Document Number

Storm Water Management Practice Maintenance Agreement

Froedtert Health, Inc., as "Owner" of the property described below, in accordance with Chapter 32 City of Waukesha Storm Water Management and Erosion Control, agrees to install and maintain storm water management practice(s) on the subject property in accordance with approved plans and Storm Water Management Plan conditions. The owner further agrees to the terms stated in this document to ensure that the storm water management practice(s) continues serving the intended functions in perpetuity. This Agreement includes the following exhibits:

Exhibit A: Legal Description of the real estate for which this Agreement applies ("Property").
Exhibit B: Location Map(s) – shows an accurate location of each storm water management practice affected by this Agreement.
Exhibit C: Maintenance Plan – prescribes those activities that must be carried out to maintain compliance with this Agreement.

Note: After construction verification has been accepted by the City of Waukesha for all planned storm water management practices, an addendum(s) to this agreement shall be recorded by the Owner showing design and construction details. The addendum(s) may contain several additional exhibits, including certification by City of Waukesha of Storm Water and Erosion Control Permit termination, as described below.

Name and Return Address

City of Waukesha
130 Delafield Street
Waukesha, WI 53188

Parcel Identification Number(s) – (PIN)

Through this Agreement, the Owner hereby subjects the Property to the following covenants, conditions and restrictions:

1. The Owner shall be responsible for the routine and extraordinary maintenance and repair of the storm water management practice(s) and drainage easements identified in Exhibit B until Storm Water and Erosion Control Permit termination by the City of Waukesha in accordance with Chapter 32 of the City Code of Ordinances.

2. After Storm Water and Erosion Control Permit termination under 1., the current Owner(s) shall be solely responsible for maintenance and repair of the storm water management practices and drainage easements in accordance with the maintenance plan contained in Exhibit C.

3. The Owner(s) shall, at their own cost, complete inspections of the storm water management practices at the time intervals listed in Exhibit C, and conduct the inspections by a a qualified professional, file the reports with the City of Waukesha after each inspection and complete any maintenance or repair work recommended in the report. The Owner(s) shall be liable for the failure to undertake any maintenance or repairs. After the work is completed by the Contractor, the qualified professional shall verify that the work was properly completed and submit the follow-up report to the City within 30 days.

4. In addition, and independent of the requirements under paragraph 3 above, the City of Waukesha, or its designee, is authorized to access the property as necessary to conduct inspections of the storm water management practices or drainage easements to ascertain compliance with the intent of this Agreement and the activities prescribed in Exhibit C. The City of Waukesha may require work to be done which differs from the report described in paragraph 3 above, if the City of Waukesha reasonably concludes that such work is necessary and consistent with the intent of this agreement. Upon notification by the City of Waukesha of required maintenance or repairs, the Owner(s) shall complete the specified maintenance or repairs within a reasonable time frame determined by the City of Waukesha.

5. If the Owner(s) do not complete an inspection under 3. above or required maintenance or repairs under 4. above within the specified time period, the City of Waukesha is authorized, but not required, to perform the specified inspections, maintenance or repairs. In the case of an emergency situation, as determined by the City of Waukesha, no notice shall be required prior to the City of Waukesha performing emergency maintenance or

repairs. The City of Waukesha may levy the costs and expenses of such inspections, maintenance or repair related actions as a special charge against the Property and collected as such in accordance with the procedures under s. 66.0627 Wis. Stats. or subch. VII of ch. 66 Wis. Stats.

6. This Agreement shall run with the Property and be binding upon all heirs, successors and assigns. After the Owner records the addendum noted above, the City of Waukesha shall have the sole authority to modify this agreement upon a 30-day notice to the current Owner(s).

Dated this ___ day of _____, 2019.

Owner:

FROEDTERT HEALTH, INC.

By: _____
Name: _____
Title: _____

Acknowledgements

State of Wisconsin:
County of Waukesha

Personally came before me this ____ day of _____, 2019, the above named _____, the _____ of Froedtert Health, Inc., to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____.
Print Name:_____
Notary Public, Waukesha County, WI
My commission expires:_____.

This document was drafted by:

Anne Wal, Esq.
von Briesen & Roper, s.c.
411 East Wisconsin Avenue, Suite 1000
Milwaukee, WI 53202

For Certification Stamp

City of Waukesha Common Council Approval

Dated this ___ day of _____, 2019.

_____

Shawn N. Reilly, Mayor

_____
Gina Kozlik, City Clerk

Acknowledgements

State of Wisconsin:
County of Waukesha

Personally came before me this ____ day of _____, 2019, the above named Shawn N. Reilly and Gina Kozlik, to me known to be the Mayor and City Clerk of the City of Waukesha, respectively, and the persons/ who executed the foregoing instrument and acknowledged the same.

_____.
Print Name:_____
Notary Public, Waukesha County, WI
My commission expires:_____.

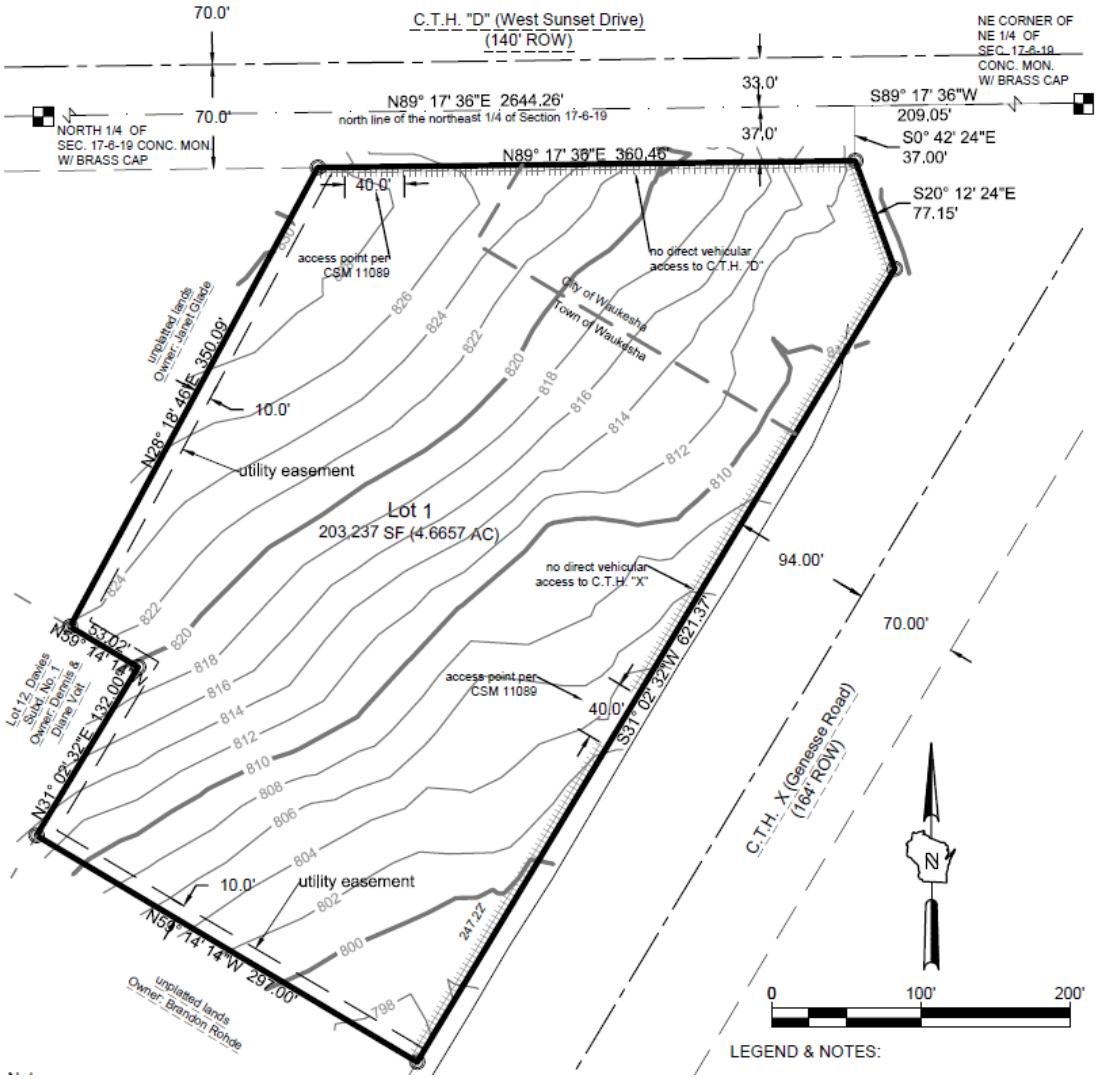
Exhibit A – Legal Description

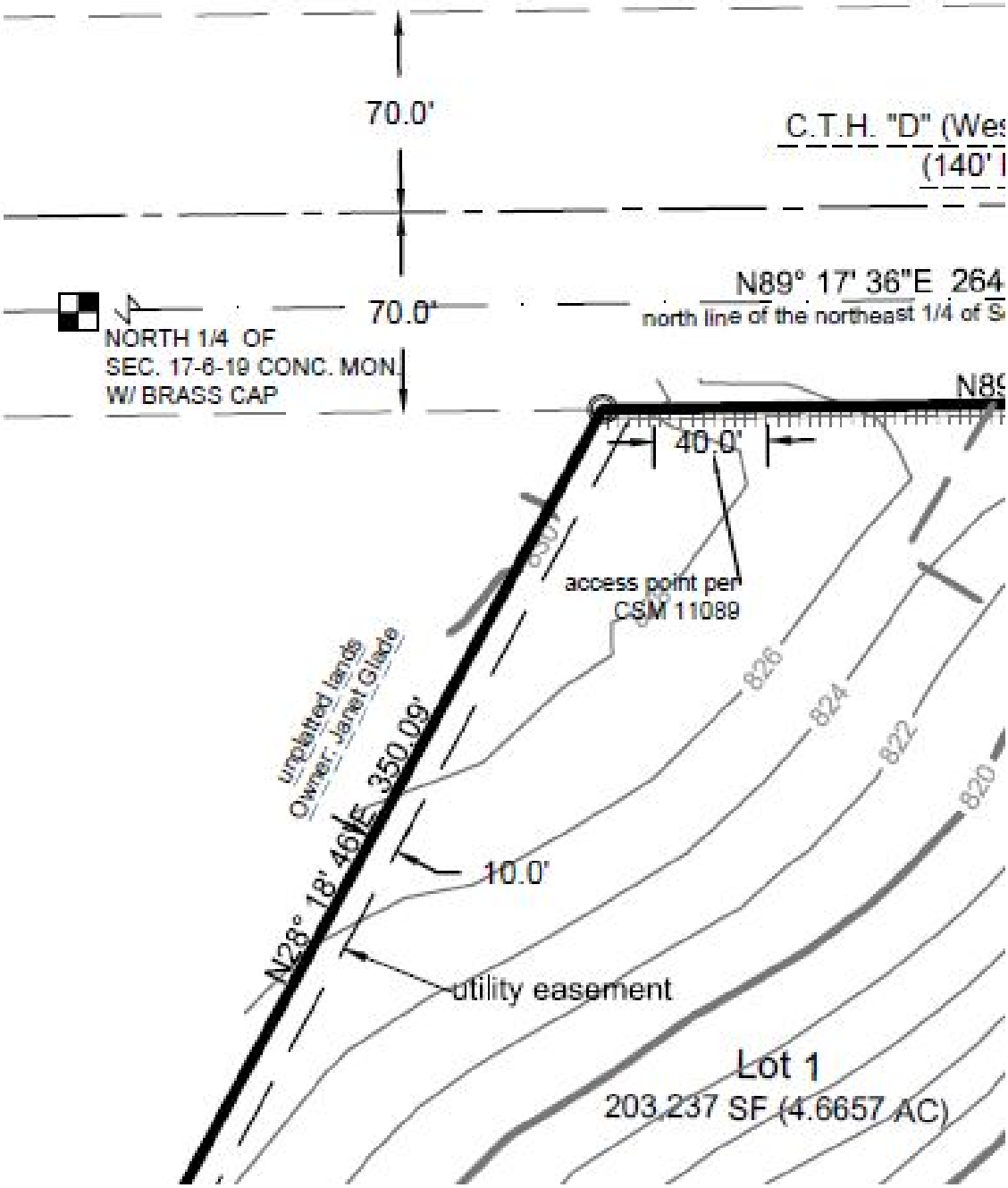
The following description and reduced copy map identifies the land parcel(s) affected by this Agreement. For a larger scale view of the referenced document, contact the Waukesha County Register of Deeds office.

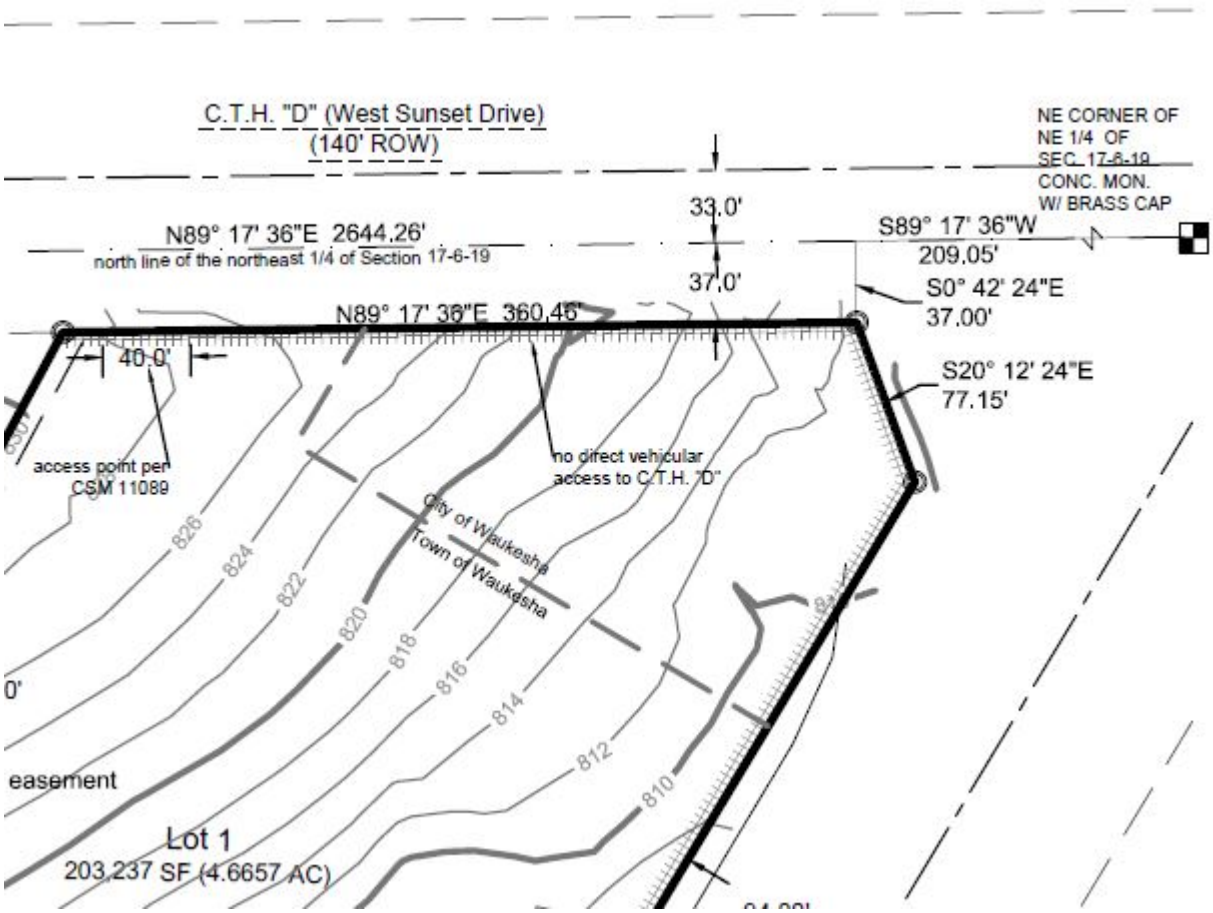
Project Identifier:	Froedtert Sunset Drive Health Clinic	Acres: 4.6657
Date of Recording:	July 30, 2019	
Map Produced By:	The Sigma Group, 1300 W. Canal Street, Milwaukee, WI 53233	
Legal Description:	Being Lot 1 and Lot 2 of Certified Survey Map No. 11089, and part of the Northeast 1/4 of the Northeast 1/4, all in Section 17, Town 6 North, Range 19 East, City of Waukesha, County of Waukesha, State of Wisconsin.	

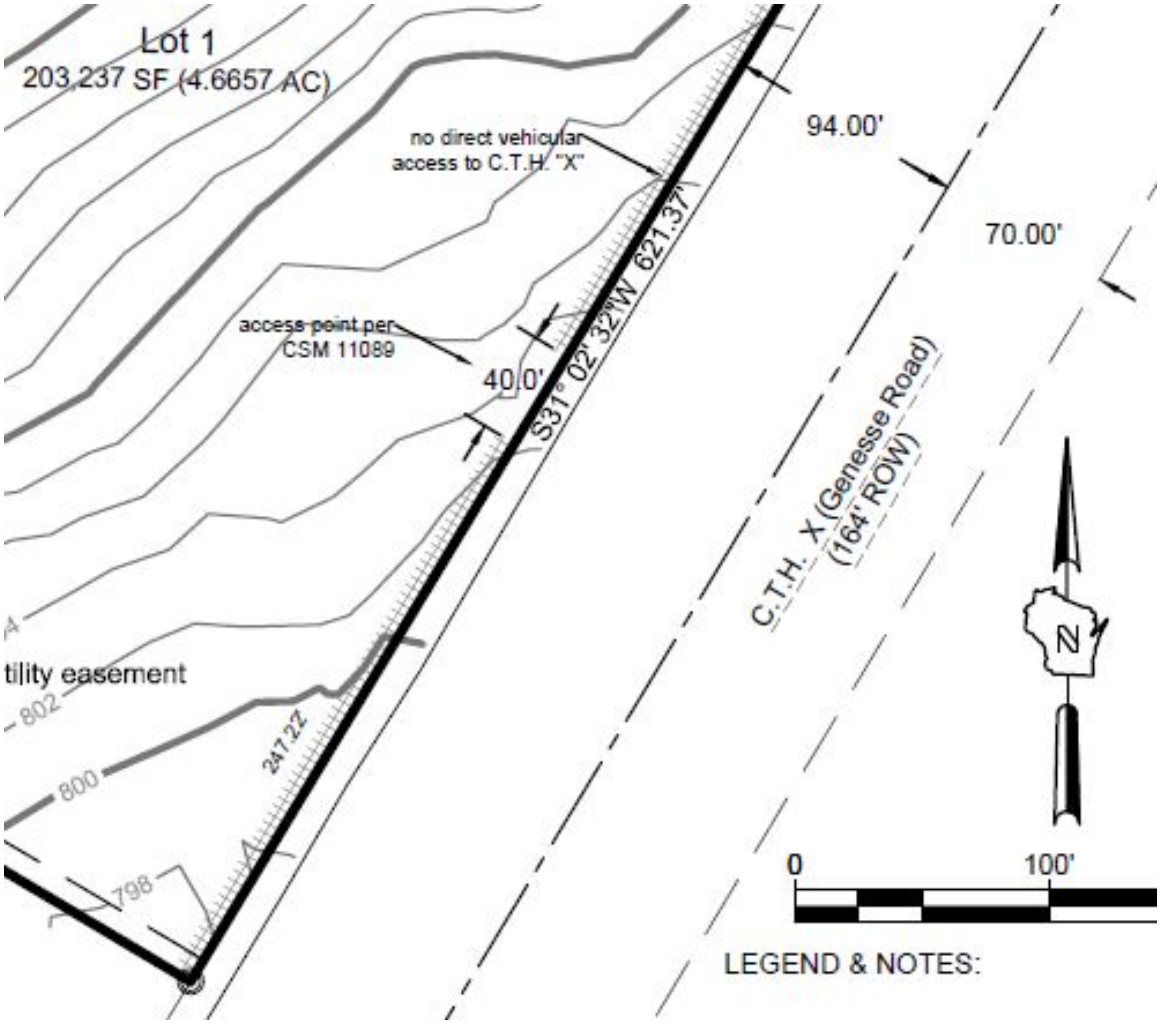
Froedtert Sunset Drive Clinic

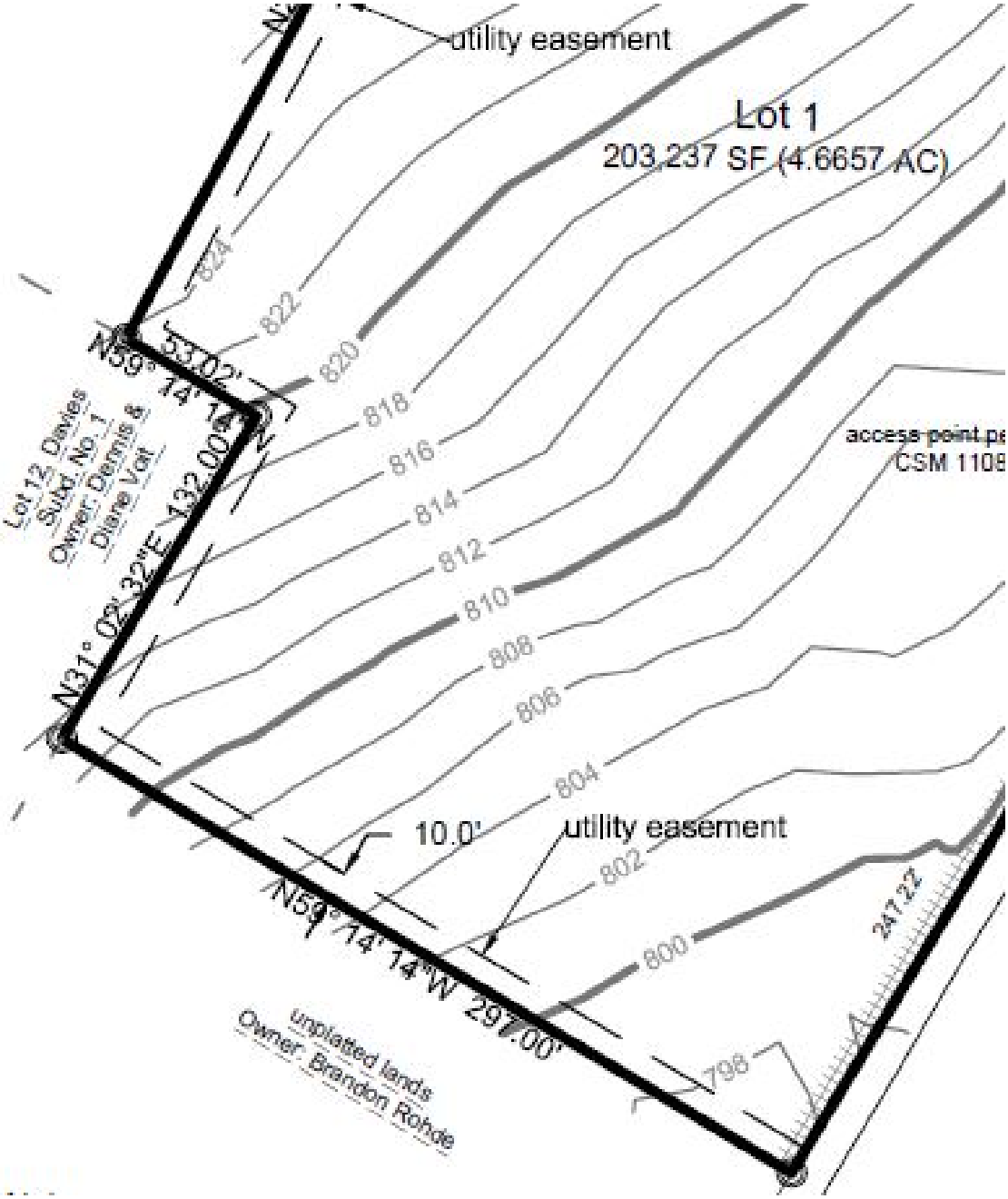
See Pages 5-8 in this Agreement for enlargements of this Exhibit.




70.0'
C.T.H. "D" (Wes
(140' I
N89° 17' 36"E 264
north line of the northeast 1/4 of S
70.0'
NORTH 1/4 OF
SEC. 17-6-19 CONC. MON.
W/ BRASS CAP
N89
40.0'
access point per
CSM 11089
unplatted lands
Owner: Janet Glisde
N28° 18' 46"E 350.09'
10.0'
utility easement
826
824
822
820
Lot 1
203,237 SF (4.6657 AC)


C.T.H. "D" (West Sunset Drive)
(140' ROW)
NE CORNER OF
NE 1/4 OF
SEC. 17-6-19
CONC. MON.
W/ BRASS CAP
33.0'
N89° 17' 36"E 2644.26'
north line of the northeast 1/4 of Section 17-6-19
S89° 17' 36"W
209.05'
37.0'
S0° 42' 24"E
37.00'
N89° 17' 36"E 360.46'
40.0'
S20° 12' 24"E
77.15'
access point per
CSM 11089
no direct vehicular
access to C.T.H. "D"
City of Waukesha
Town of Waukesha
826
824
822
820
818
816
814
812
810
easement
Lot 1
203,237 SF (4.6657 AC)

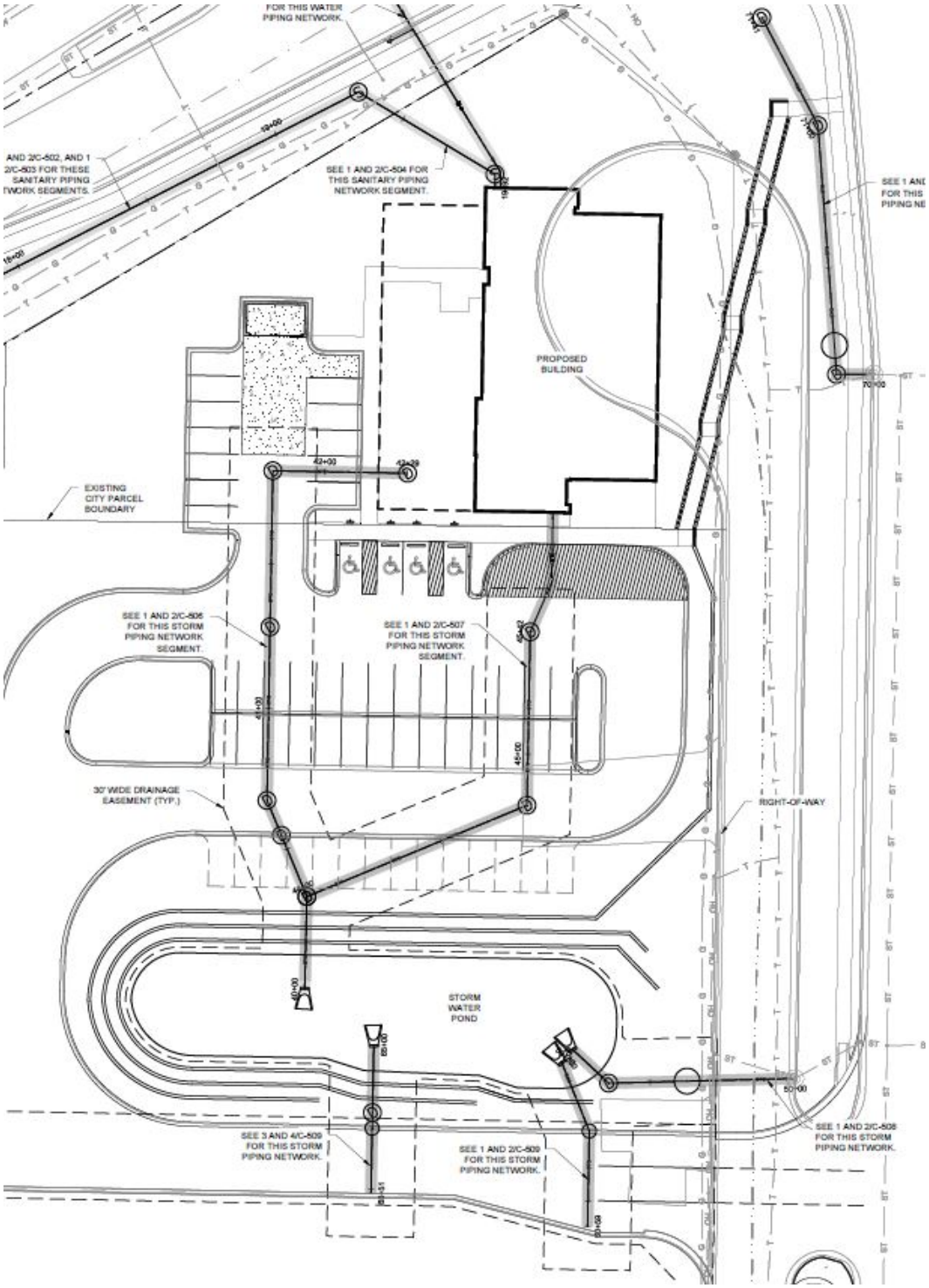

Lot 1
203,237 SF (4.6657 AC)
no direct vehicular
access to C.T.H. "X"
94.00'
70.00'
access point per
CSM 11089
40.0'
S31° 02' 32"W 621.37'
C.T.H. X (Genesse Road)
(164' ROW)
tility easement
802
800
798
247.22'
N
0
100'
LEGEND & NOTES:

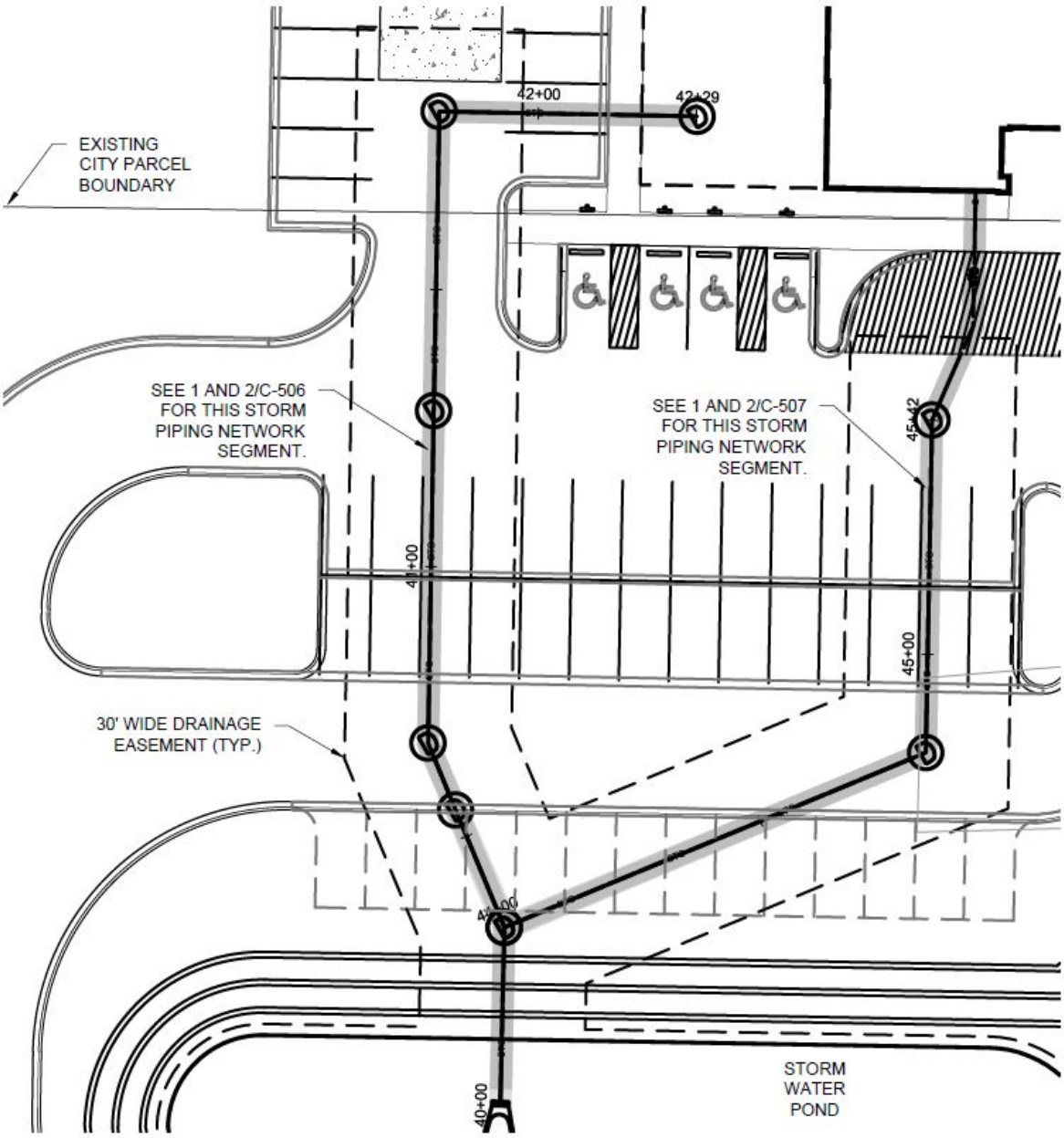

utility easement
Lot 1
203,237 SF (4.6657 AC)
824
822
820
818
816
814
812
810
808
806
804
802
800
798
N59° 14' 14"E 33.02'
Lot 12, Davies Subd. No. 1
Owner: Dennis & Diane Vatt
N31° 02' 32"E 132.00'
access point pe
CSM 1108
10.0'
utility easement
N59° 14' 14"W 297.00'
unplatted lands
Owner: Brandon Rohde
24732

Drainage Easement Restrictions: Dashed lines on map that surround storm sewer piping and the storm water pond indicate a drainage easement for storm water collection, conveyance, treatment and maintenance. No buildings or other structures not presented in Exhibit A are allowed in these areas. No grading or filling is allowed that may interrupt storm water flows in any way. See Exhibit C for specific maintenance requirements for storm water management practices within this area.

Froedtert Sunset Drive Clinic

See Pages 10-11 in this Agreement for enlargements of this Exhibit.




EXISTING
CITY PARCEL
BOUNDARY
42+00
42+29
SEE 1 AND 2/C-506
FOR THIS STORM
PIPING NETWORK
SEGMENT.
SEE 1 AND 2/C-507
FOR THIS STORM
PIPING NETWORK
SEGMENT.
45+42
40+00
45+00
30' WIDE DRAINAGE
EASEMENT (TYP.)
40+00
STORM
WATER
POND

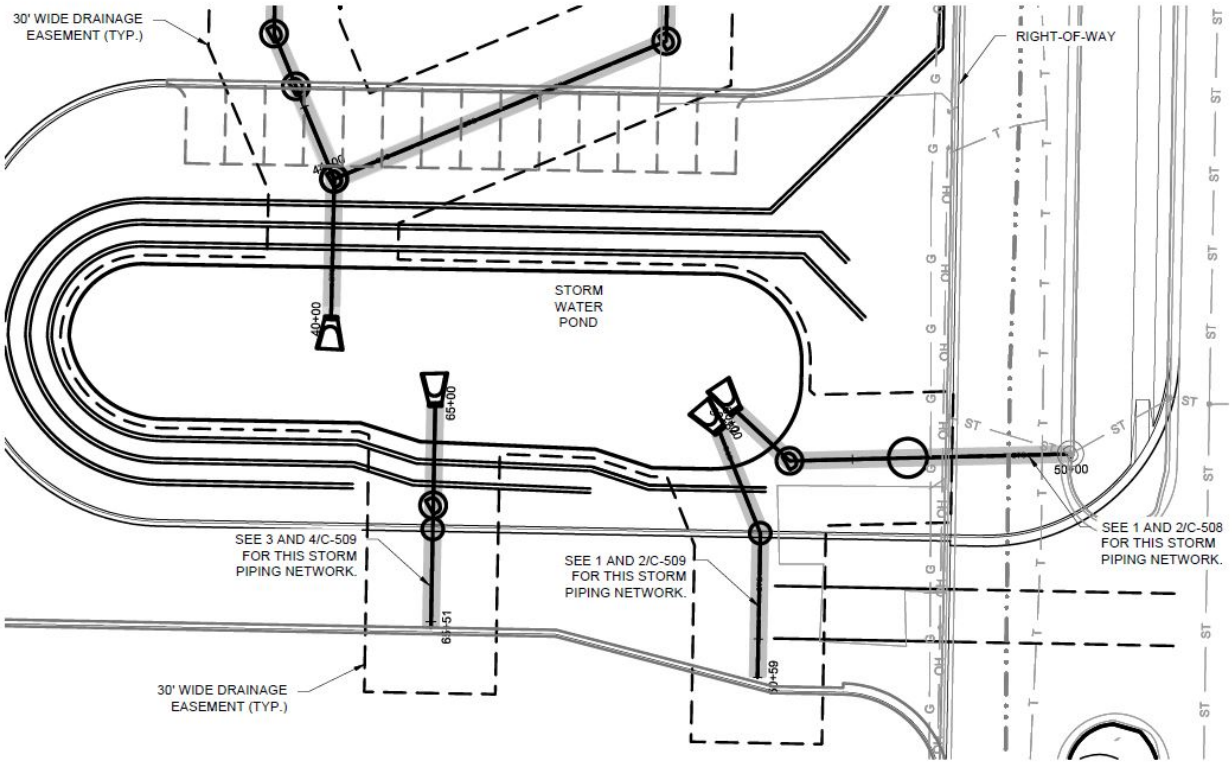

30' WIDE DRAINAGE EASEMENT (TYP.)
RIGHT-OF-WAY
STORM WATER POND
40+00
65+00
60+00
50+00
SEE 3 AND 4/C-509 FOR THIS STORM PIPING NETWORK.
SEE 1 AND 2/C-509 FOR THIS STORM PIPING NETWORK.
SEE 1 AND 2/C-508 FOR THIS STORM PIPING NETWORK.
61+51
59+59
30' WIDE DRAINAGE EASEMENT (TYP.)

Exhibit B - Location Map
Storm Water Management Practices Covered by this Agreement

The storm water management practices covered by this Agreement are depicted in excerpts taken from the construction drawings, as shown below in Figures 1 through 3. The practices include one dry detention basin, two Up-Flo water quality structures, and all associated pipes and other components of these practices. All of the noted storm water management practices are located within a drainage easement, as noted in Exhibit A.

Subdivision Name:	Froedtert Sunset Drive Health Clinic
Storm water Practices:	Dry Detention Basin; 2 Up-Flo Water Quality Structures
Location of Practices:	See Figures 1 through 3
Owners:	Froedtert Sunset Drive Health Clinic

Figure 1
Plan View of Storm Water Pond
(See Civil Drawing Sheet No. C401)

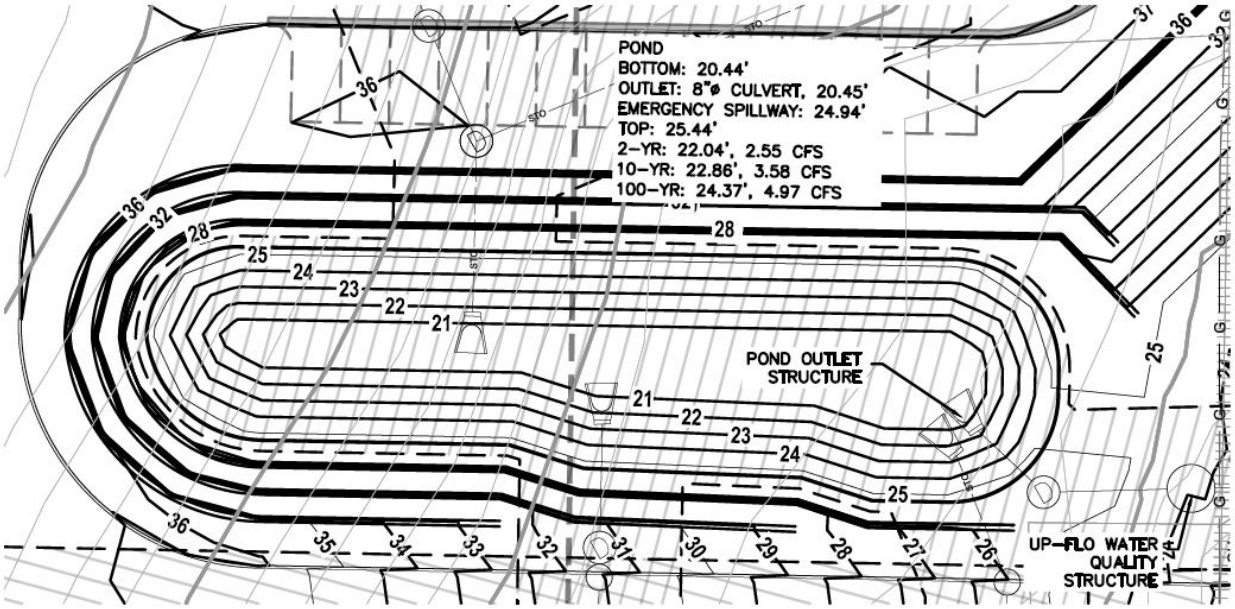
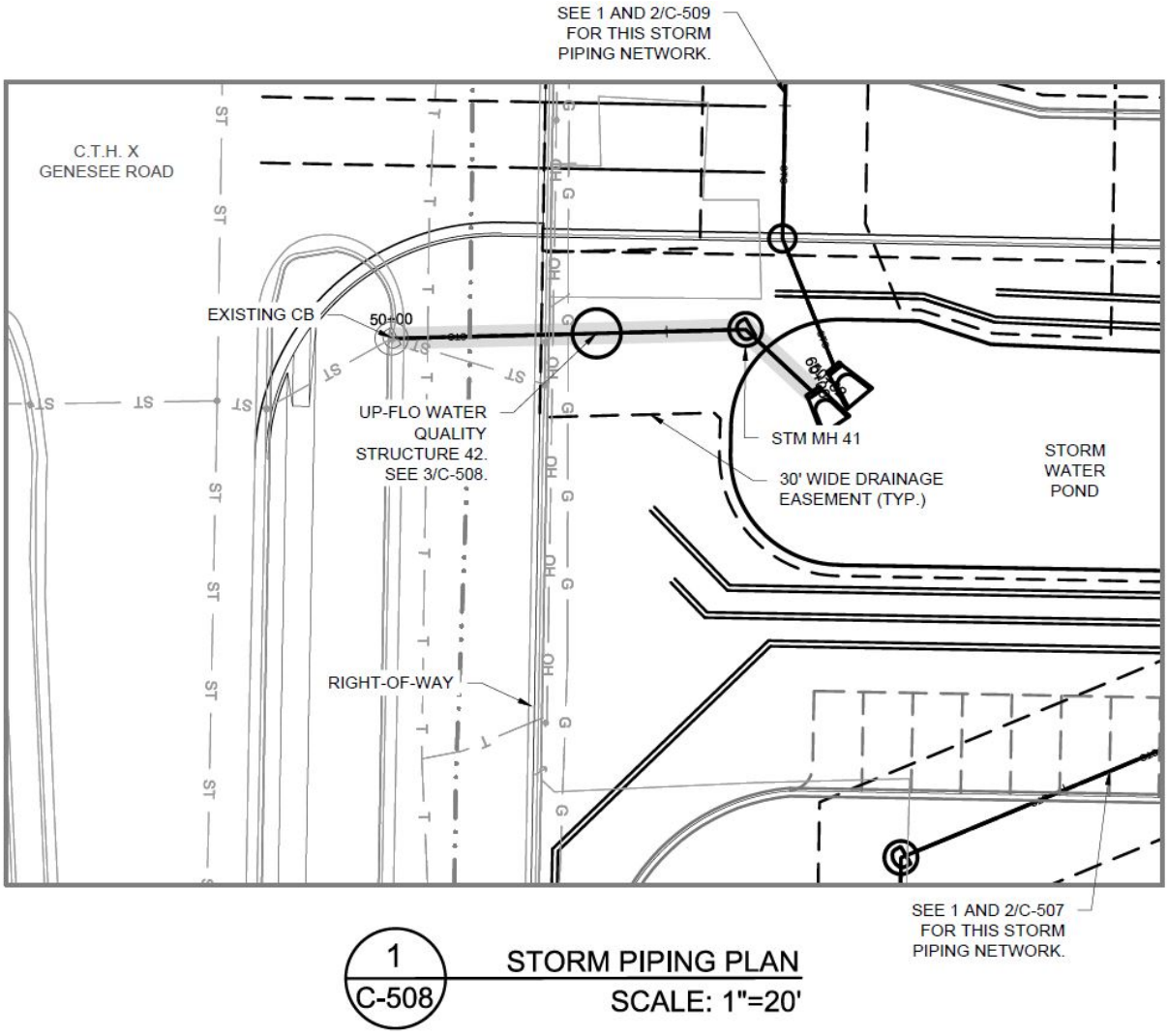
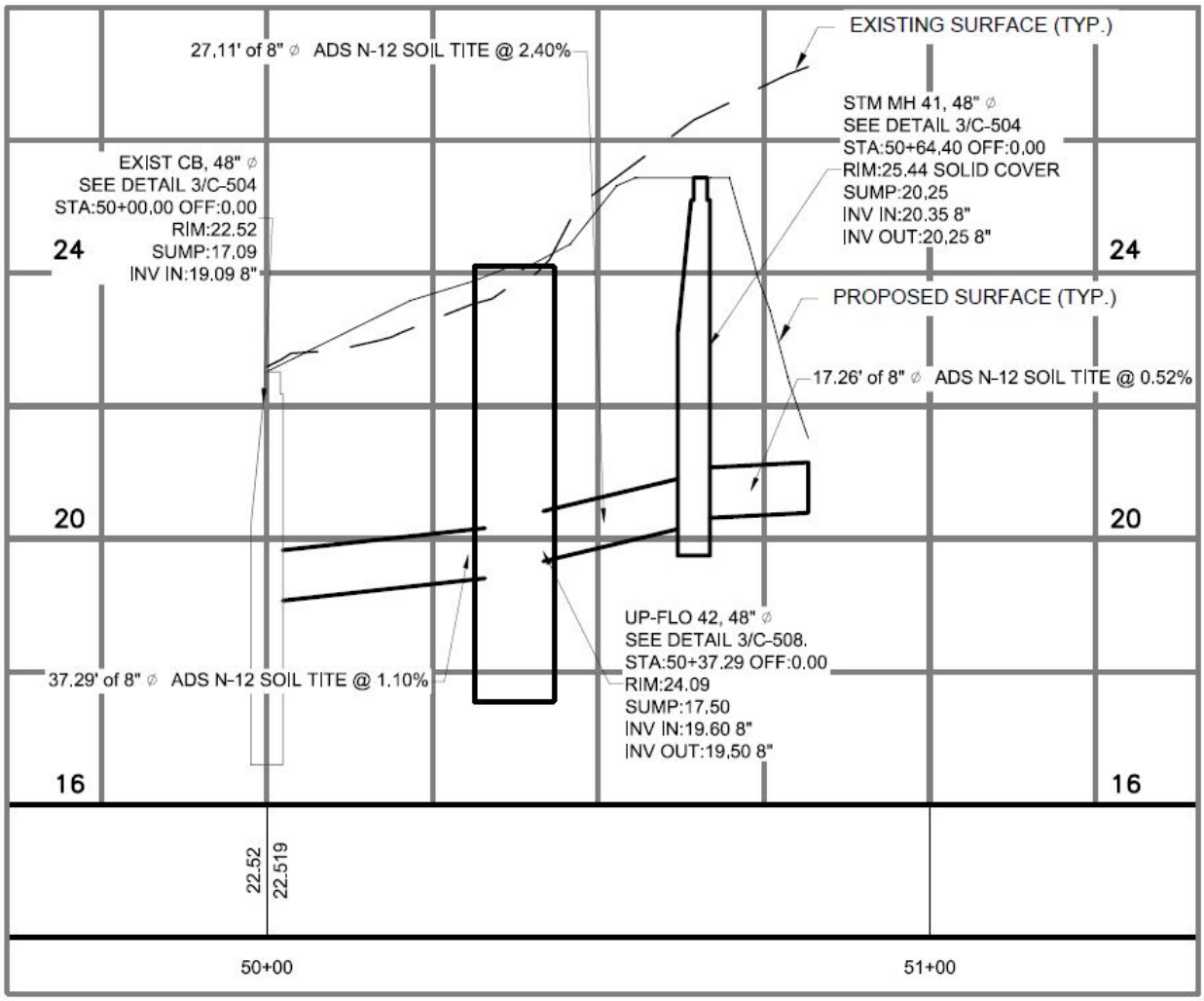


Figure 2
Up-Flo Water Quality Structure 42
(See Civil Drawing Sheet No. C508)
See Pages 13-16 of this Agreement.

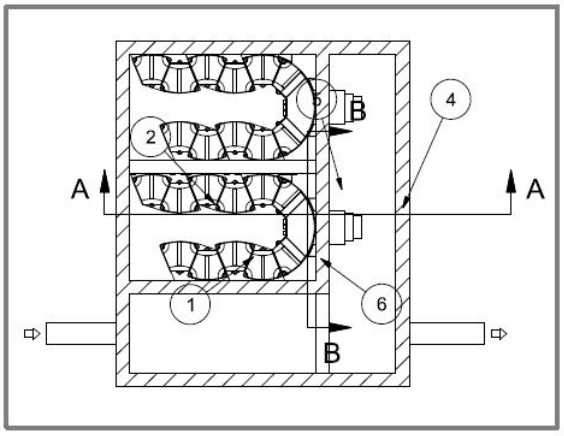


1 / C-508 STORM PIPING PLAN
SCALE: 1"=20'

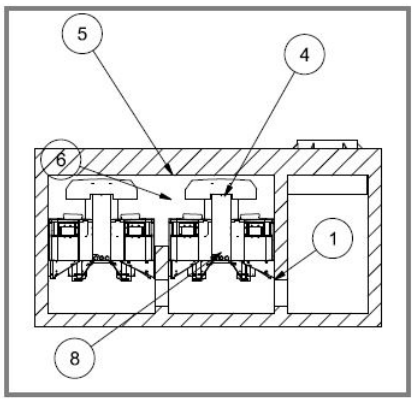


2
C-508

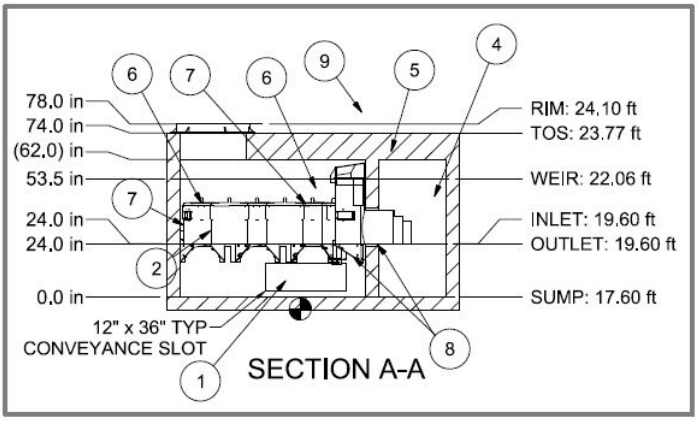
STORM PIPING PROFILE
SCALE: 1"=20' HORIZ.; 1"=2' VERT.



3A C-508 UP-FLOW 42 TOP VIEW
SCALE: NTS



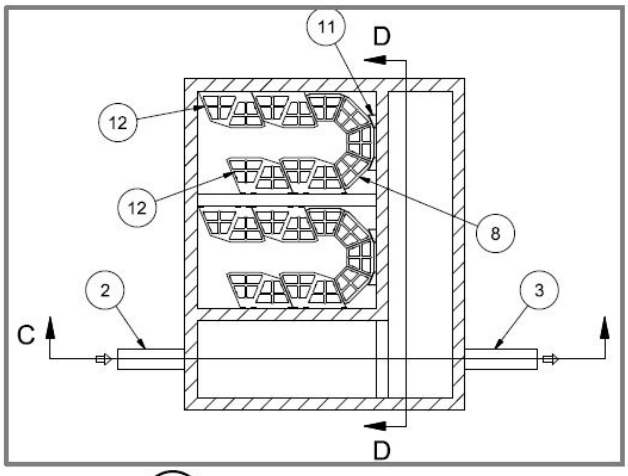
3B C-508 UP-FLOW 42 SECTION B-B
SCALE: NTS



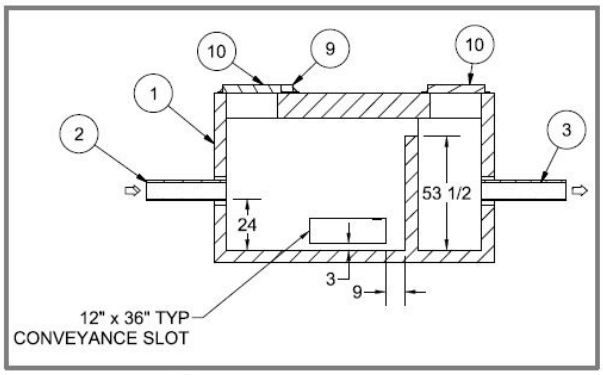
3C C-508 UP-FLOW 42 SECTION A-A
SCALE: NTS

PARTS LIST			
ITEM	QTY	DESCRIPTION	SIZE (in)
1	1	PRECAST VAULT	12 ft x 10 ft
2	1	INLET PIPE	8
3	1	OUTLET PIPE	8
4	2	OUTLET MODULE	
5	2	BYPASS HOOD	
8	8	SUPPORT FRAME	
6	22	MODULE LID	
9	2	30" FRAME AND COVER	30
7	22	MODULE BODY	
11	4	WEDGE WALL MOUNT	
10	2	24" FRAME AND COVER	24
12	3	CPZ Support Leg	
12	8	SUPPORT FRAME LH	

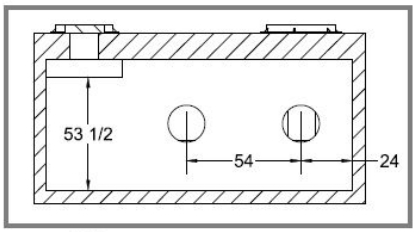
3D C-508 UP-FLOW 42 PARTS LIST
SCALE: NTS



3E C-508 UP-FLOW 42 TOP VIEW
SCALE: NTS

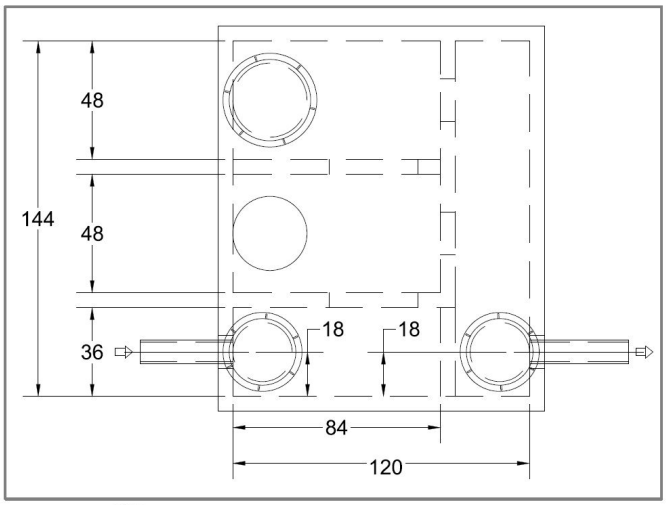


3F C-508 UP-FLOW 42 SECTION C-C
SCALE: NTS



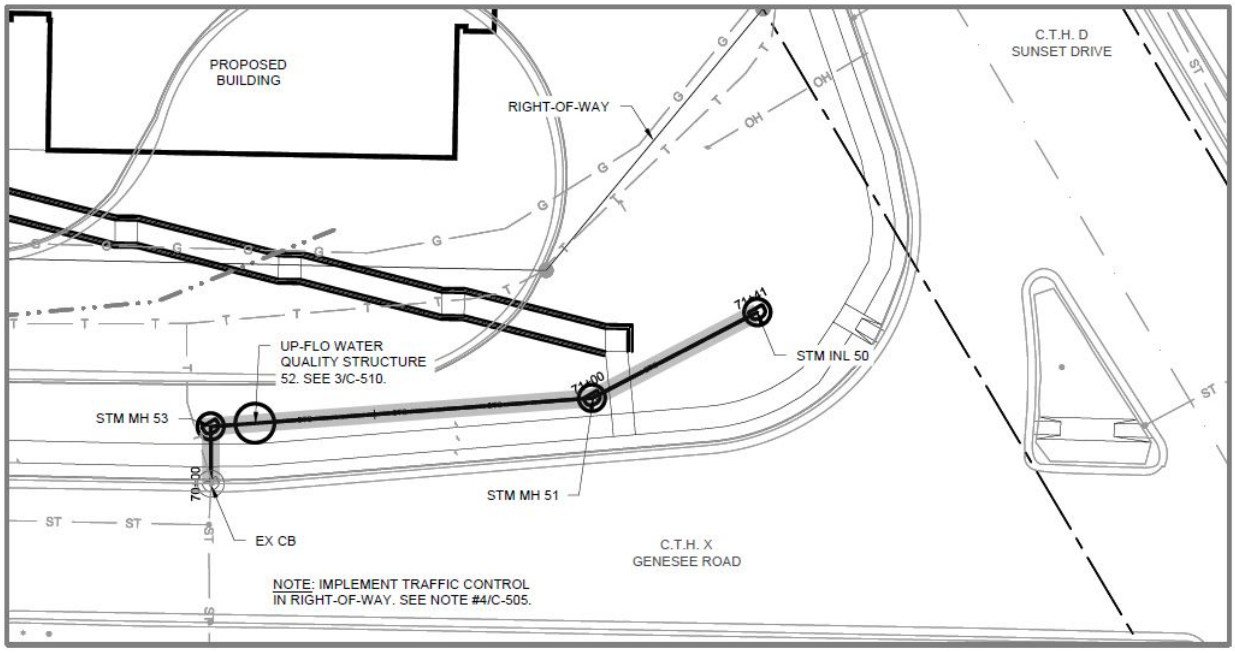
3G C-508 UP-FLOW 42 SECTION D-D
SCALE: NTS

3 C-508 UP-FLOW WATER QUALITY STRUCTURE 42
SCALE: NTS

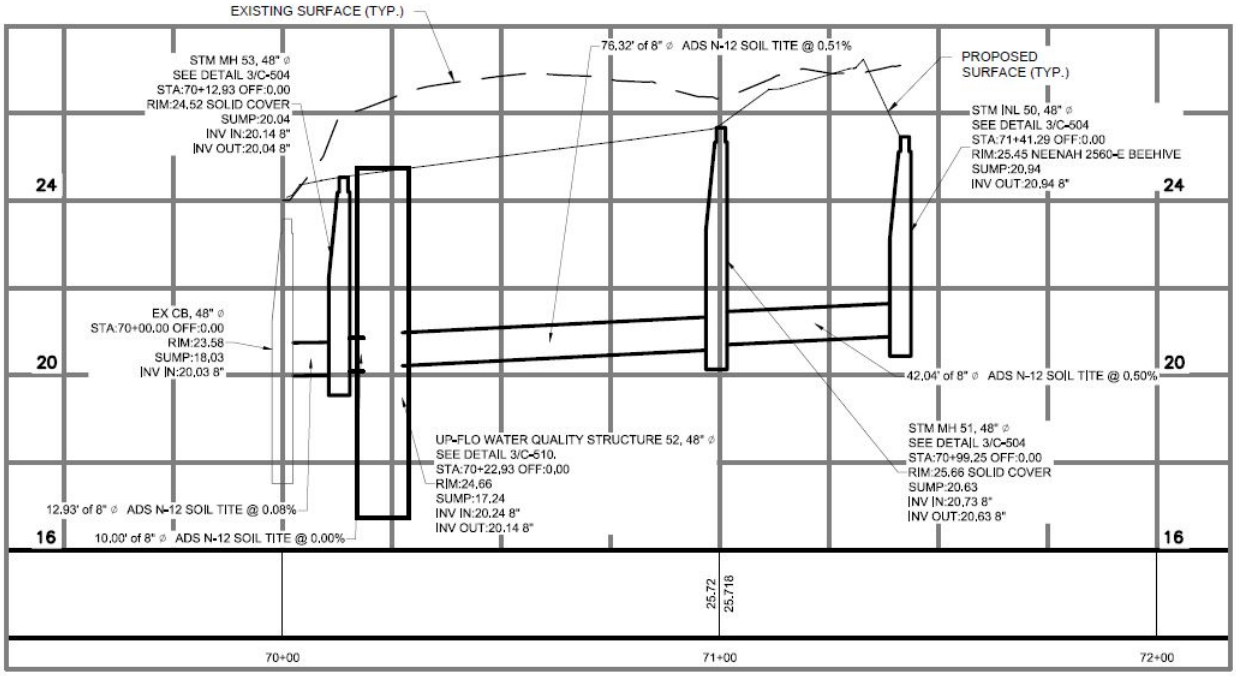


3H C-508 UP-FLOW 42 PRECAST DIMENSIONS
SCALE: NTS

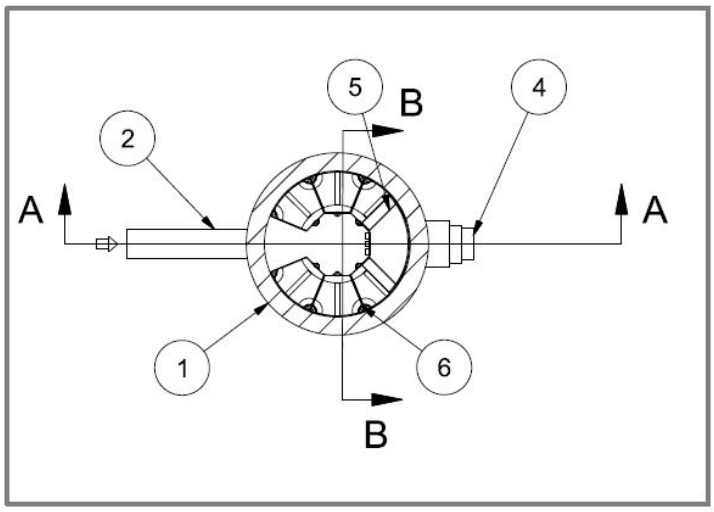
Figure 3
Up-Flo Water Quality Structure 52
(See Civil Drawing Sheet No. C510)
See Pages 17-19 of this Agreement.



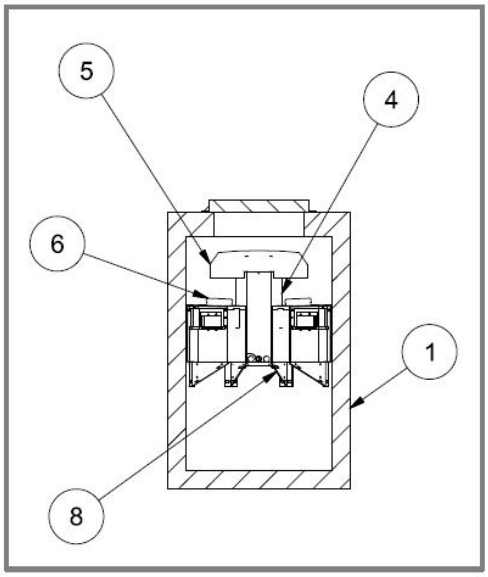
1 / C-510 STORM PIPING PLAN
SCALE: 1"=20'



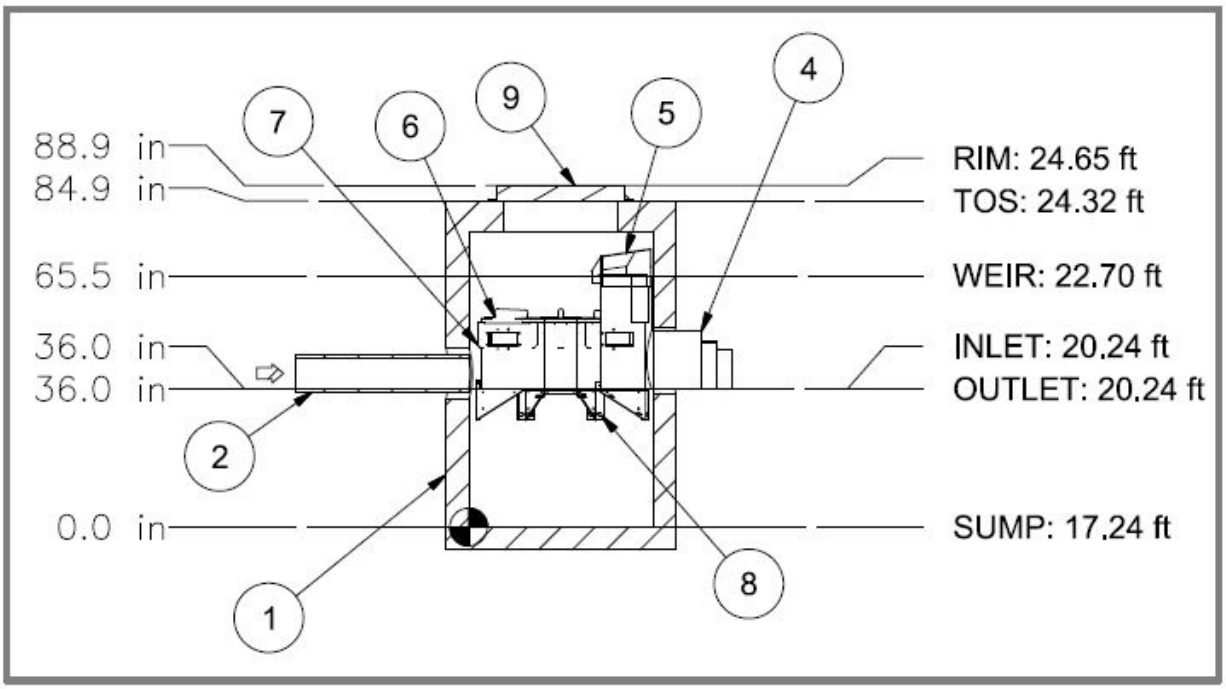
2 / C-510 STORM PIPING PROFILE
SCALE: 1"=20' HORIZ.; 1"=2' VERT.



3A / C-510 UP-FLOW 52 TOP VIEW
SCALE: NTS



3B / C-510 UP-FLOW 52 SECTION B-B
SCALE: NTS



3C / C-510 UP-FLOW 52 SECTION A-A
SCALE: NTS

PARTS LIST				
ITEM	QTY	DESCRIPTION	SIZE (in)	TYPE
1	1	PRECAST MANHOLE	48	
2	1	INLET PIPE	8	HDPE
4	1	OUTLET MODULE		
5	1	BYPASS HOOD		
6	6	MODULE LID		
7	6	MODULE BODY		
8	7	SUPPORT FRAME		
9	1	30" FRAME AND COVER	30	

3D / C-510 UP-FLOW 52 PARTS LIST
SCALE: NTS

Exhibit C
Storm Water Practice Maintenance Plan

This exhibit explains the basic function of each of the storm water practices listed in Exhibit B and prescribes the minimum maintenance requirements to remain compliant with this Agreement. The maintenance activities listed below are aimed to ensure these practices continue serving their intended functions in perpetuity. The list of activities is not all inclusive, but rather indicates the minimum type of maintenance that can be expected for this particular site. Access to the stormwater practices for maintenance vehicles is shown in Exhibit B. Any failure of a storm water practice that is caused by a lack of maintenance will subject the Owner(s) to enforcement of the provisions listed on page 1 of this Agreement by the City of Waukesha.

System Description:
The dry detention basin (Figure 1) is designed to maintain pre-development downstream peak flows. To do this, the pond size, water level and outlet structures must be maintained as specified in this Agreement.

The main basin receives runoff from a 2.36-acre drainage area. During high rainfall or snow melt events, the water level will temporarily rise and slowly drain down to the elevation of the control structure. The water level is controlled by a 8-inch diameter ADS N-12 Soil Tite pipe extending through the berm in the south corner of the basin (see Figures 1 and 3). This pipe controls the water level and causes the pond to temporarily rise during runoff events. Medium sized rip-rap is placed around the pipe entrance to reduce risk of vortices causing erosion around the pipe entrance. High flows may enter the 8-inch diameter pipe or flow over the emergency spillway. "As-built" construction drawings of the basin, showing actual dimensions, elevations, outlet structures, etc. will be recorded as an addendum(s) to this agreement within 60 days after City of Waukesha accepts verification of construction from the project engineer.

The two Up-Flo water quality structures (Figures 2 and 3) are designed to remove 80% of total suspended solids (TSS) from runoff discharging off the development site. To do this, the structures must be maintained as specified in this Agreement.

Up-Flo water quality structure #42 receives runoff from a 2.36-acre drainage area, and Up-Flo water quality structure #52 receives runoff from a 1.28-acre drainage area. During rainfall or snow melt events, the water enters the structures and is filtered before discharged off the development site. "As-built" construction drawings of the basin, showing actual dimensions, elevations, outlet structures, etc. will be recorded as an addendum(s) to this agreement within 60 days after City of Waukesha accepts verification of construction from the project engineer.

Minimum Maintenance Requirements:
To ensure the proper long-term function of the storm water management practices described above, the following activities must be completed:

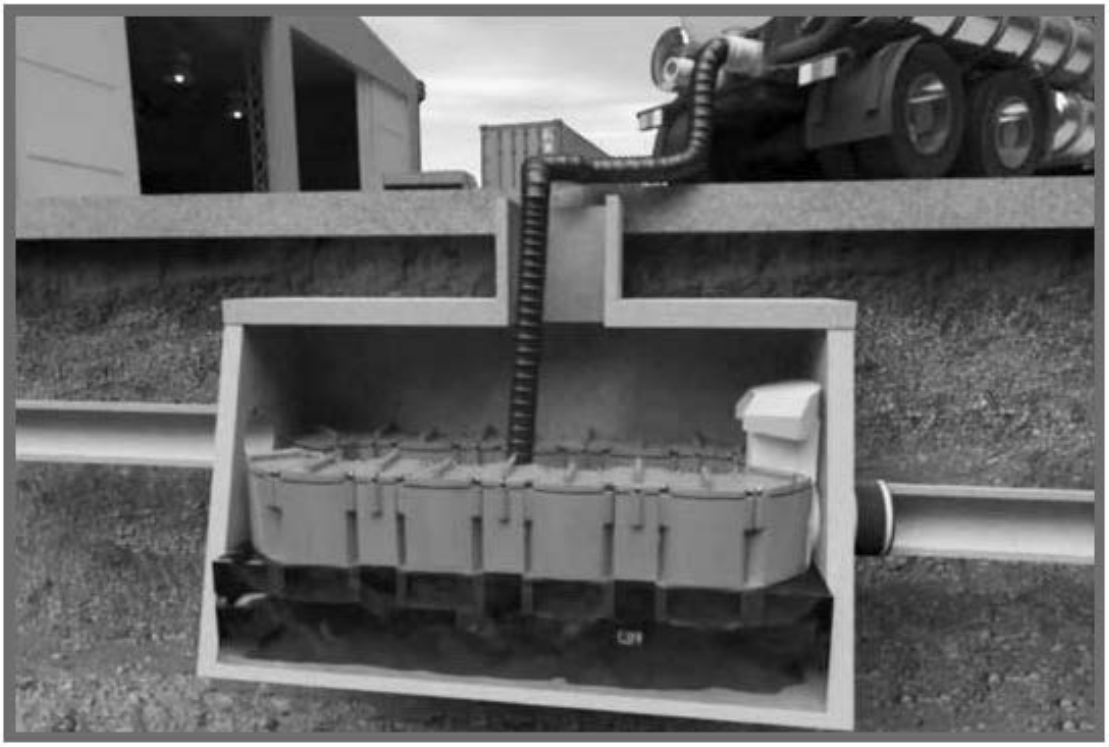
1. All outlet pipes must be checked monthly to ensure there is no blockage from floating debris or ice, especially the washed stone in front of the 8-inch ADS N-12 Soil Tite in the main basin. Any blockage must be removed immediately. Weeds and sediment must be removed from the medium rip-.
2. Grass swales shall be preserved to allow free flowing of surface runoff in accordance with approved grading plans. No buildings or other structures are allowed in these areas. No grading or filling is allowed that may interrupt flows in any way.
3. Grass swales, inlets and outlets must be checked after heavy rains (minimum of annually) for signs of erosion. Any eroding areas must be repaired immediately to prevent premature sediment build-up in the downstream basin. Erosion matting is recommended for repairing grassed areas.
4. NO trees are to be planted or allowed to grow on the earthen berms. Tree root systems can reduce soil compaction and cause berm failure. The berms must be inspected annually and any woody vegetation removed.
5. Invasive plant and animal species shall be managed in compliance with Wisconsin Administrative Code Chapter NR 40. This may require eradication of invasive species in some cases.
6. When sediment in the basin has accumulated, it must be removed (see Exhibit D). All removed sediment must be placed in an appropriate upland disposal site and stabilized (grass cover) to prevent sediment from washing back into the basin.
7. No grading or filling of the basin or berm other than for sediment removal is allowed, unless otherwise approved by the City of Waukesha.

8. Periodic mowing of the grass swales will encourage vigorous grass cover and allow better inspections for erosion.
9. Any other repair or maintenance needed to ensure the continued function of the storm water practices or as ordered by the City of Waukesha under the provisions listed on page 1 of this Agreement.
10. The titleholder(s) or their designee must document all inspections as specified above. Documentation shall include as a minimum: (a) Inspectors Name, Address and Telephone Number, (b) Date of Inspections, (c) Condition Report of the Storm Water Management Practice, (d) Corrective Actions to be Taken and Time Frame for Completion, (e) Follow-up Documentation after Completion of the Maintenance Activities. All documentation is to be delivered to the attention of the City Engineer at the City of Waukesha Engineering Department on January 10th and July 10th each year.
11. See following table for maintenance of Dry Detention Pond.

Frequency	Drainage System Feature	Date ✓	✓	✓	✓	Problem	Conditions to Check For	Conditions That Should Exist
MONTHLY, STORM	General					Trash & Debris	Any trash and debris which exceed 1 cubic feet per 1,000 square feet. In general, there should be no visual evidence of dumping. If less than threshold, all trash and debris will be removed as part of next scheduled maintenance.	Trash and debris cleared from site.
ANNUAL	General					Poisonous Vegetation and noxious weeds	Any poisonous or nuisance vegetation which may constitute a hazard to maintenance personnel or the public. Any evidence of noxious weeds as defined by State or local regulations. (Apply requirements of adopted IPM policies for the use of herbicides).	No danger of poisonous vegetation where maintenance personnel or the public might normally be. (Complete eradication of noxious weeds may not be possible. Compliance with State eradication policies required.)
MONTHLY, STORM	General					Contaminants and Pollution	Any evidence of oil, gasoline, contaminants or other pollutants	No contaminants or pollutants present. (Coordinate removal/cleanup with local water quality response agency).
MONTHLY	General					Rodent Holes	Any evidence of rodent holes if facility is acting as a dam or berm, or any evidence of water piping through dam or berm via rodent holes.	Rodents destroyed and dam or berm repaired. (Compliance with State and Local eradication policies required)
MONTHLY	General					Beaver Dams	Dam results in change or function of the facility.	Facility is returned to design function. (Coordinate trapping of beavers and removal of dams with appropriate permitting agencies)
ANNUAL	General					Insects	When insects such as wasps and hornets interfere with maintenance activities.	Insects destroyed or removed from site. Apply insecticides in compliance with adopted IPM policies.
ANNUAL	General					Tree Growth and Hazard Trees	Tree growth does not allow maintenance access or interferes with maintenance activity (i.e., slope mowing, silt removal, vactoring, or equipment movements). Trees shall not grow on top of berm or inside of berm. If trees are not interfering with access, maintenance, or stability, do not remove.	Trees do not hinder maintenance activities or do not compromise stability of berm. Harvested trees should be recycled into mulch or other beneficial uses.
ANNUAL	General						If dead, diseased, or dying trees are identified (Use a certified Arborist to determine health of tree or removal requirements)	Remove hazard Trees

Frequency	Drainage System Feature	Date ✓	✓	✓	✓	Problem	Conditions to Check For	Conditions That Should Exist
MONTHLY	Side Slopes of Pond					Erosion	Eroded damage over 2 inches deep where cause of damage is still present or where there is potential for continued erosion.	Slopes should be stabilized using appropriate erosion control measure(s); e.g., rock reinforcement, planting of grass, compaction.
MONTHLY, STORM	Side Slopes of Pond						Any erosion observed on a compacted berm embankment.	If erosion is occurring on compacted berms, a licensed civil engineer should be consulted to resolve source of erosion.
MONTHLY	Storage Area					Sediment	Accumulated sediment that reaches 3-½ feet of water depth, unless otherwise specified or affects inletting or outletting condition of the facility.	Sediment cleaned out to designed pond shape and depth; pond reseeded if necessary to control erosion.
MONTHLY	Storage Area					Liner (If Applicable)	Liner is visible and has more than three 1/4-inch holes in it.	Liner repaired or replaced. Liner is fully covered.
ANNUAL	Pond Berms (Dikes)					Settlements	Any part of berm which has settled 4 inches lower than the design elevation. If settlement is apparent, measure berm to determine amount of settlement. Settling can be an indication of more severe problems with the berm or outlet works. A licensed civil engineer should be consulted to determine the source of the settlement.	Dike is built back to the design elevation.
ANNUAL	Pond Berms (Dikes)					Piping	Discernable water flow through pond berm. Ongoing erosion with potential for erosion to continue. (Recommend a Geotechnical engineer be called in to inspect and evaluate condition and recommend repair of condition.	Piping eliminated. Erosion potential resolved.

Hydro International



Operation and Maintenance Manual

Stormwater Solutions

Up-Flo® Filter

Filtration System for Stormwater Treatment

94 Hutchins Drive
Portland, ME 04102

Tel: (207) 756-6200
Fax: (207) 756-6212
stormwaterinquiry@hydro-int.com

www.hydro-int.com

TABLE OF CONTENTS

IMPORTANT - ORDER REPLACEMENT PARTS FOR MAINTENANCE - IMPORTANT

Annual maintenance requires replacement of the Media Packs and the Drain Down Filter. Contact Hydro International to order replacements. Allow 2-4 weeks for delivery.

Office hours Monday thru Friday 8:00 A.M. to 5:00 P.M. EST
Toll free: 1-888-382-7808
Phone: 207-756-6200
Fax: 207-756-6212
Email: services@hydro-int.com

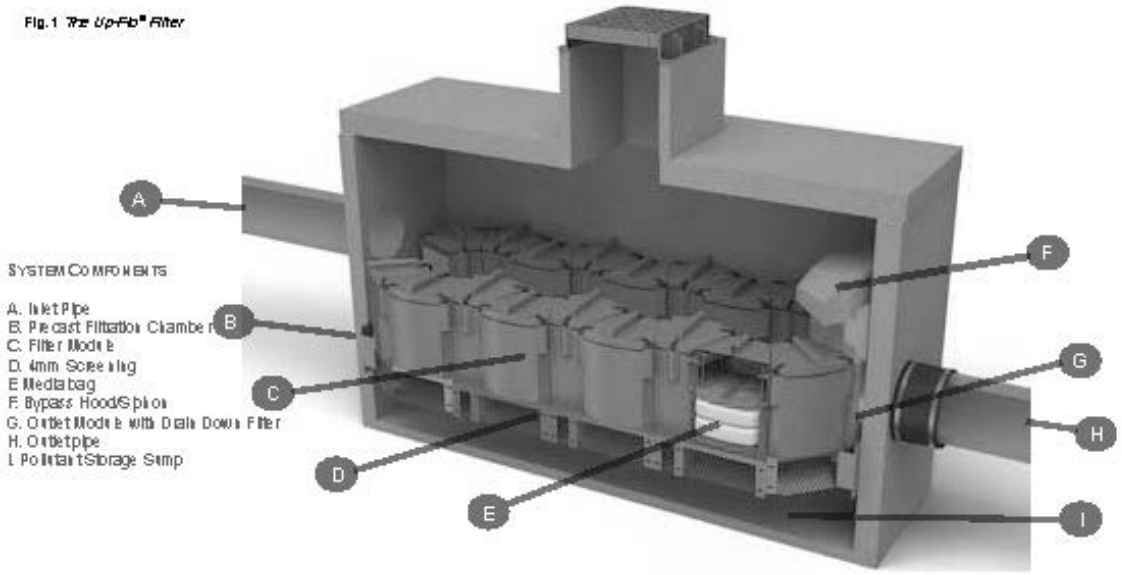
Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Overview & Product Description

The Up-Flo® Filter is a modular high-rate stormwater filtration device designed to capture trash, oil, sediment and remove fine pollutants such as dissolved and particulate metals and nutrients from stormwater runoff. Designed with efficiency, longevity and upkeep in mind, this high performance, low maintenance filter option that offers higher loading rates and longer media life for higher quality stormwater for longer periods between servicings.

In general, a minimum of two inspections are required per year to monitor sediment and gross pollutant accumulations. In order to achieve an annual TSS removal rate of 80% for the Up-Flo® Filter, the minimum maintenance frequency specified in the maintenance section for replacement of the Media Pack and removal of accumulated sediment from the sump is mandatory.

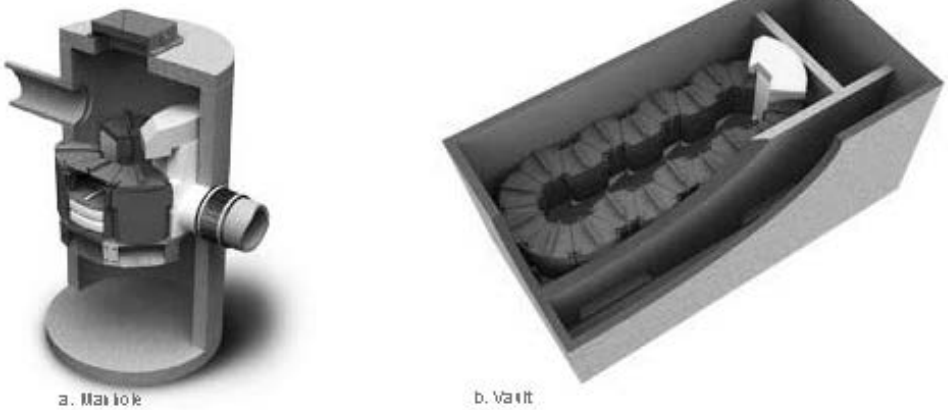
Fig.1 *The Up-Flo® Filter*



System Components

A. Inlet Pipe
B. Precast Filtration Chamber
C. Filter Module
D. 4mm Screening
E. Media bag
F. Bypass Hood/Siphon
G. Outlet Module with Drain Down Filter
H. Outlet pipe
I. Pollutant Storage Sump

Product Configurations



a. Manhole b. Vault

Fig.2 *The Up-Flo® Filter is installed in a) 4-ft (1.2m) round manhole sorb) in rectangular precast vaults. Both configurations have a wide central opening in the Up-Flo® Filter.*

Hydro Maintenance Services

Hydro International has been engineering stormwater treatment systems for over 30 years. We understand the mechanics of removing pollutants from stormwater and how to keep systems running at an optimal level.

Nobody Knows our Systems Better than we do

Avoid Service Negligence

Sanitation services providers not intimately familiar with stormwater treatment systems are at risk of the following:

- Inadvertently breaking parts or failing to clean/replace system components appropriately.
- Charging you for more frequent maintenance because they lacked the tools to service your system properly in the first place.
- Billing you for replacement parts that might have been covered under your Hydro warranty plan
- Charging for maintenance that may not yet have been required.

Leave the Dirty Work to us

Trash, sediment and polluted water is stored inside treatment systems until they are removed by our team with a vactor truck. Sometimes teams must physically enter the system chambers in order to prepare the system for maintenance and install any replacement parts. Services include are are not limited to:

- Solids removal
- Removal of liquid pollutants
- Replacement media installation (when applicable)

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Better Tools, Better Results

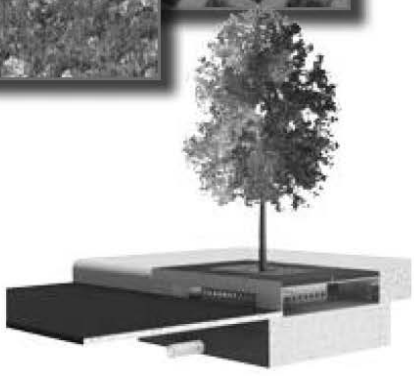
Not all vactor trucks are created equal. Appropriate tools and suction power are needed to service stormwater systems appropriately. Companies who don't specialize in stormwater treatment won't have the tools to properly clean systems or install new parts.

Service Warranty

Make sure you're not paying for service that is covered under your warranty plan. Only Hydro International's service teams can identify tune-ups that should be on us, not you.

Treatment Systems Serviced by Hydro:

- Stormwwater filters
- Stormwater separators
- Baffle boxes
- Biofilters/biorention systems
- Storage structures
- Catch basins
- Stormwater ponds
- Permeable pavement



SAVE TIME & MONEY: CALL HYDRO FOR A QUOTE

1 (800) 382-7808

LEARN MORE AT HYDRO-INT.COM/SERVICE

Operation

Introduction

The Up-Flo® Filter operates on simple fluid hydraulics. It is self-activating, has no moving parts, no external power requirements and is fabricated with durable non-corrosive components. Personnel are not required to operate the unit and maintenance is limited to periodic inspections, sediment and floatables removal, Media Pack replacement and Drain Down Filter replacement.

Pollutant Capture

The Up-Flo® Filter is designed to operate as a "treatment train" by incorporating multiple treatment technologies into a single device. Trash and gross debris are removed by sedimentation and screening before they are introduced to the filtration media, preventing surface blinding of the filter media. The Up-Flo® Filter is a wet-sump device. Between storm events, oil and floatables are stored on the water surface separate from the sediment storage volume in the sump (see **Fig.1**). The high-capacity bypass siphon acts as a floatables baffle to prevent washout of captured floatable pollutants during high intensity events.

Reduced Clogging

The Up-Flo® Filter has been designed to minimize the occurrence of clogging and blinding and employs a unique Drain Down Filter that allows the water level in the chamber to drop below the filter media between events. The Drain Down Filter mechanism creates a reverse flow that flushes captured pollutants off the surface of the Media Bag, helping to prevent blinding. By allowing the water to drain out, the Drain Down Filter also reduces the weight of the Media Bags. This makes the bags easier and safer to remove during maintenance operations.

Overflow Protection

The Angled Screens are designed to prevent ragging and blinding and are situated below the Filter Modules, sheltering them from the direct path of the influent. Coarse debris settles in the sump before the runoff flows up through the screens, protecting them from blinding. In the unlikely event of a blockage, the high capacity siphonic Bypass Hood is designed to convey high enough flow to minimize the risk of large storm creating upstream flooding.

Best Practices

Good housekeeping upstream of the Up-Flo® Filter can significantly extend Media Bag life. For example, sweeping paved surfaces, collecting leaves and grass trimmings, and protecting bare ground from erosion will reduce loading to the system. Media Packs should not be installed in the Filter Modules until construction activities are complete and site stabilization is effective.

Damage Due to Lack of Maintenance

Delayed maintenance would result in clogged Media Bags and/or blinded Angled Screens. In that situation, the Up-Flo® Filter would go into bypass and there would be no treatment of the incoming stormwater. Because the Bypass Weir can easily convey all of the flow to the Outlet Module, there would be no lasting damage to the system. Replacement of the Media Bags and removal of sediment from the sump would restore the Up-Flo® Filter to its original treatment efficiency. Establishing and adhering to a regular maintenance schedule ensures optimal performance of the system.

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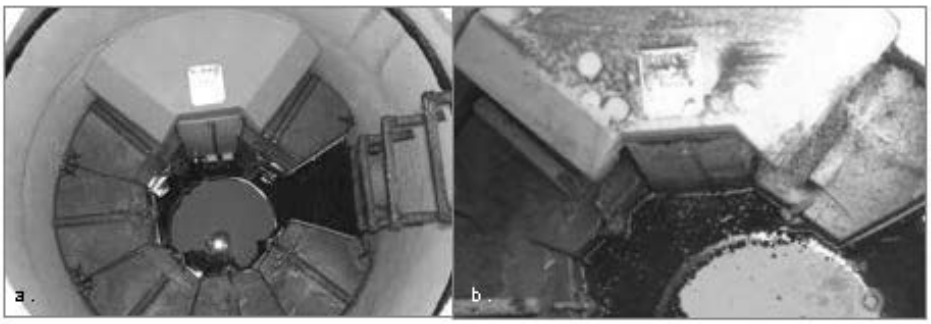

Fig.3 a) The water level in a properly functioning Up-Flo® Filter will drain down to the base of the Filter Modules. b) When the Drain Down Filter becomes clogged, the base of the Filter Modules will be submerged in standing water. Note, above right, that the Drain Down Filter is submerged in standing water.

INSPECTION & MAINTENANCE

OVERVIEW

The Up-Flo® Filter protects the environment by removing a wide range of pollutants from stormwater runoff. Periodic removal of these captured pollutants is essential to the proper functioning of the Up-Flo® Filter.

Maintenance activities can be categorized as those that may be performed from outside the Up-Flo® vessel and those that are performed inside the vessel. Maintenance performed from outside the modules includes removal of floatables and oils that have accumulated on the water surface and removal of sediment from the sump. Maintenance performed inside the vessel includes removal and replacement of Media Bags, Flow Distribution Media and the Drain Down Filter. A vactor truck is required for removal of oils, water, sediment, and to completely pump out the vessel to allow for maintenance inside. If you are not using Hydro International or a trained service provider you must follow OSHA Confined Space Entry procedures when entering the Up-Flo® vessel.

The Up-Flo® Filter design has a wide central opening between the Filter Modules for easy access to all of the components (see Fig.3). In the case of inspection and floatables removal, a vactor truck is not required. Otherwise, a vactor truck is normally required for oil removal, removal of sediment from the sump, and replacement of the Media Packs and Drain Down Filter. In most cases, entry into the Up-Flo® Filter vessel is required for replacement of the Media Packs and Drain Down Filter.

The minimum required frequency for replacement of the Media Pack is annually, whereas the minimum required frequency for removal of accumulated sediment from the sump is dependent on the Up-Flo® Filter configuration. Configurations with a larger sediment storage volume per module will require less frequent removal of accumulated sediment. Regardless, whenever sediment depth in the sump is found to be greater than 16 inches, sediment removal is required.

AT A MINIMUM, MEDIA BAGS MUST BE REPLACED AT LEAST ONCE A YEAR.

Fig.4 a) A new Media Bag of Hydro Filter Sand. b) A spent media bag of Hydro Filter Sand.

Make Sure your System was Installed Correctly

First Year Inspection and Maintenance

The frequency of inspection and maintenance can be determined in the field after installation. The frequency of ongoing maintenance needs is based on site characteristics such as contributing area, types of surfaces (e.g., paved and/or landscaped), site activities (e.g., short-term or long-term parking), and other site maintenance (e.g., sanding and sweeping). At a minimum, inspection and maintenance should be conducted at intervals of no more than six months during the first year of operation. Maintenance personnel should observe and record pollutant accumulations during the first year of service in order to benchmark the maintenance intervals that will later be established for the site. Pollutant accumulations should be measured or monitored using the following procedures:

- Measurement of sediment depth in the sump: A minimum of 8 inches (20 cm) should separate the Drain Down Filter inlet from stored sediment in the sump in order to minimize sediment migration into the Drain Down Filter. A simple probe, such as the Sludge-Judge®, can be used to determine the depth of the solids in the sump. In a typical 4-ft (1.2m) diameter manhole installation, the sediment depth should be no more than 16 inches (41 cm).

- Maintenance personnel should then enter the structure, remove the Media Pack from one of the Filter Modules, and weigh the Media Bags. Media Bags with a wet weight of approximately 40 lbs (18 kg) or more are an indication that the filter media has become full and that the Media Packs in all of the Filter Modules will require replacement (Fig.4). Minimum filtration rate is generally reached when the Media Bags have accumulated approximately 20 lbs (9 kg) of sediment. Determining the amount of accumulated sediment will be accomplished by removing both of the Media Bags from one of the Media Packs and weighing the bags separately. Since a new Media Bag weighs approximately 30 lbs (14 kg) wet, the difference in weight will approximately equal the weight of solids that have accumulated in the bag. A spent Media Bag weighs approximately 50 lbs (23 kg) wet.

- Measurement of oil layer on water surface: Since water in the Up-Flo® vessel drains down to an elevation below the bottom of the Filter Modules when the system is idle, the amount of accumulated oil must be minimized so that oil is not entrained in the Media Pack when stormwater begins to fill the vessel at the start of a storm event. Oil accumulation should be limited to 1.5 inches (4 cm) or less. Probes can be used to measure oil thickness.

- Monitoring for Drain Down Filter clogging: The water level in the Up-Flo® Filter should be monitored to ensure that the Drain Down Filter is operating properly. The Drain Down Filter is designed to lower the water level in the Up-Flo® vessel to an elevation below the bottom of the Filter Modules between storm events. Periodically conduct an inspection one to two days after a storm event during the first year of operation. Approximately 36 hours after a 1-in (2.5-cm) rainfall, the water level inside the vessel should have dropped to a point where it is equal with the base of the Filter Modules. If the water level has not reached that point, then the Drain Down Filter has either become clogged or blinded by trash or debris (Fig.5 a and b). If there is no evidence of trash or debris around the Drain Down Filter inlet, then it has likely become clogged with particles.

- Monitoring for slime and debris covering the Flow Distribution Media or Angled Screens: After removal of the Media Bags, the bottom Flow Distribution Media should be removed and inspected to determine if it is coated with slime or debris. Similarly, the Angled Screen should be inspected for blockages and ragging.

Find out how Frequently your System Needs Maintenance

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Monitoring for floatables on the water surface: Similar to oil, the amount of accumulated floatables must be minimized to prevent trash and loose debris from becoming trapped on the Angled Screens when stormwater begins to fill the Up-Flo® vessel at the start of a storm event. Visual inspection is adequate to determine the amount of floatables. Floatables should be removed before they form a mat on the surface of the water.

The solids loading rate in the sump will be calculated by measuring the sediment depth in the sump and dividing the depth by the correlating interval of time since the sump was last cleaned. Similarly, starting with fresh Media Bags, the solids loading rate in the Media Packs will be calculated by weighing the Media Bags and dividing the weights by the correlating interval of time since they were installed. The wet weight of the heaviest bag will be used to determine the loading rate. As previously mentioned, a spent Media Bag weighs approximately 50 lbs (23 kg) wet. The spent Media Bag weight estimate was based on calculations of sediment loading in an Up-Flo® Filter that was run to exhaustion during laboratory testing.

The rate of oil accumulation will be calculated by measuring the thickness of the oil layer and dividing the thickness by the correlating interval of time since the sump was last cleaned. Ordinarily, oil thickness will not be measurable unless a spill has occurred. Consequently, any oil will typically be removed along with water when cleaning the sump.

Monitoring the Drain Down Filter for clogging, monitoring the Flow Distribution Media and Angled Screens for slime and debris, and monitoring the accumulation of floatables will provide an estimate of how long the Up-Flo® Filter can operate before its performance can become impaired by one of these factors.

Routine Inspection and Maintenance

After completion of the first year of operation, determining and then following the established inspection and maintenance intervals will keep pollutant loadings within their respective limits. Removal of oils and floatables, replacement of the Drain Down Filter, replacement of Flow Distribution Media (see Fig.9, pg 11), and cleaning of Angled Screens will occur at the same frequency as cleaning of the sump and replacement of Media Bags unless the first year of operation indicates otherwise. Keeping to the established maintenance intervals will keep treatment flow rates at, or above, the design flow rate. Typically, annual maintenance is adequate.

In addition to scheduled maintenance, occasional checks for Up-Flo® Filter clogging can be performed by removing the manhole cover during a storm, monitoring the water level in the manhole or vault, and determining whether the filter is in bypass. A properly-sized filter (on-line or off-line) that is in bypass during a storm that is producing runoff at, or below, the filter's design filtration rate needs maintenance.

Inspection & Maintenance

Routine Inspection

Inspection is a simple process that requires monitoring pollutant accumulations. Maintenance crews should be familiar with the Up-Flo® Filter and its components prior to inspection.

THE FOLLOWING INSTRUCTIONS ARE INTENDED FOR NON-HYDRO MAINTENANCE SERVICE PROVIDERS AND/OR THOSE INTENDING TO MAINTAIN THIER OWN UP-FLO® FILTER:

Scheduling

- Inspection may be conducted during any season of the year but should occur shortly after a predicted rainfall to ensure components are operating properly.

Necessary Equipment

- Safety Equipment and Personal Protective Equipment (traffic cones, work gloves, etc.)
- Scale to measure the weight of the Media Bags
- Crow bar to remove grate or lid
- Pole with skimmer or net
- Sediment probe (such as a Sludge-Judge®)
- Hydro International Up-Flo® Filter Maintenance Log
- Trash bags for removed floatables

Routine Inspection Procedures

1. Set up any necessary safety equipment (such as traffic cones) to provide access to the Up-Flo® Filter. Safety equipment should notify passing pedestrian and road traffic that work is being done.
2. Remove the grate or lid to the manhole or vault.
3. Without entering the vessel, look down into the chamber to inspect the inside and to determine whether the high-water level indicator has been actuated. Make note of any irregularities. See Fig.6 for a typical inspection View.
4. Without entering the vessel, use the pole with the skimmer net to remove floatables and loose debris from the chamber.
5. Using a sediment probe such as a Sludge-Judge®, measure the depth of sediment that has collected in the sump of the vessel.
   Maximum sediment depth is 16 inches (41 cm).
6. If the high-water level indicator has been actuated after two consecutive storms, remove the Filter Module lid by turning the cam latch and remove the Filter Media Pack (*refer to page 11 Replacement Procedures*). Weigh the Media Bags from one or two modules. Media Bags should be replaced if the wet weight exceeds 40 lbs (18 kg).
7. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables and gross debris removed, and the depth of sediment measured. Also note any apparent irregularities such as damaged components or a high standing water level (see Fig.6 for the standard standing water level).
8. Securely replace the grate or lid.
9. Remove safety equipment.
10. Contact Hydro International at (800) 848-2706 to discuss any irregularities noted during inspection.

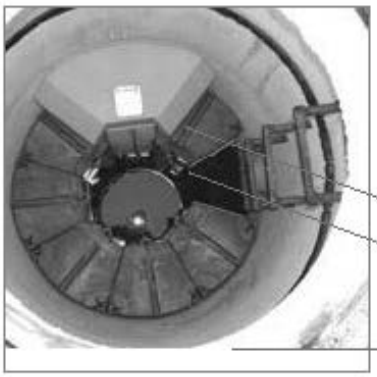

Fig.6 Inspection view of the Up-Flo® Filter.

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Routine Maintenance

Maintenance activities are grouped into two categories:

- *Activities Not Requiring Man Entry into the Up-Flo® Filter*
  These activities include floatables removal, oil removal and removal of sediment from the sump.
- *Activities Requiring Man Entry into the Up-Flo® Filter*
  Media Pack replacement and Drain Down Filter replacement.

Maintenance intervals are determined from monitoring the Up-Flo® Filter during its first year of operation. Depending on the site, some maintenance activities may have to be performed on a more frequent basis than others. In the case of floatables removal, a vactor truck is not required. Floatables and loose debris can be netted with a skimmer and pole.

A vactor truck is normally required for oil removal, removal of sediment from the sump, and to dewater the vessel for replacement of the Media Packs and Drain Down Filter (Fig.7). All inspection and maintenance activities would be recorded in an Inspection and Maintenance Log.

Completion of all the maintenance activities for a typical 4-ft (1.2m) diameter manhole installation takes less than one hour. Approximately 360 gallons of water and up to 0.6 yd^3 (0.5 m^3) of sediment may be removed in the process. In an installation equipped with six Filter Modules, 12 Media Bags (2 bags per module) would be removed and replaced. Assuming a spent Media Bag weight of 50 lbs (23 kg), up to 600 lbs (272 kg) of spent Media Bags would be removed. All consumables, including Media Bags, Flow Distribution Media, and replacement Drain Down Filters are supplied by Hydro International.

The access port located at the top of the manhole provides unobstructed access for a vactor hose and/or skimmer pole to be lowered to the base of the sump.

Maintenance Activities Not Requiring Man Entry

These activities include floatables removal, oil removal and removal of sediment from the sump.

Scheduling

- Floatables and sump cleanout may typically be done during any season of the year - before and after rainy season
- Floatables and sump cleanout should occur as soon as possible following a contaminated spill in the contributing drainage area

Recommended Equipment

- Safety Equipment (traffic cones, etc)
- Crow bar to remove grate or lid
- Pole with skimmer or net (if only floatables are being removed)
- Sediment probe (such as a Sludge-Judge®)
- Vactor truck (flexible hose preferred)
- Pressure nozzle attachment or other screen-cleaning device

Fig.7 Sediment is removed from the sump with a vactor hose. Man entry is not required for this step.

No Man Entry Required: Floatables, Oil and Sediment:

1. Set up any necessary safety equipment (such as traffic cones) around the access of the Up-Flo® Filter. Safety equipment should notify passing pedestrian and road traffic that work is being done.
2. Remove the grate or lid to the manhole or vault.
3. Without entering the vessel, look down into the chamber to inspect the inside. Make note of any irregularities.
4. If the standing water level in the sump is above the base of the Filter Modules (see Fig.8), tug the Pull Chain(s) to release the Drain Down Filter plug(s). Allow the excess water to drain out of the chamber.
5. Use the skimmer pole to fit the Drain Down Filter plug back into the open port.
6. Once all floatables and oil have been removed, drop the vactor hose to the base of the sump. Vactor out the sediment and gross debris from the sump floor. Up to 0.3 yd³ (0.2 m³) of sediment and 360 gallons (1,363 L) of water will be removed from a typical manhole Up-Flo® Filter during this process.
7. Retract the vactor hose from the vessel.
8. Inspect the Angled Screens for blockages and ragging. If present, remove the obstruction or ragging materials from the surface using a hose or other screen-cleaning device.
9. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables, oils, and gross debris removed, and the depth of sediment measured. Note any apparent irregularities such as damaged components or blockages.
10. Securely replace the grate or lid. Remove safety equipment.
11. Dispose of sediment and gross debris following local regulations.
12. Dispose of oil and sump water at a licensed water treatment facility or following local regulations.
13. Contact Hydro International at (800) 848-2706 to discuss any irregularities noted during cleanout.

Maintenance Activities Requiring Man Entry

These activities include replacement of the Media Packs and Drain Down Filter.

Unless the Up-Flo® Filter has been installed as a very shallow unit, it is necessary to have an OSHA-confined space entry trained person enter the vessel to replace Media Packs.

The access port located at the top of the manhole or vault provides access to the Up-Flo® vessel for maintenance personnel to enter the vessel and remove and replace Media Packs. The same access would be used for maintenance personnel working from the surface to net or skim debris and floatables or to vactor out sediment, oil, and water. Unless the Up-Flo® Filter has been installed in a very shallow configuration, it is necessary to have personnel with OSHA Confined Space Entry training performing the maintenance that occurs inside the vessel.

Scheduling

- Call Hydro International to order replacement Media Packs and Drain Down Filter prior to scheduling maintenance.
- Because Media Pack replacement requires entry into the Up-Flo® chamber, maintenance events should be scheduled during dry weather.
- Media Pack replacement should occur immediately after a contaminated spill in the contributing drainage area.

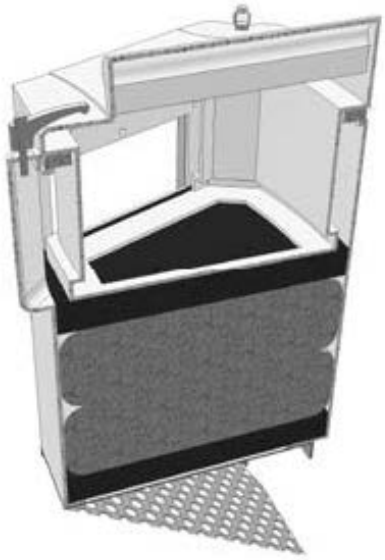


Fig.8 Cutaway view of the Filter Module

Recommended Equipment

- Safety Equipment (traffic cones, etc.)
- Crow bar to remove grate or lid
- Pole with skimmer or net (if floatables removal is not to be done with vactor hose)
- Sediment probe (such as a Sludge-Judge®)
- Vactor truck (flexible hose preferred)
- OSHA Confined Space Entry Equipment
- Up-Flo® Filter Replacement Media Packs (available from Hydro International)
- Hydro International Up-Flo® Filter Maintenance Log
- Screwdriver (flat head)
- Replacement Drain Down Filter components supplied by Hydro International

Man Entry Required: Media Pack and Drain Down Filter

1. Follow Floatables and Sump Cleanout Procedures, 1 – 13.
2. Following OSHA Confined Space Entry procedures, enter the Up-Flo® Filter Chamber.
3. Open the Filter Module by turning the three cam latches on the front and sides of the module. Remove the lid (1) to gain access to the Media Pack (Fig.9).
4. Remove and discard the spent Media Pack. The Media Pack contents include:
   - A top layer of (A) Flow Distributing Sheets
   - Two (2) Media Bags (B) equipped with nylon handles.
   - A bottom layer of (A) Flow Distributing Media.
5. Insert a new Media Pack, supplied by Hydro International.
   - First, insert a bottom layer of green Flow Distributing Media. Be sure that the media sits snugly and level at the bottom of the Filter Module.
   - Next, insert the first of two (2) replacement Media Bags. Smooth the bag out with your hands to make sure that the bag extends snugly to the walls and corners of the Filter Module.
   - Insert the second Media Bag, following the same procedure.
   - Insert the top layer of green Flow Distributing Media.

1. Filter Module Cover and Media Restraint
2. Replaceable Media Pack:
   a) Flow distribution sheets
   b) Filter Media Bags
3. Cam Latch
4. Conveyance Channel
5. Filter Module
6. Support Bracket / Angled Screen

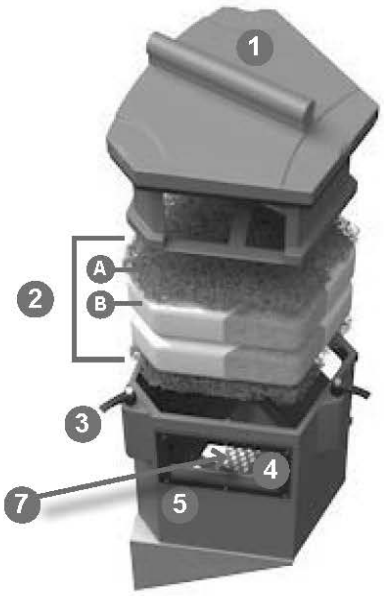


Fig.9 The Filter Module houses the Media Restraint and the Media Pack.

Be sure that the piece fits snugly against the walls and corners of the Filter Module.

- Put the lid on and secure the three latches. Check to make sure that the latches are closed properly.

6. Use a screwdriver to unscrew the Drain Down Filter from the face of the Outlet Module (see Fig.10). DO NOT DISCARD THIS PIECE.
7. Install new Drain Down Filter supplied by Hydro International.
8. Exit the Up-Flo® Filter chamber and securely replace the grate or lid.
9. On the Maintenance Log provided by Hydro International, record the date, unit location, estimated volume of floatables, oil and gross debris removed, and the depth of sediment measured. Note the number of Media Packs replaced. Note any irregularities such as damaged components or blockages.

Fig.10 *The Drain Down Filter.*

1. Drain Down Filter
2. Drain Down Plug
3. Pull Chain for Drain Down

10. Remove safety equipment.
11. Dispose of spent media packs at your local landfill, following local regulations.
12. Return the spent Drain Down Filter to Hydro International.
13. Contact Hydro International to discuss any irregularities noted during annual maintenance.

Solids Disposal

Sediment, floatables, gross debris, and spent Media Bags can generally be disposed of at the local landfill in accordance with local regulations. The toxicity of the residues captured will depend on the activities in the contributing drainage area, and testing of the residues may be required if they are considered potentially hazardous.

Sump water can generally be disposed of at a licensed water treatment facility but the local sewer authority should be contacted for permission prior to discharging the liquid. Significant accumulations of oil removed separately from sump water should be transported to a licensed hazardous waste treatment facility for treatment or disposal. In all cases, local regulators should be contacted about disposal requirements.

Maintenance at a Glance

Activity	Frequency
Inspection	- Regularly during first year of installation - Every 6 months after the first year of installation
Floatables/Oils Removal	- Twice per year or as needed - Following a contaminated spill in the drainage area
Sediment Removal	- Every six to 12 months, depending on the Up-Flo® Filter Configuration - The maximum allowable sediment depth in any Up-Flo Filter configuration is 16 inches (41 cm) - Following a contaminated spill in the drainage area
Media Pack Replacement	- Once per year - Replacement is required anytime inspection reveals that the high-water level indicator has been activated after two consecutive storms and the subsequent weighing of the Media Bags shows a wet weight greater than 40 lbs - Following a contaminated spill in the drainage area
Drain Down Filter Replacement	- Once per year with Media Pack replacement - Replacement is required anytime inspection reveals that the water level inside the vessel has not reached a level equal with the base of the Filter Modules approximately 36 hours after a 1-inch (2.5 cm) rainfall - As needed, in the event of continuous base flow conditions

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

UP-FLO® FILTER INSTALLATION LOG

SITE REFERENCE NAME OR NUMBER FOR THIS UP-FLO® FILTER LOCATION:	
SITE NAME:	
SITE LOCATION:	
OWNER:	**SITE CONTRACTOR:**
CONTACT NAME:	**CONTACT NAME:**
COMPANY NAME:	**COMPANY NAME:**
ADDRESS:	**ADDRESS:**
TELEPHONE:	**TELEPHONE:**
FAX:	**FAX:**

INSTALLATION DATE: / /

CONFIGURATION (CIRCLE ONE): **MANHOLE** **VAULT SYSTEM**

TOTAL NUMBER OF UP-FLO® FILTER MODULES: _____

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Up-Flo® Filter Inspection Log

Site Name: _____ Owner Change since last inspection? Y N

Location: _____

Owner Name: _____

Address: _____ Phone Number: _____

Site Status: _____

Date: _____ Time: _____ Site conditions*: _____

**(Stable, Under Construction, Needing Maintenance, etc.)*

Inspection Frequency Key: A=annual; M=monthly; S=after major storms

Inspection Items	Inspection Frequency	Inspected? (Yes/No)	Maintenance Needed? (Yes/No)	Comments/Description
Debris Removal				
Adjacent area free of debris?	M			
Inlets and Outlets free of debris?	M			
Facility (internally) free of debris?	M			
Vegetation				
Surrounding area fully stabilized? (no evidence of eroding material into Up-Flo® Filter)	A			
Grass mowed?	M			
Water retention where required				
Water holding chamber(s) at normal pool?	A			
Evidence of erosion?	A			
Sediment Deposition				
Filtration Chamber free of sediments?	A			
Sedimentation sump not more than 50% full?	A			
Structural Components				
Any evidence of structural deterioration?	A			
Grates in good condition?	A			
Spalling or cracking of structural parts?	A			
Outlet/Overflow Spillway	A			
Other				
Noticeable odors?	A			
Any evidence of filter(s) clogging?	M			
Evidence of flow bypassing facility?	A			

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Inspector Comments: _____

_____

_____

_____

Overall Condition of Up-Flo® Filter**: ☐ Acceptable ☐ Unacceptable

***"Acceptable" would mean properly functioning; "unacceptable" would mean damaged or required further maintenance.*

If any of the above Inspection Items are checked "Yes" for "Maintenance Needed", list Maintenance actions and their completion dates below or on the Maintenance Log provided on page 15 of the Up-Flo® Filter Operation & Maintenance Manual:

Maintenance Action Needed	Due Date

The next routine inspection is schedule for approximately: (date) _____

Inspected by: (signature) _____

Inspected by: (printed) _____

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

UP-FLO® FILTER MAINTENANCE LOG

Site Name: _____ Owner Change since last inspection? Y N

Location: _____

Owner Name: _____

Address: _____ Phone Number: _____

Site Status: _____

Date: _____ Time: _____ Site conditions: _____
**(Stable, Under Construction, Needing Maintenance, etc.)*

Estimated volume of oil/floatable trash removed: _____

Sediment depth measured in sump prior to removal: _____

Number of Filter Modules fitted with new media packs: _____

Inspector Comments: _____

_____

_____

_____

Overall Condition of Up-Flo® Filter: ☐ Acceptable ☐ Unacceptable
***"Acceptable" would mean properly functioning; "unacceptable" would mean damaged or required further maintenance.*

Maintained by: (signature) _____

Maintained by: (printed) _____

Hydro International (Stormwater), 94 Hutchins Drive, Portland ME 04102
Tel: (207) 756-6200 Fax: (207) 756-6212 Web: www.hydro-int.com

Addendum 1
Storm Water Management Practice Maintenance Agreement

Document number

The purpose of this addendum is to record verified "as-built" construction details, supporting design data and permit termination documentation for the storm water management practice(s) located on Lot 1 and Lot 2 of Certified Survey Map No. 11089, and part of the Northeast 1/4 of the Northeast 1/4, all in Section 17, Town 6 North, Range 19 East, City of Waukesha, County of Waukesha, State of Wisconsin. This document shall serve as an addendum to document # _____, herein referred to as the "Maintenance Agreement". This addendum includes all of the following exhibits:

Exhibit D: Design Summary – contains a summary of key engineering calculations and other data used to design the wet detention basin.
Exhibit E: As-built Survey – shows detailed "as-built" cross-section and plan view of the wet detention basin.
Exhibit F: Engineering/Construction Verification – provides verification from the project engineer that the design and construction of the wet detention basin complies with all applicable technical standards and Waukesha County ordinance requirements.
Exhibit G: Storm Water Management & Erosion Control Permit Termination – provides certification by the City of Waukesha that the Storm Water and Erosion Control Permit for the above noted site has been terminated.

Name and Return Address

_____
Parcel Identification Number(s) – (PIN)

Dated this ___ day of _____, 201_.

Owner:

_____
[Owners Signature – per the Maintenance Agreement]

_____
[Owners Typed Name]

Acknowledgements

State of Wisconsin County of Waukesha

Personally came before me this ____ day of _____, 201_, the above named ___[Owners name]_____ to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____.
[Name]
Notary Public, Waukesha County, WI
My commission expires:_____.

This document was drafted by:

_____

_____
[Name and address of drafter]

For Certification Stamp

Exhibit D
Design Summaries for Dry Detention Basin #1

Project Identifier: Froedtert Sunset Drive Clinic **Project Size:** 3.26 ac **No. of Lots:** 1
Number of Runoff Discharge Points: 2 **Watershed (ultimate discharge)**: Fox River
Watershed Area (including off-site runoff traveling through project area): 3.26 ac.

Watershed Data Summary. The following table summarizes the watershed data used to determine peak flows and runoff volumes required to design dry detention basin #1.

Summary Data Elements	Subwatershed A (detained)		Subwatershed B (undetained)	
	Pre-develop	**Post-develop**	**Pre-develop**	**Post-develop**
Watershed Areas *(in acres) (see attached map)*	2.36 ac.	2.36 ac.	1.28 ac.	1.28 ac.
Average Watershed Slopes (%)	2-20%	2-20%	3-6%	3-6%
Land Uses *(% of each) (see attached map)*	0.46 ac. Pavement; 3.16 ac. Turf	0.24 ac. Roof; 0.23 ac. Parking; 0.55 ac. Driveway; 0.07 ac. Sidewalk; 1.27 a. Turf	Combined with Subwatershed A	0.18 ac. Sidewalk; 1.10 ac. Turf
Runoff Curve Numbers	[(3.16 x 80) + (0.46 x 98)]/3.62 RCN = 82	[(1.27 x 80) + (0.24 x 98) + (0.85 x 98)]/2.360 RCN = 88	Combined with Subwatershed A	[(1.10 x 80) + (0.18 X 98)]/1.28 RCN = 83
Conveyance Systems Types	Sheet and shallow flow	Storm sewer	Sheet and shallow flow	Sheet and shallow flow; Grass swale; Storm sewer
Summary of Average Conveyance System Data	Sheet and shallow flow	12-15" ADS N-12 Soil Tite pipe	Sheet and shallow flow	2' deep swale; 8" ADS N-12 Soil Tite pipe
Time of Concentration *(Tc) (see attached map & worksheets)*	12.50 min.	12.20 min.	Combined with Subwatershed A	6.80 min.
25% of 2-yr 24-hr post-dev runoff volume	N/A	0.75 ac. ft.	N/A	0.31 ac. ft.
1-year/24 hour Runoff Volume	Not analyzed	Not analyzed	Not analyzed	Not analyzed
2-yr./24 hour Peak Flow *(see attached hydrographs)*	5.804 cfs	5.143 cfs	Combined with Subwatershed A	2.579 cfs
10-yr./24 hour Peak Flow	10.410 cfs	8.338 cfs	Combined with Subwatershed A	4.502 cfs
100-yr./24 hour Peak Flow	20.820 cfs	15.210 cfs	Combined with Subwatershed A	8.807 cfs

Exhibit D (continued)

Practice Design Summary. The following table summarizes the data used to design dry detention basin #1.

Design Element	Design Data
Site assessment data: (see attached maps)	
Contributing drainage area to basin (subwatershed A & B)	2.36 acres
Distance to nearest private well (including off-site wells)	> 100 l.f.
Distance to municipal well (including off-site wells)	> 1200 l.f.
Wellhead protection area involved?	No
Ground slope at site of proposed basin	25%
Any buried or overhead utilities in the area?	No
Proposed outfall conveyance system/discharge (w/ distances)	81 l.f. to Genesee Road 350 l.f. to Fox River flood plain
Any downstream roads or other structures? (describe)	Yes – storm sewer
Floodplain, shoreland or wetlands?	Yes – across Genesee Road
Soil investigation data (see attached map & soil logs):	
Number of soil investigations completed	3 (in basin area)
Do elevations of test holes extend 3 ft. below proposed bottom?	Yes (see map)
Average soil texture at pond bottom elevation (USDA)	Clay loam
Distance from pond bottom to bedrock	> 5 l.f.
Distance from pond bottom to seasonal water table	Pond bottom 2 ft. below mottling No water observed in test holes
General basin design data (see attached detailed drawings):	
Permanent pool surface area	NA – dry pond
Design permanent pool water surface elevation	elev. 21.0
Top of berm elevation (after settling) and width	elev. 25.0 / NA on width
Length/width (dimensions/ratio)	168 l.f. (L) x 38 l.f. (W) = 4.4:1
Safety shelf design (length, grade, max. depth)	NA – dry pond
Ave. water depth (minus safety shelf/sediment)	NA – dry pond
Sediment forebay size & depth	NA – dry pond
Sediment storage depth & design maintenance	NA – dry poind

Design Basin Inflow, Outflow & Storage Data
(see attached hydrographs and detail drawings)

Inflow Peak/Volume	Maximum Outflow Rate	Max. Water Elevation	Storage Volume at Max. Elev. (above perm. pool)	Outflow Control Structures*
1-yr./24 hr. (volume)	Not analyzed	Not analyzed	Not analyzed	Not analyzed
2.55 cfs (Post 2-yr./24 hr. peak)	2.55 cfs	22.04 ft.	3.1 acre feet	#1
72 cfs (Post 10-yr./24 hr. peak)	35 cfs	903.0 ft.	4.5 acre feet	#1
171 cfs (Post 100-yr./24 hr. peak)	143 cfs	904.0 ft.	6.0 acre feet	#1

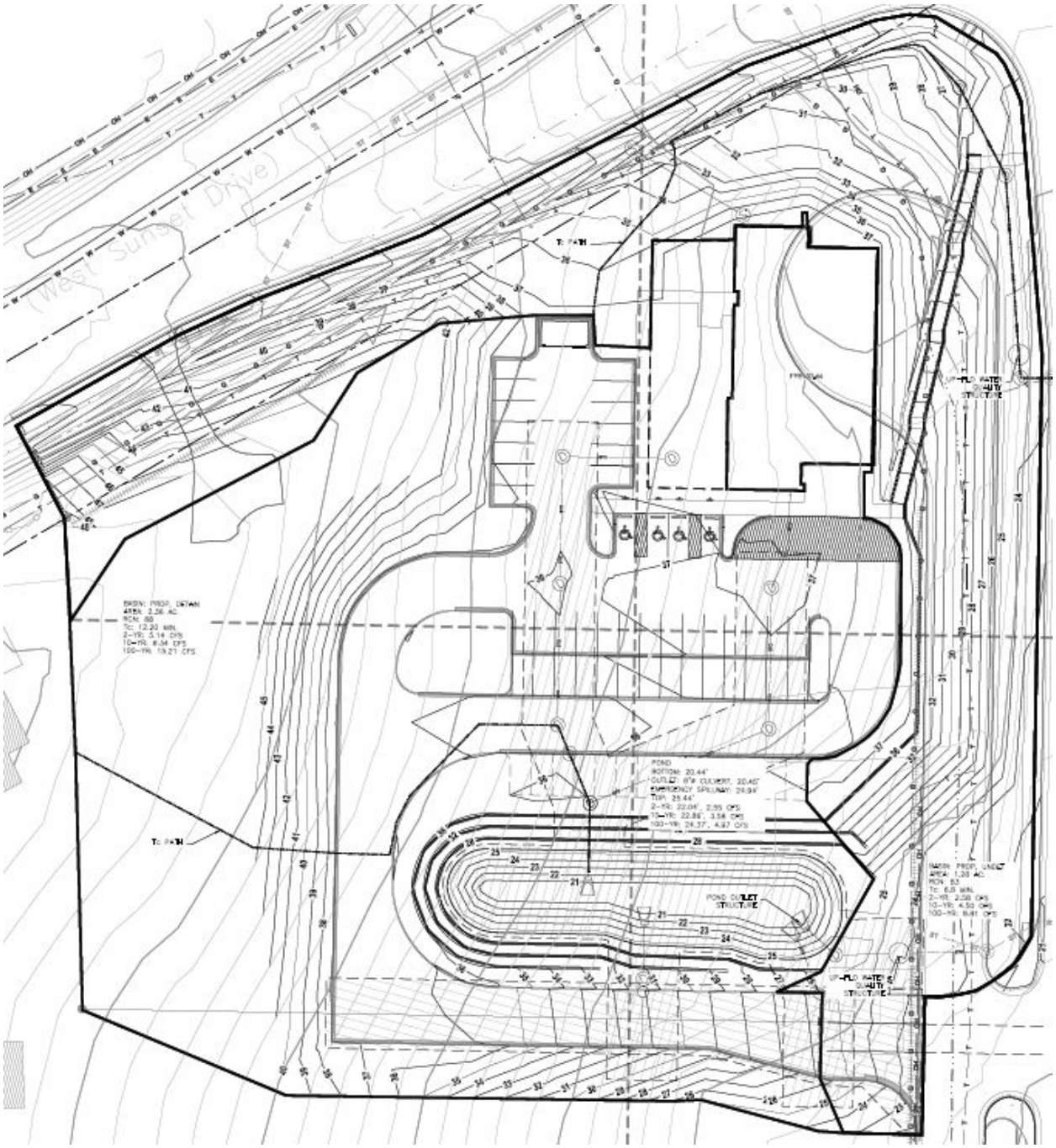
* #1 = 8 inch dia. ADS N-12 HDPE pipe

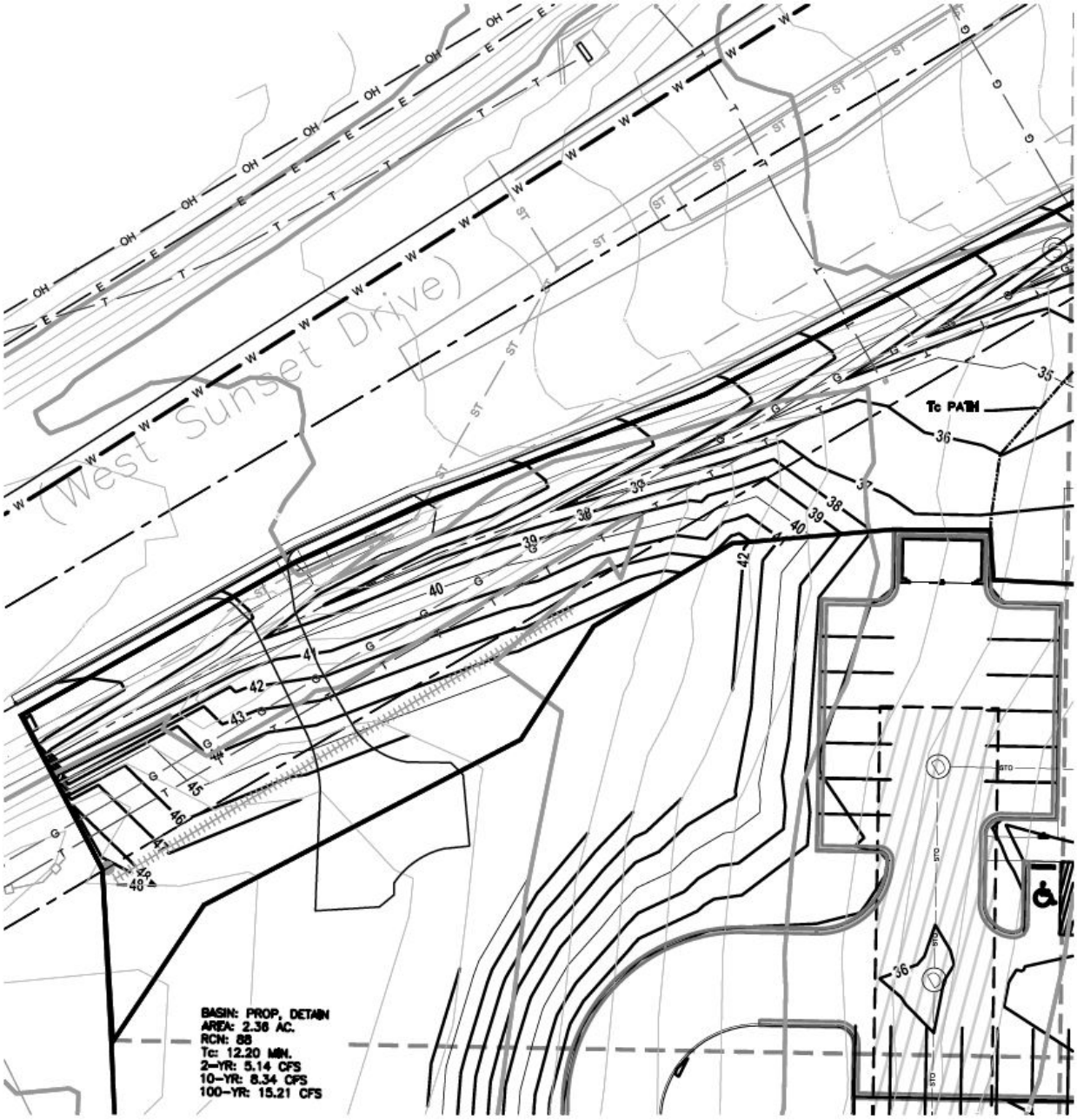
Exhibit D (continued)

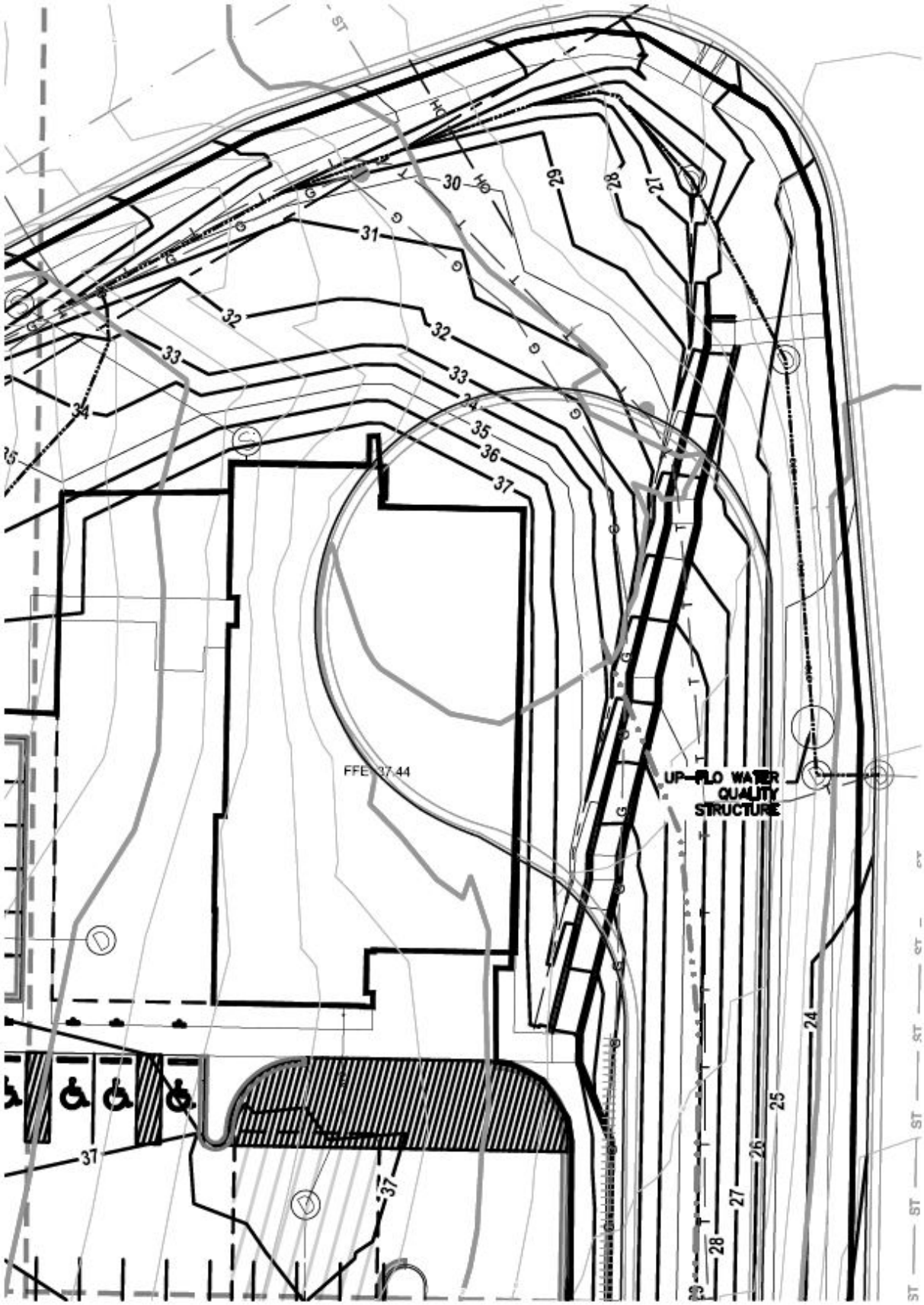
Watershed Map. The watershed map shown below was used to determine the post-development data contained in this exhibit. The post-developed watershed areas are the same as the pre-development watershed areas for this project.

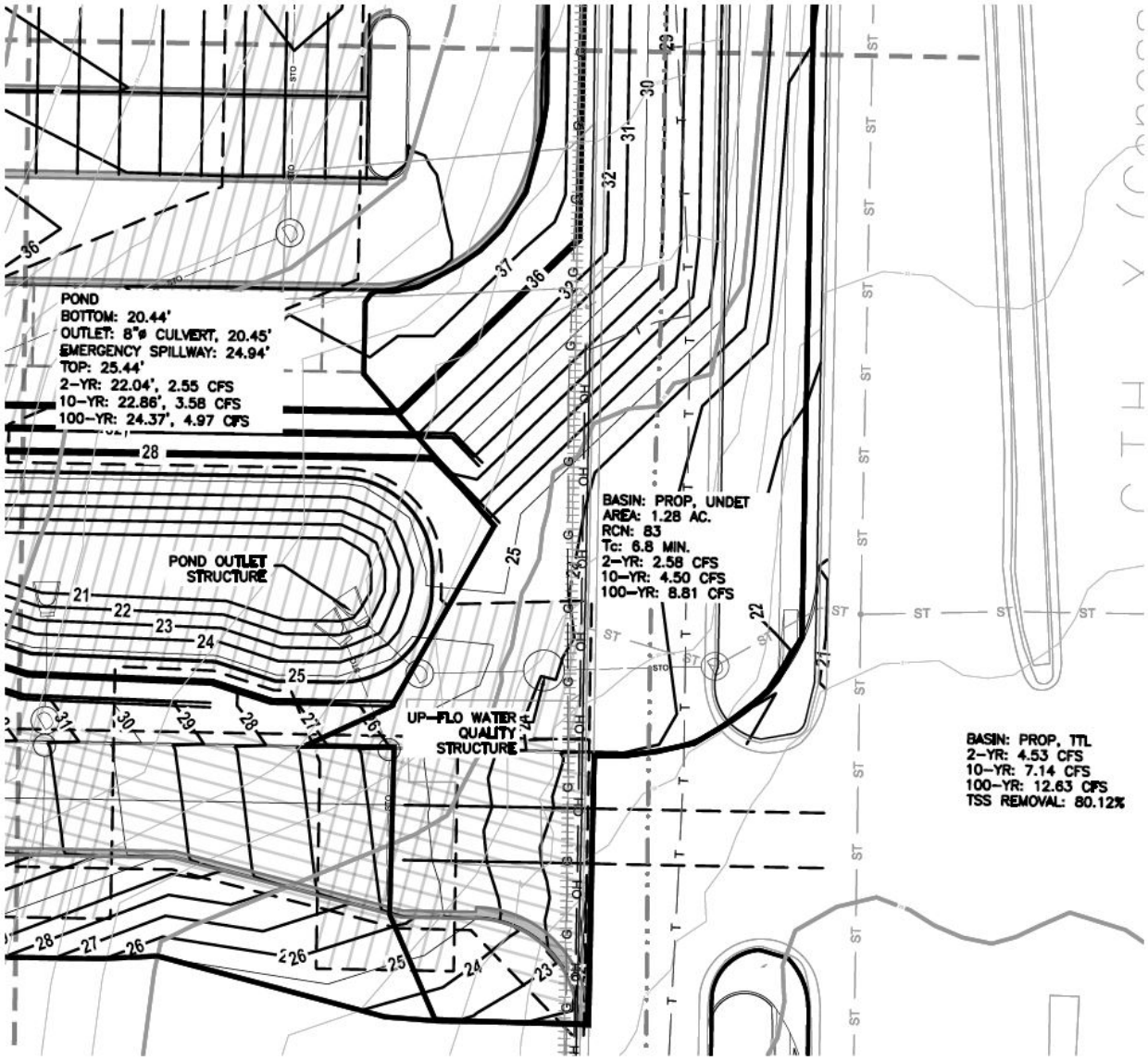
Froedtert Sunset Drive Clinic

See Pages 47-50 in this Agreement for enlargements of this Exhibit.




(West Sunset Drive)
To PATH
BASIN: PROP. DETAIN
AREA: 2.36 AC.
RCN: 88
Tc: 12.20 MIN.
2-YR: 5.14 CFS
10-YR: 8.34 CFS
100-YR: 15.21 CFS


FFE 37.44
UP-FLO WATER QUALITY STRUCTURE


POND
BOTTOM: 20.44'
OUTLET: 8"ø CULVERT, 20.45'
EMERGENCY SPILLWAY: 24.94'
TOP: 25.44'
2-YR: 22.04', 2.55 CFS
10-YR: 22.86', 3.58 CFS
100-YR: 24.37', 4.97 CFS
POND OUTLET STRUCTURE
BASIN: PROP, UNDET
AREA: 1.28 AC.
RCN: 83
Tc: 6.8 MIN.
2-YR: 2.58 CFS
10-YR: 4.50 CFS
100-YR: 8.81 CFS
UP-FLO WATER QUALITY STRUCTURE
BASIN: PROP, TTL
2-YR: 4.53 CFS
10-YR: 7.14 CFS
100-YR: 12.63 CFS
TSS REMOVAL: 80.12%

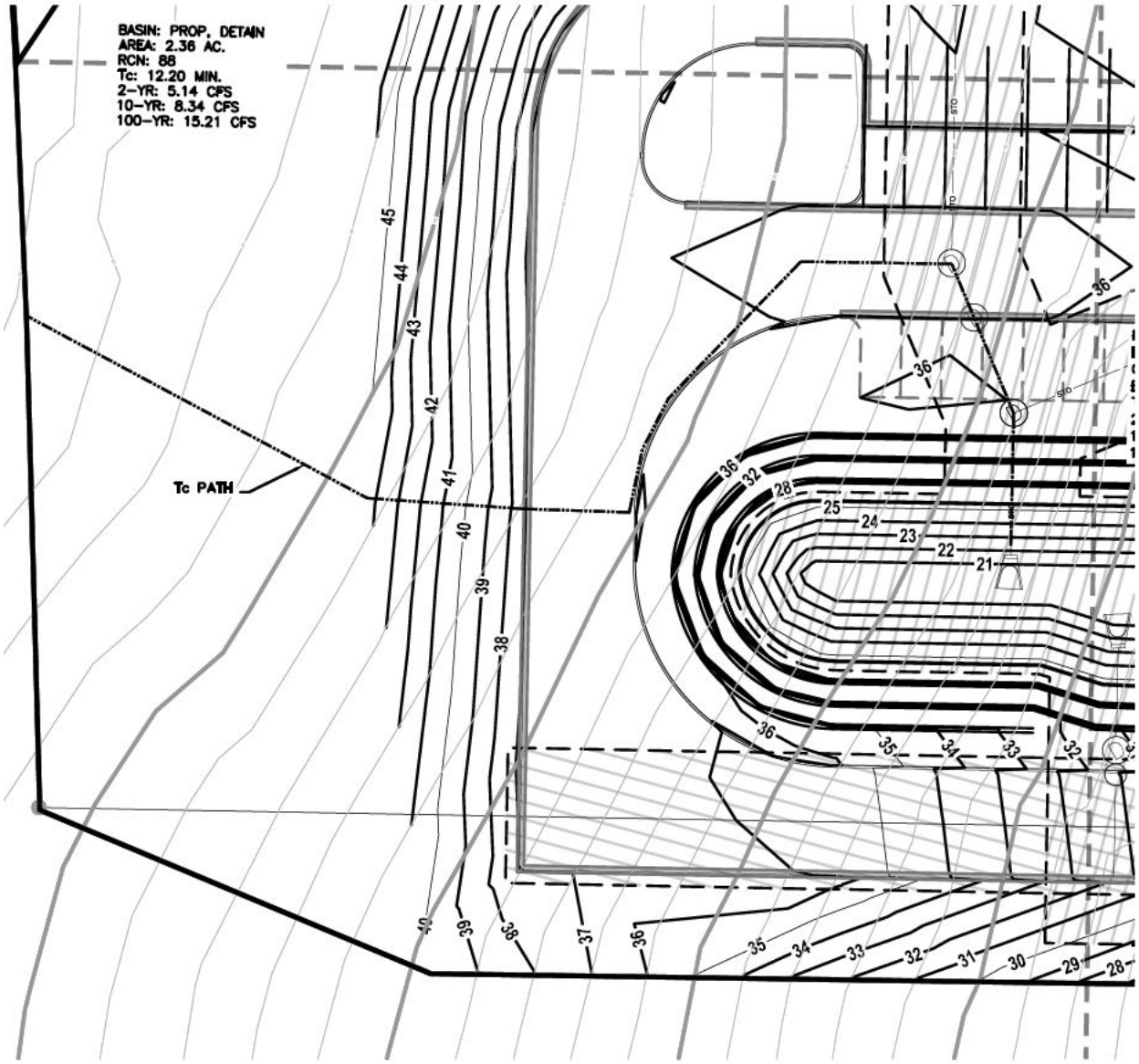

BASIN: PROP. DETAIN
AREA: 2.36 AC.
RCN: 88
Tc: 12.20 MIN.
2-YR: 5.14 CFS
10-YR: 8.34 CFS
100-YR: 15.21 CFS
Tc PATH

Exhibit E
As-built Survey for Dry Detention Basin #1

The wet detention basin depicted in Figure 1 is a reduced copy of the as-built plan.

Project Identifier:	Froedtert Sunset Drive Health Clinic
Storm water Practice:	Dry Detention Basin #1
Location of Practice:	Being Lot 1 and Lot 2 of Certified Survey Map No. 11089, and part of the Northeast 1/4 of the Northeast 1/4, all in Section 17, Town 6 North, Range 19 East, City of Waukesha, County of Waukesha, State of Wisconsin.
Owners of Outlot 1:	Froedtert Health, Inc.

Exhibit E con't

Figure 2: Cross-Section A – A'

Figure 3: Outlet Structure

Exhibit "F"
Engineering/Construction Verification

DATE: _____

TO: City of Waukesha

FROM: Engineer: Oneida Total Integrated Enterprises (OTIE)
Surveyor: The Sigma Group

RE: Engineering/Construction Verification for the following project:

Project Name: Froedtert Sunset Drive Health Clinic

Section 17, City of Waukesha

Storm Water Management & Erosion Control Permit # _____

Storm Water Management Practices: Dry Pond and 2 Up-Flow Water Quality Structures

For the above-referenced project and storm water management practices, this correspondence shall serve as verification that: 1) all site inspections outlined in approved inspection plans have been successfully completed; and 2) the storm water management practice design data presented in Exhibit D, and the "as-built" construction documentation presented in Exhibit E comply with all applicable state and local technical standards, in accordance with the City of Waukesha Storm Water Management and Erosion Control Ordinance.

[Must include one of the following two statements:]

1. Any variations from the originally approved construction plans are noted in Exhibit E. These variations are considered to be within the tolerances of standard construction techniques and do not affect the original design as presented in Exhibit D in any way.
[Note: The City may request additional documentation to support this statement depending on the extent of deviations from the approved plans.]

Or

2. Any design or construction changes from the originally approved construction plans are documented in Exhibits D and E and have been approved by the City of Waukesha.

[Note: If warm season and wetland planting verification is required, it may be included in this exhibit.]

(Signed P.E. stamp must be included)

Exhibit G
Storm Water Management and Erosion Control Permit Termination

Project Identifier: Froedtert Sunset Drive Health Clinic

Location: Being Lot 1 and Lot 2 of Certified Survey Map No. 11089, and part of the Northeast 1/4 of the Northeast 1/4, all in Section 17, Town 6 North, Range 19 East, City of Waukesha, County of Waukesha, State of Wisconsin.

Storm Water Management and Erosion Control Permit Holder's Name: Froedtert Health, Inc.

Storm Water Management & Erosion Control Permit #: _____

Chapter 32 – City of Waukesha Storm Water Management and Erosion Control requires that all newly constructed storm water management practices be maintained by the Storm Water and Erosion Control Permit Holder until permit termination, after which maintenance responsibilities shall be transferred to the responsible party identified on the certified survey map and referenced in this Maintenance Agreement.

Upon execution below, this exhibit shall serve to certify that the Storm Water Permit Holder has satisfied all requirements of the Storm Water Management and Erosion Control Ordinance and that the City of Waukesha has terminated the Storm Water Management and Erosion Control Permit for the property covered by this Maintenance Agreement.

Dated this ___ day of _____, 201_.

City of Waukesha representative:

_____
(Signature)

_____

(Typed Name and Title)

Acknowledgements

State of Wisconsin
County of Waukesha

Personally came before me this ____ day of _____, 201_, the above named _____ to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____.
[Name]
Notary Public, Waukesha County, WI
My commission expires: _____