUTTER
	CENTERLINE OF DITCH OR EDGE OF WATER
	EDGE OF WETLAND
	EXISTING FENCE
	PROPOSED FENCE
℄	PROPERTY LINE
℄	CENTERLINE
	EXIST SIGN
	PROP SIGN
	DRAINAGE DIRECTION
R	SIDEWALK RAMP
F F	FINISH FLOOR ELEV
F G	FINISH GRADE
	CONTROL POINT
O F	FOUND IRON PIPE
O S	SET IRON PIPE
	EXIST DECIDUOUS TREE
	EXIST CONIFEROUS TREE
	EXIST TREE OR BRUSH LIMIT
	SILT FENCE
	SECTION CORNER
	EXIST UTILITY UNSPECIFIED
	PROPOSED BITUMINOUS PAVEMENT
	PROPOSED CONCRETE PAVEMENT
	SPILL OUT CURB
	PROPOSED DRAINAGE BOUNDARY
M E	MATCH EXISTING
	INLET FILTER

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NOTICE:

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

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SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
MICHAEL A. BOGGIO ASSOCIATES

STANDARD FEDERAL BANK
RECORD DRAWING SET

ACCESS MANAGEMENT PLAN

CAD FILE
300688RD-11-AMP

REVISIONS

DATE
11/29/05

SCALE 0 50 100
1" = 100 FEET

DR	MAI	CH	JM
PM	M PASCOE		
BOOK	---		
JOB	300688		
FILE NO	437-520-11		

SHEET NO
11

Notes

1 Nonapplicable warning, regulatory, construction and guide signs within the CIA shall be covered or repositioned

2 D = Distance between traffic control devices
L = Minimum length of taper
B = Length of longitudinal buffer
See M000e for "D", "L" and "B" values

3. Distances shown between signs, the value for which are shown in Table D, are approximate and may need adjusting as directed by the engineer

4 Barricade spacing shall be equal in feet to the posted speed limit in feet on tangent sections, or as directed by the engineer

5 For overnight closures, channelizing devices shall be Type III Lighted Barricades or lighted plastic drums

6 When buffer areas are established, there shall be no equipment or materials stored or work conducted in the buffer area

7 Lane closures shall be from 9 00 A M to 3 00 P M only

8 All traffic control devices shall be in compliance with the M.M U T C D , part 6 2001 edition

9 Access to existing drives must be maintained at all times

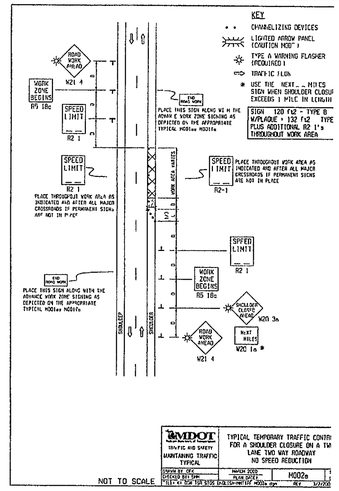
Legend

- - - - - Channelizing Devices

Type A Warning Flashers (required at night)

Lighted Arrow Panel

Traffic Flow



NOTES

1E D DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
1/1 1 MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
SEE M000e FOR "D", "L", AND "B" VALUES

2 ALL NON APPLICABLE SIGNING WITHIN THE CIA SHALL BE MODIFIED TO FIT CONDITIONS, COVERED OR REMOVED

3 DISTANCES BETWEEN SIGNS, THE VALUES FOR WHICH ARE SHOWN IN TABLE D, ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER

3A THE "WORK ZONE BEGINS" (R5 18c) SIGN SHALL BE USED ONLY IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE SHALL OMIT THIS SIGN AND THE QUANTITIES SHALL BE ADJUSTED APPROPRIATELY

4E THE MAXIMUM RECOMMENDED DISTANCE(S) BETWEEN CHANNELIZING DEVICES IN THE TAPER AREA IS 1 5 FEET OR 15 FEET AND SHOULD BE EQUAL IN FEET TO TWICE THE POSTED SPEED IN MILES PER HOUR IN THE PARALLEL AREA(S)

5 FOR OVERNIGHT CLOSURES, CHANNELIZING DEVICES SHALL BE LIGHTED PLASTIC DRUMS

6 IN, TYPE A WARNING FLASHER SHOWN ON THE WARNING SIGNS SHALL BE POSITIONED ON THE SIDE OF THE SIGN NEAR ST THE ROADWAY

7 ALL 4 x 4 WARNING SIGNS, TYPE III BARRICADES, THEIR TEMPORARY SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL BE FABRICATED IN ACCORDANCE WITH THE CURRENT STANDARD PLAN

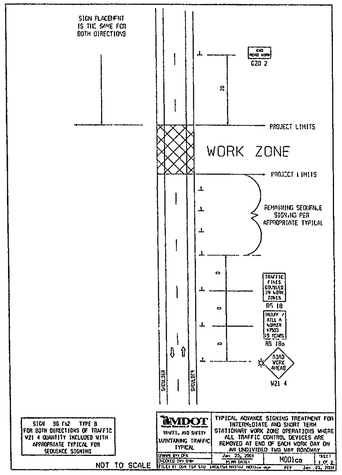
8 WORK BUFFER AREAS ARE ESTABLISHED, THERE SHALL BE NO EQUIPMENT OR MATERIAL S STORED OR WORK CONDUCTED IN THE BUFFER AREA

29A THE TYPE OF REFL CTIVE SHEETING USED FOR THE W20 1a PLAQUE SHALL BE THE SAME AS THE TYPE USED FOR THE PARENT SIGN

SIGN SIZES

DIAMOND WARNING	48" x 48
W20 1a PLAQUE	48" x 36
R2 1 REGULATORY	48 x 60"
R5 18c REGULATORY	48 x 48

MDOT TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL — TYPICAL TEMPORARY TRAFFIC CONTROL FOR A SHOULDER CLOSURE ON A TWO LANE TWO WAY ROADWAY NO SPEED REDUCTION — NOT TO SCALE — M002a



NOTES

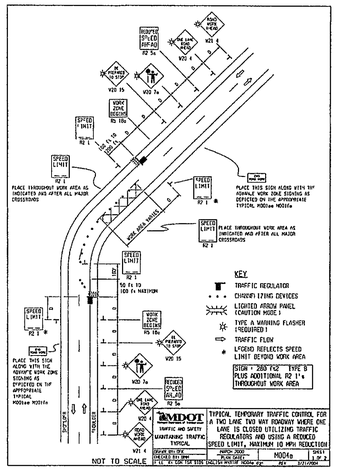
3D HE APPROPRIATE ADVANCE SIGNING, SPACINGS(S), LNGTH(S) AND TRANSLATION(S) SHALL BE AS D ON ALL PROJECTS

3S THESE SIGNS ARE INTENDED TO BE US/D WITHIN THE LIMITS OF TH TEMPORARY SEQUENCE SIGNING AS IS SHOWN ON 1 & 2 THESE SIGNS ARE NOT TO BE INTERMIXED WITH ANY OTHER TEMPORARY S-PACKED SIGNING PACKS" AS SHOWN

SIGN SIZES

G20 2	48" x 24
R5 18	48 x 60
R5 18c	48" x 60"
W21 4	48 x 48

MDOT TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL — TYPICAL ADVANCE SIGNING TREATMENT FOR INTERMEDIATE AND SHORT TERM STATIONARY WORK ZONE OPERATIONS WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC DEVICES ARE REMOVED AT END OF EACH WORK DAY ON AN UNDIVIDED TWO WAY ROADWAY — NOT TO SCALE — M001ae



NOTES

1EA SEE M000a FOR "D" VALUES

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7 ALL 4 x 4 WARNING SIGNS, TYPE III BARRICADES, THEIR TEMPORARY SUPPORT SYSTEMS AND LIGHTING REQUIREMENTS SHALL BE FABRICATED IN ACCORDANCE WITH THE CURRENT STANDARD PLAN

9 ALL TRAFFIC REGULATORS SHALL BE PROPERLY TRAIN D AND SUPERVISED

9A IN ANY OPERATION INVOLVING VOL. THAN ONE TRAFFIC REGULATOR ONE PERSON SHOULD BE DESIGNATED AS HEAD TRAFFIC REGULATOR

10 ALL TRAFFIC REGULATORS CONDUCT, THEIR EQUIPMENT, AND TRAFFIC REGULATING PROCEDURES SHALL CONFORM TO THE CURRENT EDITION OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CURRENT EDITION OF THE WOOT HANCOCK ENTITLED "TRAFFIC R"GULATORS INSTRUCTION MANUAL

11 WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS, APPROPRIATE LIGHTING SHALL BE PROVIDED TO SUFFICIENTLY ILLUMINATE THE TRAFFIC REGULATOR S STATIONS

12A THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS SHALL BE NO MORE THAN 2 MILES IN LENGTH UNLESS RESTRICTED FURTHER IN THE SPECIAL PROVISIONS FOR MAINTAINING TRAFFIC ALL SEGMENTS OF WORK THAT 2 MILES IN LENGTH WILL REQUIRE WRITTEN PERMISSION FROM THE ENGINEER BEFORE PROCEEDING

13 WHEN INTERSECTING ROADS OR SIGNIFICANT TRAFFIC GENERATORS (SHOPPING CENTERS, MOBILE HOME PARKS, ETC) OCCUR WITHIN THE ONE LANE TWO WAY OPERATION, INTERMEDIATE TRAFFIC R GULATORS, AND APPROPRIATE SIGNING SHALL BE PLACED AT THESE LOCATIONS

14 ADDITIONAL SIGNING AND/OR DELINEATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE WOO IS SIGNS

15 THE HAND HELD (PADDLE) SIGNS ACQUIRED BY THE PARTIES TO CONTROL TRA FIC WILL BE PAID FOR AS PART OF TRAFFIC CONTROL

20E IN, TRAFFIC REGULATORS SHOULD BE POSITIONED AT OR NEAR THE SIDE O THE ROAD SO THAT THEY ARE SEEN CLEARLY AT A MINIMUM DISTANCE OF 500 FEET THIS MAY REQUIRE EXTENDING THE OPERATIONS OF THE LANE CLOSURE TO OVERCOME VIEWING PROBLEMS CAUSED BY HILLS AND CURVES

SIGN SIZES

DIAMOND WARNING	48" x 48
RECTANGULAR REGULATORY	48 x 60
R5 18 REGULATORY	48 x 48

MDOT TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL — TYPICAL TEMPORARY TRAFFIC CONTROL FOR A TWO LANE TWO WAY ROADWAY WHERE ONE LANE IS CLOSED UTILIZING TRAFFIC REGULATORS AND USING A REDUCED SPEED LIMIT, MAXIMUM 10 MPH REDUCTION — NOT TO SCALE — M004a

MINIMUM MERGING TAPER LENGTH "L" (FEET)

OFFSET FEET	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) 25	30	35	40	45	50	55	60	65	70
1	10	15	20	27	45	50	55	60	65	70
2	21	30	41	53	90	100	110	120	130	140
3	31	45	61	80	135	150	165	180	195	210
4	42	60	82	107	180	200	220	240	260	280
5	52	75	102	133	225	250	275	300	325	350
6	63	90	123	160	270	300	330	360	390	420
7	73	105	143	187	315	350	385	420	455	490
8	83	120	163	213	360	400	440	480	520	560
9	94	135	184	240	405	450	495	540	585	630
10	104	150	204	267	450	500	550	600	650	700
11	115	165	225	293	495	550	605	660	715	770
12	125	180	245	320	540	600	660	720	780	840
13	135	195	266	347	585	650	715	780	845	910
14	146	210	286	374	630	700	770	840	910	980
15	157	225	307	400	675	750	825	900	975	1050

TAPER LENGTH L IN FEET

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

"L" = $\frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" S x W WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

TYPES OF TAPERS
UPSTREAM TAPERS
MERGING TAPER
SHIFTING TAPER
SHOULDER TAPER
TWO WAY TRAFFIC TAPER
DOWNSTREAM TAPERS
(USE IS OPTIONAL)

TAPER LENGTH
L MINIMUM
1/2 L MINIMUM
1/3 L MINIMUM
100 ' MAXIMUM
100 MINIMUM (PER LANE)

MDOT TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL — TABLES FOR "L", "D" AND "B" VALUES — M000e

DISTANCE BETWEEN TRAFFIC CONTROL DEVICES "D"

D DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA) 25	30	35	40	45	50	55	60	65	70
D (FEET)	255	300	350	400	450	500	550	600	650	700

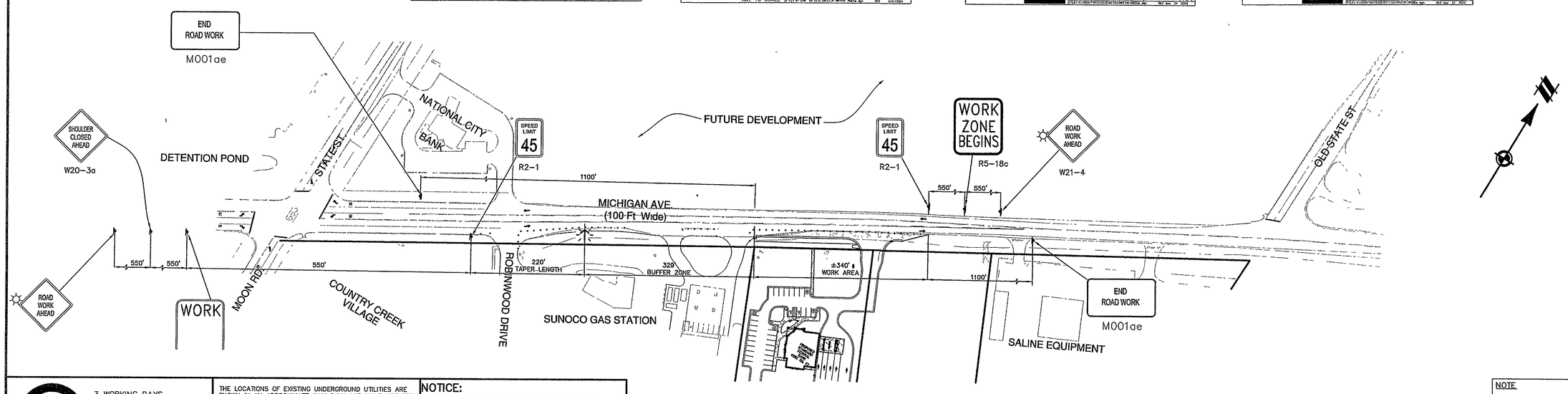
GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE[1] "B"

SPEED* MPH	LENGTH FEET
20	33
25	50
30	83
35	132
40	181
45	232
50	274
55	326
60	411
65	476
70	542

* POSTED SPEED, OFF PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED

1 BASED UPON AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) BRAKING DISTANCE PORTION OF STOPPING SIGHT DISTANCE FOR WET AND LEVEL PAVEMENTS (A POLICY ON GEOMETRIC DESIGN OF HIGHWAY AND STREETS), AASHTO THIS AASHTO DOCUMENT ALSO RECOMMENDS ADJUSTMENTS FOR THE EFFECT OF GRADE ON STOPPING AND VARIATION FOR TRUCKS

MDOT TRAFFIC AND SAFETY MAINTAINING TRAFFIC TYPICAL — TABLES FOR "L", "D" AND "B" VALUES — M000e



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SHEET NO 12

ATWELL-HICKS, INC.

SECTION 28 TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT

TRAFFIC CONTROL PLAN

CAD FILE 30068RD-12-TCP

REVISIONS

DATE 11/29/05

SCALE 0 50 100
1" = 100 FEET

DR MAI CH JM
PM M PASCOE
BOOK --
JOB 300688
FILE NO 437-520-12

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PITTSFIELD CHARTER TOWNSHIP
SOIL EROSION AND SEDIMENTATION CONTROL NOTES

GENERAL

1 The contractor shall implement and maintain the soil erosion control measures as shown on the plans at all times during construction on this project. Any modifications or additions to the soil erosion control measures due to construction or changed conditions, shall be complied with as required or directed by the owner, project engineer or Pittsfield township.

2 [illegible]

3 [illegible]

4 [illegible]

5 [illegible]

6 [illegible]

7 [illegible]

8 [illegible]

9 [illegible] precautions will be taken in the use of construction equipment to prevent [illegible] that promote erosion.

10 Proper dust control shall be maintained during construction by use of water trucks and/or chloride as required.

11 The contractor shall be responsible for [illegible] all temporary soil erosion control measures and removal of same upon authorized completion of project. Completion of project will not be authorized until all site work, home building, road work and other construction is complete and all [illegible].

12 [illegible]

13 [illegible]

SEQUENCE OF CONSTRUCTION

1 [illegible] prior to any grading operation

2 [illegible] tracking pad

3 [illegible] temporary [illegible]

4 [illegible] topsoil, fertilizer, seed and mulch [illegible]

5 [illegible] stockpile topsoil and [illegible] building construction

6 [illegible]

7 [illegible]

8 [illegible]

9 [illegible]

10 [illegible]

11 [illegible]

12 [illegible]

13 [illegible]

SEEDING

1 [illegible] in accordance with project specifications

2 All areas of disturbed earth that are not to be paved or rodded shall have 4 inches of topsoil, seed, fertilizer and mulch.

3. Immediately after seeding, mulch all seeded areas with unweathered small grain straw (preferably wheat) or hay spread uniformly at the rate of 1 1/2 to 2 tons (= 100 pounds (2 to 3 bales) per 1,000 square feet). The mulch should be anchored with a disc-type mulch anchoring tool.

4 [illegible]

5 [illegible]

[illegible]

1 Protect [illegible] with [illegible] Products [illegible] or approved equivalent as follows

a [illegible]

b [illegible]

c [illegible]

ROADS

1 During construction, all roads shall be [illegible]

[illegible]

1.00 GENERAL

1.01 DESCRIPTION

A The CONTRACTOR shall perform all excavation and backfilling necessary to complete the work. This shall include the excavation of earth and rock, the removal and disposal of unsuitable material, dewatering, placement of suitable fill and backfill material, pipe boring and jacking, all quality assurance testing, and the restoration and final grading for all earth surfaces.

1.02 WORK WITHIN RIGHTS-OF-WAY

A Where the governmental bodies having jurisdiction of the streets or rights of way have specific specifications relating to the requirements for work within their jurisdiction, such requirements must be met as a minimum requirement, and if these Specifications impose further limitations on the work, they shall also be met as the required work standard.

[illegible]

1.03 WORK WITHIN EASEMENTS

A During construction within any easement, the CONTRACTOR shall confine himself to the limits shown on the Plans. He shall notify property owners in advance of moving equipment on easement, and use of the access routes which will be designated by the OWNER. The OWNER will cooperate in working out the details of access. The topsoil over the trench shall be removed and carefully replaced upon completion of the work. The backfill of the trench in the easement may be left slightly high to provide for any slight residual settlement. Any trees, shrubs, or bushes removed shall be replaced to the satisfaction of the property owner.

1.04 SOIL BORINGS

A Soil boring results, if taken on a site, are appended to these Specifications with locations noted. Boring logs are shown to be generally representative of the site and to assist in the design and construction of the work.

2.00 MATERIALS

2.01 BACKFILL MATERIAL

A For areas not requiring granular backfill material, backfill shall be the excavated material with the exception that materials such as clay, topsoil, muck, sand, vegetable matter, rocks, boulders and other objectionable and non-packing earth shall be excluded from the backfill and removed from the site. Stone larger than 3 inches in any dimension shall be excluded from the backfill and removed from the site by the CONTRACTOR.

B Where "granular material" backfill is required as specified herein, backfill material shall be defined as a material meeting granular material Class II as defined in 2003 MDOT 902.08.

2.02 ENCASING PIPE

A Steel encasing pipe for boring and jacking shall conform to the requirements of either ASTM A53 Type E or S, Grade B or ASTM A[illegible], Grade B.

B Steel encasing pipe used under channels and highways shall meet the requirements of the governmental agency having jurisdiction and the following minimum requirements:

Nominal Diameter Inches	Maximum Wall Thickness
Under 13	0.188 inches
13-24	0.250 inches
26-30	0.312 inches
[illegible]	0.438 inches
[illegible]	0.500 inches
[illegible]	0.563 inches

C Steel encasing pipe used under railroads shall meet the requirements of the railroad and the [illegible]

Nominal Diameter Inches	Minimum Wall Thickness (inches) Coated or Cathodically Protected	Uncoated & Unprotected
Under 14	0.100	0.251
14-16	0.219	0.282
18	0.250	0.313
20	0.281	0.344
22	0.312	0.375
24	0.344	0.407
26	0.375	0.438
28-30	0.406	0.469
32	0.438	0.501
34-36	0.469	0.532
38-42	0.500	0.563
48	0.563	0.626

D Casing pipe joints shall be welded to form a leakproof continuous casing.

E [illegible] pipe joints or [illegible] of carrier pipe less than 6 inches in diameter and at least 4 inches greater than the largest outside diameter of the carrier pipe joints for carrier pipe 6 inches and over in diameter, unless otherwise shown on the Plans.

F The steel encasing pipe shall be of smooth interior and shall be placed accurately to line and grade, allowing for the encased pipe thickness and supports under each length of encased pipe.

3.00 EXECUTION

3.01 GENERAL EXCAVATION

A Excavation shall be performed by any practicable method consistent with the integrity and protection of the work and neighboring structures, workmen and the public. Topsoil shall be separately removed and stockpiled for reuse.

B All excavation, except where necessary to tunnel, bore or jack under roads, railroads, tree roots and other obstructions within the limits indicated on the Plans, to be open cut from the surface. Tunneling or boring under trees shall be considered as incidental to construction and will not be considered as cause for request for additional payment.

C Foreign material or unsuitable foundation material encountered, such as wood, boulders, etc., which obstruct the excavation, shall be removed. Such materials found at the bottom of the excavation shall be removed and the foundation restored with approved materials.

D If excess excavation is made or the material becomes disturbed so as to require removal beyond the prescribed limits, the resulting space shall be filled with selected material solidly tamped into place, in not more than 6 inch layers to the satisfaction of the ENGINEER before the construction work proceeds. At the direction of the ENGINEER, the excess excavation may be filled with [illegible] concrete at the CONTRACTOR's expense.

E The excavation shall be kept dry during the work. Where water is encountered in the excavation [illegible] CONTRACTOR shall be responsible for all damages caused by him due to inadequate or improper protection.

F The CONTRACTOR shall take ample precautions to protect all trees and ornamental shrubbery not within the limits of the construction areas or within the construction areas shown on the Plans to be retained from injury by workmen, equipment, or any other agencies connected with the work including subcontractors. Such protection shall be provided during the progress of the excavation, grading, or other phases of the work as necessary. Such trees or shrubbery shall be surrounded by protective posts or fencing before construction begins when in judgement of the ENGINEER such precautionary measures are necessary. If as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental to the Contract work.

G Any excavation not backfilled at the end of each day must be clearly marked and surrounded by appropriate safety fencing as directed by the ENGINEER. If directed by the ENGINEER, the CONTRACTOR shall cover the open excavation with a steel plate and light the excavated area.

3.02 [illegible]

A Trenches shall be excavated to the depth required with allowance for bedding the pipe. The trench shall be cut wider and deeper at each pipe joint location to provide for properly completing the pipe joint and to relieve the joint of all loadings.

B The width of the trench at the top of a rigid pipe shall be sufficient to allow the pipe to be laid and jointed properly and shall provide for a minimum net clearance of 6 inches and a maximum net clearance of 12 inches on each side of the barrel of the pipe and to allow the backfill to be placed and properly compacted.

C The width of trench at the top of a flexible pipe backfill when using concrete bedding shall be sufficient to allow the pipe to be laid and jointed properly with the minimum net clearance of 12 inches and a maximum net clearance of 18 inches on each side of the barrel of the pipe.

D Where the conditions of the ground require, or where the work is in close proximity of existing structures, the sides of excavation shall be securely held by bracing and/or sheeting which may be removed in units when the level of the backfill has reached a point where it is safe to pull the

sheeting without disturbing the protected feature. No sheeting, bracing or other timber shall be left in the excavation upon the completion of the main or other structures, except with the [illegible] review and direction of the ENGINEER.

E Other underground mains, sewers or structures encountered in the excavation shall be adequately supported during the CONTRACTOR's operation, and before backfilling shall be given permanent support as directed by the ENGINEER to meet the standards or requirements of the owning utility or agency.

F Water, sewer, gas and other utility services disturbed by the CONTRACTOR in his operations shall be repaired or replaced in a manner equal to the original condition by the CONTRACTOR at his own expense. Where these services are encountered and are undamaged, they shall be supported and/or protected by the CONTRACTOR at his expense against later settlement and/or damage after backfill. The CONTRACTOR shall consult the agency or the utility firm having jurisdiction over any duct line, gas main, etc. which may cross the excavation to determine method of supporting such duct or pipe.

G [illegible] avoid obstructing sidewalks and driveways. Hydrants under pressure, valve manhole covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Gutters shall be kept clean or other satisfactory provisions made for street drainage, and natural water courses shall not be obstructed except as otherwise provided for them on a temporary basis.

3.03 EXCAVATION FOR STRUCTURES

A Excavation for structures shall be extended sufficiently beyond the limits of the structure to provide ample room for form construction and for practicable construction methods to be followed.

B Requirements for excavation of sewers and water mains shall also apply to this Section.

3.04 EXCAVATION FOR PAVED SURFACES

A In excavating around manholes and catch basins or inlets, care shall be exercised to avoid removing the casings and pushing dirt into the structures. Dirt pushed into manholes, catch [illegible]

B The CONTRACTOR shall take ample precautions to protect all trees and ornamental shrubbery not within the limits of the construction area, or within the construction areas shown on the Plans to be retained from injury by workmen, equipment, or any other agencies connected with the work including subcontractors. Such protection shall be provided during the progress of the excavation, grading, or other phases of the work as necessary. Such trees or shrubbery shall be surrounded by protective posts or fencing before construction begins when in the judgment of the ENGINEER such precautionary measures are necessary. If as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental to the Contract work.

3.05 ROCK EXCAVATION

A Rock excavation shall consist of excavating igneous, metamorphic and sedimentary rock which cannot be excavated without continuous drilling and blasting or drilling and splitting to fracture the

rock. Blasting shall be permitted only after it has been shown that other methods of excavation are impractical. All rock excavation shall be carried to a minimum depth of 8 inches below the pipe or manhole bottom and to the bottom of all footings. The width of the rock excavation shall not exceed the diameter of the pipe plus 12 inches on either side or the edge of the foundation footing.

B When the use of explosives is necessary for the progression of the work, the CONTRACTOR shall comply with all laws, ordinances, and applicable safety code requirements and regulations relative to the handling, storage and use of explosives and protection of life and property. A person competent and experienced in the use of explosives shall be employed to supervise the work. The CONTRACTOR shall schedule all blasting for a definite hour of the day and shall notify all residents and businesses in the area as to the schedule, day and hour for such blasting operations. Explosive materials shall not be stockpiled and stored in residential areas. Explosives and initiating devices shall not be carried in the same vehicle.

C Suitable weighted plant coverings or timber mats shall be provided to confine all materials lifted [illegible] shattered or loosened shall be removed at the CONTRACTOR's expense. The CONTRACTOR shall be responsible for all damage resulting from the use of explosives.

3.06 PIPE BORING AND JACKING

A The CONTRACTOR shall obtain all necessary permits for jacking the encasing pipe under channels, highways and/or railroads and shall notify the governmental agency and/or company having jurisdiction 48 hrs before work at any crossing is started. The CONTRACTOR shall pay all costs for an inspector and/or flagmen required by a railroad or governmental agency.

B A suitable approach trench shall be opened, adjacent to the toe of the slope of the embankment. The approach trench shall be long enough to accommodate the length of pipe units to be placed and wide enough to provide sufficient working room. Guide timbers or rails for keeping the pipe on line and grade shall be installed in the bottom of the trench and heavy timber backstop supports installed at the rear of the trench to take the thrust of the jacks. A timber bearing or "pushing frame" shall be built and furnished to fit or match the end of the pipe to be jacked, so that the pressure of the jacks will be evenly distributed over the end of the pipe. Two (2) hydraulic jacks of sufficient power shall be used to apply pushing or jacking pressure. For firm ground, [illegible] Pipe shall be jacked on successive lifts until completed to guard against the "freezing of the line" due to settlement and compaction of surrounding soil.

C The sheeting of pits along any road will be required if the leading edge of all work pits will be closer to the pavement edge than the shoulder point or ten (10) ft, whichever distance is greater, or on curb and gutter sections at least five (5) ft from back of curb.

D Upon completion of the installation of the steel pipe encasement, the contractor shall furnish and install a bolted style casing spacer as described below on the carrier pipe. Casing spacers shall be placed a maximum of seven (7) feet apart along the length of the carrier pipe with one casing spacer within 2-1/2 feet of each side of a pipe joint and the rest evenly spaced. Wood skids are not an acceptable method of supporting the carrier pipe.

1 Casing spacers for carrier pipes from 4"-24" shall be made of a molded segmented high density polyethylene plastic with 304 stainless steel connecting nuts and bolts. Maximum spacer width shall be 5.2" for carrier pipes from 4"-12" and 7.0" for carrier pipes 14"-24".

Each casing spacer shall have at least six (6) integrally molded skids extending 1" beyond the bell or mechanical joint of the carrier pipe. The casing spacers shall be equal to the PSI Ranger [illegible] manufactured by Pipeline Seal and Insulator Inc., Houston, TX.

2 Casing spacers for carrier pipe larger than 24" shall be a PVC fusion bonded coated (10-16 mils) steel shell (minimum 14 gauge steel) with a 90 mil PVC inner liner and 2" wide 30% glass reinforced polyester runners (minimum compressive strength = 18,000 psi) (polyethylene is not an acceptable runner material) attached by 3/8" coated steel studs welded to the steel shell. All bolts and nuts used to fasten the shell to the carrier pipe shall be cadmium plated steel. Where risers are required under the runners they shall be a minimum 10 gauge steel welded to the shell and coated as specified for the shell (epoxy is not an acceptable coating for the shell riser). The casing spacers shall be equal to the PSI Model [illegible] as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

E Boring shall be performed by accepted and recognized method which will provide adequate safety and protection at all times to workmen employed in the work and to inspectors and others [illegible]

F If voids should develop around the outside of the encasing pipe, grouting or other methods approved by the ENGINEER shall be employed to fill such voids.

G After the pipes are tested satisfactorily, the remaining space between the carrier pipe and the encasing pipe shall be pressure grouted or otherwise filled with concrete. The carrier pipe shall be adequately braced to prevent floating or movement of the pipe.

3.07 SHORING, SHEETING AND BRACING

A Where sheet piling, shoring, sheeting, bracing or other supports are necessary they shall be furnished, placed, maintained, and except as shown or specified otherwise, removed by the CONTRACTOR.

B All sheet piling, shoring, sheeting and bracing shall be designed by a professional engineer engaged by the CONTRACTOR with demonstrated competence and experience in such work. The sheeting system shall be designed to prevent bottom failure and hydrostatic uplift within the excavation. Provision shall also be made in the design for lateral pressures due to side slopes and construction equipment or other surcharge loads as applicable.

C [illegible] drawings of the sheeting system prior to ordering any materials for [illegible] sheeting [illegible], and prior to the commencement of the excavation.

D All material, except as otherwise specified, used for sheeting and sheet piling, lagging, braces, shores and stringers, or waling strips shall be of approved quality and dimensions throughout.

E Materials for sheeting systems shall be furnished and driven or set in place by the CONTRACTOR where necessary or wherever ordered by the ENGINEER, whether the same is or is not considered necessary by the CONTRACTOR. If in the opinion of the ENGINEER, the materials furnished by the CONTRACTOR are not of proper quality or sufficient size or not properly placed to ensure the safety of the work or of adjacent structures and property, the CONTRACTOR shall upon notice from the ENGINEER to that effect forthwith procure, furnish and set in place or drive other and satisfactory materials, or place the material in a satisfactory manner, and if he shall fail or neglect to do so, the ENGINEER may order all or any part of the work to be stopped until such materials are used, are furnished and placed, and the CONTRACTOR shall not be entitled to claim, demand or receive any compensation for larger size or better quality or different disposal

of materials ordered by the ENGINEER, nor any compensation for allowance of any kind whatsoever for or on account of any damage or delay resulting from such stoppage of work.

F Steel sheet piling may be either new or used. It shall be of adequate strength, straight and properly braced. Steel sheet piling shall be of the interlocking type. Friction in the interlocks shall not be assumed to contribute to the strength of the sheet piling.

G The design, planning, installation and removal, if required, of all sheet piling, shoring, sheeting and bracing shall be accomplished in such a manner as to maintain the required excavation or trench section and to maintain the undisturbed state of the soils below and adjacent to the excavation.

H Steel sheet piling for the excavation shall be driven straight and to line. The piling shall be supported above ground before driving by a guide frame at least [illegible] high which will keep the piling accurately in the required position and vertical. Each piece of piling shall be driven only a few feet at a time, and driving shall proceed continuously around the perimeter so that the piles shall reach [illegible]

I Wales and bracing shall be supplied and installed as required to complete the sheeting system. Wales and braces shall be of adequate strength for the load imposed. Splices in wales shall develop the full strength of the member in bending, shear and axial compression.

J If bracing members are to be removed during construction, the timing and procedure for removal shall not induce excessive stresses in the permanent structures or in steel sheet piling and bracing members.

K If the construction sequence of structures requires the transfer of bracing to the completed portions of any structure, the CONTRACTOR shall secure written acceptance of the ENGINEER prior to the installation of such bracing.

L In trenching operations the use of horizontal strutting below the barrel of pipe or the use of the pipe as support for trench bracing will not be permitted. The use of a traveling shield for sewer construction shall require that the shield be approved for use by a professional engineer. Sheet piling and timbers in trench excavations shall be withdrawn in a manner so as to prevent subsequent settlement of the pipe or additional backfill loading which might overload the pipe.

M [illegible] etc., shall not in any way relieve the CONTRACTOR of any or all obligations under this Contract. Sheeting left in place shall be cut off one (1) ft below existing grade.

N The rules of the OSHA and the State Department of Labor with respect to excavation and construction shall at all times be strictly observed.

3.08 GENERAL BACKFILLING

A For all areas, unless otherwise noted, backfilling shall consist of placing excavated material as defined in Paragraph 2.01 A of this Section, in 12 inch lifts to finish grade. Compaction of backfill shall be such as to obtain 90% of the maximum density.

B Under pavements, curb, paved driveways and sidewalks, and where pipe is within a one on one influence of pavement, compaction testing shall be performed by an independent testing laboratory. Testing shall be performed at intervals of one test per lift per 75 feet of trench or as determined necessary by the ENGINEER.

3.09 BACKFILLING FOR SEWERS AND WATER MAINS

A Backfilling shall consist of placement of the prescribed materials from a level 12 inches above the crown of the pipe. Placement shall be as follows:

1 Under gravel driveways, gravel roads and shoulders, the backfill shall be granular material which shall be solidly compacted by mechanical tamp in layers of not more than 12 inches loose thickness with backfilling carried up to within 12 inches of finished grade. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content.

2 Under pavements, curb, paved driveways and sidewalks, the backfill shall be granular material compacted in layers not to exceed 12 inches loose thickness with backfilling carried up to subgrade. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content. After a period of about 60 days or [illegible] replace the top surface of the backfill within the pavement area with pavement surface equal to that surface which was removed. The pavement shall be replaced in accordance with the standard specifications of the agency having jurisdiction.

3 Backfill around lift stations, or buried underground structures shall be granular material compacted in 12 inch lifts. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content.

4 For all other areas, backfilling shall consist of placing excavated material as defined in Paragraph 2.01 A of this Section, in 12 inch lifts to finish grade. Compaction of backfill shall be such as to obtain 90% of the maximum unit density as determined at the optimum moisture content.

3.10 FILLING AND BACKFILLING FOR STRUCTURES

A Embankment underlying structural footings, streets and drives, sidewalks and around structures shall be granular material meeting the requirements of the Michigan Department of Transportation for granular material compacted to 95% density.

B [illegible] mixture free of organic and other deleterious matter and shall contain no more than 15% rocks or lumps larger than 2 1/2 inches in their greatest dimension, compacted to 90% density.

C Under all interior and exterior floor slabs, an 8 inch thick granular cushion shall be placed. Fill material shall be clean mineral aggregate meeting the following gradation requirements:

Passing the No. 4 Sieve	100%
Passing the No. 200 Sieve	0-3%

D Where embankment material is placed to achieve a new surface elevation, the top 4 inches shall be approved topsoil either salvaged from the site or hauled in by the CONTRACTOR.

3.11 FILLING AND BACKFILLING FOR PAVED SURFACES

A Embankments, including sand cushions and granular fills, shall be placed in successive layers not more than 8 inches in depth, the full width of the cross section, each layer to be thoroughly compacted by means of vibratory compactors or by an approved pneumatic-tired roller or

combination thereof as required by the ENGINEER. Each layer shall be compacted to not less than 95% of the maximum unit density as determined at the optimum moisture content. All parts of the embankment shall be uniformly compacted and the CONTRACTOR shall so direct the earthmoving equipment used in the work so that the same shall be attained. Embankment or fill outside the limits of the subgrade where sand or gravel is not required shall be made with suitable material which is free from perishable organic matter, rubbish, stones, broken concrete, roots or other foreign materials at no additional compensation. Before any embankments are begun, the base shall be made firm and cleared of topsoil, sod or other perishable material. The sides of the embankment shall be neatly and evenly dressed to the slope shown on the Plans or such other slope as the ENGINEER may direct.

B Upon completion of the placing of the curbs and after the concrete has cured sufficiently, forms shall be removed and the excavated space behind the curb shall be backfilled with a good quality of surface soil free of rubbish, stone, broken concrete, roots or other foreign material. Where adequate acceptable material for backfill behind the curb is not available, granular fill conforming to 2003 MDOT 8.02.06 Class II shall be used. Where the area behind the curb is in cut, it shall [illegible] then the embankment of fill shall be finished to the slope shown on the Plans. All trimming and finishing shall be done in a neat, workmanlike manner. All excess concrete and debris shall be removed from the excavation behind the curb line before backfilling begins.

C In construction of non rigid pavement, backfilling back of curb and gutter shall be completed before placement and compaction of the base course of the roadway.

3.12 PREPARATION OF SUBGRADE FOR ROADWAY SURFACES

A The bottom of the excavation for the pavement or top of the fill shall be known as the pavement subgrade and shall be smoothed, trimmed and compacted to the required line, grade and cross section to receive the road metal. It shall be thoroughly compacted by rolling with a roller of approved type weighing not less than 8 tons. The subgrade shall be compacted to at least 95% of the maximum density as designated by the test method AASHTO T 180. Inaccessible areas where rolling is not practical shall be thoroughly compacted by mechanical tampers capable of striking a blow equivalent to at least 250 foot pounds per square foot. The subgrade thus formed shall be maintained in a smooth and compacted condition until the pavement has been placed. No base course, surfacing, curb or curb and gutter shall be placed until the subgrade has been [illegible] granular material shall be used where unsuitable or incompactable soil is encountered. The granular material shall conform to the 2003 MDOT 9.02.08 Class II compacted to 95% of its density.

B Immediately prior to placing the pavement, the subgrade shall be tested for conformity with the cross section shown on the Plans by means of an approved template riding on the curb and gutter sections or on side forms. Unnecessary materials shall be removed or added, as required, to bring all portions of the subgrade to the correct elevation. Corrected portions shall then be thoroughly compacted and again tested with the template. Pavement material shall not be placed at any portion of the subgrade which has not been tested for correct elevation.

C The finished subgrade shall be maintained in a smooth and compacted condition until the pavement is placed. No storage piles of fine or coarse aggregate shall be placed directly upon the finished subgrade. Should the subgrade become rutted or disturbed in any manner, it shall be reshaped and recompacted.

3.13 GRADING

A The CONTRACTOR shall grade the site to achieve the elevations as shown on the Plans. All disturbed areas beyond the grading limits shall be restored to original condition.

B Surplus excavated material not needed for embankment shall be disposed of by the CONTRACTOR. Headwalls, culverts, drains, sewers and appurtenances filled or damaged by the CONTRACTOR during the course of his operations shall be cleaned, repaired, or replaced at his expense.

C All temporary earth changes shall be in conformance with the Soil and Erosion Control Act.

3.14 RESTORATION

A Headwalls, culverts and drainage systems filled or damaged by the CONTRACTOR during the course of his operations shall be cleaned, relaid or rebuilt with new materials to a condition equal to the original state and of thickness equal to the original structure and to the original line and [illegible] at the CONTRACTOR's expense.

B [illegible] in the CONTRACTOR's operations, the CONTRACTOR shall clean, repair or replace the ditch with proper finished bottom and side slopes and of section and capacity not less than the original section.

C Where excavation has been through lawn areas, the CONTRACTOR shall restore the disturbed area by placing topsoil and seeding or sodding over the final backfill material.

D The CONTRACTOR shall remove excess dirt and other construction material from the site of the work and leave the site in a condition equal to its original state.

E The final condition of the streets and roadways shall be subject to the approval of the governmental body having jurisdiction thereof, as well as review by the ENGINEER.

END OF SECTION

---

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
FOR THE LOCATION OF UNDERGROUND FACILITIES

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. 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

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

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SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT: MICHAEL A. BOGGIO ASSOCIATES

STANDARD FEDERAL BANK
RECORD DRAWING SET

PITTSFIELD TWP STANDARD
SPECIFICATIONS–SOIL EROSION CONTROL
AND EARTHWORK

CAD FILE	300688RD-13-DT
REVISIONS	
DATE	11/29/05
SCALE	NO SCALE
DR	MAI
CH.	JM
P M	M PASCOE
BOOK	--
JOB	300688
FILE NO	437-520-13
SHEET NO	13

[illegible]

1.01 DESCRIPTION

A Furnish all labor, tools, equipment and material to construct [illegible] storm sewers and drainage structures as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.

1.02 TESTING

A General

1 The CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed or just prior to placing the line in service providing the sewer pipe has [illegible] installed [illegible]

[illegible]

[illegible] ... Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.

C Material Tests

1 The CONTRACTOR shall have tests of pipe strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications.

D Submittals

1 The CONTRACTOR shall submit shop drawings or data sheets for all castings, steps and manholes.

2 The CONTRACTOR shall submit certification letters for all pipes. All letters must contain the following: Contractor's name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

2.00 PRODUCTS

2.01 PIPE

A Reinforced concrete pipe and manhole tees shall be no less than the latest revision of ASTM C76 with the class designation as shown on the Plans or in the Proposal.

B Concrete pipe shall have tongue and groove gasketed premium joints.

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C Corrugated steel pipe shall meet the requirements of AASHO M 190 for coated pipe latest revision. Minimum gage thickness shall be as shown on the Plans.

[illegible]

[illegible] adjustment rings or riser rings shall not be used for adjusting the height of the structure.

B All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4 inches high.

2.03 MORTAR FOR MANHOLES

A Mortar for plastering manholes and drainage structures shall be made of one part Portland cement and two parts fine aggregate.

2.04 BRICK AND BLOCK

A Brick for brick and mortar structures shall conform to the current ASTM Specification C62. Block for block and mortar structures shall conform to the current ASTM Specification C139.

B The concrete block masonry used to construct manhole and catch basin walls shall be solid curved blocks with the inside and outside surfaces curved to the required radii. The blocks shall have tongue and groove or other approved type of joint at the ends so that the units interlock to form a strong, rigid structure. Curved blocks shall have the inside and outside surfaces parallel.

C The block shall not exceed 18 inches in length or 8 inches in depth (height). No block shall be less than 6 inches in width (thickness). All blocks in one structure shall be of the same height dimension. The blocks shall be designed for length so that only full length or half length blocks are required to lay the circular wall of any one course.

D Blocks intended for use in the cones or tops of manholes and catch basins shall have such shape as may be required to form the structure as shown on the Plans with inside and outside joint not to exceed 1/4 inch in thickness.

2.05 STRUCTURE FRAMES AND COVERS

A Structures frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each solid manhole cover shall be marked "Storm Sewer" with letters integrally cast into the cover.

B Covers shall be as follows:

1 For use on manholes: East Jordan 1040Z with Type B cover, or equal.

2 For use on drainage structures in paved areas: East Jordan 1040Z, with Type M1 cover or equal.

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[illegible] Page 3

[illegible]

4 For use on drainage structures in landscaped areas: East Jordan 0402 with Type 02 Beehive grate or equal.

[illegible]

A Steps shall be plastic coated steel. They shall be M.A. Industries PS1 PF for precast manholes PS1 B for block manholes or equal.

2.07 DRAINAGE STRUCTURES

A All manholes and catch basins shall be precast unless otherwise specified.

B Manhole and catch basin bottoms shall be concrete and top of slab shall have a troweled finish.

C Upon approval by the ENGINEER, the manhole and catch basin walls may be constructed of concrete block masonry or concrete manhole pipe conforming to the requirements of the specifications previously listed. Construction shall be in accordance with the details for "Catch Basin" and "Storm Sewer Manhole" shown on the Plans.

D A plaster coat of mortar 1/2 inch in thickness shall be applied to the inside and outside surface of all manholes and catch basins constructed with concrete block masonry or sewer brick. The inside coat of mortar shall be applied in a smooth, neat workmanlike manner.

E Final adjustment of the top of manholes and catch basins so that the manhole or catch basin cover is at finished elevations as shown on the Plans or meets the finished surface may be accomplished with sewer brick conforming to the previously listed Specifications. The total height of brick for this purpose shall not exceed 9 inches. The total chimney height shall not exceed 18 inches.

F All block and brick masonry units shall be laid in a full bed of mortar. The inside joints of the block masonry construction shall be tooled in a neat and workmanlike manner.

3.00 EXECUTION

3.01 EXCAVATION AND BACKFILL

A All excavation and backfill 12 inches above the crown of pipe shall conform to Section 2.04 Earthwork of these specifications.

B The trench shall be backfilled closely behind the pipe laying. Unless otherwise directed or permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench within four pipe lengths behind pipe laying.

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[illegible] Page 4

[illegible]

A Concrete pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches. Where indicated on the Plans or required by the ENGINEER, concrete encasement or cradle shall be used.

B For all pipes, compacted aggregate material shall be placed at the sides of the pipe in 12 inch lifts and cover not less than 12 inches above the crown of the pipe.

C "Granular Material" shall be MDOT class II placed in not more than 6 inch layers and compacted to not less than 95% standard density.

3.03 PIPE INSTALLATION

A All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress shall be kept dry, and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphill.

B The grade as shown on the profiles or that of the pipe invert and line to which the work must conform. The grade shall be kept by laser or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials or every description. Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.

C [illegible]

D All pipe shall be carefully lowered and moved into position in the trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or linings. An excessive amount of scratching on the surface of the concrete pipe will be considered cause for rejection.

E All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine toothsaw, tubing cutter or similar tool may be used to cut concrete pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.

F Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.

3.04 CONNECTIONS TO EXISTING MANHOLES

A When a sewer is connected to an existing manhole a hole adequate to receive the new pipe shall be cored into the manhole.

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B If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2 inch mortar coat on the outside surface.

C For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. Reinforcing steel shall not be cut out shall be bent and replaced in the area that is to be patched. A form shall be constructed over the area of pipe penetration. The formed area shall then be filled with concrete.

D Closure of the manhole wall shall be made watertight using concrete.

END OF SECTION

SECTION [illegible] SANITARY SEWERS AND MANHOLES 2.[illegible] Page 1

1.00 GENERAL

1.01 DESCRIPTION

A The CONTRACTOR shall furnish all labor, tools, equipment and material to construct all sanitary sewers, manholes and necessary appurtenant work as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.

1.02 TESTING

A General

1 The CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed and has been installed for not less than [illegible]

2 The CONTRACTOR may desire to make an air test prior to backfilling for his own purposes but the line acceptance tests shall be conducted after backfilling or extensions.

3 All sewer lines shall be televised while running enough water through the line to be visible at the next downstream manhole.

4 All sewer lines shall be checked for alignment.

5 All manholes shall be tested for leakage. All PVC lines shall be tested for deflection.

6 Sewer pipe 30 inches and smaller shall be air tested. Sewer pipe larger than 30 inches shall be tested by either infiltration or exfiltration and shall be tested in lengths of 1600 feet or less.

6 Should the results of any test fail to meet the criteria established in this Specification, the CONTRACTOR shall at his own expense locate and repair rejected section and retest until it is within specified allowance.

B Test for Leakage: Air Test

1 After a manhole to manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs inflated to 25 psig internal pressure. [illegible] without requiring external blocking or bracing.

2 There shall be three (3) hose connections to the pneumatic plug. One hose shall be used only for inflation of the pneumatic plug. The second hose shall be used to continuously reading the air pressure rise in the sealed line. The third hose shall be used only for introducing low pressure air into the sealed line.

3 There shall be a 0-30 psig gauge for reading the internal pressure of the line being tested. Calibrations from the 1-10 psig range shall be in tenths of lbs (not ounces) and this 0-10 portion shall cover 90% of the complete dial range.

4 Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any ground water pressure that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period the third hose shall be disconnected.

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[illegible] 2.[illegible] Page 2

[illegible] condition.

a [illegible] RCP Pipes

(1) The time requirement for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time given in the following table.

Pipe	Min Holding Time Seconds/100 ft Pipe
4 inch	18
6 inch	42
8 inch	72
10 inch	90
12 inch	108
15 inch	126
18 inch	144
[illegible]	[illegible]
24-inch	216
27 inch	252
30 inch	288

(2) In areas where ground water is known to exist, the CONTRACTOR shall install a 1/2 inch diameter capped pipe nipple approximately 10 inches long through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the line acceptance test, the ground water level shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the pipe nipple. The hose shall be held vertically and a measurement of the height in feet of water shall be taken after the water stops rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the lbs of pressure that will be added to all readings. For example, if the height of water is 11 1/2 ft, then the added pressure will be 5 psig. This makes the 3.5 psig to be 8.5 psig, and the 2.5 psig to be 7.5 psig. The 1 lb allowable drop and the timing remains the same.

b [illegible]

(1) The time requirement for the pressure to decrease from 3.5 to 3.0 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than that shown in the following table.

Pipe Size (inches)	Holding Time (seconds)	Minimum Holding Time (seconds)
4 inch	0.190xL	113
6 inch	0.427xL	170
8 inch	0.760xL	227
10-inch	1.187xL	283
12 inch	1.709xL	340
15 inch	2.671xL	425

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[illegible] Page 3

[illegible]

(2) If any section of the sewer fails to meet this requirement, the CONTRACTOR shall perform a television inspection of the faulty section and repair or replace at his own expense all defective material and/or workmanship to the satisfaction of the ENGINEER. The test procedure shall be repeated until the results are acceptable.

C Test for Infiltration

1 Sewer pipe over 18 inches shall be tested to measure the infiltration of ground water. If the measured leakage exceeds 200 gallons per inch diameter per mile of pipe per 24 hr period, the CONTRACTOR shall locate the points of excessive leakage and make the necessary repairs at his own expense.

2 In the event the test does not pass the infiltration test as stated above, the test shall be repeated after suitable repairs have been completed.

D Test for Exfiltration

[illegible] above the [illegible]

2 After the manhole has been filled with water [illegible] hours the water absorption by the pipe to form exfiltration tests are satisfied.

3 For the purpose of establishing the 4 ft test head, the head shall be measured from the crown of the sewer pipe at the midpoint of the test section length. This procedure shall be used for both infiltration and exfiltration tests.

E Test for Manhole Leakage

1 All manholes shall be tested for leakage, by using plugs on all incoming outgoing sewers, and filling the manholes with water to the top of the manhole. Four hours shall be allowed for water absorption by the manhole before testing is initiated. Allow [illegible] exfiltration for 48 inch diameter manholes shall be 2 gallons per foot of depth per day.

F [illegible]

1 All sewer shall be laid accurately to the line and grade designed by the ENGINEER. The sewers will be tested for alignment by having a light through the pipe at a manhole and viewing the light from an adjacent manhole. Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.

G Test for Deflection of PVC Pipe

1 PVC pipe sewers shall be installed in such a manner that the initial deflection of the conduit shall conform to the latest revision of ASTM D 3034.

2 Deflection of PVC pipe shall be tested by pulling a rigid pig or equivalent through the pipe. The pig shall be constructed in accordance with the following table of maximum outside diameter and shall be submitted to the ENGINEER for review before testing is initiated.

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Pipe Size	Pig O.D.
[illegible] inches	5.33 inches
8 inches	7.11 inches
10 inches	8.87 inches
12 inches	10.55 inches
15 inches	12.90 inches
18 inches	15.74 inches

3 The pig shall be drawn by hand through the pipe from manhole to manhole. Any portion of pipe through which the pig passes freely shall be deemed to have passed the deflection test. Sections of pipe through which the pig does not pass shall be located, uncovered and the pipe zone bedding improved and backfilled by the CONTRACTOR at his own expense. The pipe shall then be retested before acceptance is granted.

H Material Test

1 The CONTRACTOR shall have tests of pipe and strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred length may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications.

1.03 SUBMITTALS

A The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes, manhole castings, pipe to manhole connections and valves. The Contractor shall submit certification letter for all pipe proposed on the project. The letters shall contain the following: Contractor name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

2.00 PRODUCTS

2.01 SEWER PIPE

A [illegible] diameter and larger shall be PVC truss pipe. Ductile iron pipe and reinforced concrete pipe shall be used as specified by the ENGINEER.

B Pipe for service leads 4 though 8 inches in diameter shall be polyvinyl chloride (PVC).

C Reinforced concrete pipe shall be no less than the latest revision of ASTM C76 with the class designation as shown on the Plans or in the Proposal.

D PVC pipe 4 inches through 15 inches in diameter shall meet or exceed all of the requirements of the current ASTM D 3034 SDR 26 polyvinyl chloride sewer pipe and fittings. 18 inch diameter PVC pipe shall meet or exceed all the requirements of the current ASTM F 679 SDR 26 polyvinyl chloride sewer pipe and fittings. Samples of pipe and physical and chemical data sheets shall be submitted to the ENGINEER for review. Approval shall be obtained before pipe is purchased.

E Truss pipe shall meet or exceed all of the requirements of the current ASTM D2680.

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[illegible] Page 5

F Ductile iron pipe shall meet or exceed all the requirements of ANSI A21.50 and a cement lining.

2.02 SEWER PIPE FITTINGS

A Fittings shall be of the same material as the pipe and in no case shall the walls be thinner than that of the pipe furnished.

B Wye and tee fittings for PVC pipe shall be reviewed by the ENGINEER before purchasing.

C The dry fit of all fittings must be snug. If the fit is such that it is loose, the pipe or fitting will be rejected as faulty and of improper size.

2.03 SEWER PIPE JOINTS

A Concrete pipe joints shall be made of a resilient material conforming to the latest revision of ASTM Designation C443. Proper lubricant shall be furnished by the joint manufacturer.

B Concrete pipe for use with rubber joints shall be smooth and precisely formed to provide a uni[illegible]

C PVC pipe shall be jointed with ring gasket bell ends. Jointing material shall be applied to the bell end of the pipe at the point of manufacture in such a manner that a tight uniform joint will be achieved and such that when the joint is made up in the field the joint material will not roll or tear from the pipe. A proper joint lubricant shall be furnished by the pipe manufacturer.

2.04 REINFORCED CONCRETE MANHOLES

A Manholes shall conform to the current ASTM specifications for precast reinforced concrete manhole sections, serial designation C478. Manhole section joints shall conform to ASTM C990-96. Cone sections shall be straight side type with an offset step configuration.

B All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4 inches high.

C Manholes constructed over an existing sewer line shall have a doghouse, mudded to an 8-inch thick collar. The bottom of the existing pipe shall be the channel. All other manholes shall have precast integral base sections with pre-formed concrete channels.

D All channels shall be constructed to the full [illegible] depth of the pipe.

2.05 MORTAR FOR MANHOLES

A Mortar for plastering manholes shall be made of one part Portland cement and two parts fine aggregate.

2.06 MANHOLE FRAMES AND COVERS

A Manhole frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each cover shall be marked with the Pittsfield Township logo and the letters "PITTSFIELD TWP SANITARY SEWER" integrally cast into the cover.

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[illegible] Page 6

[illegible] groove and a concealed pickhole. Frames and covers shall be East Jordan 1040Z, with Type AGS cover.

C All manhole frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER.

2.07 MANHOLE STEPS

A Steps shall be plastic coated steel. They shall be M.A. Industries PS1 PF or PS1 B or approved equal.

2.08 MANHOLE CONNECTIONS

A Sewer pipe (6 inch to 24 inch) to manhole connections shall be through: 1) a flexible rubber boot which shall be securely clamped into a cored [illegible] pipe port. Pipe ports shall be core-drilled at the point of manhole manufacture and shall be accurately located within 1/2 inch of proposed sewer centerline (Kor-N-Seal), or, 2) a self adjusting mechanical pipe to manhole seal which provides a resilient flexible and infiltration proof joint (Res Seal) or 3) [illegible] rubber wedge [illegible] flexible pipe to manhole connections shall be installed per the manufacturer's specifications.

B Neoprene rubber for the manhole boot shall meet ASTM Specification C 443 and shall have a minimum thickness of 3/8 inch. Pipe clamp bands shall be of corrosion resistant steel.

C Sewer pipe over 24 inches to manhole connections shall be in accordance with details shown on the Plan.

2.09 SANITARY MANHOLE ADJUSTMENTS

A All final grade adjustment of manhole cover and frame assemblies shall be completed utilizing injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by LADTECH INC. or approved equal. The adjustment rings shall be manufactured from polyethylene plastic as identified in ASTM Designation D 1248.

B All adjustment for matching road grade shall be made utilizing a molded [illegible] slope ring.

C Each adjustment ring shall be sealed with a 7/16 to 1/2 inch bead of butyl rubber sealant per the [illegible]

D All castings and adjustment rings shall be securely fastened to the cone of the structure with four 3/8 inch threaded rods. The rods shall be galvanized or stainless steel anchored to the structure with Redhead concrete anchors or equal. Stainless steel or galvanized nuts and washers shall be used to attach the casting.

2.10 MANHOLE DROPS

A Manhole drop connections shall be interior drops using the drop bowl as produced by Reliner-Duran Inc. or approved equal.

B Drop bowl model "A-4" shall be used for all lines up through full 6 inch inlet. Drop bowl model "A-6" shall be used for all 8 inch inlets. Drop bowl model "B-8" shall be used for all 10 inch inlets. Lines larger than 10 inches shall be as directed by the ENGINEER.

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C [illegible] for a main or the slope is 3 percent or greater.

D The drop pipe shall be secured to the manhole wall with Reliner Duran [illegible] stainless steel adjustable clamps or brackets or approved equal.

E The drop bowl and each clamping bracket shall be attached to the manhole wall with 3/8 inch x 3 3/4 inch bolts.

F The incoming pipe shall be trimmed such that it protrudes 2 inches into the manhole.

G A 1-inch V shaped notch shall be cut into the bottom edge of the incoming pipe.

3.00 EXECUTION

3.01 EXCAVATION AND BACKFILL

[illegible] Section 2.01 Earthwork of these specifications.

3.02 BEDDING

A Ductile iron and concrete pipes shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches for 24 inch and smaller pipe and not less than 4 inches for pipe larger than 24 inch conforming to Class B bedding as shown on the Plans. Where shown on the Plans or required by the ENGINEER, concrete encasement or concrete cradle shall be used.

B PVC pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches conforming to Class B bedding as shown on the Plans. Where shown on the Plans or where the pipe passes under a road with less than 4 ft of cover, the pipes shall be encased.

C For all pipes, compacted granular material shall be placed at the sides of the pipe and cover not less than 12 inches above the crown of the pipe.

D [illegible] standard density for PVC and 90% standard density for reinforced concrete.

E Pea gravel or crushed stone used for bedding shall be separated from the sand backfill with a non woven geotextile fabric. The fabric shall be Amoco 4551 or approved equal.

3.03 PIPE INSTALLATION

A Installation of PVC pipe shall be in conformance with ASTM D2321-89.

B All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress shall be kept dry, and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphill.

C All joints shall be made up in accordance with the manufacturer's instructions using materials and equipment especially prepared for the type of joint to be used.

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[illegible] Page 8

D [illegible] must conform. The grade shall be kept by levels, lasers or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials of every description. Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.

E The location of the piping as shown on the Plans has been determined to avoid, insofar as possible, interference with trees or structures or fixtures above ground and other underground mains, services, utilities, or structures. Any change in location or alignment of piping which may be found more feasible or practicable as the work progresses shall be made by the CONTRACTOR as the ENGINEER may direct.

F All pipe and fittings shall be carefully lowered and moved into position in the trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or linings. An excessive amount of scratching on the surface of the PVC pipe will be considered cause for rejection.

G [illegible] permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench within two pipe lengths behind pipe laying.

H All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine tooth saw, tubing cutter or similar tool may be used to cut PVC pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.

I After cutting bell and spigot or socket pipe, a stop mark shall be made with a pencil or crayon using dimensions as shown by the manufacturer's instructions or by using another pipe in the field as a guide.

J Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.

3.04 CONNECTIONS TO EXISTING MANHOLES AND OTHER RIGID STRUCTURES

A When a sewer is connected to an existing manhole, a hole adequate to receive the new pipe shall [illegible]

B If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2 inch mortar coat on the outside surface.

C For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be clamped into the cored hole and used to make the connection.

D For connections to existing fiberglass manholes, a hole shall be cored into the manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be installed using fiberglass reinforced pipe stubout for Kor-N-Seal boot sealing surface.

3.05 STREAM AND RIVER CROSSING

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A [illegible] provisions of Act 346, the Inland Lakes and Streams Act of 1972 and the rules and regulations promulgated thereunder. Stream crossings and all restoration required shall be completed within five days of the construction.

B The CONTRACTOR shall utilize such construction methods as are feasible and practicable to divert or stop stream flow to lay the pipe in the dry. Pipe shall be ductile iron mechanical joint, or compression gasket joint pipe with joints at transition to other types of sewer pipe encased with no less than 1 cu yd of concrete placed at a minimum of 6 inches thickness around the pipe. After the sewer is properly laid, jointed and encased, the stream channel shall be cleaned of dirt and debris resulting from the CONTRACTOR's operations.

C After the crossing is made, heavy riprap and sodding shall be placed to protect the banks from corrosion as shown on the Plans.

END OF SECTION

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
FOR THE LOCATION OF UNDERGROUND FACILITIES

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. 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

NOTICE:

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

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SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET
PITTSFIELD TWP. STANDARD SPECIFICATIONS – STORM & SANITARY SEWERS

CAD FILE 300688RD-13-DT

REVISIONS

DATE 11/29/05

SCALE NO SCALE
DR MAI | CH JM
P M M PASCOE
BOOK --
JOB 300688
FILE NO. 437-520-14

SHEET NO C14

1 00 GENERAL

1 01 DESCRIPTION

A The CONTRACTOR shall furnish all labor materials and equipment required to construct water main, and all necessary appurtenant work as herein specified The water main shall be installed in the locations as shown on the Plans and shall meet the line acceptance tests

1 02 TESTING

A General

1 Furnish all equipment and personnel to conduct system acceptance tests as specified herein All tests shall be conducted under the supervision of the ENGINEER No acceptance tests shall be conducted until the entire system is constructed or just prior to placing the system in service providing the water main has been installed and backfilled for not less than 30 days

2 All water mains branches and valves shall be tested for pressure leakage and disinfection

3 Should the results of any test fail to meet the criteria established in this Specification the CONTRACTOR shall at his own expense locate and repair rejected section and retest until it is within specified allowance

4 Provide all labor, supervision pumps measuring devices power and other materials and equipment necessary for conducting acceptance tests on all piping

B Preparation

1 After the pipe has been laid and backfilled as specified the CONTRACTOR shall fill the line or a valve section thereof to be tested with water in such a manner as to expel all air from the pipe This may be done through fire hydrants at the high points or if no hydrant is available at such point the CONTRACTOR shall make the taps necessary to accomplish the expulsion of all air At the close of the test, all taps shall be satisfactorily plugged with brass plugs

2 Only Pittsfield Township personnel or the CONTRACTOR under direct supervision of Pittsfield Township personnel may fill or flush lines

C Sequence

1 All water mains connected to an existing water system shall be flushed chlorinated and bacteriologically tested prior to pressure testing The sequence for acceptance testing shall be

a Flushing
b Chlorination
c Flushing
d Bacteriological Testing
e Pressure Testing

2 Where mains can be totally isolated from the existing water system with airgaps, pressure testing shall precede chlorination and bacteriological testing The sequence for acceptance testing shall be

a Pressure Testing
b Connect to System
c Flushing
d Chlorination
e Flushing
f Bacteriological Testing

D Flushing

1 Mains shall be flushed with clean potable water until the water runs clear When flushing mains prior to chlorination all hydrant heads operating stems and hydrant valve mechanisms shall be removed

E Chlorination

1 All new mains and pipe or any existing mains contaminated by the CONTRACTOR shall be chlorinated to a minimum residual chlorine concentration of fifty (50) parts per million with commercial liquid chlorine solution or approved equal The chlorinated water shall be allowed to stand in the mains for 24 hours The end of the 24 hour period the chlorinated water at all parts of the mains shall show a free available chlorine residual of not less than twenty five (25) parts per million If less than twenty five (25) parts per million residual is shown at the end of the first 24 hours period additional chlorine shall be added until a residual of not less than twenty five (25) parts per million at all parts of the system is shown after a subsequent 24 hour period The chlorinated water shall then be removed from the mains and the mains flushed with potable water for bacteriological testing

F Bacteriological Testing

1 The OWNER will take bacteriological samples of the water in the mains for analysis at two different times The first samples will be taken 24 hours after the mains have been satisfactorily chlorinated, flushed and filled with potable water The second sample will be taken 24 hours later Each sample will be incubated for 48 hours

2 The CONTRACTOR shall provide a sufficient number of corporation cocks and copper tubing for taking samples Samples shall not be collected from hoses or fire hydrants

3 Bacteriological testing will begin on Mondays to afford Pittsfield Township personnel and the testing laboratory a full work week to conduct the testing

G Pressure Testing

1 All pipe laid under this Contract shall be subjected to a hydrostatic pressure of 150 psi based on the elevation of the lowest point in the system The main shall be maintained under the test pressure for a minimum continuous period of two (2) hours by pumping potable water into the line at frequent intervals The volume of water so added shall be measured and considered to represent the leakage from the main No pipeline installed will be accepted until the leakage measured over a 1 hour period is less than 0 092 gallon per inch diameter of the pipe per 1000 feet All visible leaks must be corrected The maximum length of water main to be tested at one time shall be 2000 feet

2 In the event that the leakage exceeds the specified amount the main shall be carefully inspected for leaks and repaired as necessary Any cracked or defective pipe fittings valves or hydrants discovered shall be removed and replaced with sound material at the

CONTRACTOR's expense and the test repeated to the satisfaction of the ENGINEER and OWNER

3 If the CONTRACTOR chooses to pressure test against an existing valve he assumes the responsibility of meeting the leakage requirements The CONTRACTOR may at his discretion provide a physical break and cutting in sleeve for pressure testing

H Material Tests

1 The CONTRACTOR shall have test of pipe and strength made by an independent testing laboratory Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the specifications

1 03 SUBMITTALS

A The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes manhole castings, pipe to manhole connections and valves The Contractor shall submit certification letter for all pipe proposed on the project The letters shall contain the following Contractor name project name township name current date certification of pipe provided and letterhead of the certifying company

2 00 PRODUCTS

2 01 PIPE AND FITTINGS

A Ductile iron pipe water main shall meet all the requirements of the latest revision of the American National Standards Institute Specifications A21 51 and the American Water Works Association (AWWA) Specification C151 All joints including joints for valves and hydrants shall be "push on" Pipe shall be furnished in 18 or 20 ft lengths unless otherwise required The pipe shall meet the thickness class requirements shown in the table below

Size Nominal Inside Diameter	Thickness Class
4	54
6	54
8	54
10	54

Size Nominal Inside Diameter	Thickness Class
12	54
14	54
16	54
18	54
20	54
24	54

B Pipe shall withstand a working pressure of 125 psi plus a 100 psi surge pressure

C Pipe shall be double cement lined and seal coated with an approved bituminous seal coat in accordance with ANSI Specification A21 4 (AWWA C 104)

D Ductile iron or cast iron fittings shall meet all the requirements of the latest revision of the American National Standards Institute Specification A21 10 for a working pressure of 125 psi and be of the push on joint type Plugs, where shown on the Plans shall be solid mechanical joint plug type

E Mechanical joints, shall be in conformity with the requirements of the latest revision of the American National Standards Institute A21 11 The bolts shall be of high strength low alloy steel type

F Push on joints shall meet all the requirements of AWWA Specification C111 Push on joints shall consist of a ductile iron bell provided with a recess to receive a circular molded rubber gasket to effect the joint seal A rubber gasket and sufficient lubricant to assemble the joint shall be furnished with each joint The lubricant shall have no deleterious effect upon the color taste or odor of potable water and shall not be corrosive to either the pipe or gasket Pipe furnished with push on type joints shall be equal in strength and leak tightness to pipe furnished with mechanical joints as specified when installed under identical conditions and shall meet all other requirements of these Specifications In addition to the above requirements, the gasket and lubricant shall conform to the latest revision of the ANSI Specification A21 11

2 02 VALVES

A All valves installed under this Specification shall conform to the applicable requirements of AWWA C500, C504, and C509 standards governing construction materials and workmanship Each valve shall carry the name or trademark of the manufacturer All valves shall have operating nuts that turn to the right (clockwise) to open

B Resilient Seated Gate Valves

1 Resilient seated gate valves shall have a cast or ductile iron body and bonnet Valves shall have a minimum non shock W O G working pressure of 200 psi The wedge shall be ductile iron encased in a bonded in place styrene butadiene elastomer covering to form resilient seating surfaces Stem shall be bronze of non rising design with double o ring packing

2 Resilient seated gate valves shall be used for all mains

3 Resilient seated gate valves shall be manufactured by Waterous American Flow Control or Clow

C Swing Check Valves

1 Valves shall have a cast or ductile iron body and bolted cap with a minimum non shock W O G working pressure of 150 psi Seats shall be bronze and shall be screwed into the valve body The disc shall be bronze or cast iron with permanently rolled in bronze faces The disc hinge pin shall be aluminum bronze or stainless steel riding in bronze bushings one on each side of the valve Valves shall have ANSI 125 pound standard drill flat faced flanges unless otherwise specified or shown on the Plans Valves shall have outside weighted arm

D Air Release Valves

1 Air release valves when specified shall be designed to operate under a maximum operating pressure of 300 psi and capable of venting 200 CFFAS (cubic feet of free air per second) Valves shall be cast iron with bronze internal parts and Type 304SS float

E Corporation Stops

1 One inch corporation stops used for insertion into mains shall be Ford F600 or FB600, or equal All stops shall have bronze cast bodies keys, stem washers and nuts Inlet threads shall conform to the latest revision of AWWA C800 The outlet connection shall be able to receive the flared end of the copper service pipe All stops 1 1/2 inch and larger shall be of ball plug design

F Valve Boxes

1 Valve boxes 5 1/4 shall be of cast iron construction They shall be of three piece screw type adjustment design All valve boxes shall be installed flush with the top of the proposed site grade Covers shall be designed to be removed easily to provide access to the valve The base shall not rest upon the valve assembly All valve boxes shall be Tyler Pipe 6860 Item D with a number 6 base or Bibby V620 D

2 03 GATEWELLS

A Gatewells shall conform to the current ASTM specifications for precast reinforced concrete manhole sections serial designation C478 Section joints shall be rubber gasketed and conform to ASTM C990 96 Cone sections shall be straight side type with an offset step configuration

B All gatewell component parts shall have the name of the manufacturer stenciled on the inside The lettering or logo shall be a minimum of 4 inches high

C Gatewells constructed over an existing water main shall have a doghouse mudded to an 8 inch thick cookie All other gatewells shall have precast integral base sections

D Mortar for plastering gatewells shall be made of one part Portland cement and two parts fine aggregate

2 04 GATEWELL FRAMES AND COVERS

A Gatewell frames and covers shall weigh not less than 350 lbs Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover Each cover shall be marked with the Pittsfield Township logo and the letters PITTSFIELD TWP WATER integrally cast into the cover

B Frames and covers shall be East Jordan 1040Z with Type A cover

C All gatewell frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER

2 05 MANHOLE STEPS

A Steps shall be plastic coated steel They shall be M A Industries PS1-PF or PS1 B or approved equal

2 06 GATEWELL CONNECTIONS

A Water pipe (6 inch to 24 inch) to manhole connections shall be through 1) a flexible rubber boot which shall be securely clamped into a core drilled pipe port Pipe ports shall be core drilled at the point of manhole manufacturer and shall be accurately located within 1/2 inch of proposed sewer centerline (Kor N Seal) or 2) a self adjusting mechanical pipe to manhole seal which provides a resilient flexible and infiltration proof joint (Res seal) or 3) a flexible rubber wedge firmly rammed into a rubber gasket which is cast into the manhole (Press Wedge II) or equal All flexible pipe to manhole connections shall be installed per the manufacterer s specifications

B Neoprene rubber for the manhole boot shall meet ASTM Specification C443 and shall have a minimum thickness of 3/8 inch Pipe clamp bands shall be of corrosion resistant steel

C Water pipe over 24 inches to gatewell connections shall be in accordance with details shown on the Plan

2 07 Gatewell Adjustments

A All final grade adjustment of gatewell covers and frame assemblies shall be completed utilizing injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by LADTECH, INC or approved equal The adjustment rings shall be manufactured from polyethylene plastic as identified in ASTM Designation D 1248 Brick adjustments are not acceptable

B All adjustment for matching road grade shall be made utilizing a molded indexed slope ring

C Each adjustment ring shall be sealed with a 3/16 to ¼ inch bead of butyl rubber sealant per the manufacturer's instructions Sealant shall meet ASTM specification C 990

D All castings and adjustment rings shall be securely fastened to the cone of the structure with four 3/8 inch threaded rods The rods shall be galvanized or stainless steel anchored to the structure with Redhead concrete anchors or equal Stainless steel or galvanized nuts and washers shall be used to attach the casting

2.08 SERVICE LEADS

A Pipe for service leads 1 inch to 2 inch shall be soft annealed Type K copper

B Curb Stops One-inch curb stops used for service connections shall be Ford or B22 444 ball valve McDonald 4713, Mueller B 25204 or approved equal Curb stops 1 1/2" shall be Ford B22 666 McDonald 6100 or approved equal Two inch curb stops shall be B44 777, McDonald 6100 22, or approved equal All parts shall be cast from bronze They shall have an inverted key stop Both inlet and outlet connections shall be able to receive the flared end of the copper service pipe for 1 inch and 1 1/2 inch Compression fittings shall be used for 2 inch

C Curb Boxes Curb boxes used for service connections shall be the Arch" type All curb boxes shall have an I D screw type adjustment and shall be furnished complete with cover rod and ½" diameter pentagon bolt(s) All curb boxes shall be coated inside and out with a tar base enamel The minimum bury shall be 5' 0" (60") and the maximum 6 (72) All curb boxes shall be Ford model EA1 60 40-54R McDonald model 5601 or 5603 or Bibby model R160 or R260

D Couplings

1 One inch and 1 1/2 inch couplings used for service connections located outside the pavement or more than 10 feet from a building shall be Ford C22 or McDonald 4758, or equal They shall have a three part union, and both inlet and outlet connections shall be able

to receive the flared end of the copper service pipe for 1 inch and 1 1/2 inch Two inch couplings located outside the pavement or more than 10 feet from a building shall be Ford C44 77 or McDonald 4758 22 or equal and be a compression or flare type fitting All parts shall be cast from bronze

2 All service connections between two copper service pipes (two inch or less in diameter) located under the pavement or within 10 feet of a building shall be connected using wrought copper, solder sweat type couplings conforming to ASME B16 18 or ASME B16 22 Fittings shall bear made in USA labels Joining of copper piping shall be a solder sweat connection using lead free Silfos The use of 95 5 Tin Antimony or equivalent solders will not be allowed

2 09 HYDRANTS

A Fire hydrants shall comply with the latest revision of AWWA Standard, C502 Hydrants shall be compression type to open with the pressure They shall have a 5 1/4 valve opening and 6" push on joint inlet Hydrants shall have two 3 1/2 (4 05" O D) pumper connections with National Standard 7 1/2 threads per inch All hydrants shall have City of Ann Arbor standard thread pattern

B Fire hydrants shall have inside barrel dimension of not less than 7 375 I D from top to bottom The 1 1/8' pentagon operating nut shall open left (counter clockwise)

C All nozzles shall be on a removable head with a flange so that they may be rotated by changing the position of the flange

D Hydrant shall be fully bronze mounted including top of the operating stem where it passes through the double o ring seal in the bronze packing gland The forged operating stem in the base and the valve seat shall also be of bronze The molded valve shall be of composition rubber and the cast iron valve clamps shall be packed with o ring seals and held tight to the stem by a threaded bronze hex retainer ring and threaded bronze locknut anchored with set screws

E Hydrant shall be designed for 150 psi working pressure and tested to 300 psi Those portions of the hydrant above grade shall have two coats of red enamel All unpainted surfaces shall have two coats of coal tar pitch varnish

F The hydrants shall be Waterous Pacer WB 67 250 or EJIW 5BR with push on joint connections and break flange barrel

G All hydrants shall have a Hydra Storz adapter The adapters shall be constructed of a A 356 High Strength Aluminum Alloy painted orange The storz sealing surface shall have a machined metal seat The threads and metal seat area shall be Teflon coated The adapters shall be equipped with a set of Type 302 stainless steel butterfly vanes designed to automatically open by use of stainless steel torsion spring with water flow and automatically close when flow is stopped The adapter shall be installed on the left side of the hydrant when facing the hydrant

H Hydrants adjacent to truck routes on commercial developments shall be protected by bollards

2 10 TAPPING SLEEVES AND VALVES

A Tapping sleeves when specified shall be full length of heavy duty stainless steel construction designed for use with the type of pipe to be tapped Tapping sleeve body shall be 18-8 type 304 stainless steel Flange shall be CF8 cast stainless steel Bolts shall be 304 stainless steel Gasket shall be full circumferential SBR compounded for water service Tapping sleeve shall contain a test plug to assure seal prior to tapping Tapping sleeve shall be JCM Industries type

432 Romac Industries type SST Ford type Fast or PowerSeal 3490AS or Dresser 630 or approved equal

B Tapping valves shall meet the specifications for gate valves except that the valve shall have a flange compatible with the tapping sleeve Tapping valves shall be Waterous resilient wedge or equal

C The tapping sleeves and valves shall be subjected to a hydrostatic pressure of 200 psi The sleeves and valves shall be maintained under the test pressure for a minimum continuous period of 5 minutes by pumping potable water into the sleeve Upon any visual leakage observed by the ENGINEER, the tapping sleeve and valve shall be adjusted or removed and replaced and the test repeated at the CONTRACTOR's expense to the satisfaction of the ENGINEER

2 11 TRACER WIRE

A Wire to be used for tracer purposes shall be #12 THNN solid single strand copper with blue insulation

B Connections shall be made using 3M DBR 09964 wire connectors or equal

2 12 POST INDICATORS AND VALVES

A Post indicators when specified shall be American Flow Control series A240 or Clow series 2945A with aluminum plates indicating "OPEN" or SHUT Post indicators shall open left

B Post indicator valves shall be Waterous Series 500 American Flow Control Model 2500 or Clow model F 6120 All valves shall open left

C Post indicators and their corresponding valves must be made by the same manufacturer

D Bollards must be placed to protect post indicators except as specified by the ENGINEER

2 13 BOLLARDS

A Bollards shall be 4 inch diameter galvanized schedule 40 steel posts 36 to 48 inches high with a minimum depth of 24 inches The posts shall be set in and filled with 3000 psi concrete Bollards protecting hydrants and PIVs shall be painted red

2 14 POLYETHYLENE WRAP

A Polyethylene wrap shall be 8 mil thick Class C' (black) polyethylene conforming to the most recent AWWA standard specification for Polyethylene Encasement for Ductile Iron Pipe AWWA C105/A21 5 The wrap shall overlap the joint by 12 inches to either side and be secured to the pipe with polyethylene adhesive tape All pipe and fittings shall be wrapped and taped

3 00 EXECUTION

3 01 EXCAVATION AND BACKFILL

A All excavation and backfill 12 inches above the crown of the pipe shall conform to Section 2 04 Earthwork of these specifications

3 02 BEDDING

A Ductile iron pipes shall be fully enclosed in polywrap and laid on a compacted sand cushion 4 inches thick Sand shall conform to fine aggregate 2NS as defined in 1996 MDOT 902 08

B 2NS sand bedding material shall be placed around and above the main to a height of 12 inches above the main

C Sand shall be compacted on top of 12 inches above the pipe to not less than 95 percent of the maximum unit density as determined at optimum moisture content

3 03 PIPE INSTALLATION

A Any pipe damaged in transport or handling shall be rejected and removed from the site of the work

B In handling and placing ductile iron pipe and fittings no metal shall be used in contact with the inside of the pipe to lift or support the pipe The pipe shall be moved only through the use of belt slings or automatic release type pipe tongs Care shall be taken not to injure the pipe or pipe coating, and no damaged or imperfect pipe shall be used in the work except that minor damage to pipe coating may be repaired subject to the review of the ENGINEER

C All pipe and fittings shall be carefully lowered and moved into position in the trench or vault in a controlled manner such as will prevent damage to the pipe and its coating and lining

D In assembly of push on or shove type joints the bell socket recess and the gasket shall be wiped clean and the gasket placed properly in position A thin film of lubricant shall then be applied to the surface of the gasket to come into contact with the entering pipe The plain end of the entering pipe shall be cleaned and then entered and forced home to the base of the socket Where pipe is cut, the entering end shall be beveled before being inserted in the joint Where time permits drying the cut and beveled ends shall be coated with coal tar enamel

E To prevent trench water from entering the pipe joints which for any reason may not be completed as the pipe is laid shall be thoroughly packed with approved material in a manner to make them watertight Open ends of fittings shall be tightly closed with approved plugs and well packed, as shall the end of the last pipe laid whenever work is not in progress

F Each pipe shall be laid accurately to the line and grade shown on the Plans Whenever it is necessary to deflect pipe from a straight line either in the horizontal or vertical plane, to avoid obstructions or where long radius curves are permitted, the amount of deflection allowed shall not exceed that required for satisfactory jointing and shall be reviewed by the ENGINEER In no case shall deflection of joints exceed the manufacturer's recommended maximum deflection

G The CONTRACTOR shall not be entitled to any additional compensation because depth is more than specified at certain locations or due to clearances at manholes or due to unforeseen obstacles, or occasioned in order to avoid undue changes in grade

H The trench shall be backfilled closely behind the pipe laying Unless otherwise directed or permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench to within two lengths behind pipe laying

I Field lock joints designed to hold the pipe to proper line and grade against internal static and dynamic forces and external loads shall be provided at all tees wyes and plugs and wherever the pipe is deflected from a straight line and the resultant forces are not self contained through the

use of flanges anchor ties and the like Concrete thrust blocks or anchorage shall be 3000 PSI concrete

J Air release valve and manhole shall be constructed where shown on the Plans All castings and manholes shall be as specified under gatewells Gatewells shall be constructed in accordance with the details shown on the Plans

K Blow off valves and manholes shall be constructed in accordance with the details shown on the Plans All castings shall be as specified under gatewells

3 04 CONNECTION TO EXISTING MAINS

A When making a dry connection to an existing main the existing main to which a connection is to be made shall be isolated by the closing of the necessary existing valves and the water from the existing main shall then be pumped out or removed by other means so the connection may be made in the dry After the connection has been acceptably made the portion of the new line to the nearest valve shall be satisfactorily tested and disinfected along with the drained portion of the existing main before the isolated existing main is placed back in service except as the ENGINEER may otherwise direct In as much as residents served by this isolated main will be temporarily out of water during this period the work shall be executed as rapidly as possible and the time of and the procedure in making such connections shall be subject to the review of the ENGINEER Such work may be required to be done at night in order to minimize inconvenience of water users The CONTRACTOR shall not be entitled to any additional compensation because of night work or other special requirements in work under this Section

B The CONTRACTOR shall make particular effort prior to bidding to ascertain whether or not valves in the existing mains to be connected to the new mains are so located as to provide isolation If valves are not found to be adequate then the CONTRACTOR shall utilize other means to make the connections with a minimum of interruption to service

C When making a wet tap connection to an existing main a tapping sleeve designed for the type of pipe being tapped shall be utilized and the tap shall be made in accordance with the manufacturer of the tapping equipment

D Wherever adapters are required to properly connect the pipe with existing pipe or other material or manufacturer the nominal I D of adapters shall be the same size as the nominal diameter of pipe connected thereto Adapters shall also be furnished and used as required by the manufacturer for connection to fittings

3 05 SERVICE LEADS

A Service leads shall be installed where shown on the Plans All service taps shall be the "wet" method type and no tap shall be made until the acceptance test has been conducted and the line is under pressure

B When crossing a paved street the service lead shall be jacked under the pavement Augering and/or jacking requirements on paved streets for the installation of pipe less than 2-1/2 outside diameter shall be made by a compactor" type machine or similar method without removing existing soil if soil conditions permit

C Depth of bury for all service leads shall be between 5 and 7 feet from finish grade

3 06 HYDRANTS

A Fire hydrants shall be constructed in accordance with the details shown on the Plans Finish grade level to center of nozzle caps shall measure between 24 and 30 inches A maximum of one hydrant barrel extension and one operating stem extension may be used to accommodate changes in grade Under no conditions shall extended hydrant have more than one coupling in the operating stem Pumper connections shall point toward the street

B Fire hydrants shall be installed with barrel vertical and properly based Concrete thrust blocks shall be placed behind the hydrant, tee and every bend Care should be taken to insure that the drain holes on the hydrant are not plugged by the thrust blocks Hydrant shall be set in 1 yard of coarse gravel for drainage purposes If ground water is encountered the drain hole shall be plugged as directed by the manufacturer The backfill shall be sand thoroughly tamped around the hydrant and valve box in 1 ft layers

C Fire hydrant and gate valve shall be set apart 24 inches Gate valves and valve box shall be as specified under the valve paragraphs of this Section

3 07 TRACER WIRE

A Tracer wire shall be installed along the top of all water mains at a height of not more than 6 inches above the pipe Wire shall be extended to all hydrants service leads blowoffs dead ends buildings and post indicator valves Tracer wire shall be brought to grade, leaving enough excess material to avoid loss or damage to wire during construction and subsequent activities

B When tracer wire is to be run along short offsets (less than 20 feet) a loop of wire shall be utilized to loop to the end of the offset bring the loop to grade and terminate it in an approved manner For service leads and offsets of more than 20 feet in length a splice may be utilized to make this connection at the main following manufacturer's instructions The tracer wire shall then be installed and terminated in an approved manner

C Tracer wire terminations shall be made by one of the following methods

1 Tracer wire shall be terminated at hydrants by securing the wire to the nozzle chain at the hydrant leaving excess material for future hydrant maintenance

2 Terminations at valve/curb boxes, post indicators valves and blow offs shall be made with 2 wraps of the wire at grade around the box or pipe leaving excess material for future trimming following landscaping activities

3 Gatewell terminations shall be made by running the tracer wire through the pipe opening in the wall down to and across the floor to the steps up the wall and secure to the top step leaving the stub accessible at the casting Wire shall be run through the gatewell such that it does not create a hazard

4 Terminations shall be made above grade at buildings near the water meter or as directed by the Pittsfield Township Utility Department

D When connections are made to existing water mains which do not have tracer wire the following method most applicable to the field condition shall be used

1 When connection is made at/near a valve or hydrant the connection shall be made in the same manner as the termination at said structures in Item C(2) above

2 When connection takes place in a gatewell the same procedure shall be used as in termination at a gatewell (see Item C(3) above)

3 If no valve or hydrant is available the upper section only of a valve box shall be set with the tracer wire stubbed up inside

END OF SECTION

3 WORKING DAYS
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FOR THE LOCATION OF
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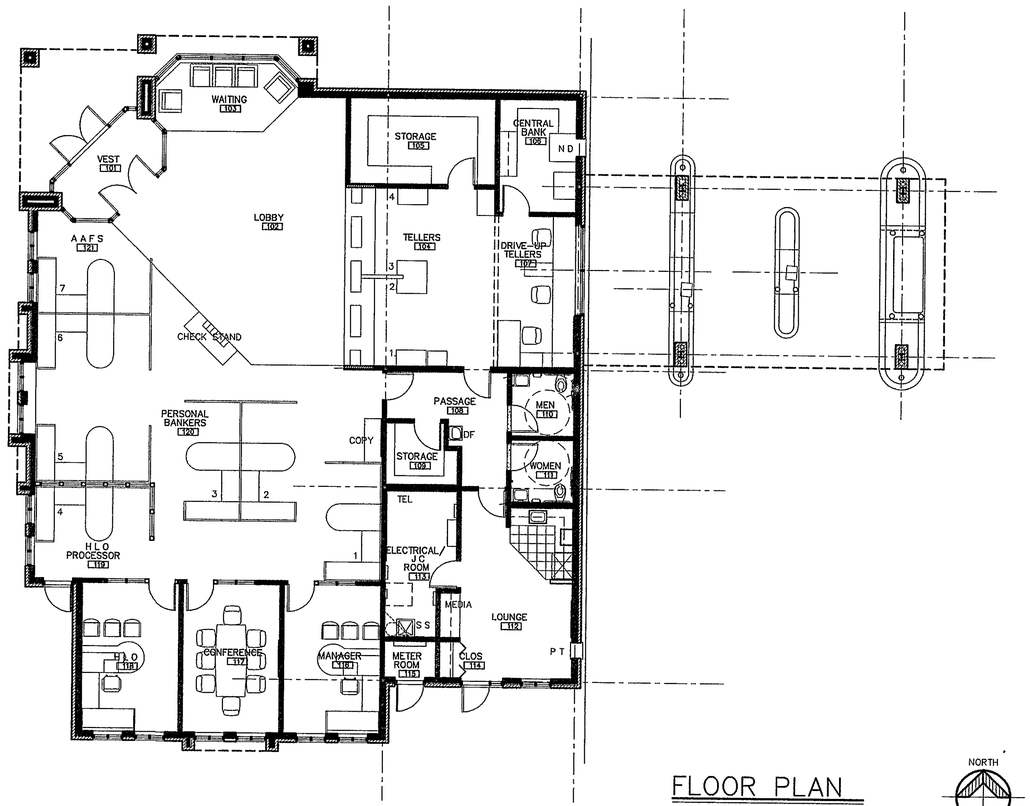
SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK
RECORD DRAWING SET

PITTSFIELD TWP. STANDARD
SPECIFICATIONS – WATER MAINS

CAD FILE	300688RD-13-DT
REVISIONS	
DATE	11/29/05
SCALE	NO SCALE
DR	MAI
CH.	JM
P M	M PASCOE
BOOK	--
JOB	300688
FILE NO	437-520-15
SHEET NO	C15



FLOOR PLAN

1/8" = 1'-0"

4,262 SQ FT

NORTH

AMENDED FLOOR PLAN
CSPA 03-26

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04-01-05
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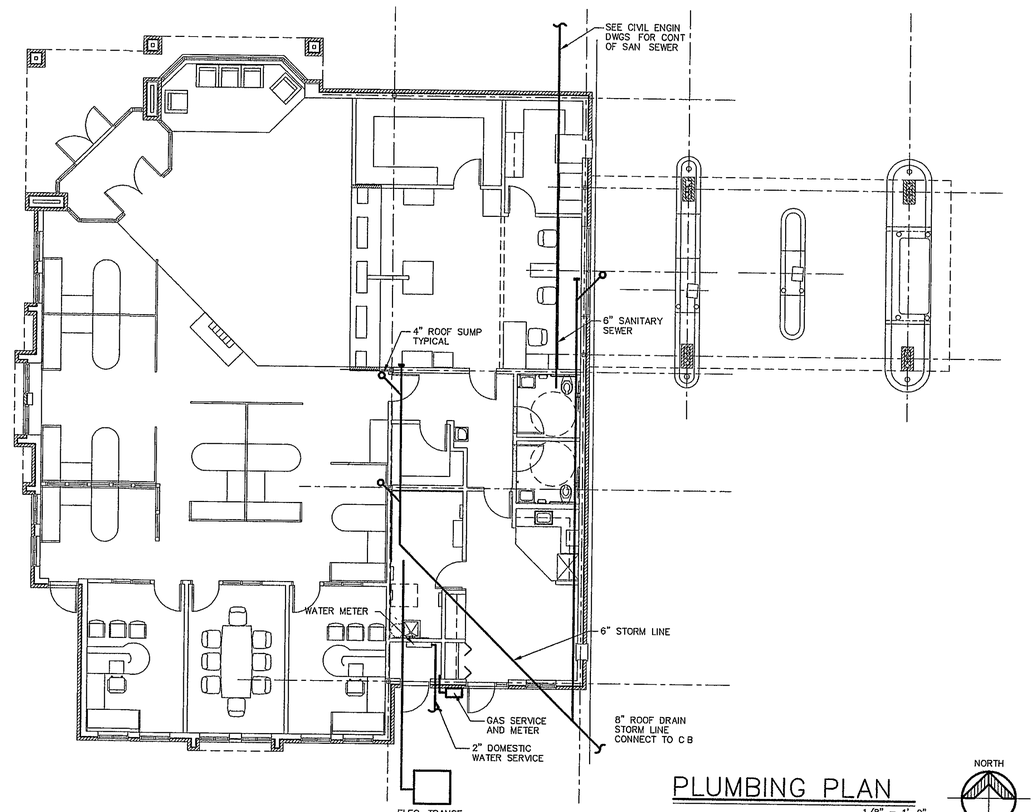
CSPA 03-26
05-06-05

Sheet No
A-1



PLUMBING PLAN

1/8" = 1'-0"
4,262 SQ FT

AMENDED FLOOR PLAN
CSPA 03-26

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CSPA 03-26
05-06-05

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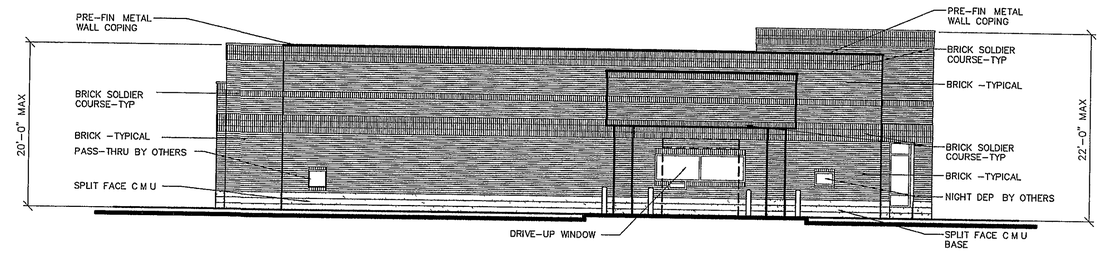
A-1P

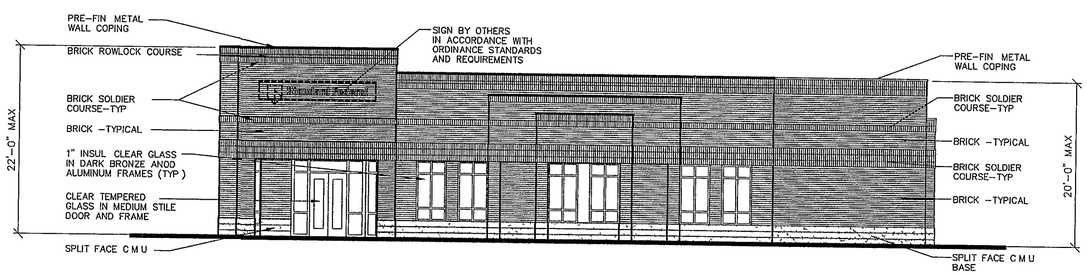


WEST ELEVATION

SCALE 1/8" = 1'-0"

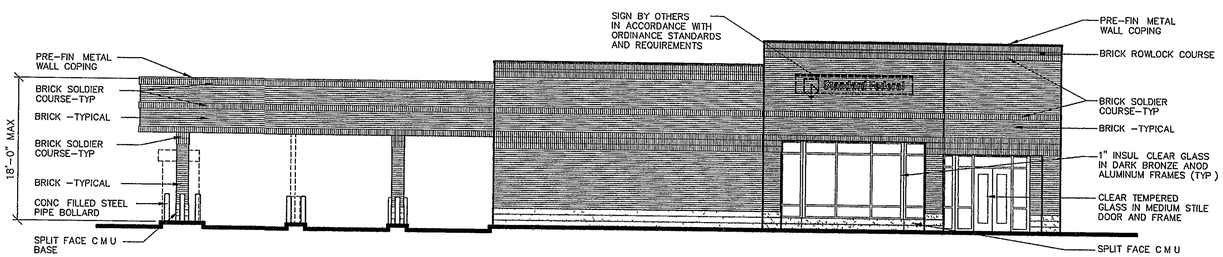
NORTH ELEVATION

SCALE 1/8" = 1'-0"



EAST ELEVATION

SCALE 1/8" = 1'-0"



SOUTH ELEVATION

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PITTSFIELD TOWNSHIP, MICHIGAN

Sheet Title
ELEVATIONS

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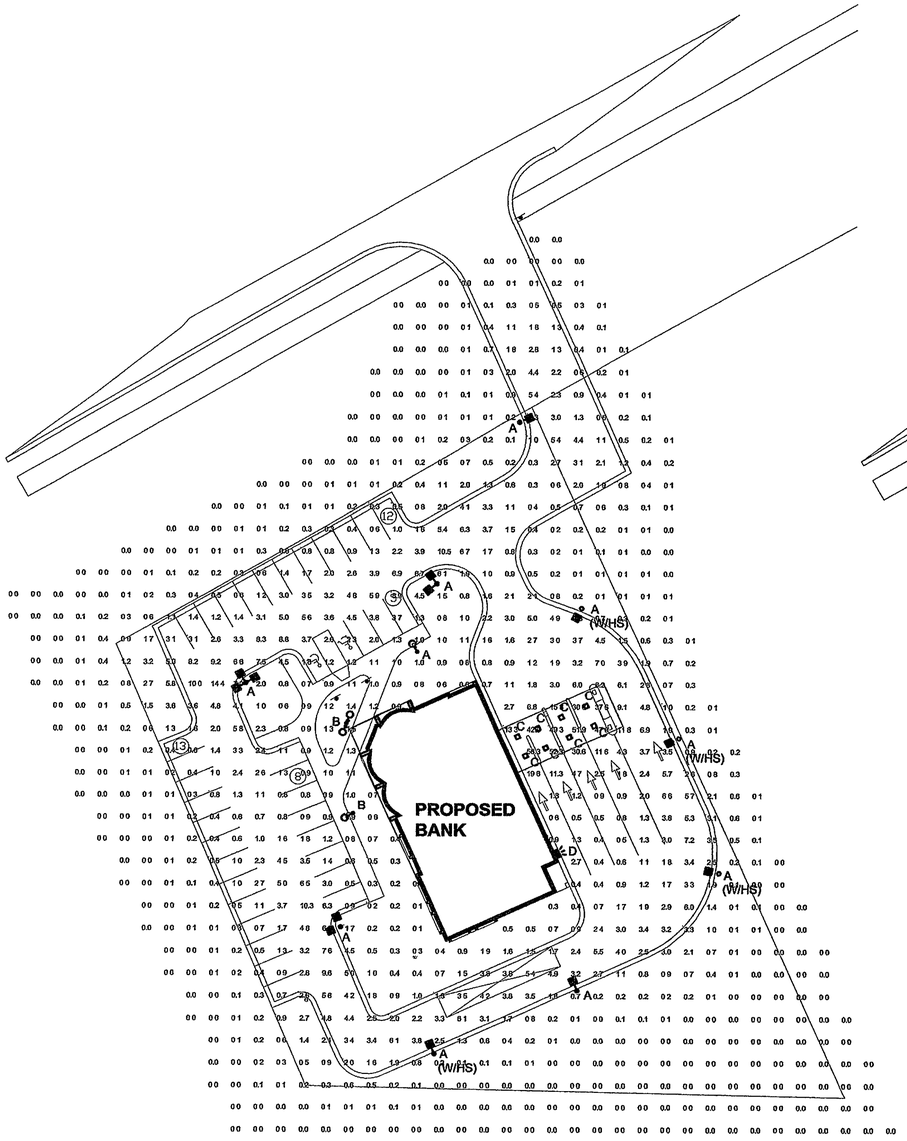
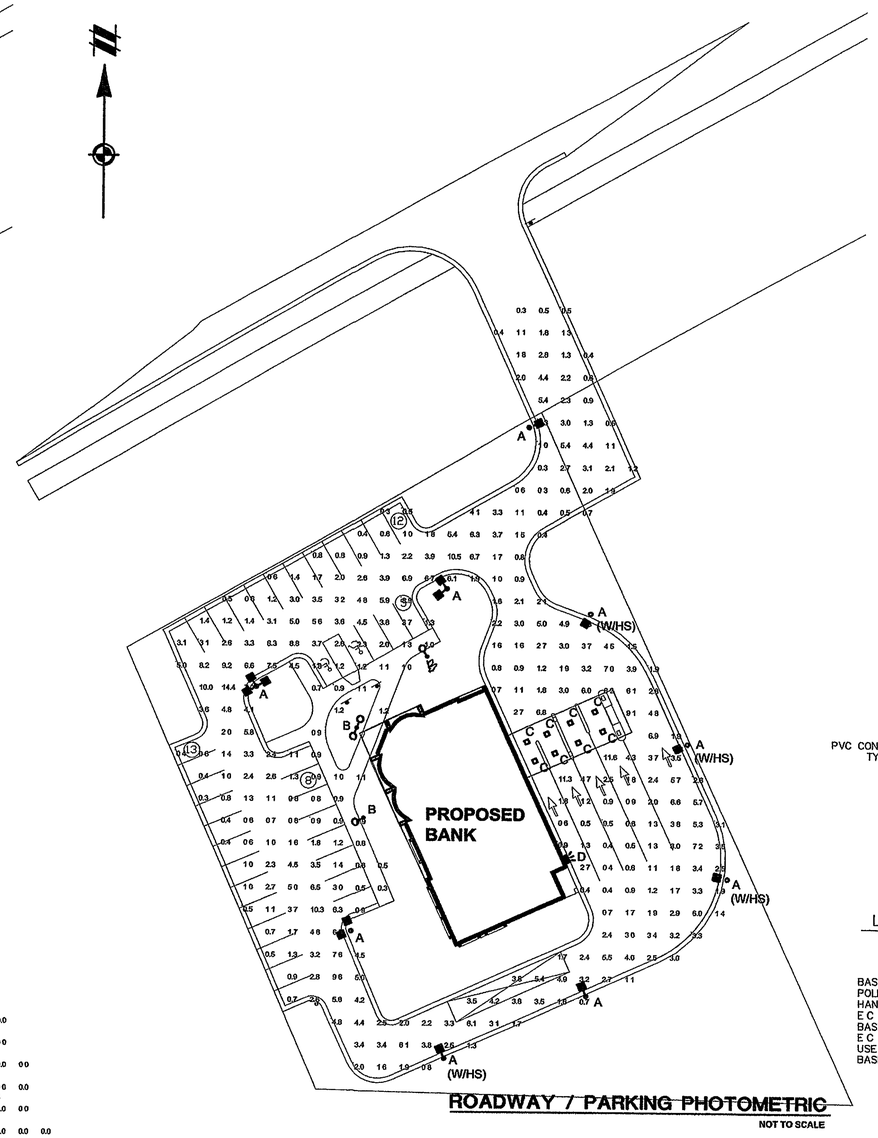
11-19-03
07-14-04 SPA
05-06-05

Sheet No
A-2



FULL SITE PHOTOMETRIC

NOT TO SCALE



ROADWAY / PARKING PHOTOMETRIC

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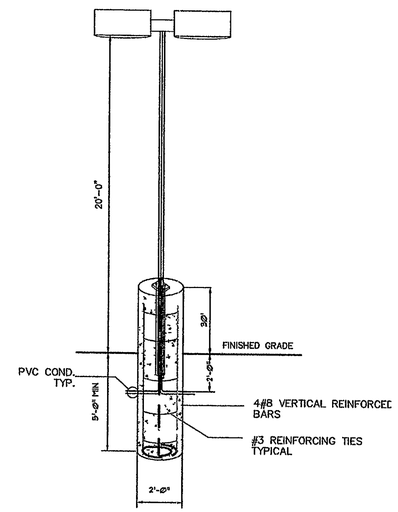
ENERGY / TECHNOLOGY SOLUTIONS
418-1/2 S WASHINGTON
P O Box 1116
ROYAL OAK, MI 48068 1116

Off. 248/744 0360
Fax 248/744 0367



LIGHT POLE BASE DETAIL

N.T.S

BASE DETAIL NOTES.
POLE SHALL BE FURNISHED WITH 4"X6"GASKETED HAND HOLE
E C TO CONNECT #6 GROUND BARE GROUND TO POLE BASE AND COIL IN BOTTOM OF CONCRETE BASE
E C SHALL FURNISH AND INSTALL IN-LINE FUSING.
USE 4-40"X1" ANCHOR BOLTS.
BASE SHALL BE ROUND FORMED 2'-0" DIA

NOTE.
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FULL SITE

STATISTICS

Description	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	1 7 fc	56 3 fc	0 0 fc	N/A	N/A

ROADWAY / PARKING

STATISTICS

Description	Avg	Max	Min	Max/Min	Avg/Min
Calc Zone #1	2 7 fc	14 4 fc	0 3 fc	48.0 1	9.2·1

LUMINAIRE SCHEDULE

Symbol	Label	Qty	Catalog Number	Description	Lamp	Lumens	LLF	Watts
	A	13	LITHONIA KSE1 250M R3	ARM MOUNTED FIXTURE WITH PREMIUM SEGMENTED OPTICS ON 20' POLE. HOUSE SIDE SHIELD WHERE INDICATED.	ONE 250-WATT METAL HALIDE	20000	0 74	310
	B	4	SUN VALLEY DSD1-CG-H-111	DECORATIVE SITE FIXTURE ON 12' POLE		6200	0 74	125
	C	8	LITHONIA G1 175MP FW T73		15000 LM LAMP	15000	0 74	125
	D	1	LITHONIA WST 2/26DTT MD	ARCHITECTURAL SCONCE WITH MEDIUM THROW DISTRIBUTION WITH CLEAR, FLAT GLASS LENS	TWO 26-WATT TWIN TUBE COMPACT FLUORESCENT, HORIZONTAL POSITION.	1600	0 81	

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RECORD DRAWING SET
SITE PHOTOMETRIC PLAN

CAD FILE
300688RD-18-LT dwg

REVISIONS

DATE
11/22/05

Sheet Title:
SITE PHOTOMETRIC PLAN

Issued For:
04-13-04 REVIEW
8-26-04

Sheet No.
NE-1

NOTE
THIS SHEET DOES NOT CONTAIN FIELD MEASURED/AS-BUILT INFORMAION

SCALE 0
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JOB 300688
FILE NO
437-520-19

SHEET NO
19

STATE OF MICHIGAN
MICHAEL A. BOGGIO
ARCHITECT
NO
24098
LICENSED ARCHITECT

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
FOR THE LOCATION OF UNDERGROUND FACILITIES

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. 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

NOTICE:

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

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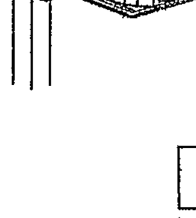
NOTE:
THIS SHEET DOES NOT CONTAIN FIELD MEASURED/AS-BUILT INFORMATION

LIGHT FIXTURE INFORMATION

LITHONIA LIGHTING

Catalog Number	Type
KSE1-250M-R3-120-HS WHERE INDICATED	A

Area Lighting
KSE1
METAL HALIDE
100W, 150W, 175W, 200W, 250W
15' to 25' Mounting



FEATURES & SPECIFICATIONS

INTENDED USE – Used for car lots, street lighting or parking areas.

CONSTURCTION – Rugged, heavy-gauge, 12" thick, lightweight extruded, aluminum housing. Square shape, seam-welded and internally sealed for weather-tight integrity. Naturally anodized, extruded, aluminum door frame is sealed to housing by a silicone, closed-cell gasket and is secured with (3) quarter turn closing screws. Can be hinged from any of the four sides.

Porcelain horizontally-oriented, socket with copper alloy nickel-plated screw shell and center contact. Medium-base socket used with 100W and mogul base used with 150-250W. UL listed 150W-600V

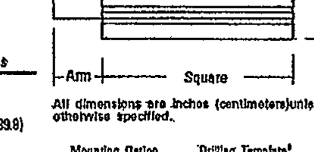
FINISH – Standard finish is dark bronze (DDB), polyester powder, electrostatically applied and oven cured. Other powder architectural colors available

OPTICAL SYSTEM – Reflectors are anodized and segmented for superior uniformity and control, which allows the flexibility to mix distributions without compromising the overall lighting job. Reflectors attach with tool-less fasteners and are rotatable and interchangeable. Three cutoff distributions available. Type II (Roadway), Type III (Asymmetric), Type IV (Forward Throw Sharp Cutoff). Lens is 125" thick impact resistant, tempered glass.

ELECTRICAL SYSTEM – High reactance, high power factor ballast for 100W. Constant wattage autotransformer ballast for 150-250W. Super CWA pulse start ballast required for 200W (must order SCWA option). Ballasts are copper wound and 100% factory tested. Removable power tray and positive locking disconnect plug

INSTALLATION – Extruded, 4" aluminum arm for pole or wall mounting is shipped in fixture carton. Optional mountings available.

LISTING – UL listed for wet locations. Listed and labeled to comply with Canadian Standards (see Options).



Specifications
EPA: 1.3 ft² (.12m²) (includes arm)
Square: 15-11/16 (39.8)
Depth: 8-3/4 (22.2)
Arm length: 4 (10.2)
Weight: 26.6 lbs (12.1kg)

Arm — Square — D

All dimensions are inches (centimeters) unless otherwise specified.

Mounting Option	Drilling Template[6]
SPxx, RPxx, DA12P	5
WBxx, DA12WB	8
WWxx	7

ORDERING INFORMATION

Example: KSE1 250M R3 120 SP04 SF DDB LPI

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line. Order accessories as separate catalog number

KSE250M — R3 — 120 — HS - WHERE INDICATED

Series: KSE1 100M, KSE1 150M, KSE1 175M, KSE1 200M, KSE1 250M

Distribution:
R2 IES Type II roadway
R3 IES Type III asymmetric
R4SC IES Type IV forward throw, sharp cutoff

Voltage: 120, 208[1], 240[1], 277, 347, 480[1], TB[2]

Mounting[6]:
SP04 Square pole (4" arm) (standard)[3]
SP09 Square pole (9" arm)
RP04 Round pole (4" arm)[3]
RP09 Round pole (9" arm)
WW04 Wood pole or wall (4" arm)[3]
WW09 Wood pole or wall (9" arm)
WB04 Wall bracket (4" arm)
WB09 Wall bracket (9" arm)
L/ARM When ordering KMA, DA12

OPTIONAL MOUNTING (shipped separately)
DA12P Degree arm (pole)
DA12WB Degree arm (wall)
KMA Mast arm adapter
KTMB Twin mounting bar

Options:
Shipped Installed in Fixture
SF Single fuse (120, 277, 347V)
DF Double fuse (208, 240, 480V)
LPI Lamp included as standard
L/LP Less lamp
PER NEMA twist lock receptacle only
QRS Quartz restrike system (100W max) (lamp not included)
EC Emergency circuit
CR Enhanced corrosion resistance
CSA Listed and labeled to comply with Canadian Standards
SCWA Super CWA Pulse Start Ballast (n/a 100W, 175W or 250W)
Shipped Separately[4]
PE1 NEMA twist-lock photocontrol (120, 208, 240V)
PE3 NEMA twist-lock photocontrol (347V)
PE4 NEMA twist lock photocontrol (480V)
PE7 NEMA twist lock photocontrol (277V)
SC Shorting cap for PER option
KSE1HS House side shield (R2,R3)
KSE1VG Vandal guard

Architectural Color (powder finish)[5]
Standard Colors
DDB Dark bronze (standard)
DWH White
DBL Black
Classic Colors
DMB Medium bronze
DNA Natural aluminum
DSS Sandstone
DGC Charcoal gray
DTG Tennis green
DBR Bright red
DSB Steel blue
Striping[7]
SDDB Dark bronze
SDWH White
SDBL Black
SDNA Natural aluminum
SDTG Tennis green
SDBR Bright red
SDBUA Dark blue
SDGYM Grey
SDYLB Yellow
Architectural Class 1 Anodize
ADB Dark Bronze
ABL Black

NOTES:
1 Consult factory for availability in Canada
2 Optional multi-tap ballast (120, 208, 240, 277V). (120, 277, 347V in Canada.)
3 The SP09, RP09 or WW09 must be used when two or more luminaires are oriented on a 90° drilling pattern.
4 May be ordered as accessory
5 Additional architectural colors available; see Architectural Colors brochure form no. 794.3.
6 For arm-mounting, refer to technical data section in the Outdoor binder for drilling template.
7 Striping is available in the ten colors listed only

Accessories: Tenon Mounting Slipfitter (Order separately)

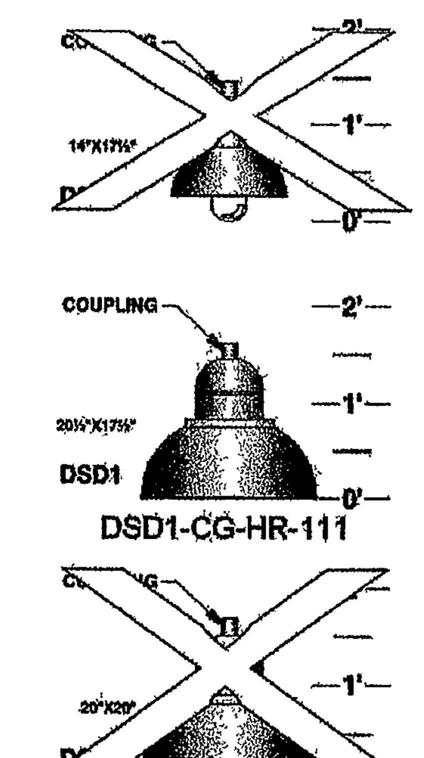
Tenon O.D.	One	Two@180°	Two@90°[3]	Three@120°	Three@90°[3]	Four@90°[3]
2-3/8"	T20-190	T20-280	T20-290	T20-320	T20-390	T20-490
2 7/8"	T25-190	T25 280	T25-290	T25 320	T25-390	T25-490
4"	T35-190	T35 280	T35-290	T35-320	T35-390	T35-490

Outdoor — Sheet# KSE1-M — AL-270

DSD

TYPE B

HEAVY WALL ALUMINUM CONSTRUCTION. LUMINAIRE PROVIDED WITH REMOVABLE BALLAST TRAY AND CLEAR PRISMATIC REFRACTOR OR OPAL GLASS DIFFUSER



DSD1-CG-HR-111

BALLASTS ARE H.P.F. / C.W.A. AUTOTRANSFORMER, -20° STARTING TEMPERATURE

	METAL HALIDE	HIGH PRESSURE SODIUM	MERCURY VAPOR	INC.	FOR FLUOR. LAMPS CONSULT FACTORY
DSD1 / DSD2 / DSDR1	50W, 70W, 100W, 175W.	50W, 70W, 100W, 150W.	50W, 75W, 100W, 175W.	TO 200W.	

UL Listed for wet location.

LUMINAIRE ACCESSORIES
(SPECIFY AS SUFFIX TO LUMINAIRE NO.)

3/8" IPS STEM MOUNT AND SWIVEL CANOPY (4'-0" MAX) — SM
CHAIN MOUNTED (4' 0" MAX) — CM

STANDARD DIFFUSER DSD1 AND DSD2:
CLEAR PRISMATIC TEMPERED GLASS

OPTION:
OPAL GLASS DIFFUSER (ANNEALED AND HEAT RESISTANT)....WGD
CLEAR TEMPERED GLASS LENS (DSD1 ONLY)....CG
REFLECTOR TYPE III (DSD1 ONLY) (HORIZONTAL LAMP)....HR-III
REFLECTOR TYPE V (DSD1 ONLY) (HORIZONTAL LAMP)....HR-V-SQ

DSDR1 REFRACTOR OPTIONS:
TYPE V LIGHT DISTRIBUTION....V
TYPE IV LIGHT DISTRIBUTION....IV
TYPE III LIGHT DISTRIBUTION....III
TYPE II LIGHT DISTRIBUTION....II
TYPE I LIGHT DISTRIBUTION....I

GENERAL OPTIONS:
HOUSE SIDE SHIELD 90°....HS90°
135°....HS135°
180°....HS180°
PHOTO CELL + VOLTAGE (EXAMPLE: PC120V)....PC+V
SINGLE FUSE (120V., 277V.)....SF
DOUBLE FUSE (208V., 240V., 480V.)....DF

sun valley LIGHTING — The Lighting Tradition
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LD-15

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ROYAL OAK, MI 48068-1116
OFF 248/744 0360
FAX 248/744 0367

Catalog Number	Type
GF1-175M-RW-T73-120	C

Recessed Squares
2'x2' G1
Floating Door
T73 Prismatic Lens
Horizontal MH or HPS Lamp

FEATURES

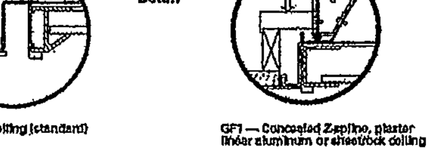
HOUSING — 20-gauge steel housing with high-reflectance, white polyester powder enamel finish. Anodized aluminum top reflector.

DOOR ASSEMBLY — Prismatic tempered glass lens. Painted aluminum door floats in middle of black reveal. Door attaches to housing assembly using T-hinges and two opposing cam latches for positive retention. Heat-treated glass refractor mounted below lamp to control brightness

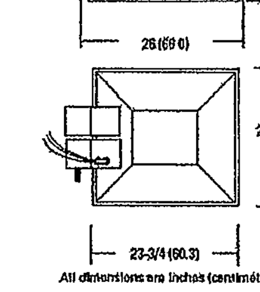
BALLAST — Power door contains all electrical components (thermally-activated insulation detector included). Power door swings down for easy access or can be removed for servicing. Ballasts are 100% factory tested. Prewired 7', 16-gauge leads and 90° connector, no flex

SOCKET — Mogul base porcelain socket, with copper alloy, nickel-plated screw shell and center contact. Mounted horizontally to power door. Position oriented socket standard with metal halide

LISTING — Fixtures are UL listed for recessed mounting and damp locations. Listed and labeled to comply with Canadian Standards and Mexican Standards (see options)



Mounting Detail
G1 — Grid ceiling (standard)
GF1 — Concealed Zspline, plaster linear aluminum or sheetrock ceiling



All dimensions are inches (centimeters)

ORDERING INFORMATION

Example G1 175M RW T73 120

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line. Order accessories as separate catalog numbers (shipped separately)

GF1 — 175M — RW — T73 — 120

Series:
G1 T bar mounting
GF1 Non-T bar mounting[1]

Wattage/lamp:
Metal Halide
175M MS175C/H
250M MS250C/H
400M MS400C/H
High Pressure Sodium
150S LU150C[2]
250S LU250C

Aluminum door frame:
RW Regressed white
FW Flush white
RM Regressed matte black
FM Flush matte black

Shielding:
T73 Prismatic tempered glass lens

Voltage: 120, 208, 240, 277, 347

Options:
SSC Provides compatibility with Lithonia Reloc System 820. System 820 can be installed less this option with connectors provided by others.
DCS Cord and Reloc DCS connector
RCA Cord and Reloc RCA connector
RCS Cord and Reloc RCS connector
QRS Quartz restrike system (uses DC base quartz lamp by others; see other side for wattage restrictions).
QRSTD Quartz restrike system with time delay.
EC Emergency circuit (DC base socket with leads for connection to external emergency power source; see other side for wattage restrictions).
SF Single fuse.
DF Double fuse (208, 240V).
WG Wireguard (attached to door).
TA Top access availability for relamping.
220/50HZ Consult factory
PWS 1436X Prewired 7' 14 ga. leads; no flex.
PWS 1636 Prewired 7', 16 ga. leads; 6' flex.
PWS 1436 Prewired 7', 14 ga leads; 6' flex.
CSA Listed and labeled to comply with Canadian Standards.
NOM Listed and labeled to comply with Mexican Standards.

Accessories
Order as separate catalog numbers
TCPF Plaster frame.
HTC Earthquake clips (for use in T bar suspended ceiling).
RB 3" deep black smooth baffle (n/a GF1).
RMB 2" deep matte black grooved baffle (n/a GF1)
WG12 Wireguard (attaches to grid ceiling)

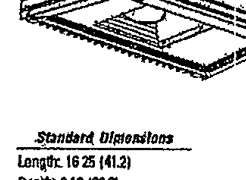
Notes:
1 GF1 ceiling thickness: minimum 1 1/8"; maximum 4-1/8"
2 150S requires 55-volt lamp operation.

LITHONIA LIGHTING — INDOOR H.I.D. LIGHTING — G1

LITHONIA LIGHTING

Catalog Number	Type
WST-2/26DTT-MD-120	D

Decorative Wall-Mounted Lighting
WST
COMPACT FLUORESCENT
26 DTT
2/26DTT
32TRT
2/32TRT
42TRT
2/42TRT



FEATURES & SPECIFICATIONS

INTENDED USE
For building- and wall-mounted applications.

CONSTRUCTION
Rugged, die-cast, single piece aluminum housing. Die-cast door frame has a 1/8" thick tempered glass lens. Door frame is fully gasketed with one-piece solid silicone.

FINISH
Standard finish is new textured dark bronze (DDBT) corrosion resistant polyester powder finish, with other architectural colors available

OPTICAL SYSTEM
Segmented reflectors for superior uniformity and control. Medium throw (MD) full cutoff distribution available.

ELECTRICAL SYSTEM
Fluorescent ballast is Class P, electronic, high power factor, <10%THD, with starting temperature of 0°F (-18°C). Fluorescent socket is high temperature thermoplastic with an integral lamp retention clip.

INSTALLATION
Universal mounting mechanism with integral mounting support allows fixture to hinge down. Bubble level provides correct alignment with each installation

LISTING
UL listed (standard). CSA Certified (see Options). Suitable for wet locations (damp location listed in lens-up orientation). WLU option offers wet location listing in up orientation (see Options). IP65 rated.

Standard Dimensions
Length: 16.25 (41.2)
Depth: 9.13 (23.2)
Overall Height: 7.25 (18.4)
Max. Weight: 30 lbs (13.6 kg)

All dimensions are inches (centimeters) unless otherwise specified

ORDERING INFORMATION

Example: WST 42TRT FT 120 LPI DNAT

Choose the boldfaced catalog nomenclature that best suits your needs and write it on the appropriate line.

WST — 2/26DTT — MD — 120

Series: WST

Wattage/Source: Compact Fluorescent: 26DTT, 2/26DTT, 32TRT, 2/32TRT, 42TRT, 2/42TRT

Distribution: MD Medium throw

Voltage: 120, 208[1], 240[1], 277, 347, MVOLT[2]

Options:
Shipped Installed in Fixture
GMF Internal slow-blow fusing (must specify voltage; n/a MVOLT)
EC Emergency circuit (25W max 120V, incandescent lamp included)
DC12 Emergency circuit 12 volt (35W lamp included std.)[3]
ELDW Emergency battery pack (n/a with 2/32TRT or 2/42TRT)[3] (32° min. operating temp.)
CR Enhanced corrosion resistance
CRT Non-stick protective coating (black only)
PE Photoelectric cell button type (n/a MVOLT)[1]
WLU Wet location door for up orientation
DFL Diffusing lens
LPI Lamp included (std)
L/LP Less lamp
CSA CSA Certified
Shipped Separately
WSBBW Surface-mounted back box
UT5 Uplift 5 degrees
WSTWG Wire guard[4]
WSTVG Vandal guard[4]

Architectural Colors[5]
Standard Textured Colors
DDBT Dark bronze (std.)
DSST Sandstone
DNAT Natural aluminum
DWHG White
DBLB Black
Optional Textured Colors
DBNH Bronze
DSPD Dark gray
DSPJ Light gray
DSPE Green
DSPR Dark red
DSPF Rust
DSPH Red
Striping
SDDB Dark bronze
SDWH White
SDBL Black
SDNA Natural aluminum
SDSS Sandstone
SDTG Tennis green
SDBR Bright red
SDBUA Dark blue
SDGYM Gray
SDYLB Yellow

NOTES:
1 Consult factory for availability in Canada.
2 Optional multi-volt electronic ballast capable of operating on any line voltage from 120-277V.
3 Not available with GMF. For lamp-down orientation only
4 Must be ordered with fixture; cannot be field installed
5 Additional architectural colors available; see www.lithonia.com for more information.

Outdoor — Sheet #: WST-CF — BM-135

STATE OF MICHIGAN — MICHAEL A. BOGGIO JR. — ARCHITECT — NO 24098 — LICENSED ARCHITECT

Sheet No. PE-2

Issued For:
04-13-04 REVIEW
08-26-04 REVISED

Sheet Title: LIGHT FIXTURE INFORMATION

Standard Federal
NEW BRANCH OFFICE: PITTSFIELD TOWNSHIP, MICHIGAN

Michael A. Boggio Assoc. Architects
30100 Telegraph Rd., Ste. 216 Bingham Farms MI 48025 (248)-258-5155

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SECTION 28
TOWN 3 SOUTH, RANGE 6 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT: MICHAEL A. BOGGIO ASSOCIATES
STANDARD FEDERAL BANK RECORD PLAN SET
LIGHTING FIXTURE INFORMATION

CAD FILE 300688CP-18-LT dwg

REVISIONS

DATE 11/22/05

SCALE 0 — NONE
DR -- CH --
P.M. M PASCOE
BOOK --
JOB 300688
FILE NO 436-538-20

SHEET NO A-20