

Permit Application No.: **18-147**

Rules: **Erosion Control, Stormwater Management**

Applicant: **3100 MSP**
Project: **LakeHaus Multifamily Development**
Location: **3100 West Lake Street**

Received: **3/19/2018**
Complete: **4/6/2018**
Noticed: **5/10/2018**

Recommendation:

Approval of MCWD permit application on the following conditions:

1. Submission of financial assurance for Erosion Control (\$1,500) and Stormwater Management (\$2,000);
2. Submission of a draft declaration for maintenance of stormwater facilities, for MCWD approval, then recordation;
3. Reimbursement of MCWD costs;
4. Identification of contractor responsible for maintenance of erosion control plan;
5. Submission of documentation of submission of NPDES permit application;

Background

3100 MSP has applied for a Minnehaha Creek Watershed District permit for Erosion Control and Stormwater Management for the construction of a multifamily housing development located at 3100 West Lake Street in the City of Minneapolis.

No variances from MCWD rule provisions are needed for approval of the permit. The permit is before the Board of Managers at the request of a member of the public. During the Public Notice period, a member of the public expressed concern related to stormwater-management systems installed for prior nearby developments, which reportedly resulted in excess and/or altered flow to neighboring properties and legal conflict among property owners and developers.

District Rule Summary

Erosion Control

The District exercises regulatory authority for erosion control in the City of Minneapolis. The Erosion Control rule is applicable for any project exceeding 5,000 square feet of land disturbance or 50 cubic yards of excavation, fill, or stockpiling. The proposed project involves approximately 1.7 acres of land disturbance, therefore the Erosion Control Rule is triggered.

The Applicant has submitted an erosion control plan which provides best management practices to achieve erosion and sediment control including a rock construction entrance, silt fence and inlet protection where necessary. A vegetative stabilization plan including the incorporation of six-inches of topsoil into underlying soils prior to final stabilization has also been provided. The Project's concrete washout will be located on site with an impermeable liner. A Minnesota Pollution Control Agency National Discharge Elimination System (NPDES)/State Disposal System (SDS) stormwater permit for construction activity will be obtained by the applicant prior to the start of construction as mentioned in the Conditions listed in this report.

Upon satisfaction of recommended conditions, the erosion control practices meet District requirements.

Stormwater Management

The District exercises regulatory authority for Stormwater Management in the City of Minneapolis. The Stormwater Management rule is applicable anytime there is new impervious surface or replacement of existing impervious surface. The project proposes the replacement of 0.96 acres of impervious surface with 1.15 acres of impervious surface on a 1.65 acre site.

For sites undergoing redevelopment that are greater than one acre with more than 40% site disturbance volume control, rate control, and phosphorus control requirements apply to the entire site's impervious surfaces.

Table 1: Treatment Scope Summary

Size of Site (ac)	Site Drains To	Existing Impervious (ac)	Proposed Impervious (ac)	Disturbance Area (ac)
1.7	Bde Maka Ska	1.0	1.2	1.7

To meet the District’s volume control requirement, the applicant must abstract the first 1 inch of rainfall over the site’s impervious area. To meet the District requirements, the project is required to provide 4,171 cf of abstraction. To achieve this, the applicant is proposing to install an underground infiltration system in an area with permeable soils and a filtration system in an area with clay soils totaling 4,304 cf of abstraction. The underground systems will discharge to the stormsewer on West Lake Street which drains to Bde Maka Ska. The underground system is designed to draw down within 48 hours. By providing the required volume abstraction, the District’s Phosphorus Control requirement is met according to Section 3(a)(2).

Table 2: Abstraction

Practice	Treatment Volume	Abstraction Credit	Abstraction Volume
Infiltration System	978 cf	100%	978 cf
Filtration System	6,652 cf	50%	3,326 cf
Total			4,304 cf

The rate control requirement mandates that there can be no net increase in the peak runoff rates for the 1, 10, and 100 year events. Runoff from the site is discharges to stormsewer in West Lake Street, which is the downgradient property site boundary for the purposes of rate control analysis. The peak runoff rates for all storm events decrease to the stormsewer inlet, as shown in Table 3. The District’s rate control requirement is met.

Table 3: Run off rates (cubic feet per second)

	1 year event		10 year event		100 year event	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
West Lake Street	0.7	0.4	12.9	9.31	22.4	22.3

The freeboard criterion in subsection 3e of the rule requires two vertical feet of separation between the low openings of structures and the 100-year high water elevations of stormwater BMPs. The high water elevation for the underground system is 873.9 and the low opening to the building is 878.5. Therefore, the high water elevation section of the rule is met.

Section 8 of the rule regulates new point sources to waterbodies and the allowable bounce and inundation for downstream waterbodies. The project does not propose a new point source directly to a waterbody. The downstream waterbody is Bde Maka Ska. Due to the large size of the lake and the limited increase in runoff volume, the District Engineer did not require the applicant to model the downstream impact.

The maintenance requirement of the rule requires applicants to record declarations for maintenance of stormwater facilities to the property. Recordation of a maintenance declaration is listed in the recommended conditions.

Upon satisfaction of recommended conditions, the proposed stormwater management plan meets the requirements of the District’s Stormwater Management Rule.

Summary:

3100 MSP is proposing a multifamily housing development that will trigger the District’s Erosion Control and Stormwater Management rules. The project as proposed meets the applicable requirements under each of these District rules. Staff recommends approval of the MCWD permit application with the conditions provided above.

Attachments:

1. Permit Application
2. Site Location
3. Erosion Control Plan
4. Stormwater Management Plan

18-147

WATER RESOURCE PERMIT APPLICATION FORM

Use this form to notify/apply to the Minnehaha Creek Watershed District (MCWD) of a proposed project or work which may fall within their jurisdiction. Fill out this form completely and submit with your site plan, maps, etc. to the MCWD at:

15320 Minnetonka Blvd. Minnetonka, MN 55345.

Keep a copy for your records.

YOU MUST OBTAIN ALL REQUIRED AUTHORIZATIONS BEFORE BEGINNING WORK.

1. Name of each property owner: 3100 MSP, LLC
 Mailing Address: 1530 Pine Street, Suite 1 City: Boulder State: CO Zip: 80302
 Email Address: jeff@studiodevelopmentservices.com Phone: (720) 771-0516 Fax: _____

2. Property Owner Representative Information (not required) (licensed contractor, architect, engineer, etc...)
 Business Name: Kimley-Horn & Associates Representative Name: Trisha Sieh
 Business Address: 2550 University Ave. West City: St. Paul State: MN Zip: 55114
 Email Address: trisha.sieh@kimley-horn.com Phone: (651) 645-4197 Fax: _____

3. Project Address: 3100 West Lake Street City: Minneapolis
 State: MN Zip: 55416 Qtr Section(s): _____ Section(s): 32 Township(s): 29N Range(s): 24W
 Lot: _____ Block: _____ Subdivision: _____ PID: 3202924430382

4. Size of project parcel (square feet or acres): 1.651 Acres
 Area of disturbance (square feet): 1.66 Acres Volume of excavation/fill (cubic yards): 40,000 CY
 Area of existing impervious surface: 0.96 Acres Area of proposed impervious surface: 1.15 Acres
 Length of shoreline affected (feet): 0 Ft Waterbody (& bay if applicable): N/A

5. Type of permit being applied for (Check all that apply):
 EROSION CONTROL WATERBODY CROSSINGS/STRUCTURES
 FLOODPLAIN ALTERATION STORMWATER MANAGEMENT
 WETLAND PROTECTION APPROPRIATIONS
 DREDGING ILLICIT DISCHARGE
 SHORELINE/STREAMBANK STABILIZATION

6. Project purpose (Check all that apply):
 SINGLE FAMILY HOME MULTI FAMILY RESIDENTIAL (apartments)
 ROAD CONSTRUCTION COMMERCIAL or INSTITUTIONAL
 UTILITIES SUBDIVISIONS (include number of lots)
 DREDGING LANDSCAPING (pools, berms, etc.)
 SHORELINE/STREAMBANK STABILIZATION OTHER (DESCRIBE): _____

7. NPDES/SDS General Stormwater Permit Number (if applicable): _____

8. Waterbody receiving runoff from site: Bde Maka Ska Lake

9. Project Timeline: Start Date: 6/1/2018 Completion Date: 6/1/2019

Permits have been applied for: City County MN Pollution Control Agency DNR COE
 Permits have been received: City County MN Pollution Control Agency DNR COE

By signing below, I hereby request a permit to authorize the activities described herein. I certify that I am familiar with MCWD Rules and that the proposed activity will be conducted in compliance with these Rules. I am familiar with the information contained in this application and, to the best of my knowledge and belief, all information is true, complete and accurate. I understand that proceeding with work before all required authorizations are obtained may be subject to federal, state and/or local administrative, civil and/or criminal penalties.

Signature of Each Property Owner: [Signature] Date: 3/19/2018

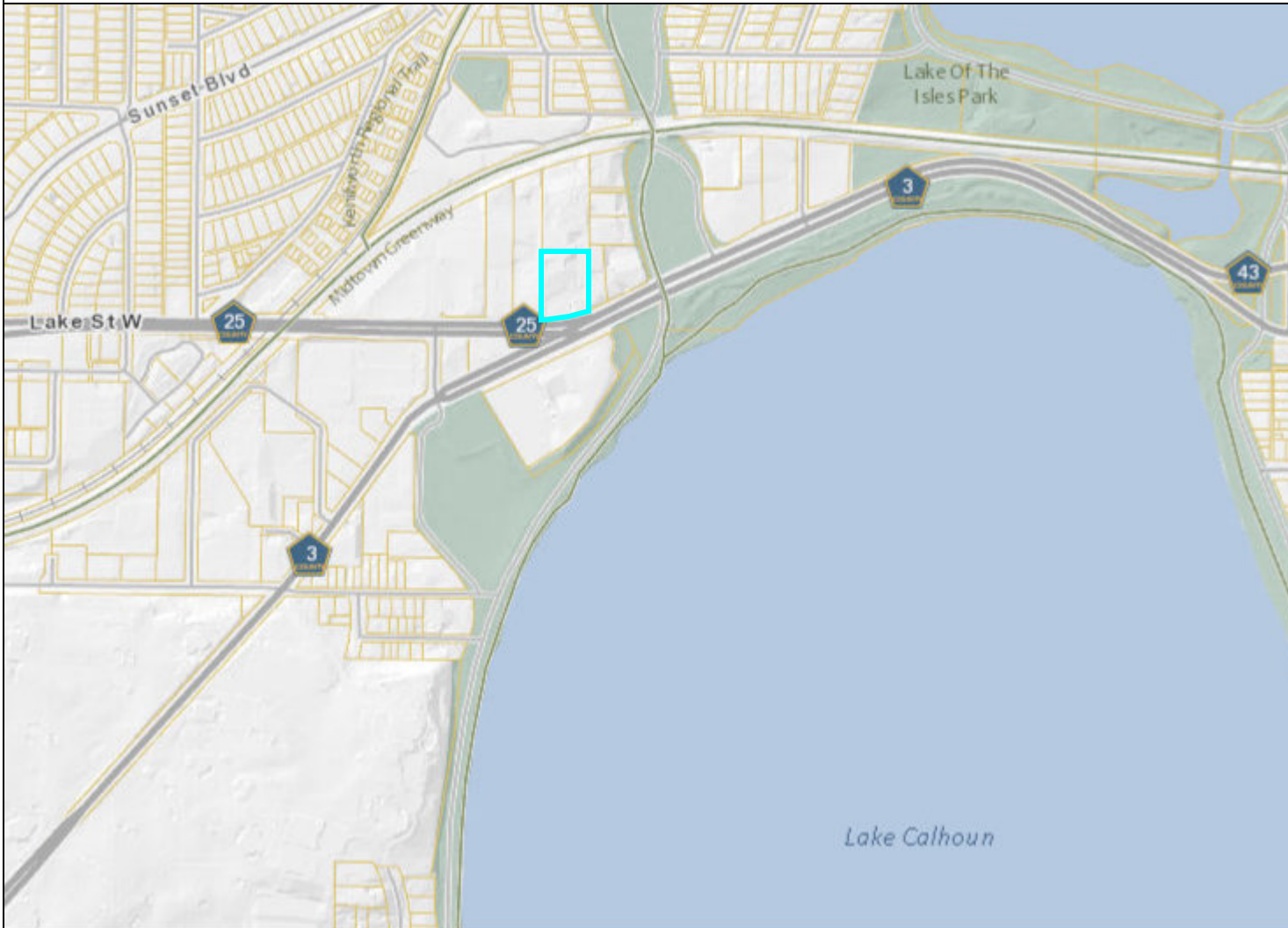




Hennepin County Natural Resources Map

Date: 5/21/2018

Legend



PID: 3202924430382
Address: 3100 LAKE ST W,
MINNEAPOLIS
Owner Name: 3100 MSP LLC
Acres: 1.61

Comments:
3100 West Lake Street, Minneapolis

1 inch = 800 feet



This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota.

Signature
TRISHA SIEH
 Typed or Printed Name
49848 5/1/18
 License # Date

FINAL PRELIMINARY DEVELOPMENT REVIEW - 04/19/2018

ORIGINAL ISSUE:
 5/24/2017

Revisions:	No.	Description	Date
	1	PDR SUBMITTAL	5/24/17
	2	LUA SUBMITTAL	6/15/17
	3	LUA UPDATE	7/18/17
	4	LUA UPDATE	8/23/17
	5	100% DD	3/02/18
	6	PDR RESUBMITTAL	3/14/18
	7	PDR RESUBMITTAL	4/04/18
	8	FTG & FNDTN	4/06/18
	9	PDR RESUBMITTAL	4/19/18
	10	MCES SUBMITTAL	5/01/18

215536
 PROJECT NUMBER

BRJ TDS
 DRAWN BY CHECKED BY

KEY PLAN

LAKEHAUS

PHASE I EROSION AND SEDIMENTATION CONTROL PLAN

C2.0

LEGEND

	PROPERTY LINE
	EXISTING CONTOUR
	ROCK ENTRANCE
	INLET PROTECTION
	LIMITS OF DISTURBANCE
	SILT FENCE
	FILTER LOG
	EXISTING SURFACE SLOPE
	EXISTING STORM SEWER

KEYNOTE LEGEND

	FILTER LOG
	TEMPORARY CONSTRUCTION ENTRANCE
	INLET PROTECTION
	LIMITS OF DISTURBANCE
	SILT FENCE
	CONCRETE WASHOUT PIT

SITE DATA TABLE - 3100 W. LAKE ST

TOTAL PROPERTY AREA	71,935 SF (1.65 AC)
PRE-DEVELOPMENT (GROUND FLOOR) PERVIOUS AREA	29,921 SF (0.69 AC) (42%)
PRE-DEVELOPMENT (GROUND FLOOR) IMPERVIOUS AREA	42,014 SF (0.96 AC) (58%)
POST-DEVELOPMENT (GROUND FLOOR) PERVIOUS AREA	21,870 SF (0.50 AC) (30%)
POST-DEVELOPMENT (GROUND FLOOR) IMPERVIOUS AREA	50,065 SF (1.15 AC) (70%)
POST PERVIOUS/IMPERVIOUS RATIO	0.435

EROSION CONTROL PLAN NOTES

- ALL PERIMETER SILT FENCE AND ROCK CONSTRUCTION ENTRANCES SHALL BE INSTALLED PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL CONSTRUCT DRAINAGE BASINS PRIOR TO SITE GRADING.
- THE CONTRACTOR SHALL INSTALL CATCH BASIN EROSION CONTROL MEASURES.
- WITHIN ONE WEEK (7 DAYS) OF SITE GRADING, ALL DISTURBED AREAS SHALL BE STABILIZED WITH SEED, SOD, OR ROCK BASE. REFER TO LANDSCAPE PLANS FOR MATERIALS.
- ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH CITY, STATE, AND WATERSHED DISTRICT PERMITS.
- THE CONTRACTOR SHALL MAINTAIN ALL EROSION CONTROL MEASURES, INCLUDING THE REMOVAL OF SILT IN FRONT OF SILT FENCES DURING THE DURATION OF THE CONSTRUCTION.
- ANY EXCESS SEDIMENT IN PROPOSED BASINS SHALL BE REMOVED BY THE CONTRACTOR.
- REMOVAL ALL EROSION CONTROL MEASURES AFTER VEGETATION IS ESTABLISHED.
- THE CONTRACTOR SHALL REMOVE ALL SOILS AND SEDIMENT TRACKED ONTO EXISTING STREETS AND PAVED AREAS AND SHALL SWEEP ADJACENT STREETS AS NECESSARY IN ACCORDANCE WITH CITY REQUIREMENTS.
- IF BLOWING DUST BECOMES A NUISANCE, THE CONTRACTOR SHALL APPLY WATER FROM A TANK TRUCK TO ALL CONSTRUCTION AREAS.

SEQUENCE OF CONSTRUCTION:

UPON IMPLEMENTATION AND INSTALLATION OF THE FOLLOWING AREAS: TRAILER, PARKING, LAYDOWN, PORTA-POTTY, WHEEL WASH, CONCRETE WASHOUT, FUEL AND MATERIAL STORAGE CONTAINERS, SOLID WASTE CONTAINERS, ETC., IMMEDIATELY DENOTE THEM ON THE SITE MAPS AND NOTE ANY CHANGES IN LOCATION AS THEY OCCUR THROUGHOUT THE CONSTRUCTION PROCESS.

BMP AND EROSION CONTROL INSTALLATION SEQUENCE SHALL BE AS FOLLOWS:

- INSTALL INLET PROTECTION AT EXISTING STORM SEWER INLETS.
- CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE (1), CONCRETE WASHOUT PIT (1) AND INSTALL SILT FENCE.
- PREPARE TEMPORARY PARKING AND STORAGE AREA.
- CONSTRUCT AND STABILIZE DIVERSIONS AND TEMPORARY SEDIMENT TRAPS.
- PERFORM CLEARING AND GRUBBING OF THE SITE. PERFORM MASS GRADING, ROUGH GRADE TO ESTABLISH PROPOSED DRAINAGE PATTERNS.
- START CONSTRUCTION OF THE BUILDING PAD AND STRUCTURES.
- TEMPORARILY SEED WITH PURE VINE SEED. THROUGHOUT CONSTRUCTION, DISTURBED AREAS THAT WILL BE INACTIVE FOR 7 DAYS OR MORE OR AS REQUIRED BY NPDES AND/OR CITY OF MINNEAPOLIS GRADING PERMIT.

SWPPP UPDATES AND AMENDMENTS

THE GC MUST UPDATE THE SWPPP, INCLUDING THE JOBSITE BINDER AND SITE MAPS, TO REFLECT THE PROGRESS OF CONSTRUCTION ACTIVITIES AND GENERAL CHANGES TO THE PROJECT SITE. UPDATES SHALL BE MADE DAILY TO TRACK PROGRESS WHEN ANY OF THE FOLLOWING ACTIVITIES OCCUR: BMP INSTALLATION, MODIFICATION OR REMOVAL, CONSTRUCTION ACTIVITIES (E.G., PAVING, STORM SEWER INSTALLATION, FOOTING INSTALLATION, ETC.), CLEARING, GRUBBING OR GRADING, OR TEMPORARY OR PERMANENT STABILIZATION.

SITE DISCHARGE
 RUNOFF WILL DISCHARGE INTO BDE MAKA SKA LAKE APPROXIMATELY 0.1 MILES SOUTHEAST OF THE SITE

LIMITS OF DISTURBANCE OFFSET FROM PROPERTY LINE FOR CLARITY UNLESS NOTED OTHERWISE. DISTURBANCE SHALL NOT ENCRUCH ON NEIGHBORING PROPERTIES WITHOUT APPROVAL.

EROSION AND SEDIMENT CONTROL NOTES

INSTALL PERIMETER EROSION CONTROLS AS INDICATED IN PLANS PRIOR TO START OF WORK. HAY BALES ARE NOT ALLOWED AS EROSION & SEDIMENT CONTROL DEVICE IN MINNEAPOLIS.

ESTABLISH ROCK CONSTRUCTION ENTRANCES PRIOR TO BEGINNING LAND DISTURBING ACTIVITIES. 1 1/2" - 3" WASHED AGGREGATE IS RECOMMENDED FOR ROCK ENTRANCES. A GEOTEXTILE FABRIC IS REQUIRED.

REMOVE ALL SOILS AND SEDIMENTS DEPOSITED ONTO PUBLIC AND/OR PRIVATE PAVEMENT AREAS WITHIN 24 HOURS OF DEPOSITION. REMOVAL OF TRACKING MATERIALS SHALL BE COMPLETED AT THE END OF EACH WORK DAY WHEN TRACKING OCCURS. SWEEPING MAY BE ORDERED AT ANY TIME IF CONDITIONS WARRANT. SWEEPING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION AND IN SUCH A MANNER TO PREVENT DUST BEING BLOWN TO ADJACENT PROPERTIES.

REMOVE ALL SOILS AND SEDIMENTS DEPOSITED ONTO PUBLIC AND/OR PRIVATE PAVEMENT AREAS WITHIN 24 HOURS OF DEPOSITION. REMOVAL OF TRACKING MATERIALS SHALL BE COMPLETED AT THE END OF EACH WORK DAY WHEN TRACKING OCCURS. SWEEPING MAY BE ORDERED AT ANY TIME IF CONDITIONS WARRANT. SWEEPING SHALL BE MAINTAINED THROUGHOUT THE DURATION OF CONSTRUCTION AND IN SUCH A MANNER TO PREVENT DUST BEING BLOWN TO ADJACENT PROPERTIES.

INSTALL INLET PROTECTION IN ALL DOWNSTREAM CATCH BASINS WHICH RECEIVE RUNOFF FROM THE DISTURBED AREA. CATCH BASIN INSERTS ARE REQUIRED AT ALL LOCATIONS NOT WITHIN THE DISTURBED AREA WHICH RECEIVE RUNOFF (MNDOT TYPE C INLET PROTECTION). NOTE HAY BALES AND SILT FENCE WRAPPED GRATES ARE NOT EFFECTIVE AND ARE NOT APPROVED FOR USE AS INLET PROTECTION DEVICES.

LOCATE ALL SOIL AND DIRT PILES NO LESS THAN 25 FEET FROM ANY PUBLIC OR PRIVATE ROADWAY OR DRAINAGE CHANNEL. ALL STOCK PILES THAT REMAIN IN PLACE FOR 7 DAYS OR MORE SHALL BE STABILIZED BY MULCHING, VEGETATIVE COVER, TARPING OR OTHER MEANS. TEMPORARY STOCK PILES LOCATED ON PAVED SURFACES MUST BE AT LEAST 2 FEET OR MORE AWAY FROM THE DRAINAGE/GUTTER LINE AND SHALL BE COVERED IF REMAINING MORE THAN 24 HOURS.

MAINTAIN ALL TEMPORARY EROSION CONTROL DEVICES IN PLACE UNTIL THE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED. INSPECT TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES ON A WEEKLY BASIS AND REPLACE DETERIORATED, DAMAGED OR ROTTED EROSION CONTROL DEVICES IMMEDIATELY.

MAINTENANCE OF EROSION AND SEDIMENT CONTROL DEVICES SHALL BE PERFORMED WHENEVER THE DEVICE IS 30% FULL. FAILURE TO MAINTAIN EROSION CONTROL DEVICES MAY LEAD TO FURTHER ENFORCEMENT ACTION. WEEKLY INSPECTIONS REQUIRED AND AFTER EACH 1/2" OR MORE RAIN EVENT WITHIN 24 HRS.

READY MIXED CONCRETE AND BATCH PLANT WASHOUTS PROHIBITED WITHIN THE PUBLIC RIGHT OF WAY. DESIGNATE CONCRETE WASHOUT AND MIXING LOCATIONS IN THE EROSION CONTROL PLANS. UNDER NO CIRCUMSTANCES MAY WASHOUT WATER DRAIN ONTO THE PUBLIC RIGHT OF WAY OR INTO THE PUBLIC STORM DRAIN.

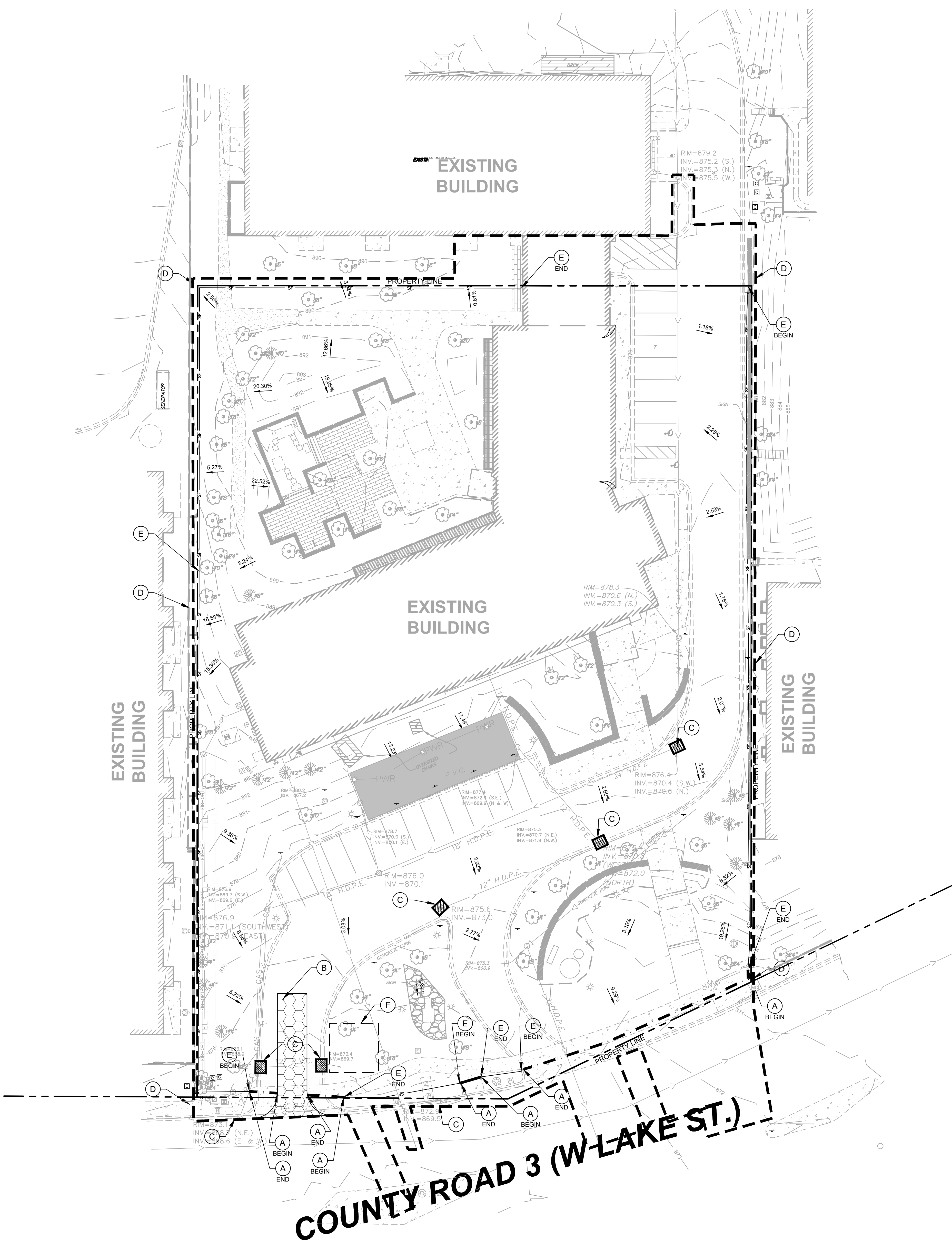
TEMPORARILY OR PERMANENTLY STABILIZE ALL DENUDED AREAS WHICH HAVE BEEN FINISH GRADED WITHIN 7-14 DAYS (SLOPE DEPENDENT). USE SEEDING AND MULCHING, EROSION CONTROL MATTING AND/OR SODDING WITH TEMPORARY STAKING IN GREEN SPACE AREAS. USE EARLY APPLICATION OF GRAVEL BASE FOR AREAS DESIGNATED FOR PAVED SURFACING.

REMOVE ALL TEMPORARY SYNTHETIC, STRUCTURAL AND NON-BIODEGRADABLE EROSION AND SEDIMENT CONTROL AFTER THE SITE HAS UNDERGONE FINAL STABILIZATION AND PERMANENT VEGETATION HAS BEEN ESTABLISHED. MINIMUM VEGETATION COVER OF 70% REQUIRED. ALL TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES SHALL BE MAINTAINED UNTIL THE SITE HAS 70% ESTABLISHED VEGETATIVE COVER AND ALL PAVED AREAS HAVE BEEN STABILIZED WITH THE SELECTED PAVEMENT TYPE.

ADDITIONAL EROSION CONTROL MAY BE REQUIRED BY OTHER PERMITTING AGENCIES. IT IS THE RESPONSIBILITY OF THE PROJECT ENGINEER TO VERIFY THAT THE CITY AND ALL OTHER AGENCY REQUIREMENTS ARE MET.

MINNEAPOLIS CUSTOM MNDOT SPEC. REF. 2573 NOT TO SCALE

	MINNEAPOLIS DEPARTMENT OF PUBLIC WORKS DRAWN: DCD DATE: 8/06 APPROVED: HRS DATE: 3/07	EROSION CONTROL NOTES STANDARD PLATE NO. SEWR-8007
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota.

Signature
TRISHA SIEH
Typed or Printed Name
49848 5/1/18
License # Date

FINAL PRELIMINARY DEVELOPMENT REVIEW - 04/19/2018

ORIGINAL ISSUE: 5/24/2017

REVISIONS:

No.	Description	Date
1	PDR SUBMITTAL	5/24/17
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8	FTG & FNDTN	4/04/18
9	PDR RESUBMITTAL	4/19/18
10	MCES SUBMITTAL	5/01/18

215536
PROJECT NUMBER

BRJ TDS
DRAWN BY CHECKED BY
KEY PLAN

LEGEND

- PROPERTY LINE
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED CATCH BASIN MANHOLE
- PROPOSED STORM SEWER
- PROPOSED SURFACE SLOPE
- PROPOSED SPOT ELEVATION
- MATCH EXISTING ELEVATION
- TOP CURB SPOT ELEVATION
- FINISHED GRADE AT TOP OF WALL
- FINISHED GRADE AT BOTTOM OF WALL
- BUILDING WALL RETAINING FILL ABOVE FFE
- PROPOSED UNDERGROUND STORMWATER SYSTEM
- EXISTING STORM SEWER

STORMWATER MANAGEMENT PLAN NOTES

- STORM SEWER PIPE SHALL BE AS FOLLOWS:
RCP PER ASTM C-76
HDPE: 0" - 10" PER AASHTO M-252
HDPE: 12" OR GREATER PER ASTM F-2306
PVC SCH 40 PER ASTM D-3034
STORM SEWER FITTINGS SHALL BE AS FOLLOWS:
RCP PER ASTM C-76, JOINTS PER ASTM C-361, C-990, AND C-443
HDPE PER ASTM 3212
PVC PER ASTM D-3034, JOINTS PER ASTM D-3212
- ALL STORM SEWER CONNECTIONS SHALL BE GASKETED AND WATER TIGHT INCLUDING MANHOLE CONNECTIONS.
- UNDERGROUND STORMWATER DETENTION SYSTEM REQUIREMENTS
 - REQUIRED WATER QUALITY VOLUME = 4,171 CF
 - PROPOSED WATER QUALITY VOLUME = 4,304 CF
 - BMP 1 (FILTRATION, 50% CREDIT) => 8,652 CF PROVIDES 3,326 CF OF WATER QUALITY VOLUME
 - BMP 2 = 978 CF
 - INFILTRATION DEPTH = 1.8' IN UNDERGROUND SYSTEMS TO ALLOW 48 HOUR DRAWDOWN
 - 40% VOID STONE SPACE
- ON-SITE DETENTION TO MEET RATE CONTROL AND WATER QUALITY CONTROL REQUIREMENTS PER THE CITY OF MINNEAPOLIS AND MINNEHAHA CREEK WATERSHED DISTRICT STANDARDS.
- DESIGN ASSUMES HYDROLOGIC SOIL GROUP (B) FOR SILTY SANDS ASSUMING A 0.45 IN/HR INFILTRATION RATE

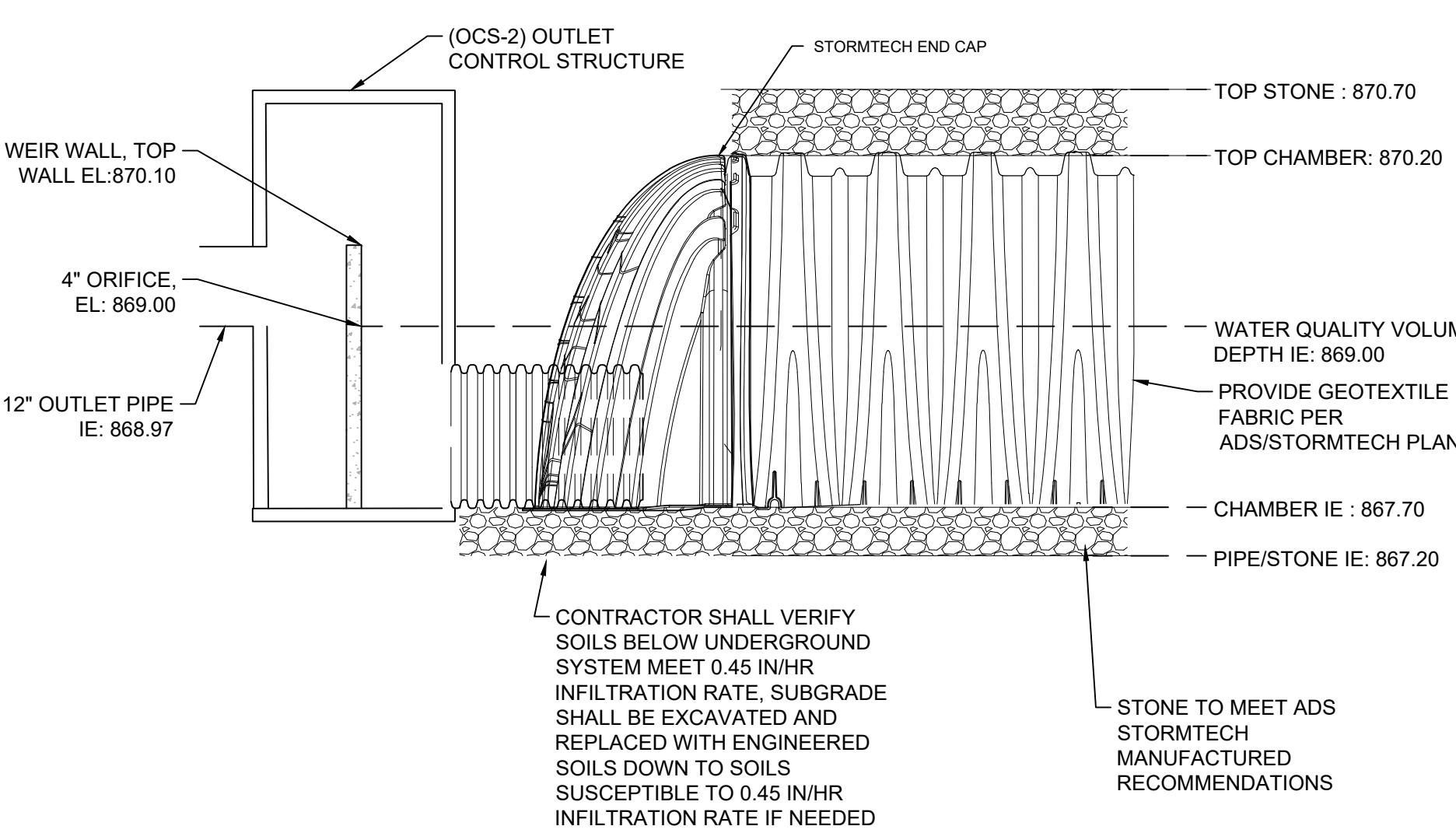
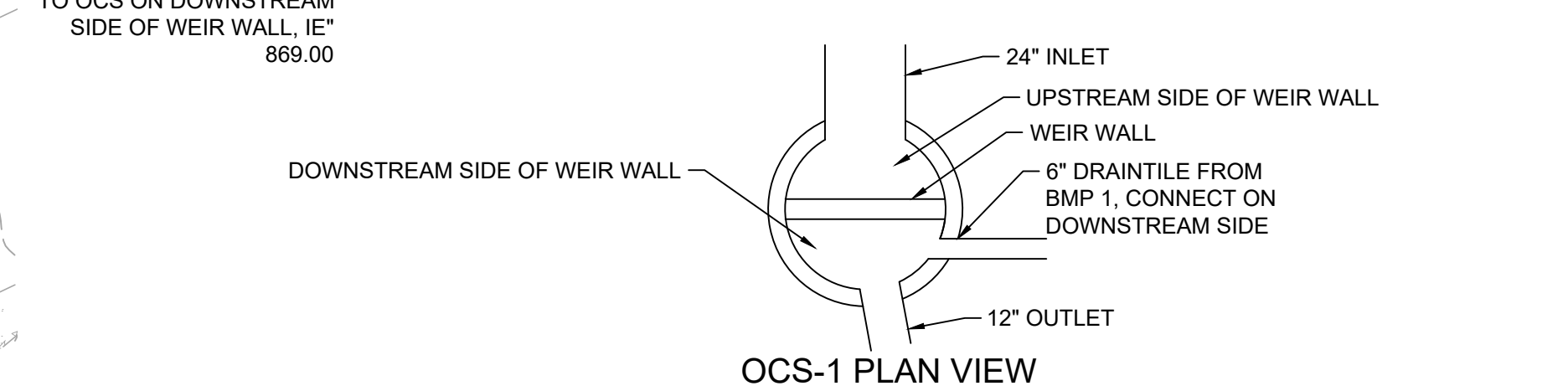
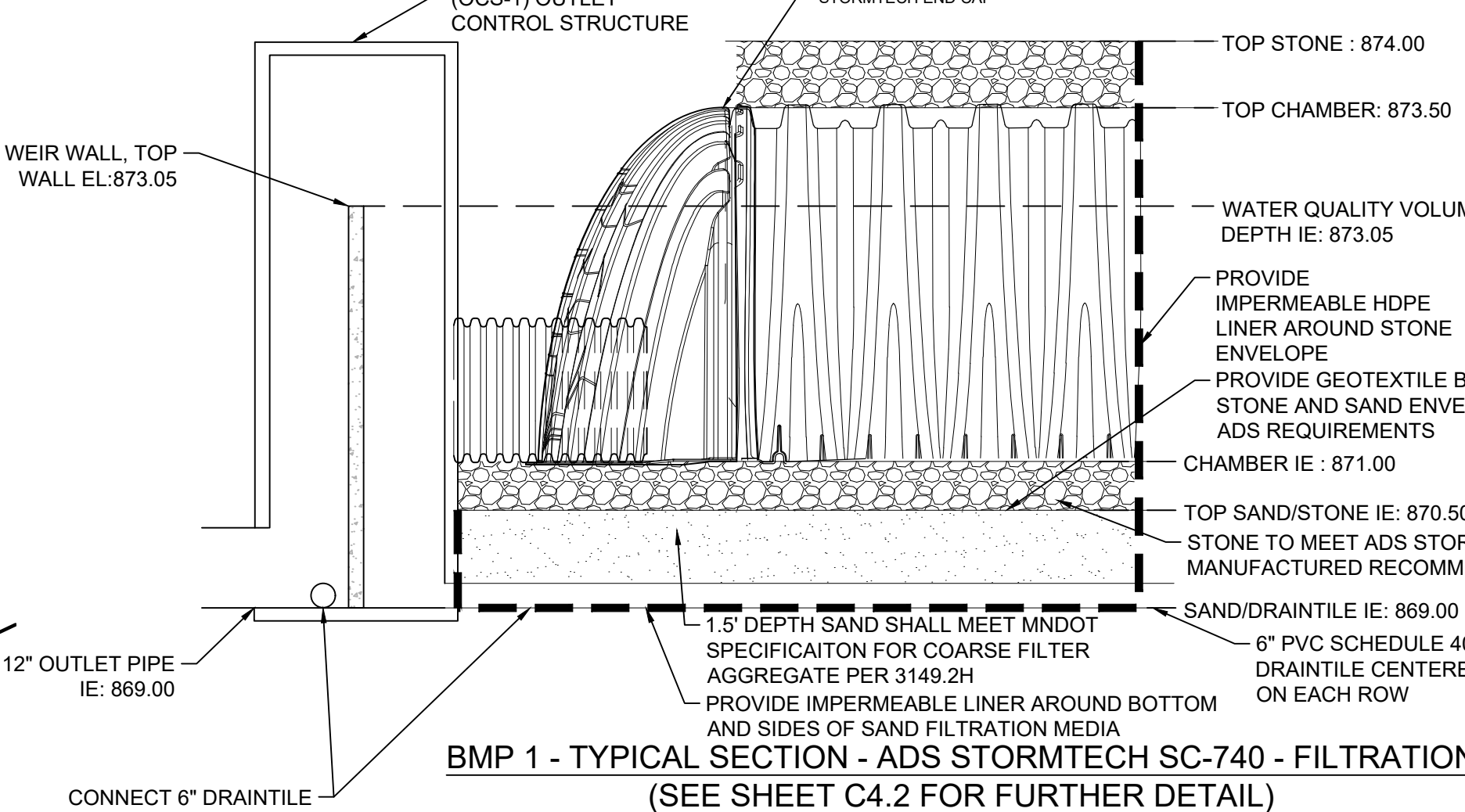
CITY OF MINNEAPOLIS - STORMWATER NOTES

THE CONTRACTOR, PROPERTY OWNER OR RESPONSIBLE PARTY SHALL CONTACT MINNEAPOLIS SURFACE WATERS AND SEWERS 48 HOURS PRIOR TO ANY EXCAVATION OR CONSTRUCTION RELATED TO OR IN THE LOCATION OF THE PROPOSED STORMWATER MANAGEMENT BMP'S (CONTACT PAUL CHELSEN 612-673-2406 OR PAUL.CHELSEN@MINNEAPOLISMN.GOV)

UPON THE PROJECT'S COMPLETION THE PROPERTY OWNER IS RESPONSIBLE TO PROVIDE TO THE DEPARTMENT OF PUBLIC WORKS A FINAL STORMWATER MANAGEMENT REPORT INCLUDING RECORD DRAWINGS. THIS REPORT WILL SERVE AS A MEANS OF VERIFICATION THAT THE INTERIM APPROVED STORMWATER MANAGEMENT DESIGN HAS BEEN MET. THIS FINAL REPORT SHALL SUBSTANTIATE THAT ALL ASPECTS OF THE ORIGINAL DESIGN HAS BEEN ADEQUATELY PROVIDED FOR BY THE CONSTRUCTION OF THE PROJECT.

STRUCTURE NO.	STRUCTURE/CASTING TYPE	RIM/GRADE ELEVATION	INVERT ELEVATION	PIPE SIZE IN	PIPE SLOPE IN	INVERT ELEVATION OUT	PIPE SIZE OUT	PIPE SLOPE OUT
EX-2	CONNECT TO EXISTING 15" HDPE	876.66				S 870.40	15"	0.50%
EX MH-1	EXISTING MANHOLE	873.10	N 868.60	15"	1.00%			
OCS-1	BMP #1 OCS NEENAH R-1792-FG OPEN GRATE	875.28	N 871.00	24"	0.00%	S 869.00	12"	1.00%
OCS-2	BMP #2 OCS NEENAH R-1792-FG OPEN GRATE	875.32	E 867.70	24"	0.00%	SW 868.97	12"	1.00%
STM-02	NEENAH R-1642 SOLID LID	873.62	E 869.43	15"	0.50%	W 869.28	15"	0.50%
STM-03	15'-30" BEND W/ CLEANOUT	872.39	NE 869.85	15"	0.50%	W 869.85	15"	0.50%
STM-04	15'-45" BEND W/ CLEANOUT	872.35	N 869.90	15"	0.50%	SW 869.90	15"	0.50%
STM-05	NEENAH R-1642 SOLID LID	875.70	N 868.84 E 868.83 NE 868.83	12" 12" 12"	1.00% 1.00% 1.00%	S 868.73	15"	1.00%
STM-06	48" Ø MH CONNECT TO UNDERGROUND, NEENAH R-1792-FG OPEN GRATE	861.50	N 872.41	12"	1.00%	S 876.70	24"	1.00%
STM-08	PRE-TREATMENT (S&L BUFFLE) MANHOLE W/4' SUMP NEENAH R-1642	873.89	E 868.04	12"	1.00%	W 867.91	24"	1.00%
STM-10	24" AREA DRAIN (NYLOPLAST)	872.50				N 868.00	10"	2.00%
STM-11	30" Ø POT PER SEWR-1017 NEENAH R-1792-FG OPEN GRATE	871.48				W 868.55	12"	1.00%
STM-12	24" AREA DRAIN (NYLOPLAST)	878.70				W 871.49	10"	2.00%
STM-15	24" AREA DRAIN (NYLOPLAST)	874.50				E 871.45	10"	2.00%

STRUCTURE NO.	STRUCTURE/CASTING TYPE	INVERT ELEVATION	PIPE SIZE IN	PIPE SLOPE IN	INVERT ELEVATION OUT	PIPE SIZE OUT	PIPE SLOPE OUT
STM-01	CONNECT TO UNDERGROUND (OUTLET)				S 871.00	24"	0.00%
STM-07	CONNECT TO UNDERGROUND (INLET)	E 867.88	24"	1.00%			
STM-09	CONNECT TO UNDERGROUND (OUTLET)				W 867.70	24"	0.00%
STM-13	CONNECT TO UNDERGROUND (INLET)	S 868.03	10"	2.00%			
STM-14	CONNECT TO UNDERGROUND (INLET)	E 871.33	10"	2.00%			
STM-16	CONNECT TO UNDERGROUND (INLET)	W 871.33	10"	2.00%			
STM-17	ROOF DRAIN STUB				S 873.73	12"	1.00%
STM-18	CONNECT TO UNDERGROUND (INLET)	N 876.61	24"	1.00%			
STM-19	ROOF DRAIN STUB				W 871.55	10"	2.00%
STM-20	CONNECT TO UNDERGROUND (INLET)	E 871.33	10"	2.00%			



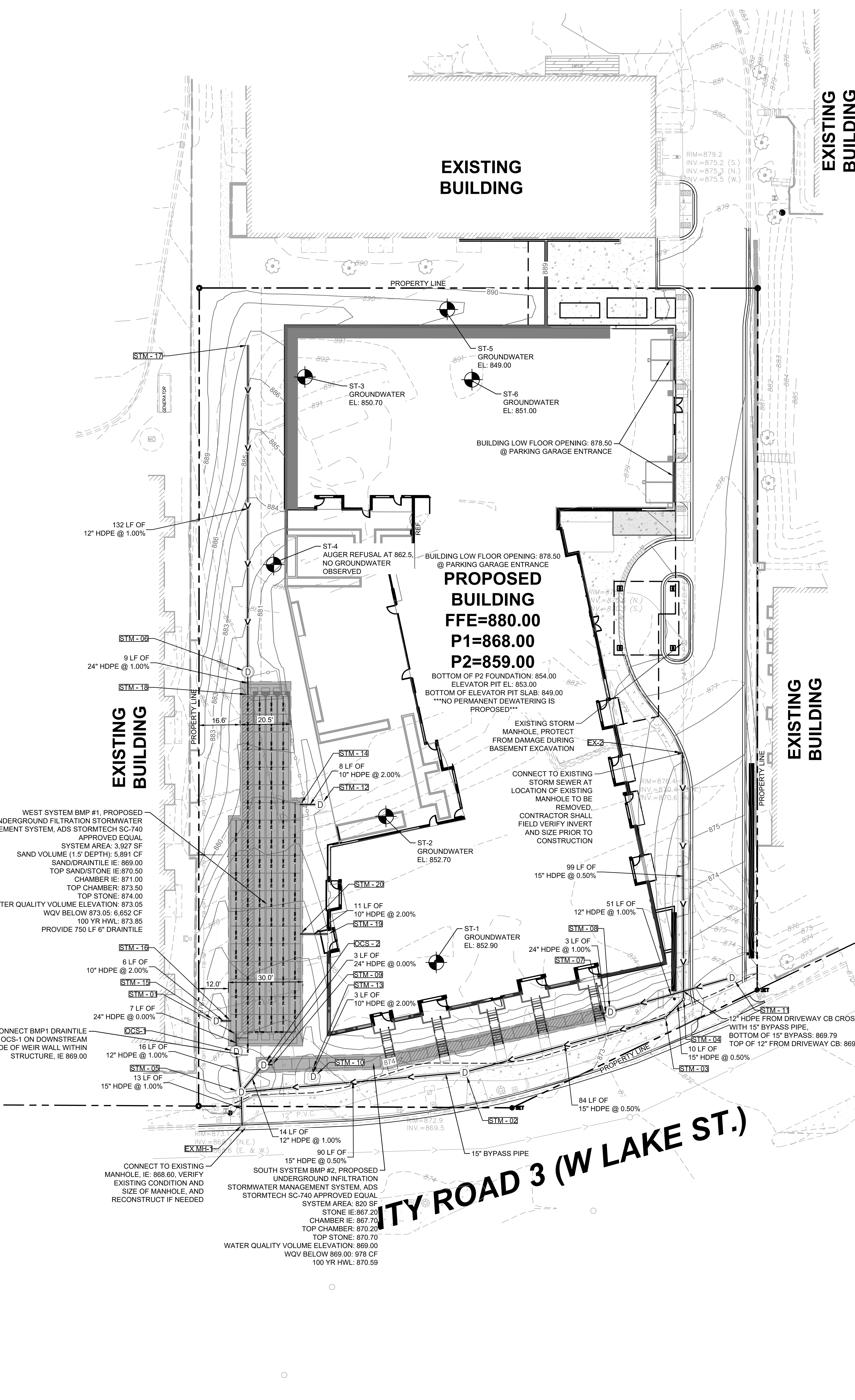
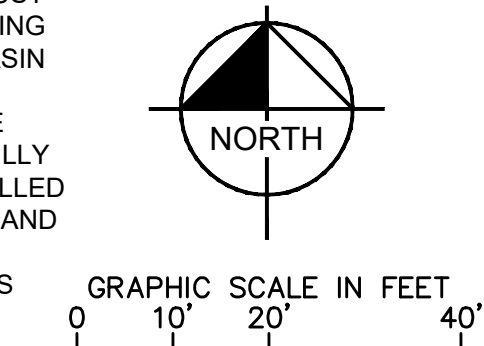
BMP 2 - TYPICAL SECTION - ADS STORMTECH SC-740 - INFILTRATION (SEE SHEET C4.2 FOR FURTHER DETAIL)

WEST SYSTEM - BMP 1 FILTRATION

- SAND FILTRATION MEDIA SHALL BE ENGINEERED SOIL MEETING THE SPECIFICATION OF MNDOT COARSE FILTER AGGREGATE PER SECTION 3149.2H
- UPON COMPLETION OF THE STORMWATER BMP AND FINAL STABILIZATION OF THE TRIBUTARY DRAINAGE AREA, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION OF THE BMP AFTER SIGNIFICANT RAIN EVENTS THAT SHOW THE BMP HAS DRAWN DOWN WITHIN 48 HOURS
- CONTRACTOR SHALL COMPACT SUBGRADE BENEATH SAND FILTRATION MEDIA
- FINAL EXCAVATION OF FILTRATION BASIN AND INSTALLATION/INCORPORATION OF SOIL-MEDIA MIX MUST OCCUR IN FILTRATION BASIN IF SOIL CONDITIONS ARE WET.
- IMMEDIATELY FOLLOWING BASIN CONSTRUCTION, THE BOTTOM AND SIDE SLOPES OF THE BASIN MUST BE FULLY STABILIZED. TEMPORARY SILT FENCE SHALL BE INSTALLED AT THE BASE OF THE FILTRATION BASIN SIDE-SLOW AND TOP OF THE SIDE-SLOPE OF THE FILTRATION BASIN PERIMETER AND REMAIN UNTIL THE DRAINAGE AREA IS STABILIZED
- CONTRACTOR SHALL COORDINATE AND COMPLETE CERTIFIED AS-BUILT PLANS DEMONSTRATING ALL CONSTRUCTED STORMWATER CONVEYANCE STRUCTURES, AND STORMWATER MANAGEMENT FACILITIES (INCLUDING AS-BUILT VOLUMES) CONFORM TO DESIGN AND/OR PLANS AS APPROVED BY THE CITY

SOUTH SYSTEM - BMP 2 INFILTRATION

- CONTRACTOR TO PROVIDE (2) DOUBLE RING INFILTRATOR TESTS WITHIN THE UNDERGROUND SYSTEM EXCAVATION PRIOR TO INSTALLATION OF THE UNDERGROUND SYSTEM. THE CONTRACTOR SHALL PROVIDE THE RESULTS TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION OF THE UNDERGROUND SYSTEM
- CONTRACT SHALL OVER-EXCAVATE SILTS/CLAYS BENEATH FOOTPRINT OF BMP 2 TO A DEPTH WHERE SOILS INFILTRATE AT A RATE OF 0.45 IN/HR
- IF SOILS ARE DETERMINED TO NOT BE CONDUCTIVE TO THE DESIGN INFILTRATION RATES, THE CONTRACTOR SHALL REMOVE AND REPLACE THE POORLY INFILTRATING SOILS DOWN TO A DEPTH WHERE THE EXISTING SUBGRADE SOILS MEET EXCEED THE DESIGN RATE AS REVIEWED BY THE ENGINEER
- UPON COMPLETION OF THE STORMWATER BMP AND FINAL STABILIZATION OF THE TRIBUTARY DRAINAGE AREA, THE CONTRACTOR SHALL PROVIDE DOCUMENTATION OF THE BMP AFTER SIGNIFICANT RAIN EVENTS THAT SHOW THE BMP HAS DRAWN DOWN WITHIN 48 HOURS
- NO CONSTRUCTION EQUIPMENT SHALL TRAVEL WITHIN THE INFILTRATION BASIN AREA. USE EXCAVATOR WITH TOOTHED BUCKET FOR INFILTRATION BASIN EXCAVATION TO AVOID COMPACTING OR SMEARING OF SOILS
- FINAL EXCAVATION OF INFILTRATION BASIN AND INSTALLATION/INCORPORATION OF SOIL-MEDIA MIX MUST OCCUR IN DRY SOIL CONDITIONS TO PREVENT SMEARING AND COMPACTION. DO NOT WORK IN INFILTRATION BASIN IF SOIL CONDITIONS ARE WET.
- IMMEDIATELY FOLLOWING BASIN CONSTRUCTION, THE BOTTOM AND SIDE SLOPES OF THE BASIN MUST BE FULLY STABILIZED. TEMPORARY SILT FENCE SHALL BE INSTALLED AT THE BASE OF THE INFILTRATION BASIN SIDE-SLOW AND TOP OF THE SIDE-SLOPE OF THE INFILTRATION BASIN PERIMETER AND REMAIN UNTIL THE DRAINAGE AREA IS STABILIZED
- CONTRACTOR SHALL COORDINATE AND COMPLETE CERTIFIED AS-BUILT PLANS DEMONSTRATING ALL CONSTRUCTED STORMWATER CONVEYANCE STRUCTURES, AND STORMWATER MANAGEMENT FACILITIES (INCLUDING AS-BUILT VOLUMES) CONFORM TO DESIGN AND/OR PLANS AS APPROVED BY THE CITY



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