Menomonee Falls
MORE THAN A VILLAGE

Village of Menomonee Falls
W156 N8480 Pilgrim Road
Menomonee Falls, WI 53051-3140
Telephone: (262) 532-4200

STORMWATER MANAGEMENT FACILITIES OPERATION AND INSPECTION REPORT

Quarter Section: 03 SE
Name of Business/Subdivision: TID#8 – PHASE I
Property Tax ID Number: 0012943
Address of Property:

Dry Pond	
Wet Pond	X
Other	

Description: SWP03S003
P-0154

Location Of Pond: SW CORNER OF FALLS PKWY & PILGRIM RD

Year Pond Constructed: 2013
Year of Last Certification: N/A

Compliance Verification	Design	Actual	Compliant Yes	Compliant No	Comments (Condition of Structure)
Primary Outlet Pipe	(SP010685)				Outlet Pipe Material
Opening Diameter (inches) (ST012391)	53"X34"	60"X38"			REINFORCED CONRETE PIPE – HORIZONTAL ELIPTICAL, JOINT NEEDS REPAIR AROUND PIPE AT RISER STRUCTURE.
Upstream Invert	785.60	785.57			
Downstream Invert	785.54	785.32			
Length (feet)	80.00	82.95			
Slope (%)	0.08%	0.30%			
Secondary Outlet Pipe	(If Applicable)				Outlet Pipe Material
Opening Diameter (inches)					
Upstream Invert					
Downstream Invert					
Length (feet)					
Slope (%)					
Riser	(If Applicable)				Riser Material
Opening Diameter (inches)					
Elevation					
Upper Discharge Control	(If Applicable)				
Opening Diameter (inches)	60"X60"	60"X60"			5ft x 5ft SQUARE CONCRETE RISER STRUCTURE
Elevation	793.75	793.77			

Compliance Verification	Design	Actual	Compliant Yes	No	Comments
Lower Discharge Control	(If Applicable)				
Opening Diameter (inches)	6”	6”			6” DIA. HOLE IN CONCRETE DIVIDER WALL WITHIN CONCRETE RISER STRUCTURE
Elevation	793.00	792.95			
Other (Description)					
Opening Type and Size (inches)					
Elevation					
Emergency Spillway					
Elevation		800.07			ELEVATION HIGHER THAN UPPER DISCHARGE CONTROL, DRAINS SOUTH TO CLEVELAND AVE
Length of spillway (feet)		12”			WIDTH OF DITCH APPROX. 12” AT HIGH POINT

Embankment	Present Yes	No	Comments/Maintenance Requirements
Unauthorized Plantings, trees, or woody vegetation	X		Remove lawn clippings/brush that has been dumped at the southerly edge of the water line behind N89W15640 CLEVELAND AVE.
Animal burrows or slope erosion		X	

Storm Sewer Outfalls	Type & Size	Location	Comments
Outfall 1 (ST012357)	12” RCP	DITCH NW OF POND	RCP IN GOOD CONDITION, 799.80
Outfall 2 (ST012382)	38”X60” H.E. RCP	NW CORNER OF POND	RCP IN GOOD CONDITION, 793.28
Outfall 3 (ST012388)	16” RCP	N EMBANKMENT	RCP IN GOOD CONDITION, 796.13
Outfall 4 (ST014907)	12” RCP	NE CORNER OF POND	RCP IN GOOD CONDITION, 789.59

Storage Properties	Design	Actual	Compliant Yes	No	Not Applicable	Equipment Used
Normal Water Elevation *(Wet Ponds)*	793.00	792.95				GPS ROVER RECEIVER: GEOMAX – ZENITH 35
Design High Water Elevation	796.55	796.55				GPS BASE RECEIVER: SOKKIA 2700 RSX
Area at Normal Water Elevation (Ac) (Wet Ponds)	0.728 AC	0.765 AC				DATA COLLECTOR: CARLSON SURVEYOR 2
Area at Design High Water Elevation (Ac)	0.943 AC	1.114 AC				
Active Storage Available (Ac-Ft)*	3.213 ACFT	3.845 ACFT				
Lowest Elevation at Top of Embankment (If Applicable)	797.00	798.00				
Average Elevation at Top of Embankment (If Applicable)	798.00	799.00				
Maximum Bottom Elevation	788.00	N/A				
Average Pond Bottom Elevation	788.00	N/A				
Pond Bottom Area (Ac)	0.327 AC	0.765 AC				
Maximum Pond Depth	12.0 FT	N/A				
Average Pond Depth	5.0 FT	N/A				
Average Permanent Pool Depth *(Wet Ponds)*	5.0 FT	N/A				

*To Determine Active Storage $V = ((H/3)(A1 + A2 + ((A1 + A2)^{(1/2)})))$

Falls Parkway Retention Pond – SWP03S003

Overview

Storm Water Outlet ST012382

Falls Parkway Retention Pond – SWP03S003

Storm Water Outlet ST012357

Storm Water Outlet ST012388

Falls Parkway Retention Pond – SWP03S003

Storm Water Outlet ST014907

Storm Water Overflow ST012391

Falls Parkway Retention Pond – SWP03S003

Emergency Spillway

Ditch to Northwest of Pond – Looking Northwest.

Falls Parkway Retention Pond – SWP03S003

Repairs Needed (10/03/2017)

Concrete Riser Overflow Structure - ST012391

1 Sizeable Leak @ Pipe/Structure Joint
1 Sizeable Leak @ Structure Joint

Remove Clippings from Southerly Bank of Pond (Behind N89W15640 Cleveland Ave)

Wet Ponds Use *H = Height of Section , A1= area at normal water elevation, A2=area at top section*
Dry Ponds Use *H= Height of Section, A1= pond bottom area, A2=area at top section*

Sketch Outlet	*Place Photograph of Pond*
	Place Photograph of Pond

Inspection Firm: VILLAGE OF MENOMONEE FALLS

Phone Number: (262) 532-4411

Address: VILLAGE OF MENOMONEE FALLS
W156N8480 PILGRIM RD
MENOMONEE FALLS, WI 53051

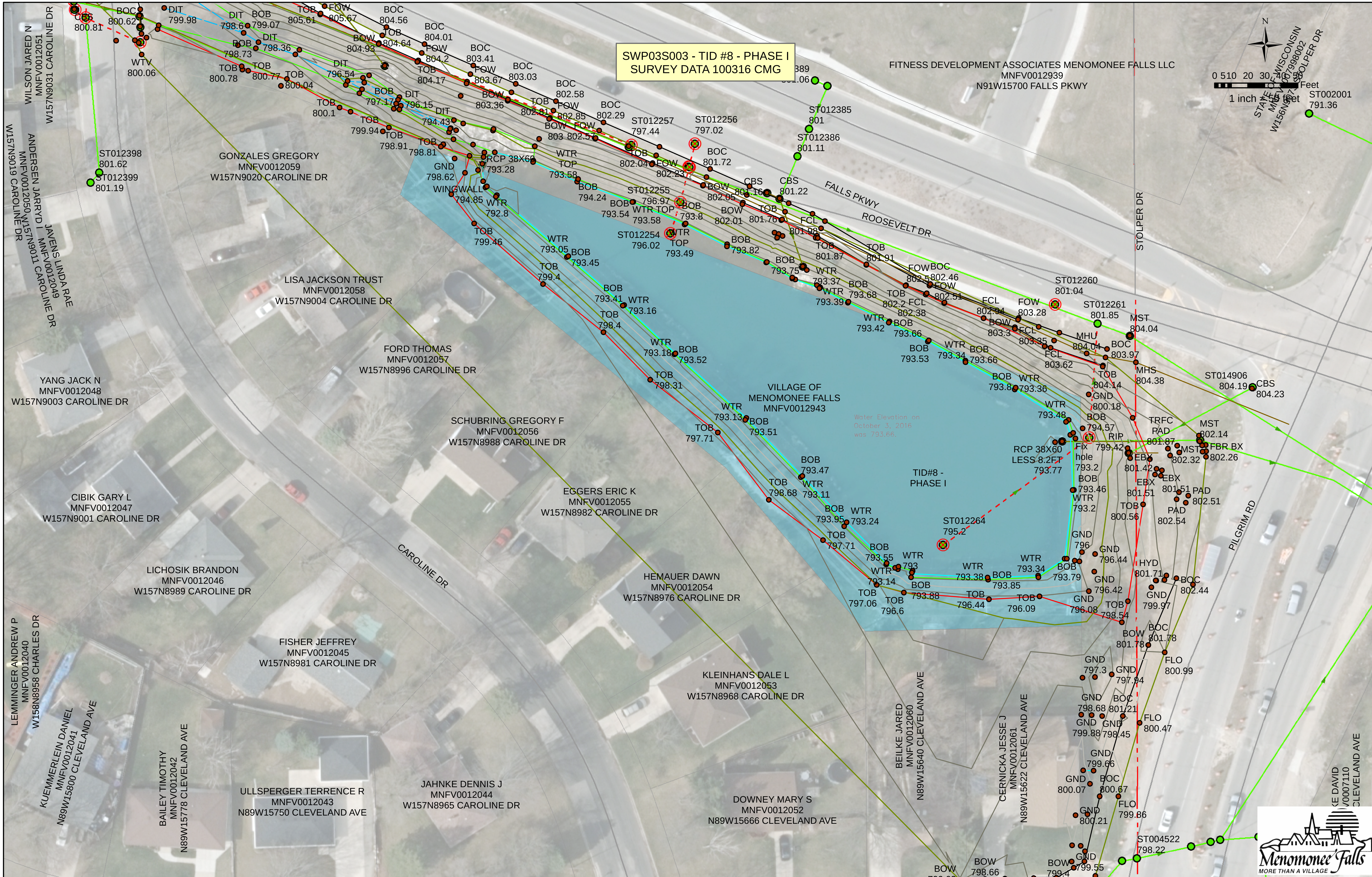
Inspector Name : CHRISTOPHER M. GARIEPY

Inspection Date: OCTOBER 3, 2016

Certifying Professional Name: THOMAS M. HOFFMAN, P.E.

Phone Number: (262) 532-4415

Date:	*Signature:*	
1/31/17		WISCONSIN THOMAS M. HOFFMAN E-33370 BROOKFIELD WIS PROFESSIONAL ENGINEER *Affix Seal Here*



SWP03S003 - TID #8 - PHASE I
SURVEY DATA 100316 CMG
FITNESS DEVELOPMENT ASSOCIATES MENOMONEE FALLS LLC
MNFV0012939
N91W15700 FALLS PKWY
VILLAGE OF
MENOMONEE FALLS
MNFV0012943
TID#8 -
PHASE I
Water Elevation on
October 3, 2016
was 793.66.
RCP 38X60
LESS 8.2FT
793.77
FALLS PKWY
ROOSEVELT DR
STOLPER DR
PILGRIM RD
CAROLINE DR
GONZALES GREGORY
MNFV0012059
W157N9020 CAROLINE DR
LISA JACKSON TRUST
MNFV0012058
W157N9004 CAROLINE DR
FORD THOMAS
MNFV0012057
W157N8996 CAROLINE DR
YANG JACK N
MNFV0012048
W157N9003 CAROLINE DR
SCHUBRING GREGORY F
MNFV0012056
W157N8988 CAROLINE DR
CIBIK GARY L
MNFV0012047
W157N9001 CAROLINE DR
EGGERS ERIC K
MNFV0012055
W157N8982 CAROLINE DR
LICHOSIK BRANDON
MNFV0012046
W157N8989 CAROLINE DR
HEMAUER DAWN
MNFV0012054
W157N8976 CAROLINE DR
FISHER JEFFREY
MNFV0012045
W157N8981 CAROLINE DR
KLEINHANS DALE L
MNFV0012053
W157N8968 CAROLINE DR
JAHNKE DENNIS J
MNFV0012044
W157N8965 CAROLINE DR
ULLSPERGER TERRENCE R
MNFV0012043
N89W15750 CLEVELAND AVE
DOWNEY MARY S
MNFV0012052
N89W15666 CLEVELAND AVE
BAILEY TIMOTHY
MNFV0012042
N89W15778 CLEVELAND AVE
KUEMMERLEIN DANIEL
MNFV0012041
N89W15800 CLEVELAND AVE
LEMMINGER ANDREW P
MNFV0012040
W158N8958 CHARLES DR
BEILKE JARED
MNFV0012060
N89W15640 CLEVELAND AVE
CERNICKA JESSE J
MNFV0012061
N89W15622 CLEVELAND AVE
WILSON JARED M
MNFV0012051
W157N9031 CAROLINE DR
ANDERSEN JARRYD I
MNFV0012050
W157N9019 CAROLINE DR
JAVENS LINDA RAE
MNFV0012049
W157N9011 CAROLINE DR
0 5 10 20 30 40 Feet
1 inch = 50 feet
ST012257
797.44
ST012256
797.02
ST012255
796.97
ST012254
796.02
ST012264
795.2
ST012260
801.04
ST012261
801.85
ST014906
804.19
ST012385
801
ST012386
801.11
ST012398
801.62
ST012399
801.19
ST002001
791.36
ST004522
798.22
Menomonee Falls
MORE THAN A VILLAGE

$H_1 = 796.55$
$H_2 = 793.00$
$\Delta H = 3.55'$
$A_1 = 0.765AC$
$A_2 = 1.114AC$

As-Built
Active Storage

SWP03N003 2016

$$V = \left(\frac{H}{3}\right)\left(\left(A_1 + A_2\right) + \sqrt{A_1 + A_2}\right)$$

$$V = \left(\frac{3.55'}{3}\right)\left(\left(0.765AC + 1.114AC\right) + \sqrt{0.765AC + 1.114AC}\right)$$

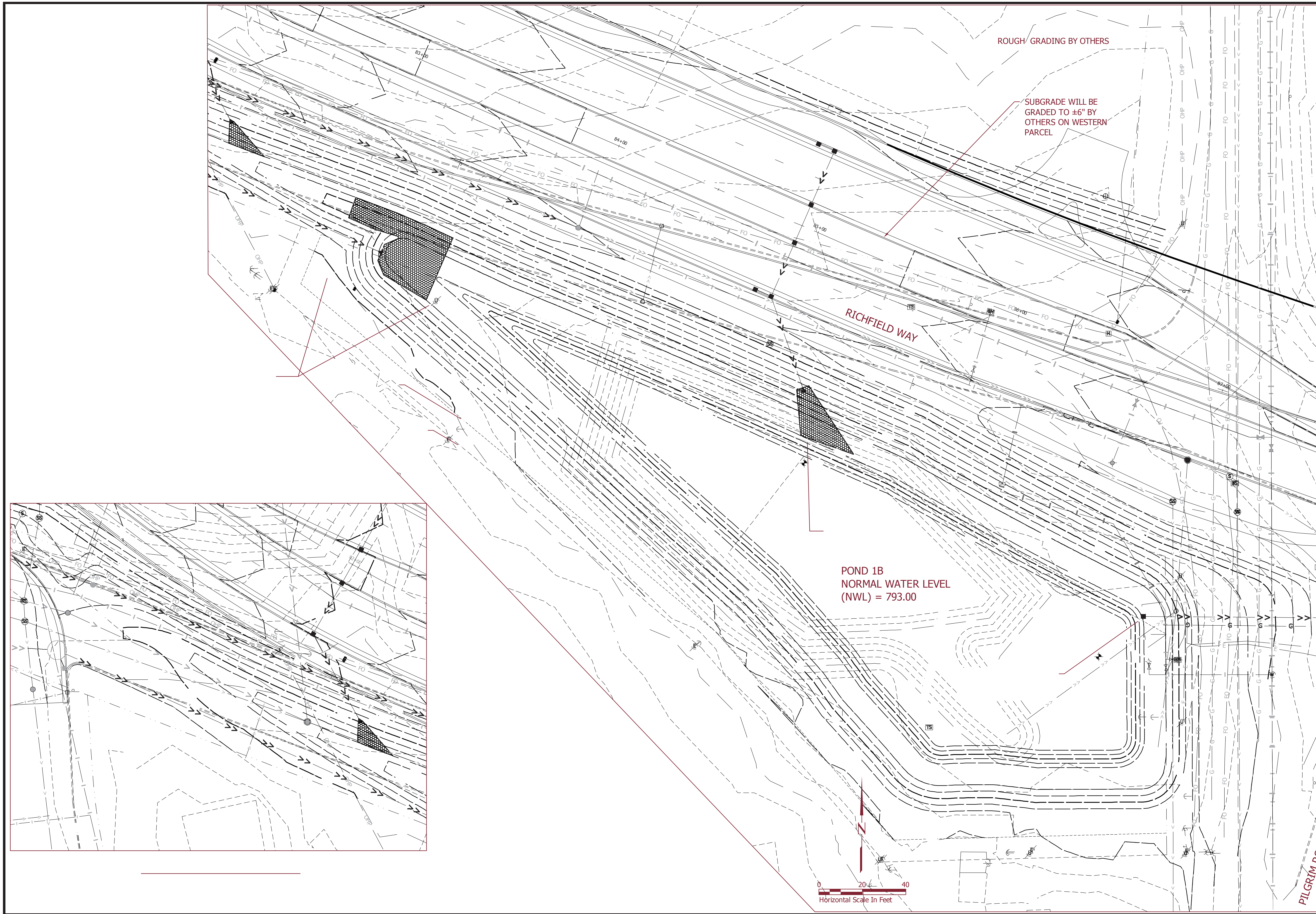
$$V = 1.183'\left(1.879AC + \sqrt{1.879AC}\right)$$

$$V = 1.183'\left(1.879AC + 1.371AC\right)$$

$$V = 1.183'\left(3.25AC\right)$$

$V =$ ~~5.768 AC-FT~~
3.845 AC-FT ✓ CMG 1/24/17

Traffic Count Information Requested
N
0 10 20 40 60 80 100 Feet
1 inch = 100 feet
FALLS PKWY
ROOSEVELT DR
PILGRIM RD
STOLPER DR
I 41 SB OFF
I 41 SB ON
CAROLINE DR
CHARLES DR
CLEVELAND AVE
SWP03S003
100 YR = 796.55
HW ELEV = 800.07
H = 3.55'
A_1 = 0.765 AC
A_2 = 1.119 AC
800.07



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VILLAGE OF MENOMONEE FALLS

RICHFIELD WAY ROAD EXTENSION - PHASE I

GRADING PLAN - POND 1B

NO.	REVISION	DATE

SURVEY	MJD
DRAWN	AJR
DESIGNED	MAC
APPROVED	MAC
PROJ. NO.	193802203

SHEET NUMBER
C3.04

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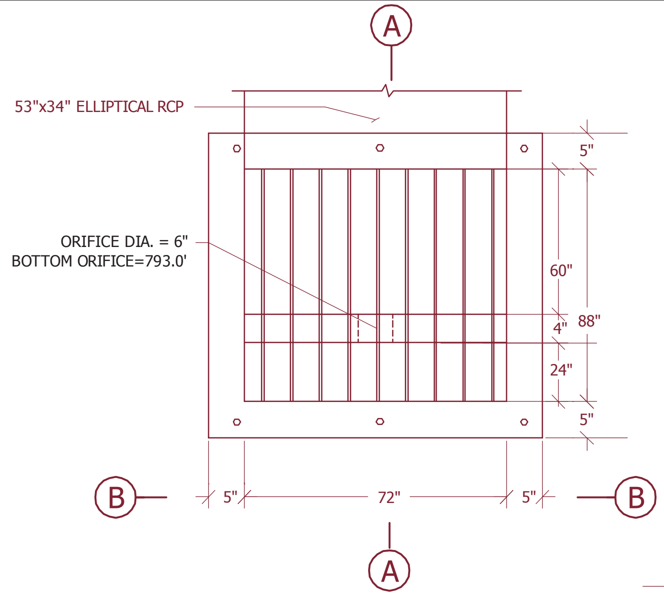
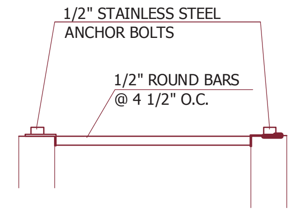
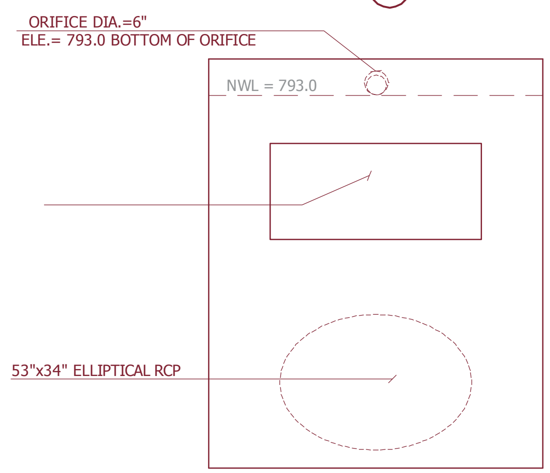


1. OUTLET STRUCTURE SHALL BE REINFORCED PRECAST CONCRETE OR CAST IN PLACE.
2. GRATING SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
3. ALL ANCHOR BOLTS SHALL BE 1/2"φ S.S. EXP. ANCHORS W/ 4" MIN. EMBEDMENT.





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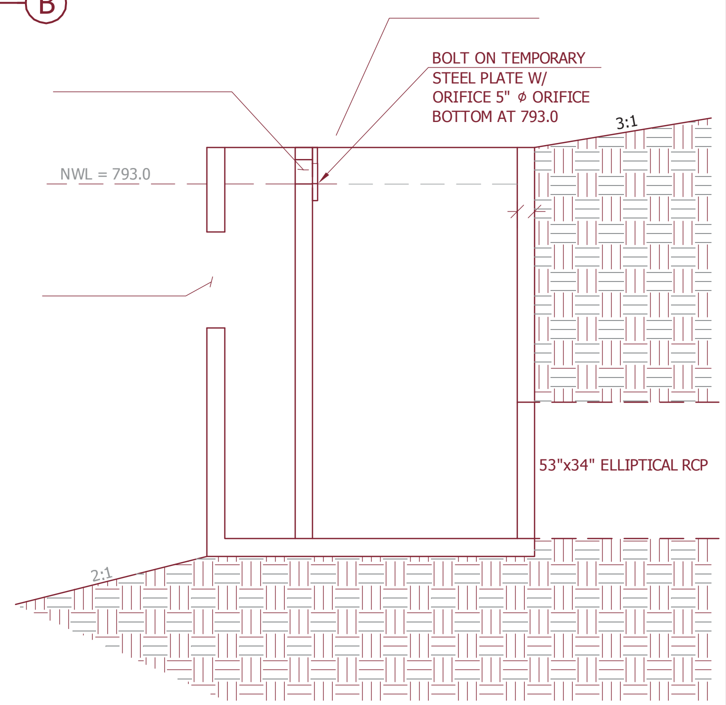

A SECTION
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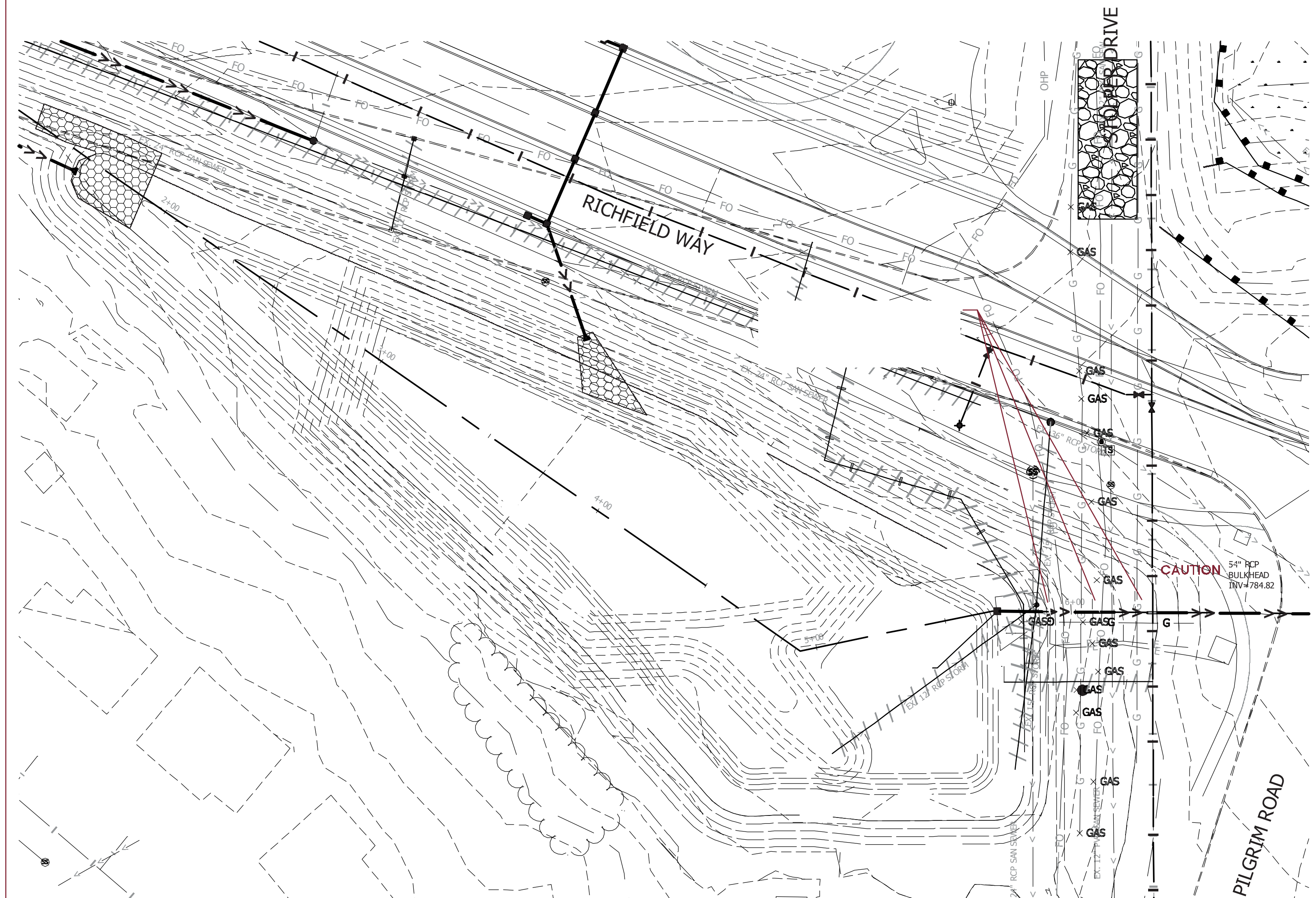
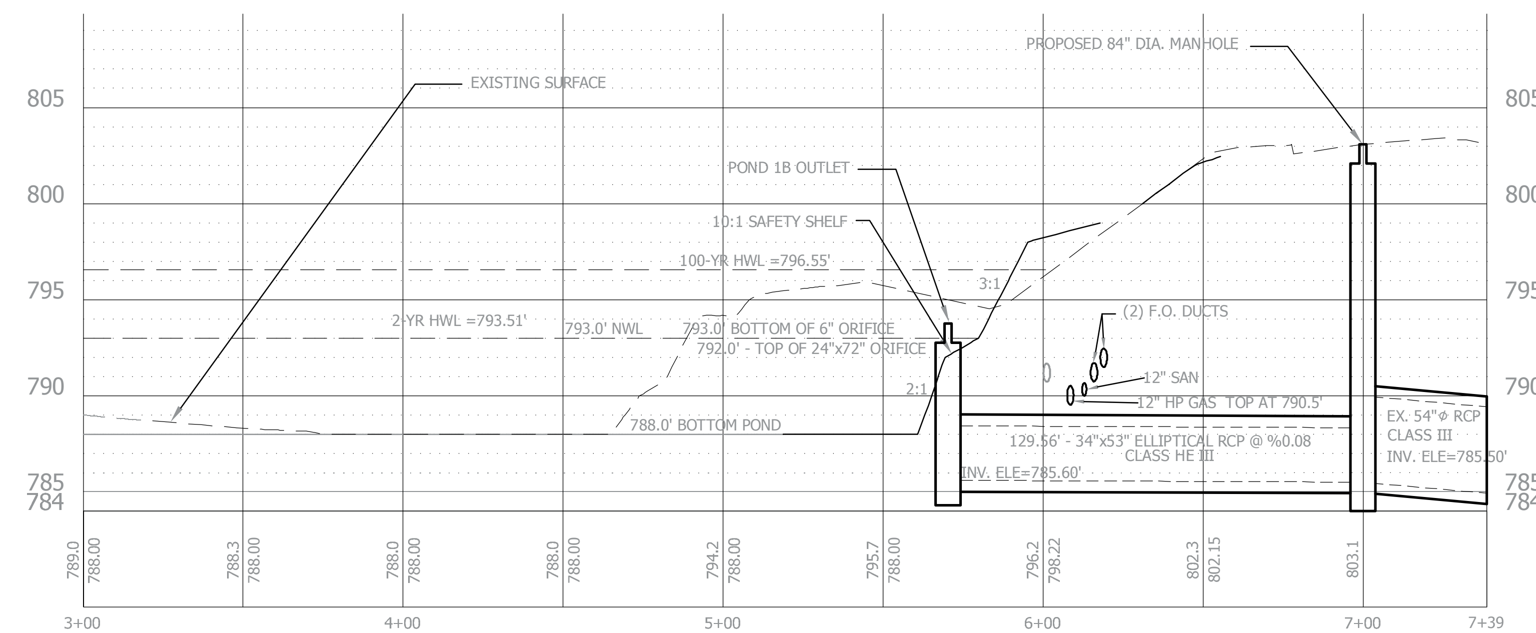


POND 1B OUTLET - PLAN VIEW
1" = 30' Hor.



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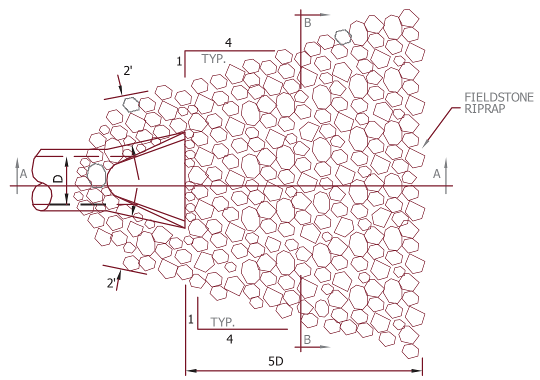
VILLAGE OF MENOMONEE FALLS
RICHFIELD WAY ROAD EXTENSION - PHASE I
POND 1B DETAILS

NO.	REVISION	DATE
1		2/21/13

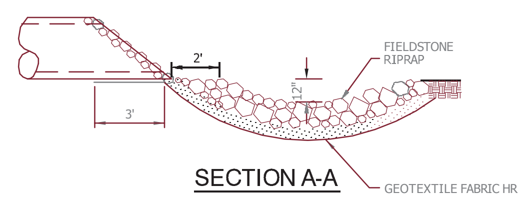
SURVEY	MJD
DRAWN	AJR
DESIGNED	MAC
APPROVED	MAC
PROJ. NO.	193802203

SHEET NUMBER
C8.03

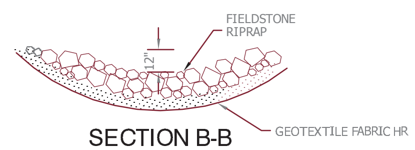


PLAN

NOTE:
FIELDSTONE RIPRAP SHALL BE PLACED APPROXIMATELY AS SHOWN ON PLAN SHEETS. THIS DETAIL PROVIDES SOME DESCRIPTION ABOUT THE PARAMETERS OF THE FIELDSTONE RIPRAP PLACEMENT BUT THE FIELDSTONE RIPRAP WILL ULTIMATELY BE FIELD FIT AT THE ENGINEER'S APPROVAL.



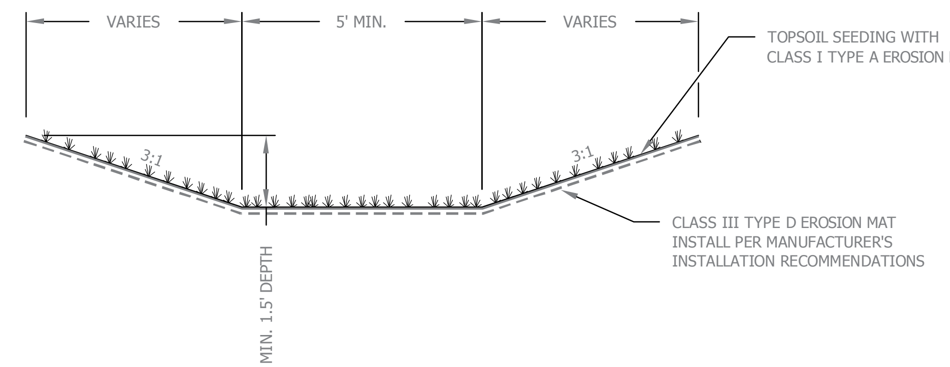
SECTION A-A



SECTION B-B

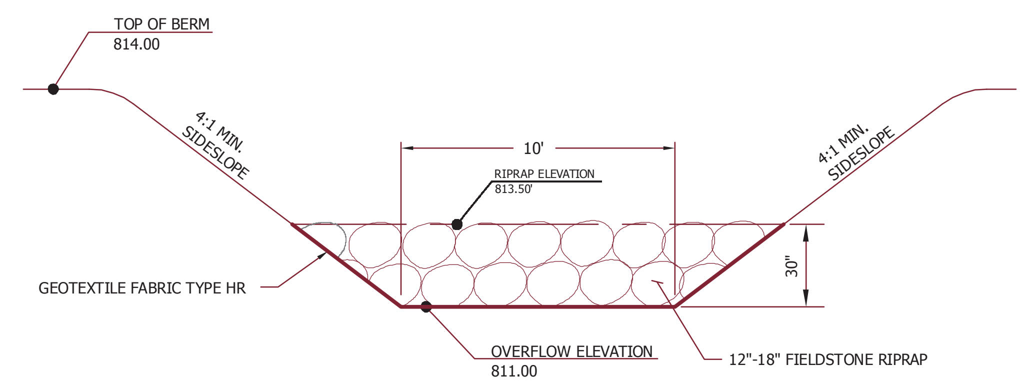
FIELDSTONE RIPRAP AT OUTLETS

NOT TO SCALE



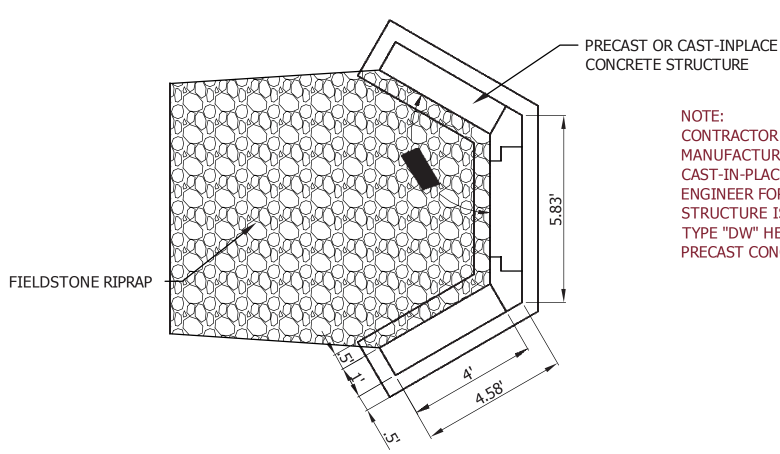
EROSION SECTION OF DITCH TO POND 1B

NOT TO SCALE

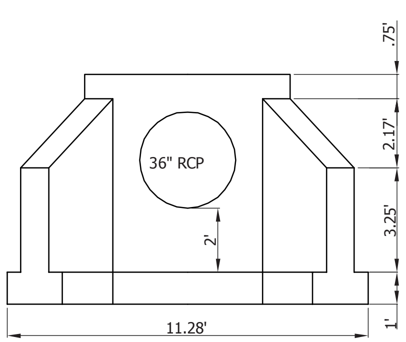


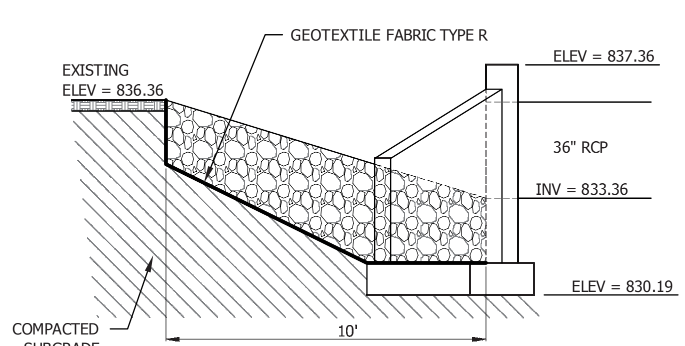
POND 1A OVERFLOW DETAIL

NOT TO SCALE



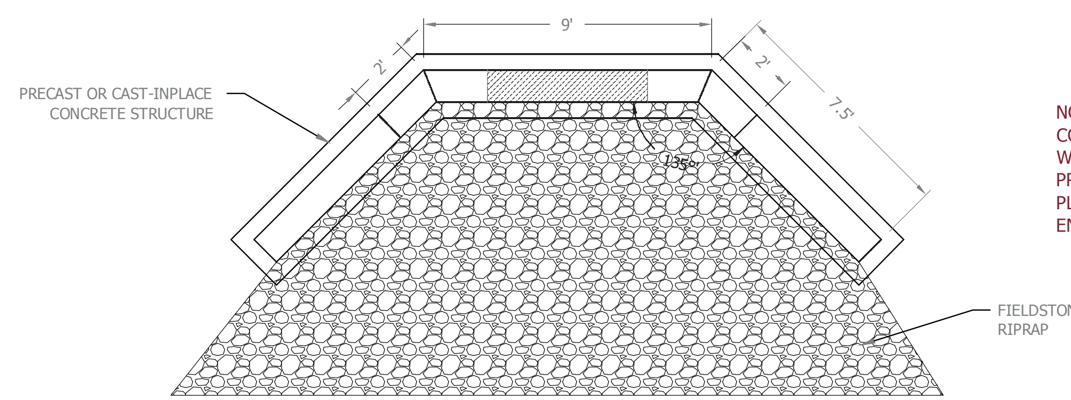
NOTE:
CONTRACTOR SHALL COORDINATE WITH PRECAST MANUFACTURERS OR PROVIDE THEIR OWN CAST-IN-PLACE PLAN TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL. THE PROPOSED STRUCTURE IS A MODIFIED VERSION OF THE PA TYPE "DW" HEADWALL PRODUCED BY MODERN PRECAST CONCRETE.



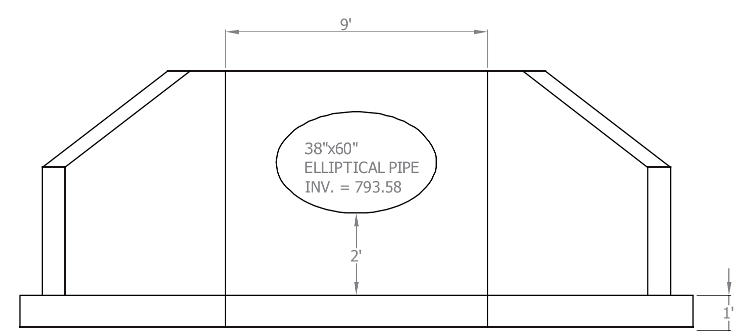


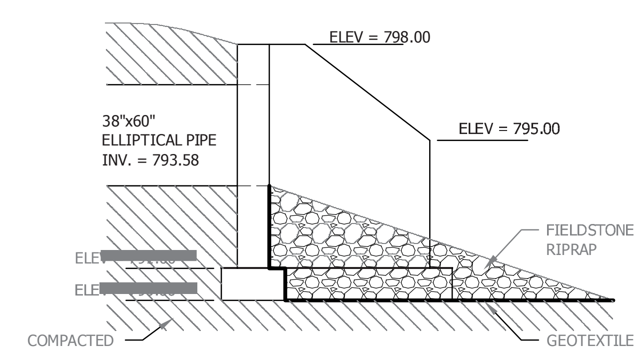
FES 101 - HEADWALL FOR 36" PIPE STA 0+09 ROOSEVELT DRIVE

NOT TO SCALE



NOTE:
CONTRACTOR SHALL COORDINATE WITH PRECAST MANUFACTURERS OR PROVIDE THEIR OWN CAST-IN-PLACE PLAN TO BE SUBMITTED TO THE ENGINEER FOR APPROVAL.





FES 6 - HEADWALL FOR 38"x60" RC ELLIPTICAL PIPE STA 6+07 CAROLINE DRIVE

NOT TO SCALE

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12075 N. Corporate Parkway, Suite 200
Mequon, WI 53092
Ph: 262-241-4466
Fax: 262-241-4901
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VILLAGE OF MENOMONEE FALLS
RICHFIELD WAY ROAD EXTENSION - PHASE I
CONSTRUCTION DETAILS

NO.	REVISION	DATE
1		2/21/13

SURVEY	MJD
DRAWN	AJR
DESIGNED	MAC
APPROVED	MAC
PROJ. NO.	193802203

SHEET NUMBER
C8.04

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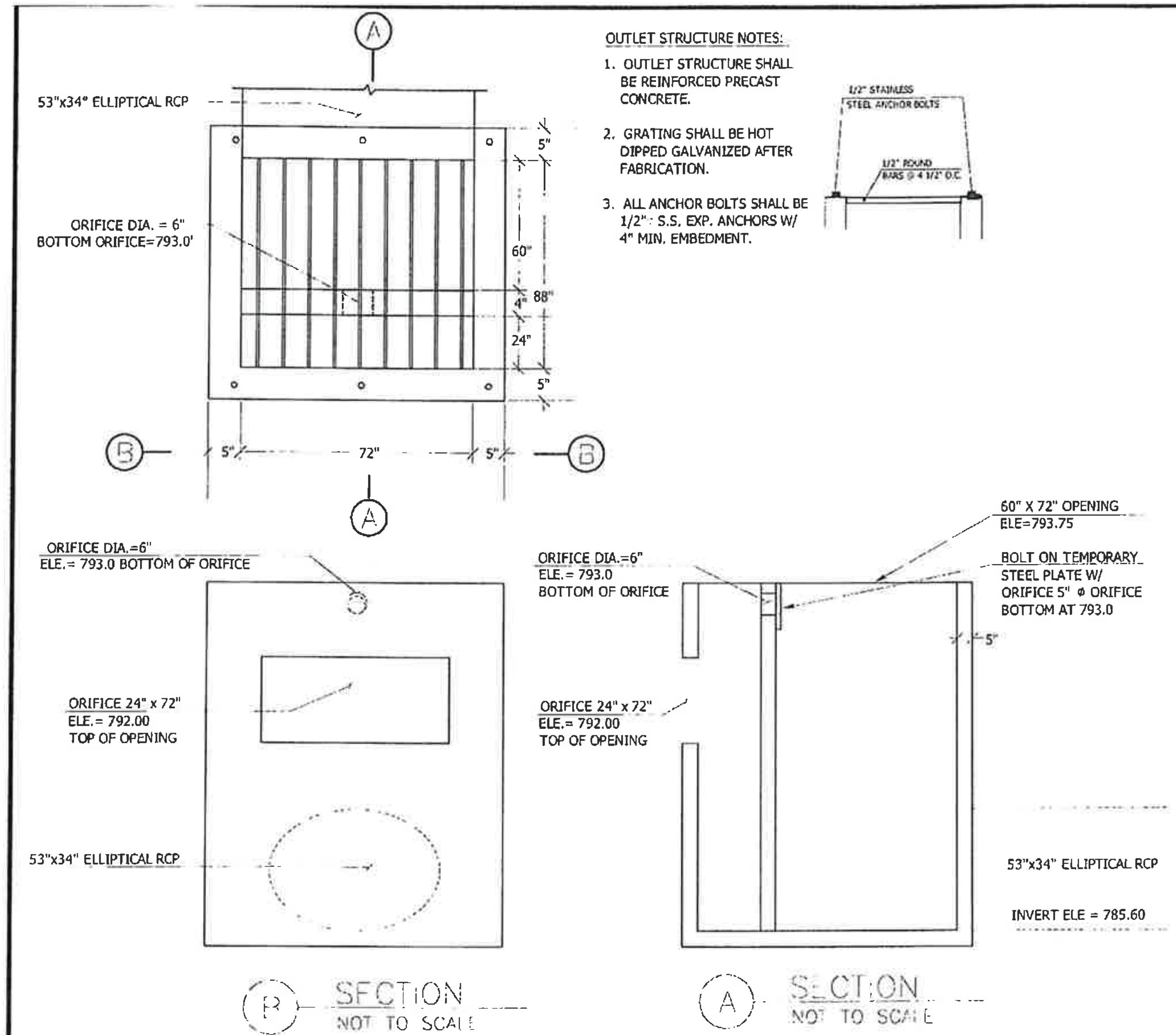
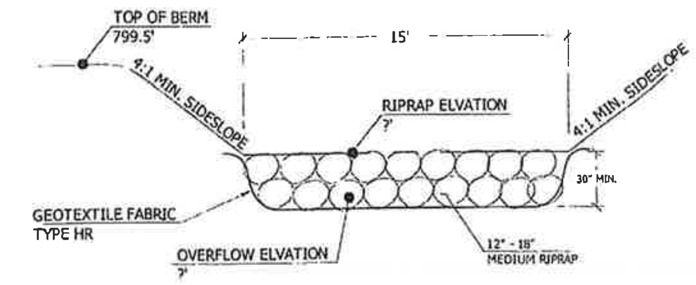


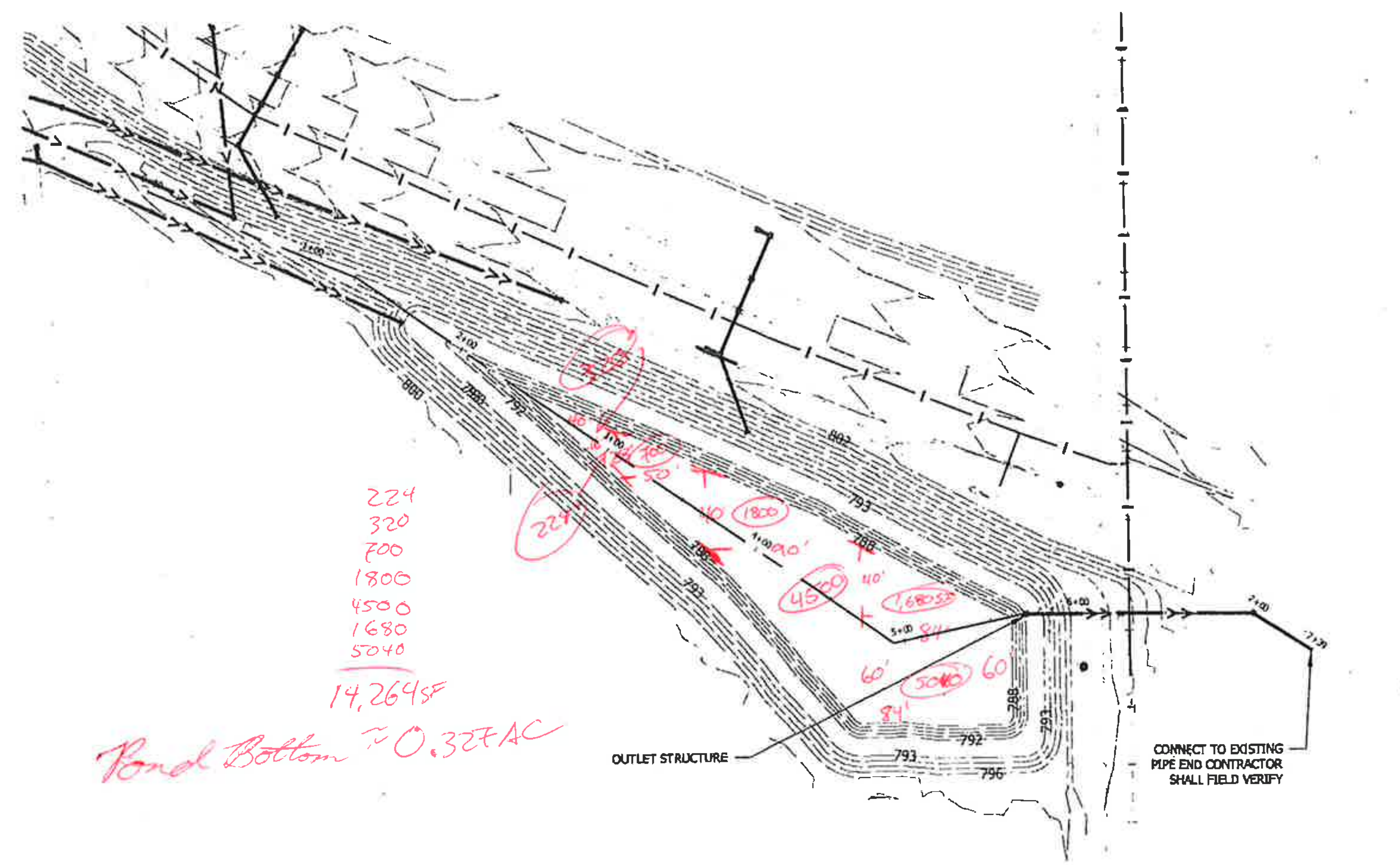
OUTLET STRUCTURE NOTES:

1. OUTLET STRUCTURE SHALL BE REINFORCED PRECAST CONCRETE.
2. GRATING SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.
3. ALL ANCHOR BOLTS SHALL BE 1/2" S.S. EXP. ANCHORS W/ 4" MIN. EMBEDMENT.

POND 1B OUTLET STRUCTURE DETAIL

NOT TO SCALE



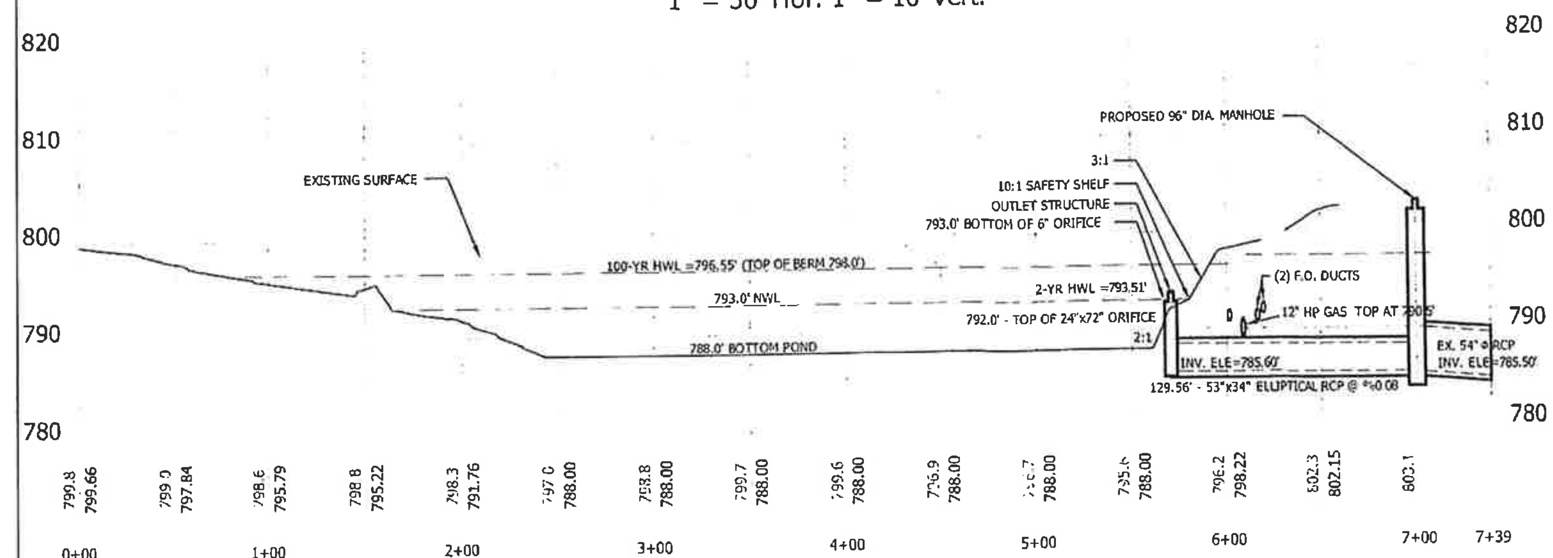


POND 1B - PLAN VIEW

1" = 50' Hor.

POND 1B OUTLET - PROFILE VIEW

1" = 50' Hor. 1" = 10' Vert.



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VILLAGE OF MENOMONEE FALLS

RICHFIELD WAY ROAD EXTENSION - PHASE I

CONSTRUCTION DETAILS

NO.	REVISION	DATE

SURVEY	MJD
DRAWN	AJR
DESIGNED	MAC
APPROVED	MAC
PROJ. NO.	193802203

SHEET NUMBER

C8.04

Summary for Pond Pond 1B: Pond 1B

[82] Warning: Early inflow requires earlier time span

Inflow Area = 32.637 ac, 37.35% Impervious, Inflow Depth > 5.68" for 100 event
Inflow = 272.52 cfs @ 12.02 hrs, Volume= 15.444 af
Outflow = 151.85 cfs @ 12.25 hrs, Volume= 14.791 af, Atten= 44%, Lag= 13.4 min
Primary = 151.85 cfs @ 12.25 hrs, Volume= 14.791 af

Routing by Dyn-Stor-Ind method, Time Span= 11.75-21.25 hrs, dt= 0.01 hrs / 2
Peak Elev= 796.75' @ 12.25 hrs Surf.Area= 0.943 ac Storage= 3.198 af

Plug-Flow detention time= 31.7 min calculated for 14.776 af (96% of inflow)
Center-of-Mass det. time= 13.5 min (809.8 - 796.4)

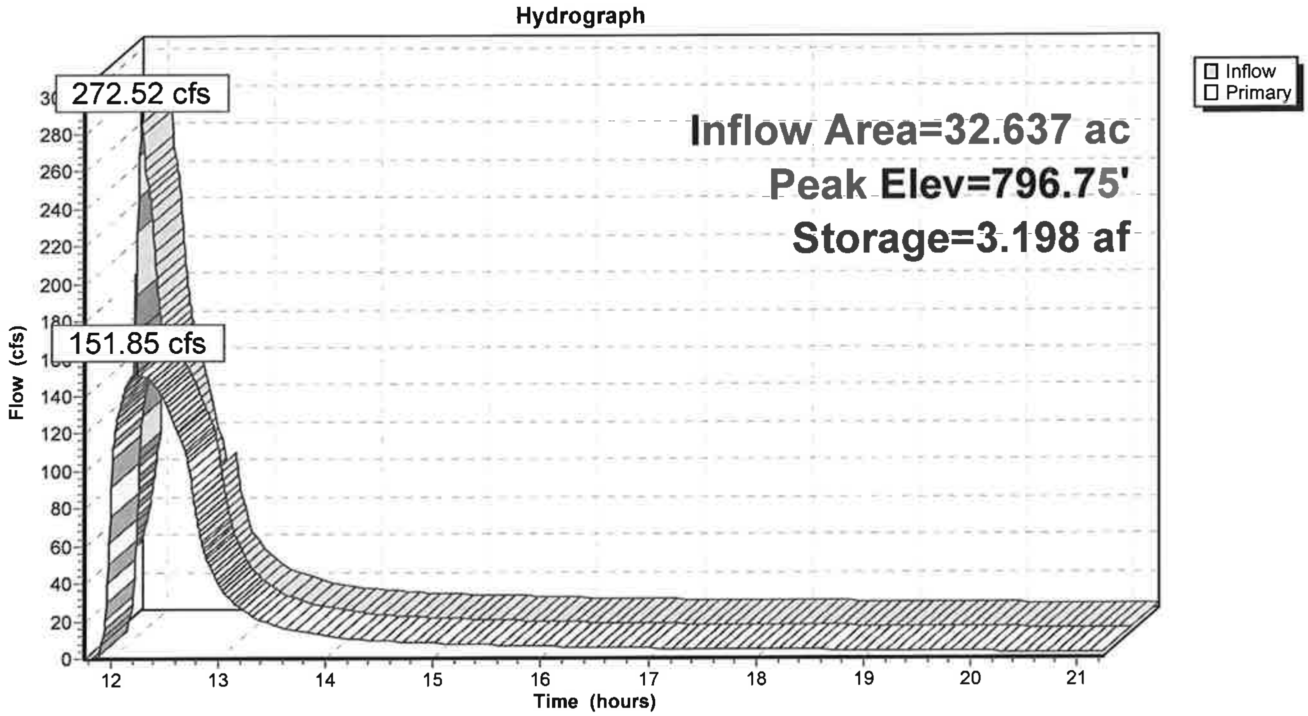
Volume	Invert	Avail.Storage	Storage Description
#1	793.00'	3.923 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
793.00	0.728	0.000	0.000
794.00	0.794	0.761	0.761
795.00	0.863	0.828	1.589
796.00	0.943	0.903	2.492 ← 3.213AC-FT
797.00	0.943	0.943	3.435
797.50	1.006	0.487	3.923

Device	Routing	Invert	Outlet Devices
#1	Primary	785.60'	**53.0" W x 34.0" H, R=47.9" Elliptical RCP_Elliptical 53x34** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 785.60' / 785.50' S= 0.0010 '/' Cc= 0.900 n= 0.013, Flow Area= 10.20 sf
#2	Device 1	793.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	793.75'	**36.0" x 72.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=151.84 cfs @ 12.25 hrs HW=796.75' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Elliptical 53x34** (Passes 151.84 cfs of 153.12 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.77 cfs @ 9.01 fps)
  └─**3=Orifice/Grate** (Orifice Controls 150.07 cfs @ 8.34 fps)

Pond Pond 1B: Pond 1B



Summary for Pond Pond 1B: Pond 1B

Inflow Area = 32.637 ac, 37.35% Impervious, Inflow Depth > 5.70" for 100 event
Inflow = 273.51 cfs @ 12.02 hrs, Volume= 15.507 af
Outflow = 152.51 cfs @ 12.24 hrs, Volume= 14.854 af, Atten= 44%, Lag= 13.3 min
Primary = 152.51 cfs @ 12.24 hrs, Volume= 14.854 af

Routing by Dyn-Stor-Ind method, Time Span= 11.75-21.25 hrs, dt= 0.01 hrs / 2
Peak Elev= 796.77' @ 12.24 hrs Surf.Area= 0.943 ac Storage= 3.223 af

Plug-Flow detention time= 31.7 min calculated for 14.839 af (96% of inflow)
Center-of-Mass det. time= 13.5 min (809.5 - 796.1)

Volume	Invert	Avail.Storage	Storage Description
#1	793.00'	3.923 af	**Custom Stage Data (Prismatic)**Listed below (Recalc)

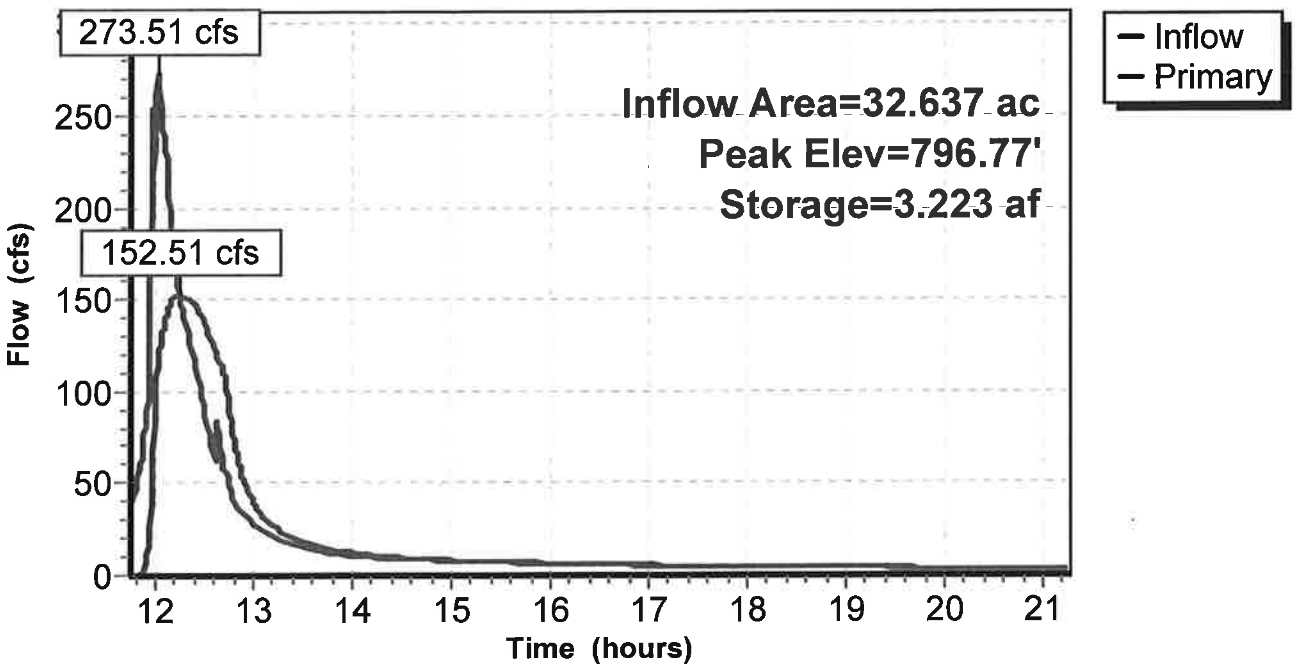
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
793.00	0.728	0.000	0.000
794.00	0.794	0.761	0.761
795.00	0.863	0.828	1.589
796.00	0.943	0.903	2.492
797.00	0.943	0.943	3.435
797.50	1.006	0.487	3.923

Device	Routing	Invert	Outlet Devices
#1	Primary	785.60'	**53.0" W x 34.0" H, R=47.9" Elliptical RCP_Elliptical 53x34** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 785.60' / 785.50' S= 0.0010 '/' Cc= 0.900 n= 0.013, Flow Area= 10.20 sf
#2	Device 1	793.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	793.75'	**36.0" x 72.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=152.50 cfs @ 12.24 hrs HW=796.77' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Elliptical 53x34** (Passes 152.50 cfs of 153.33 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 1.77 cfs @ 9.04 fps)
  └─**3=Orifice/Grate** (Orifice Controls 150.72 cfs @ 8.37 fps)

Pond Pond 1B: Pond 1B

Hydrograph



Summary for Pond Pond 1B: Pond 1B

Inflow Area = 32.637 ac, 37.35% Impervious, Inflow Depth > 1.01" for 2 event
Inflow = 22.99 cfs @ 12.32 hrs, Volume= 2.736 af
Outflow = 16.09 cfs @ 12.57 hrs, Volume= 2.155 af, Atten= 30%, Lag= 14.6 min
Primary = 16.09 cfs @ 12.57 hrs, Volume= 2.155 af

Routing by Dyn-Stor-Ind method, Time Span= 11.75-21.25 hrs, dt= 0.01 hrs / 2
Peak Elev= 794.16' @ 12.57 hrs Surf.Area= 0.805 ac Storage= 0.885 af

Plug-Flow detention time= 109.0 min calculated for 2.151 af (79% of inflow)
Center-of-Mass det. time= 43.8 min (875.4 - 831.5)

Volume	Invert	Avail.Storage	Storage Description
#1	793.00'	3.923 af	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
793.00	0.728	0.000	0.000
794.00	0.794	0.761	0.761
795.00	0.863	0.828	1.589
796.00	0.943	0.903	2.492
797.00	0.943	0.943	3.435
797.50	1.006	0.487	3.923

Device	Routing	Invert	Outlet Devices
#1	Primary	785.60'	**53.0" W x 34.0" H, R=47.9" Elliptical RCP_Elliptical 53x34** L= 100.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 785.60' / 785.50' S= 0.0010 '/' Cc= 0.900 n= 0.013, Flow Area= 10.20 sf
#2	Device 1	793.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	793.75'	**36.0" x 72.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=16.09 cfs @ 12.57 hrs HW=794.16' TW=0.00' (Dynamic Tailwater)
└─**1=RCP_Elliptical 53x34** (Passes 16.09 cfs of 131.07 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.90 cfs @ 4.58 fps)
  └─**3=Orifice/Grate** (Weir Controls 15.19 cfs @ 2.08 fps)