



COMMUNITY DEVELOPMENT • 115 Executive Parkway, Suite 400 • Hudson, Ohio 44236 • (330) 342-1790

DATE: July 7, 2016

TO: City of Hudson Planning Commission for July 11, 2016 Meeting

FROM: Greg Hannan, City Planner
Mark Richardson, Community Development Director

SUBJECT: Preliminary Grading: Reserve at River Oaks

ZONING: District 3: Outer Village Residential Neighborhood

PC Case No: 2016-17

Project Introduction

Prestige Homes and Pulte Homes of Ohio have applied for preliminary grading for The Reserve at River Oaks Subdivision. The proposed scope of work includes preliminary grading of existing cleared areas within future phases of the northern portion of the subdivision to be accessed from Boston Mills Road. The proposed grading area abuts the southeast corner of Phase I adjacent to the intersection of Regal Woods Drive and Kingswood Drive. The applicant has requested the proposed grading work so existing stockpiled soils with the project area can be graded and seeded and the FEMA authorized floodplain work can be completed.

A summary of the applicable Planning Commission cases for the subdivision are listed below:

Case#	Meeting Date	Action
2013-19	September 9, 2013	Preliminary Subdivision Plan approval
2013-24	December 9, 2013	Site plan approval for tree clearing activities (Phase I)
2014-05	April 14, 2014	Final Plat and Improvement Plans approval for Phase I - 47 sublots accessed from Boston Mills Road
2014-14	August 11, 2014	Map Amendment
2015-01	January 26, 2015	Preliminary Subdivision Plan approval for an additional 88 sublots for a total overall subdivision of 236 sublots.
2015-02	January 26, 2015	Site Plan approval from tree clearing activities (Phase II)
2015-10	May 11, 2015	Final Plat and Improvement Plans approval for Phase II - 60 sublots accessed from Boston Mills Road

Adjacent Development:

The proposed work area is located within the interior portion of the River Oaks subdivision. The work area is adjacent to Phase I to the west and north, additional future phases to the east, and the wetland conservation area to the south.

The following information is attached to this report.

1. Conditional Letter of Map Revision for the proposed floodplain revision, issued by the Federal Emergency Management Agency, dated April 28, 2015.
2. Preliminary review comments prepared by City Planner Greg Hannan, dated June 22, 2016 based on the June 13, 2016 submittal.
3. Preliminary Engineering Department review comments, prepared by Asst City Engineer Brad Kosco, dated June 17, 2016 based on the June 13, 2016 submittal.
4. Site Grading and SWPPP Plan received June 28, 2016 from Donald G. Bohning & Associates, Inc.

Section 1207: Zoning Development and Site Plan Standards

Compliance with previous approvals

The subdivision previously received preliminary plan approval per PC Case No. 2013-19 and tree clearing approval per PC Case No. 2015-02. Staff finds the proposed preliminary grading and limits of disturbance to be in compliance with the previous approvals.

Wetland/Stream Corridor Protection

The subject parcel contains significant wetland areas immediately south of the proposed work area as shown on the approved delineation. The limits of grading have been established at the required 50 foot setback from the jurisdictional wetlands.

Floodplain

The applicant has proposed a revision to the defined Federal Emergency Management Agency (FEMA) 100 year floodplain as discussed with the Preliminary Plan approval. The applicant has completed a detailed site study by Hydrosphere Engineering to accurately define the floodplain and floodway within the project site. The Federal Emergency Management Agency has issued a Conditional Letter of Map Revision authorizing the proposed scope of work. Section 1205.14 Floodplain/Floodway Overlay District governs the 100 year floodplain and floodway. The Engineering Department will review the current status of the request and review for compliance with Section 1205.14 of the Land Development Code.

The applicant is following the below procedure as discussed in the preliminary plan approval and is at number 6 below:

1. Floodplain study submitted to the City for their review. Once the study has been reviewed and accepted by the City, the City Official signs the FEMA MT2-Form 1 as part of the submittal to FEMA.
2. Surrounding property owners are mailed to inform them of the study.
3. Floodplain study submitted to FEMA for their review. The submittal will be for a Conditional Letter of Map Revision – based upon fill (CLOMR-F). FEMA will provide review comments that must be addressed to continue the review process.

4. FEMA will issue a public notice of the proposed changes to the Flood Insurance Rate Map (FIRM) and will accept public comments.
5. FEMA to provide a preliminary approval.
- 6. Upon FEMA's preliminary approval, the City may issue a Floodplain Development Permit which would authorize the proposed fill. (current step)**
7. As-built topographic information of the development site is obtained after construction is completed.
8. The floodplain model is finalized based upon the as-built topographic data.
9. The final information is re-submitted to FEMA for final approval.
10. FEMA grants final approval and the FIRM is updated to reflect the new analysis.

Findings:

The staff finds that the application complies with the purposes and intent of the code and community plans, subdivision development and design standards, regulations that minimize land disturbance and protect environmental features, and other applicable development regulations as specified in Section 1204.05(b) except as discussed above and recommended below.

Required PC Action, Chapter 1203.09(g)(3)

The PC shall consider the development application, the staff report, and then take final action. PC shall approve, approve with conditions, or deny the application based on its compliance with the appropriate review standards. All decisions of the Commission shall be based on findings of fact related to the relevant standards of the Code.

Recommendation

Approve the site plan application for Case No. 2016-17 for preliminary grading for The Reserve at River Oaks Subdivision, according to plans dated as received June 28, 2016 provided the following conditions are met:

1. The Stormwater Pollution Prevention Plan shall be approved by the City of Hudson and the Summit County Soil and Water Conservation District.
2. The proposed grading work is subject to the review and approval of the Engineering Department including compliance with Section 1205.14 Floodplain/Floodway Overlay District.
3. Satisfaction of the above conditions prior to scheduling of a preconstruction meeting with City Officials and no clearing or construction of any kind shall commence prior to the issuance of a Zoning Certificate.
4. Before scheduling a preconstruction meeting, the applicant shall install silt fencing and/or polypropylene fencing to mark and protect the approved clearing limits, which shall be maintained by the applicant.



Federal Emergency Management Agency

Washington, D.C. 20472

April 28, 2015

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

The Honorable William A. Currin
Mayor, City of Hudson
City Hall and Administration
115 Executive Parkway, Suite 400
Hudson, OH 44236

IN REPLY REFER TO:

Case No.: 15-05-0039R
Community Name: City of Hudson, OH
Community No.: 390660

Dear Mayor Currin:

We are providing our comments with the enclosed Conditional Letter of Map Revision (CLOMR) on a proposed project within your community that, if constructed as proposed, could revise the effective Flood Insurance Study report and Flood Insurance Rate Map for your community.

If you have any questions regarding the floodplain management regulations for your community, the National Flood Insurance Program (NFIP) in general, or technical questions regarding this CLOMR, please contact the Director, Mitigation Division of the Federal Emergency Management Agency (FEMA) Regional Office in Chicago, Illinois, at (312) 408-5500, or the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP). Additional information about the NFIP is available on our website at <http://www.fema.gov/nfip>.

Sincerely,

A handwritten signature in black ink, appearing to read "Luis Rodriguez".

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

List of Enclosures:

Conditional Letter of Map Revision Comment Document

cc: Mr. Christopher Thoms, CFM

Mr. Mark Richardson

Mr. Gregory S. Modic, P.E.

Mr. Michael C. Menoes, Ph.D, P.E.



Federal Emergency Management Agency

Washington, D.C. 20472

CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT

COMMUNITY INFORMATION		PROPOSED PROJECT DESCRIPTION	BASIS OF CONDITIONAL REQUEST
COMMUNITY	City of Hudson Summit County Ohio	FILL	HYDRAULIC ANALYSIS HYDROLOGIC ANALYSIS FLOODWAY NEW TOPOGRAPHIC DATA
	COMMUNITY NO.: 390680		
IDENTIFIER	Residential Development Adjacent to Mud Brook	APPROXIMATE LATITUDE & LONGITUDE: 41.235, -81.480 SOURCE: USGS QUADRANGLE DATUM: NAD 83	
AFFECTED MAP PANELS			
TYPE: FIRM*	NO.: 39153C0126E DATE: July 20, 2009	* FIRM - Flood Insurance Rate Map	

FLOODING SOURCE AND REACH DESCRIPTION

Mud Brook - From approximately 100 feet downstream of West Streetsboro Road to approximately 3,100 feet upstream of West Streetsboro Road

PROPOSED PROJECT DESCRIPTION

Flooding Source	Proposed Project	Location of Proposed Project
Mud Brook	Fill Placement Grading	From approximately 1,000 feet upstream of West Streetsboro Road to approximately 2,800 feet upstream of West Streetsboro Road, east of Mud Brook

SUMMARY OF IMPACTS TO FLOOD HAZARD DATA

Flooding Source	Effective Flooding	Proposed Flooding	Increases	Decreases
Mud Brook	Zone AE	Zone AE	Yes	Yes
	Zone X (shaded)	Zone X (shaded)	Yes	Yes
	BFEs*	BFEs	None	Yes
	Floodway	Floodway	Yes	Yes

* BFEs - Base (1-percent-annual-chance) Flood Elevations

COMMENT

This document provides the Federal Emergency Management Agency's (FEMA's) comment regarding a request for a CLOMR for the project described above. This document is not a final determination; it only provides our comment on the proposed project in relation to the flood hazard information shown on the effective National Flood Insurance Program (NFIP) map. We reviewed the submitted data and the data used to prepare the effective flood hazard information for your community and determined that the proposed project meets the minimum floodplain management criteria of the NFIP. Your community is responsible for approving all floodplain development and for ensuring that all permits required by Federal or State/Commonwealth law have been received. State/Commonwealth, county, and community officials, based on their knowledge of local conditions and in the interest of safety, may set higher standards for construction in the Special Flood Hazard Area (SFHA), the area subject to inundation by the base flood. If the State/Commonwealth, county, or community has adopted more restrictive or comprehensive floodplain management criteria, these criteria take precedence over the minimum NFIP criteria.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on the FEMA website at <http://www.fema.gov/nfip>.

Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration

Case 15-05-0039R

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Federal Emergency Management Agency

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CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION

To determine the changes in flood hazards that will be caused by the proposed project, we compared the hydraulic modeling reflecting the proposed project (referred to as the proposed conditions model) to the hydraulic modeling used to prepare the Flood Insurance Study (FIS) (referred to as the effective model). If the effective model does not provide enough detail to evaluate the effects of the proposed project, an existing conditions model must be developed to provide this detail. This existing conditions model is then compared to the effective model and the proposed conditions model to differentiate the increases or decreases in flood hazards caused by more detailed modeling from the increases or decreases in flood hazards that will be caused by the proposed project.


The table below shows the changes in the BFEs:

BFE Comparison Table

Flooding Source: Mud Brook		BFE Change (feet)	Location of maximum change
Existing vs. Effective	Maximum increase	0.0	N/A
	Maximum decrease	0.1	Approximately 2,900 feet upstream of Streetsboro Road
Proposed vs. Existing	Maximum increase	0.0	N/A
	Maximum decrease	0.0	N/A
Proposed vs. Effective	Maximum increase	0.0	N/A
	Maximum decrease	0.1	Approximately 2,900 feet upstream of Streetsboro Road

NFIP regulations Subparagraph 60.3(b)(7) requires communities to ensure that the flood-carrying capacity within the altered or relocated portion of any watercourse is maintained. This provision is incorporated into your community's existing floodplain management ordinances; therefore, responsibility for maintenance of the altered or relocated watercourse, including any related appurtenances such as bridges, culverts, and other drainage structures, rests with your community. We may request that your community submit a description and schedule of maintenance activities necessary to ensure this requirement.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on the FEMA website at <http://www.fema.gov/nfip>.


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CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

DATA REQUIRED FOR FOLLOW-UP LOMR

Upon completion of the project, your community must submit the data listed below and request that we make a final determination on revising the effective FIRM and FIS report. If the project is built as proposed and the data below are received, a revision to the FIRM and FIS report would be warranted.

- Form 1, entitled "Overview & Concurrence Form". Detailed application and certification forms must be used for requesting final revisions to the maps. Therefore, when the map revision request for the area covered by this letter is submitted, Form 1 must be included. If as-built conditions differ from the proposed plans, please submit new forms, which may be accessed at http://www.fema.gov/plan/prevent/fhm/dl_mt-2.shtm, or annotated copies of the previously submitted forms showing the revised information.
- Form 2, entitled "Riverine Hydrology & Hydraulics Form"
- Form 3, entitled "Riverine Structures Form"
- Hydraulic analyses, for as-built conditions, of the base flood, the 10-percent, 2-percent, and 0.2 percent annual chance floods; and the regulatory floodway, together with a topographic work map showing the revised floodplain and floodway boundaries. Please ensure that the revised information ties in with the current effective information at the downstream and upstream ends of the revised reach.
- An annotated copy of the FIRM, at the scale of the effective FIRM, that shows the revised floodplain and floodway boundary delineations shown on the submitted work map and how they tie into the floodplain and floodway boundary delineations shown on the current effective FIRM at the downstream and upstream ends of the revised reach.
- As-built plans, certified by a registered professional engineer, of all proposed project elements.
- A copy of the public notice distributed by your community, stating its intent to revise the regulatory floodway, or a signed statement by your community that it has notified all affected property owners and affected adjacent jurisdictions.
- Documentation of the individual legal notices sent to property owners who will be affected by any widening/shifting of the base floodplain and/or any BFE increases along Mud Brook.
- Evidence that your community has, prior to approval of the proposed encroachment, adopted floodplain management ordinances that incorporate the increased BFEs and revised floodway boundary delineations to reflect the post-project conditions, as stated in Paragraph 65.12(b).

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on the FEMA website at <http://www.fema.gov/nfip>.

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CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)


• A letter stating that your community will adopt and enforce the modified regulatory floodway, OR, if the State/Commonwealth has jurisdiction over either the regulatory floodway or its adoption by your community, a copy of your community's letter to the appropriate State/Commonwealth agency notifying it of the modification to the regulatory floodway and a copy of the letter from that agency stating its approval of the modification

• FEMA's fee schedule for reviewing and processing requests for conditional and final modifications to published flood information and maps may be accessed at http://www.fema.gov/plan/prevent/fhm/fim_fees.shtm. The fee at the time of the map revision submittal must be received before we can begin processing the request. Payment of this fee can be made through a check or money order, made payable in U.S. funds to the National Flood Insurance Program, or by credit card (Visa or MasterCard only). Please forward the payment, along with the revision application, to the following address:

LOMC Clearinghouse
847 South Pickett Street
Alexandria, VA 22304-4605

After receiving appropriate documentation to show that the project has been completed, FEMA will initiate a revision to the FIRM and FIS report. Because the flood hazard information (i.e., base flood elevations, base flood depths, SFHAs, zone designations, and/or regulatory floodways) will change as a result of the project, a 90-day appeal period will be initiated for the revision, during which community officials and interested persons may appeal the revised flood hazard information based on scientific or technical data.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional information about the NFIP is available on the FEMA website at <http://www.fema.gov/nfip>.


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CONDITIONAL LETTER OF MAP REVISION COMMENT DOCUMENT (CONTINUED)

COMMUNITY INFORMATION (CONTINUED)

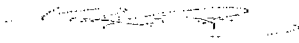
COMMUNITY REMINDERS

We have designated a Consultation Coordination Officer (CCO) to assist your community. The CCO will be the primary liaison between your community and FEMA. For information regarding your CCO, please contact:

Ms. Christine Stack
Director, Mitigation Division
Federal Emergency Management Agency, Region V
536 South Clark Street, Sixth Floor
Chicago, IL 60605
OH:(312) 408 5500

A preliminary study is being conducted for Summit County. Preliminary copies of the revised FIRM and FIS report were submitted to your community for review on October 1, 2014, and may become effective before the revision request following this CLOMR is submitted. Please ensure that the data submitted for the revision ties into the data effective at the time of the submittal.

This comment is based on the flood data presently available. If you have any questions about this document, please contact the FEMA Map Information eXchange (FMIX) toll free at 1-877-336-2627 (1-877-FEMA MAP) or by letter addressed to the LOMC Clearinghouse, 847 South Pickett Street, Alexandria, VA 22304-4605. Additional Information about the NFIP is available on the FEMA website at <http://www.fema.gov/nfip>.


Luis Rodriguez, P.E., Chief
Engineering Management Branch
Federal Insurance and Mitigation Administration



COMMUNITY DEVELOPMENT • 115 Executive Parkway, Suite 400 • Hudson, Ohio 44236 • (330) 342-1790

June 22, 2016

Greg Modic
Pulte Homes
387 Medina Road, Suite 1700
Medina, Ohio 44256

Mr. Modic-

Thank you for your submission of the site plan request for preliminary grading for the Reserve at River Oaks. As previously discussed this request has been scheduled for the Planning Commission (PC) agenda on July 11, 2016. In preparation for such, I am forwarding preliminary comments related to compliance with the Land Development Code (LDC). Our goal is to provide you an opportunity to review the below comments and submit any additional or revised information by June 30, 2016. We will revise the comments accordingly for the staff report scheduled to be issued on June 6, 2016. Additionally I am available to meet and review the comments and the review process at your convenience.

Section 1207: Zoning Development and Site Plan Standards

Compliance with previous approvals

The project previously received preliminary plan approval per PC Case No. 2013-19 and tree clearing approval per PC case No. 2015-02. Staff finds the proposed preliminary grading and limits of disturbance to be in compliance with the previous approvals.

Limits of Disturbance

The proposed limits of disturbance have been indicated on the submittal.

Wetland/Stream Corridor Protection

The subject parcel contains significant wetland areas immediately south of the proposed work area as shown on the approved delineation. The limits of grading have been established at the required 50 foot setback from the jurisdictional wetlands.

Floodplain

The applicant has proposed a revision to the defined Federal Emergency Management Agency (FEMA) 100 year floodplain as discussed with the Preliminary Plan approval. The applicant has completed a detailed site study by Hydrosphere Engineering to accurately define the floodplain

and floodway within the project site. The Federal Emergency Management Agency has issued a Conditional Letter of Map Revision authorizing the proposed scope of work. Section 1205.14 Floodplain/Floodway Overlay District governs the 100 year floodplain and floodway. The Engineering Department will review the current status of the request and review for compliance with Section 1205.14 of the Land Development Code.

Thank you for your significant investment in the community and please contact me for any assistance I can provide.

Sincerely,

Gregory P. Hannan, AICP
City Planner

CC: Mark Richardson, Community Development Director
Thom Sheridan, City Engineer

— O H I O —

HUDSON

ENGINEERING • 115 Executive Parkway, Suite 400 • Hudson, Ohio 44236 • (330) 342-1770

MEMORANDUM

Date: June 17, 2016

To: Greg Hannan, Hudson Community Development

From: Bradley S. Kosco, P.E., P.S. Assistant City Engineer

Re: **Future Pond No. 5 (River Oaks Phase 2) Plan Review**

The City of Hudson Engineering Department has reviewed the above preliminary residential site plan received May 26, 2016. (Please contact our office if you would like to meet to discuss the comments in detail.)

Please see the redlined comments on the existing set of plans attached to this letter. Please return the redlined plans with the next submittal. The following review comments shall be addressed and all applicable items shall be resubmitted to the City of Hudson:

1. The City of Hudson Engineering Standards (Engineering Standards) and Land Development Code (LDC) shall be followed for plan development. They are available online at the City of Hudson Website www.hudson.oh.us under the Engineering Dept. and Community Development Department respectively. The standards are also available in print for a fee. Please contact our office (330-342-1770) if you would like a cost for the printed version.
2. Provide applicable drainage calculations for review.
3. The CLOMR FEMA Letter dated April 28, 2015 indicates that additional, supporting data including forms, hydraulic analysis for as-built conditions, topographic map, annotated copies of the FIRM, as-built plans certified by professional engineer, etc. are to be submitted to FEMA upon completion of the project. The developer will be required to submit all of the data required by FEMA and provide a LOMR from FEMA, prior to City acceptance of the project. Additional discussion on this matter will be required prior to plan approval.
4. Provide approval letter from Summit Soil and Water Conservation District.
5. The plan shows three sets of contours; grey scale (existing), thin bold (future) and thick bold. Please label contour styles or revise drawing to clarify what is being represented.
6. Provide labeling as marked on plan.

If you have any questions, please contact our office.

Respectfully,

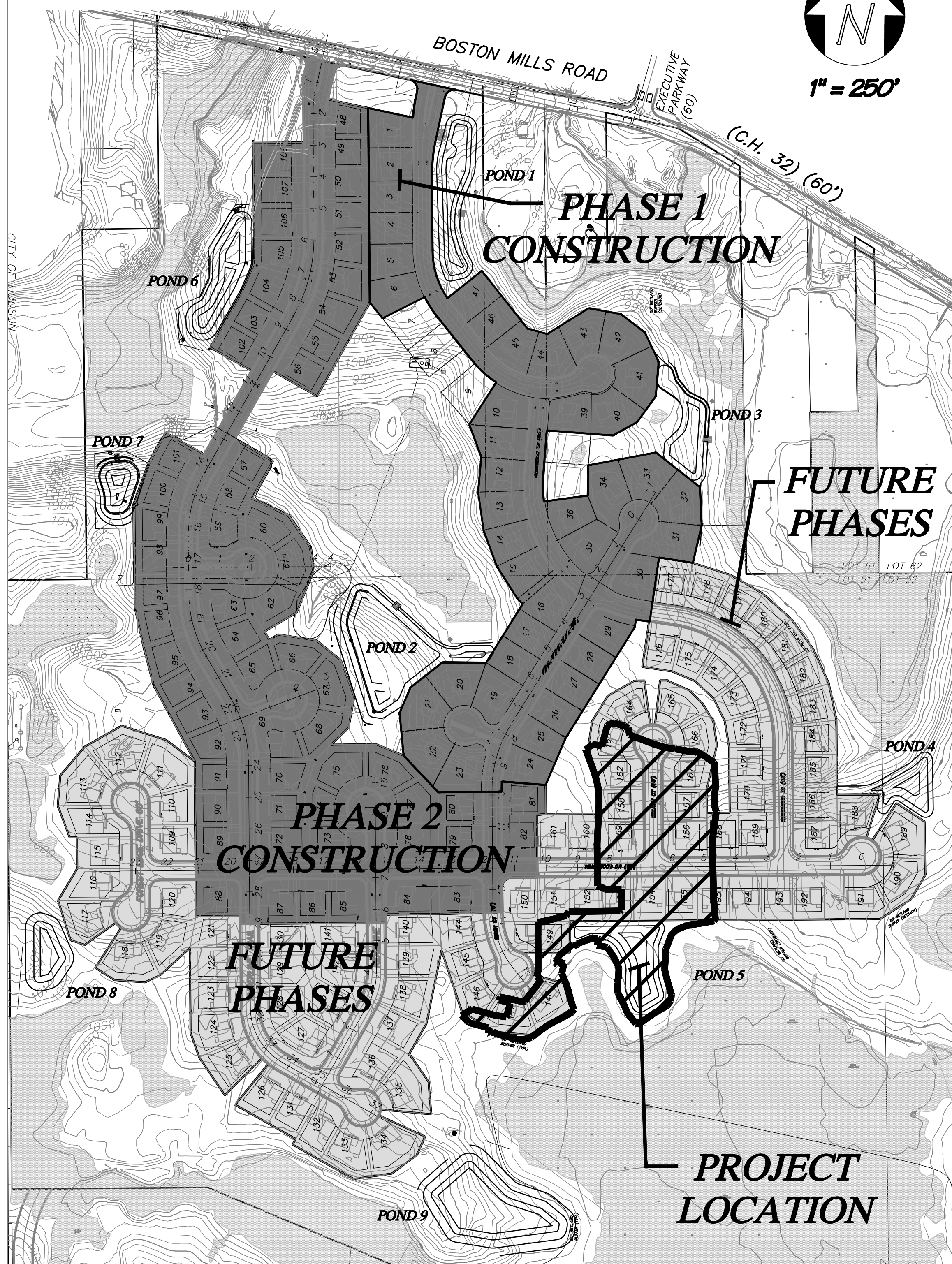


Bradley Kosco, P.E., P.S.
Assistant City Engineer

C: Thomas J. Sheridan, P.E., P.S. City Engineer

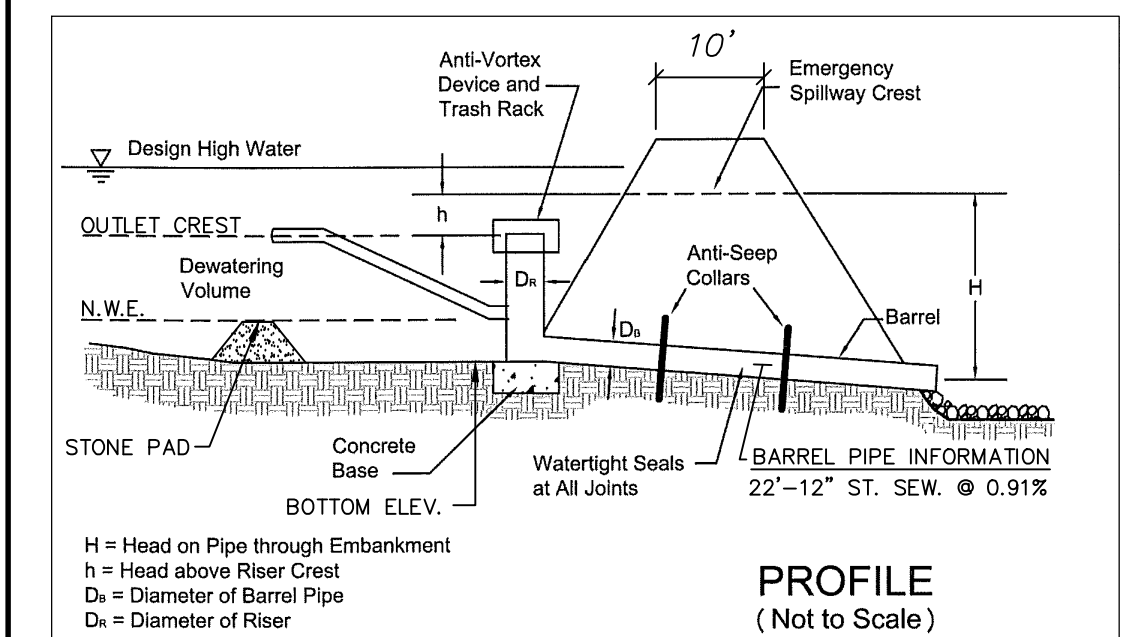
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THE RESERVE AT RIVER OAKS VICINITY MAP



SEDIMENT BASIN DATA										
BASIN DESIG.	WATERSHED AREA (ACRES)	X 1800 = (C.F.)	N.W.E. AREA (FEET)	OUTLET AREA (S.F.)	AREA @ CREST (S.F.)	TOTAL STORAGE (C.F.)	WIDTH OF EMERGENCY SPILLWAY (FEET)	EMERGENCY SPILLWAY ELEV. (FEET)		
	SB	6.05	10,890	1000.0	25,772	1001.2	30,509	34,082	10.0'	1003.50
SEDIMENT VOLUME NEEDED		SEDIMENT VOLUME PROVIDED		OUTLET INFO						
AREA OF DISTURBANCE (ACRES)	X 1000 = (C.F.)	BOTTOM ELEV. (FEET)	BOTTOM AREA (S.F.)	N.W.E. AREA (S.F.)	AREA @ CREST (S.F.)	TOTAL STORAGE (C.F.)	BARREL PIPE (IN.)	RISER PIPE (IN.)	ORIFICE (IN.)	DRAIN TIME (HRS)
6.05	6,050	990.0	1,054	1000.0	25,772	92,335	12	-	2.0	*
ORIFICE INVERT = 1000.00										

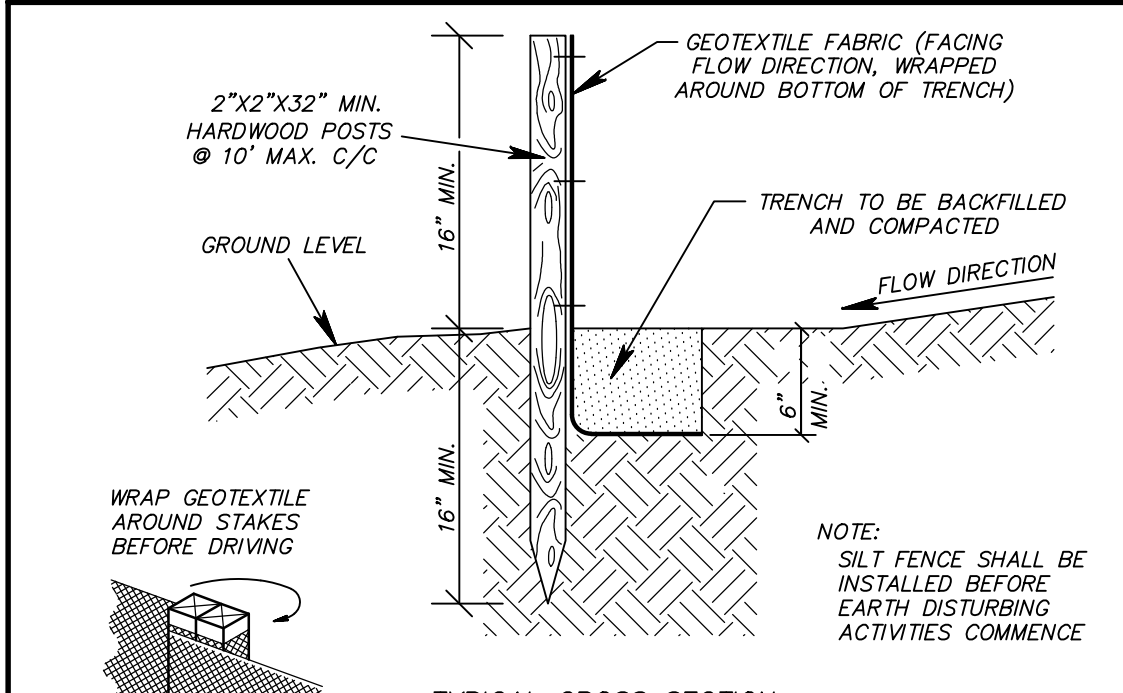
* DRAIN TIME IS 104 HOURS IF DELAWARE DOT SKIMMER DEWATERING DEVICE IS USED.
DRAIN TIME IS 113 HOURS IF MODEL #1 2.0" ORIFICE SADDLE MARLEE FLOAT SKIMMER IS USED.



H = Head on Pipe through Embankment
h = Head above Riser Crest
D_r = Diameter of Barrel Pipe
D_s = Diameter of Riser

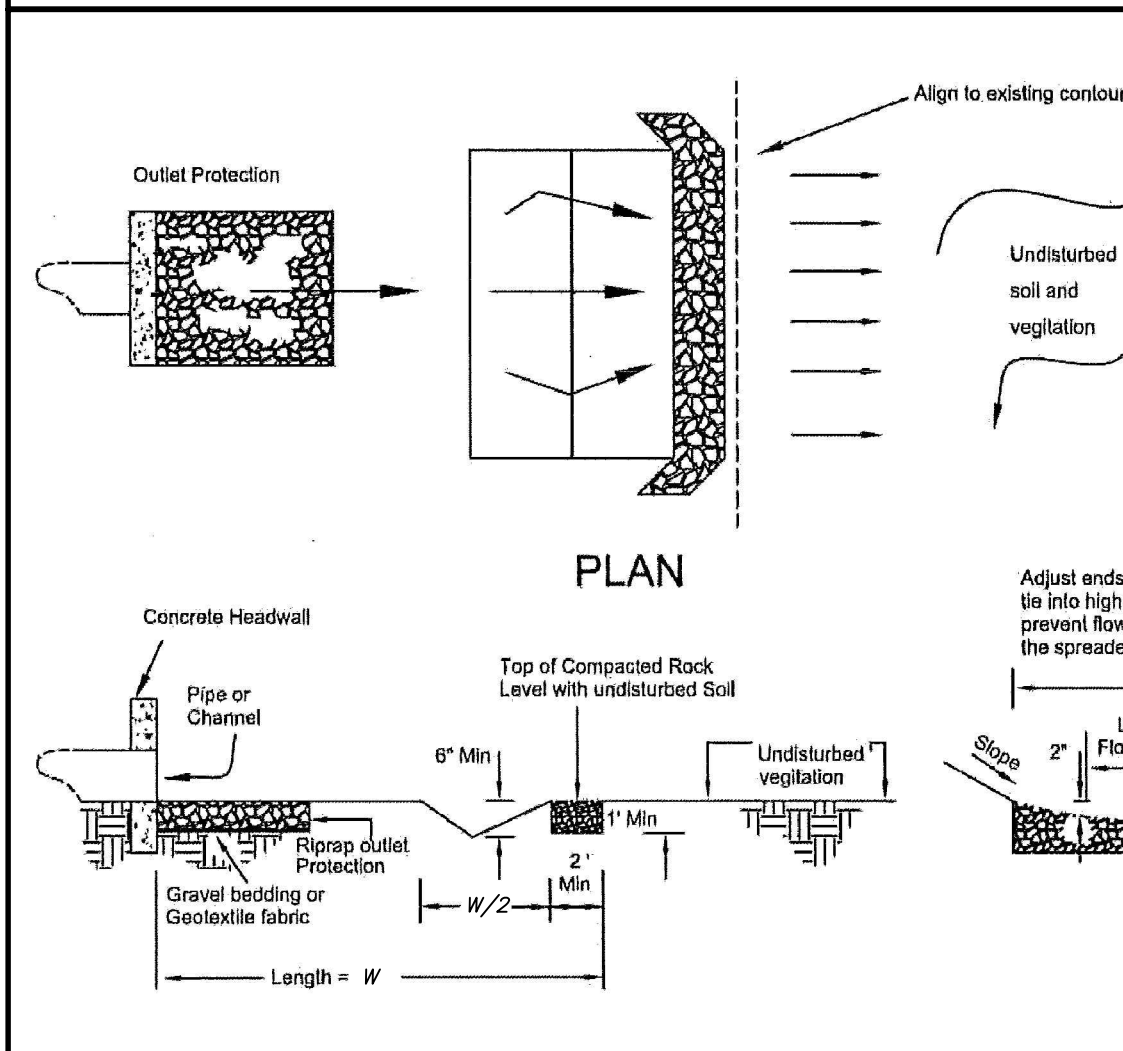
NOTE: POND DISCHARGE CONTROL STRUCTURE IS BEING TEMPORARILY UTILIZED AS THE SEDIMENT BASIN RISER PIPE. SEE NOTES AND DETAIL ON SHEET 1.

SEDIMENT BASIN DETAIL (SB) NO SCALE



NOTE: SILT FENCE SHALL BE INSTALLED BEFORE EARTH DISTURBING ACTIVITIES COMMENCE

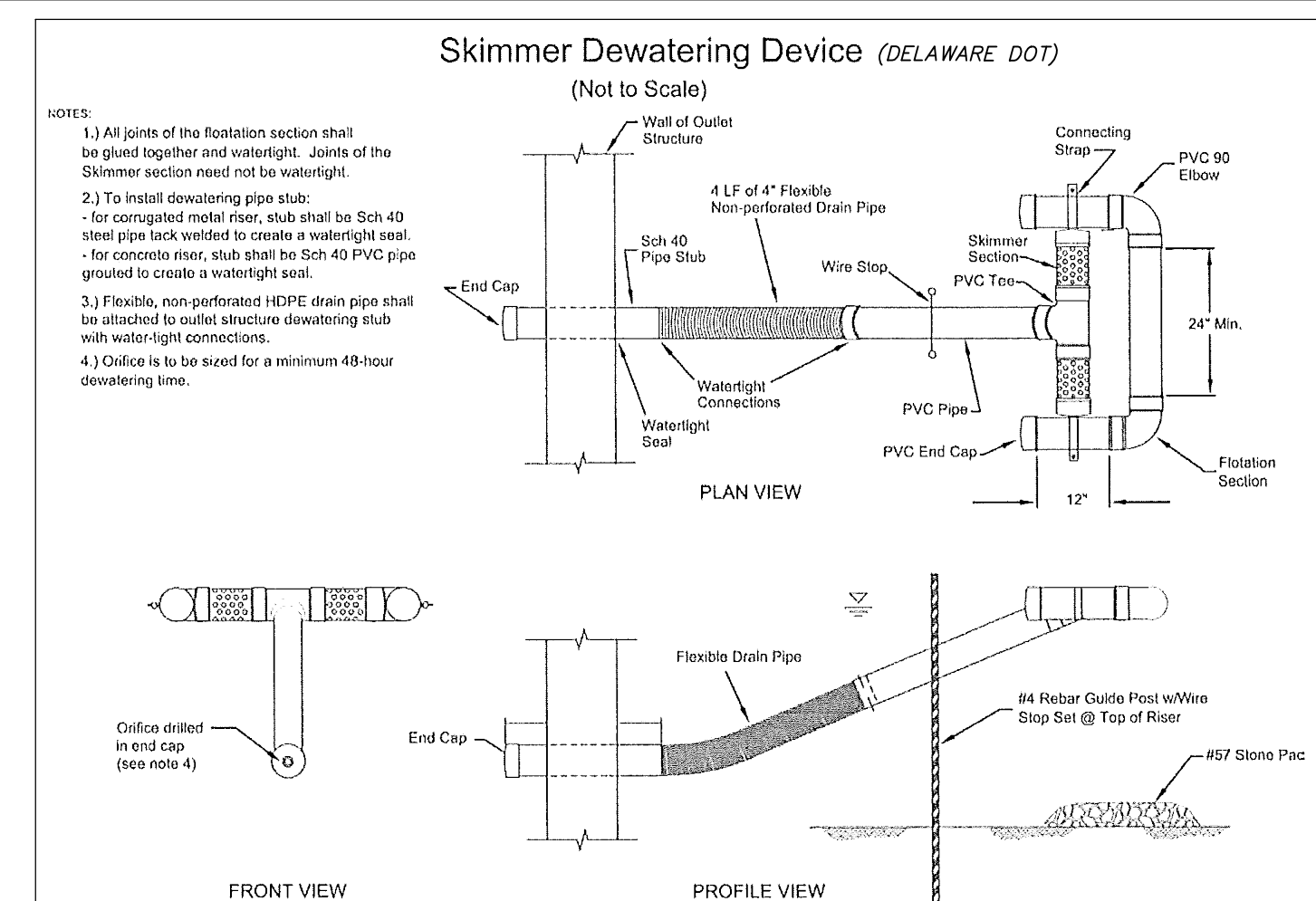
SILT FENCE DETAIL (SF) NO SCALE



TEMPORARY SEEDING DETAIL (LS) NO SCALE

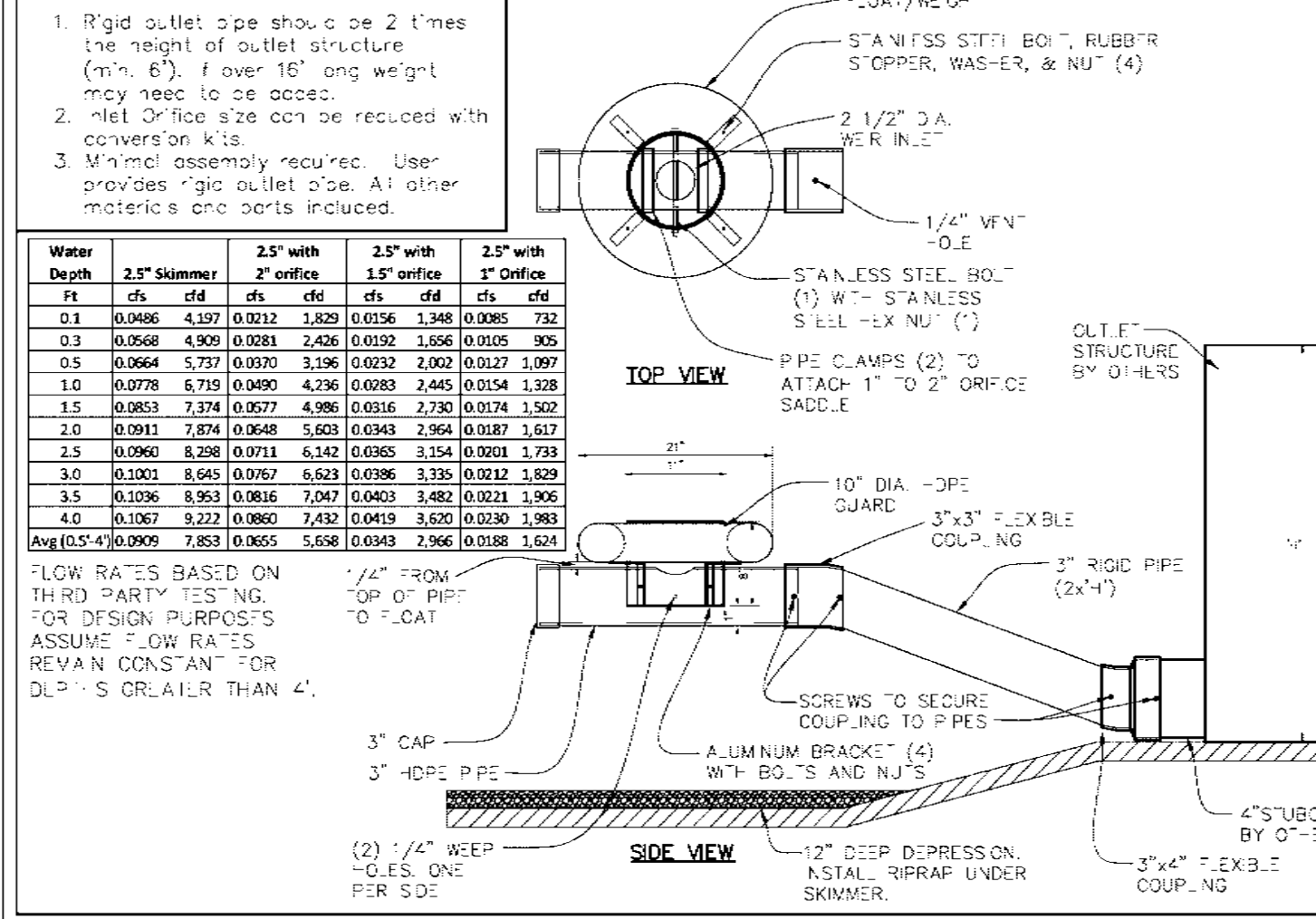
- Construct level spreader on a level grade to ensure uniform spreading of storm runoff.
- Level spreaders must be constructed on undisturbed soil, NOT on fill.
- The level spreader must outlet to erosion-resistant areas with established existing vegetation.
- Rock shall be ODOT Type D where 50% of the material by weight is larger than 6 inches, and 85% of the material by weight is larger than 3 inches but less than 12 inches.
- Rock in level spreader shall be compacted with at least two passes of heavy machinery to prevent further settling. Spread gravel or soil over top of the placed riprap surface to fill the voids and interlock the riprap together.
- Fertilizing, seeding, and mulching shall conform to the recommendations in the applicable vegetative specification.

RIGID LIP LEVEL SPREADER DETAIL (LS) NO SCALE



SKIMMER DEWATERING DEVICE (DELAWARE DOT) (Not to Scale)

STANDARD NOTES:
1. Rigid outlet pipe should be 2 times the height of outlet structure (min. 6'). If over 16' long weight may need to be added.
2. Inlet orifice size can be reduced with covers on riser.
3. Final assembly required. User provides rigid outlet pipe. All other materials are parts included.



MODEL #1 1" = 2 1/2" Marlee Float Skimmer Detail (SB) PRODUCTS

Water Depth	2.5" with 2" orifice	2.5" with 1.5" orifice	2.5" with 1" orifice					
1.0	0.0486	4.57	0.0312	1.820	0.0156	1.348	0.0085	7.51
0.3	0.0268	4.909	0.0281	2.426	0.0152	1.566	0.0105	9.25
0.5	0.0664	5.722	0.0326	3.198	0.0232	2.022	0.0127	1.997
1.0	0.0778	6.725	0.0490	4.236	0.0393	2.445	0.0154	1.328
1.5	0.0853	7.174	0.0577	4.986	0.0456	2.780	0.0174	1.507
2.0	0.0911	7.874	0.0648	5.603	0.0493	3.054	0.0187	1.633
2.5	0.0960	8.298	0.0711	6.142	0.0525	3.254	0.0201	1.731
3.0	0.1003	8.645	0.0767	6.623	0.0556	3.379	0.0212	1.829
3.5	0.1050	8.963	0.0816	7.047	0.0582	3.482	0.0221	1.900
4.0	0.1097	9.222	0.0860	7.432	0.0613	3.620	0.0230	1.963
Avg (2.5' - 4.0')	0.0909	7.883	0.0655	5.658	0.0343	2.766	0.0138	1.624

FLOW RATES BASED ON THIRD PARTY TESTING. FOR DESIGN PURPOSES ASSUME FLOW RATES REVENUE CONSISTANT FOR D.P. - 5' OR LARGER THAN 4'.

SOIL PROTECTION CHART												
STABILIZATION TYPE	J	F	M	A	M	J	J	A	S	O	N	D
PERMANENT SEEDING	●	●	●	●	●	●	●	●	●	●	●	●
DORMANT SEEDING	●	●	●	●	●	●	●	●	●	●	●	●
TEMPORARY SEEDING	●	●	●	●	●	●	●	●	●	●	●	●
SODDING	●	●	●	●	●	●	●	●	●	●	●	●
MULCHING	●	●	●	●	●	●	●	●	●	●	●	●

* - IRRIGATION NEEDED DURING JUNE THRU AUGUST
** - IRRIGATION NEEDED FOR 2-3 WEEKS AFTER APPLYING SOD
NOTE: DISTURBED AREAS THAT WILL BE IDLE OVER WINTER SHALL HAVE EROSION CONTROLS APPLIED PRIOR TO THE ONSET OF WINTER WEATHER.

PROJECT IMPLEMENTATION SCHEDULE

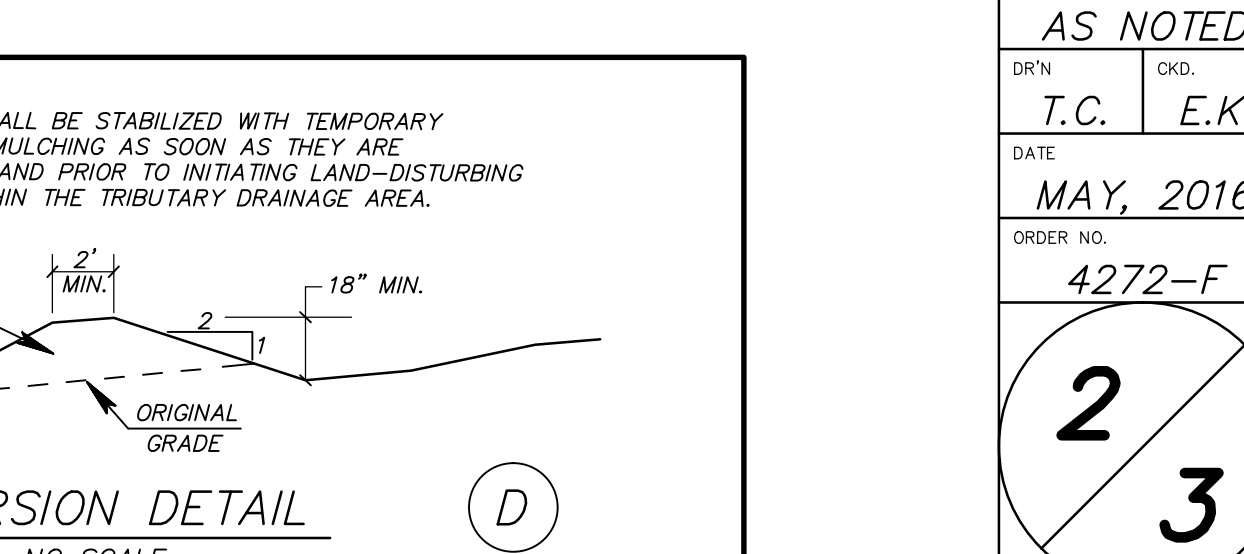
SYM.	ODOT ITEM	QUANT.	UNITS	DESCRIPTION
1. INITIAL SEDIMENT CONTROL MEASURES				
CRS	703.01	---	TONS	CONST. ROAD STABILIZATION NO. 2 AGGREGATE
SF	207	260'	L.F.	SILT FENCING (FILTER FABRIC FENCE)
SB	207	1	EA.	SEDIMENTATION BASINS
ST	207	---	EA.	SEDIMENTATION TRAPS
IP	207	---	EA.	INLET PROTECTION (EXTG. INLETS)
D	207	1,000	L.F.	DRAINAGE WAY ROUTING (DIVERSIONS)
SPS	603	---	L.F.	TEMP. STORM CONDUIT CONSTRUCTION ROUTING
DPS	207	---	EA.	DROP PIPE STRUCTURE
DP	207	---	EA.	DEWATERING RISER PIPE
SCD	207	---	EA.	SILTATION CHECK DAM
TCF	207	---	L.F.	TEMP. CONSTRUCTION FENCING
2. SITE GRADING				
TPS	651	---	C.Y.	TOPSOIL STOCKPILE
TS M	207	5.9	ACRE	TEMPORARY SEEDING & MULCHING SEED MIX NO. 2
FS	207	---	S.Y.	VEGETATIVE FILTER STRIP
DP	207	---	S.Y.	DITCH PROTECTION
EM	671	---	S.Y.	EROSION CONTROL MAT (FOR EMERGENCY SPILLWAY)
ES	671	35	S.Y.	EROSION CONTROL MAT (FOR EMERGENCY SPILLWAY)
3. SITE IMPROVEMENT INSTALLATION - SANITARY & STORM SEWERS, & WATERMAIN				
IP	207	---	EA.	INLET PROTECTION
IP	207	---	EA.	INLET PROTECTION (AFTER PAVEMENT CONSTRUCTION)
RP	601	---	C.Y.	ROCK CHANNEL PROTECTION
GP	601	---	C.Y.	GABION OUTLET PROTECTION
LS	SPEC	1	E.A.	RIGID LIP LEVEL SPREADER
4. FINAL SITE STABILIZATION				
SK	207	---	L.F.	FILTER SOCK, 12" DIA
PS M	659	0.8	ACRE	PERMANENT SEEDING & MULCHING SEED MIX NO. 1

EARTHWORK LEGEND

ODOT ITEM	SYMBOL	AREA (ACRES)	CUT (C.Y.)	FILL (C.Y.)	DESCRIPTION
201	C/L	7.3			CLEARING / DISTURBED
203	CUT		22,400		LIMITS OF EXCAVATION
203	CUT		4,350		BORROW
203	FILL			25,475	LIMITS OF EMBANKMENT CONSTRUCTION
203	FILL			26,750	EMBANKMENT +5% SHRINKAGE
651		5,650			TOPSOIL STRIPPED
652				1,300	TOPSOIL RESPREAD 12" AT POND BERM (PERM. SEEDING AREA)
652				4,350	TOPSOIL PLACED IN BORROW AT POND BOTTOM

NOTES:
1.) QUANTITIES GIVEN IN THE LEGEND ARE ONLY APPROXIMATE AND ARE GIVEN TO ASSIST IN ESTABLISHING THE UNIT PRICE BID FOR THE VARIOUS ITEMS

NOTE: DIVERSIONS SHALL BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING AS SOON AS THEY ARE CONSTRUCTED AND PRIOR TO INITIATING LAND-DISTURBING ACTIVITIES WITHIN THE TRIBUTARY DRAINAGE AREA.



DIVERSION DETAIL (D) NO SCALE

REVISIONS

S.W.P.P. DETAILS & LEGENDS - FUTURE POND NO. 5
THE RESERVE AT RIVER OAKS - PHASE 2
CITY OF HUDSON
SUMMIT COUNTY, OHIO

6/22/2016 - 9:46am

ODOT SCALE
AS NOTED
VERT. SCALE
AS NOTED
DRN
E.K.
DATE
MAY, 2016
ORDER NO.
4272-F

2
3

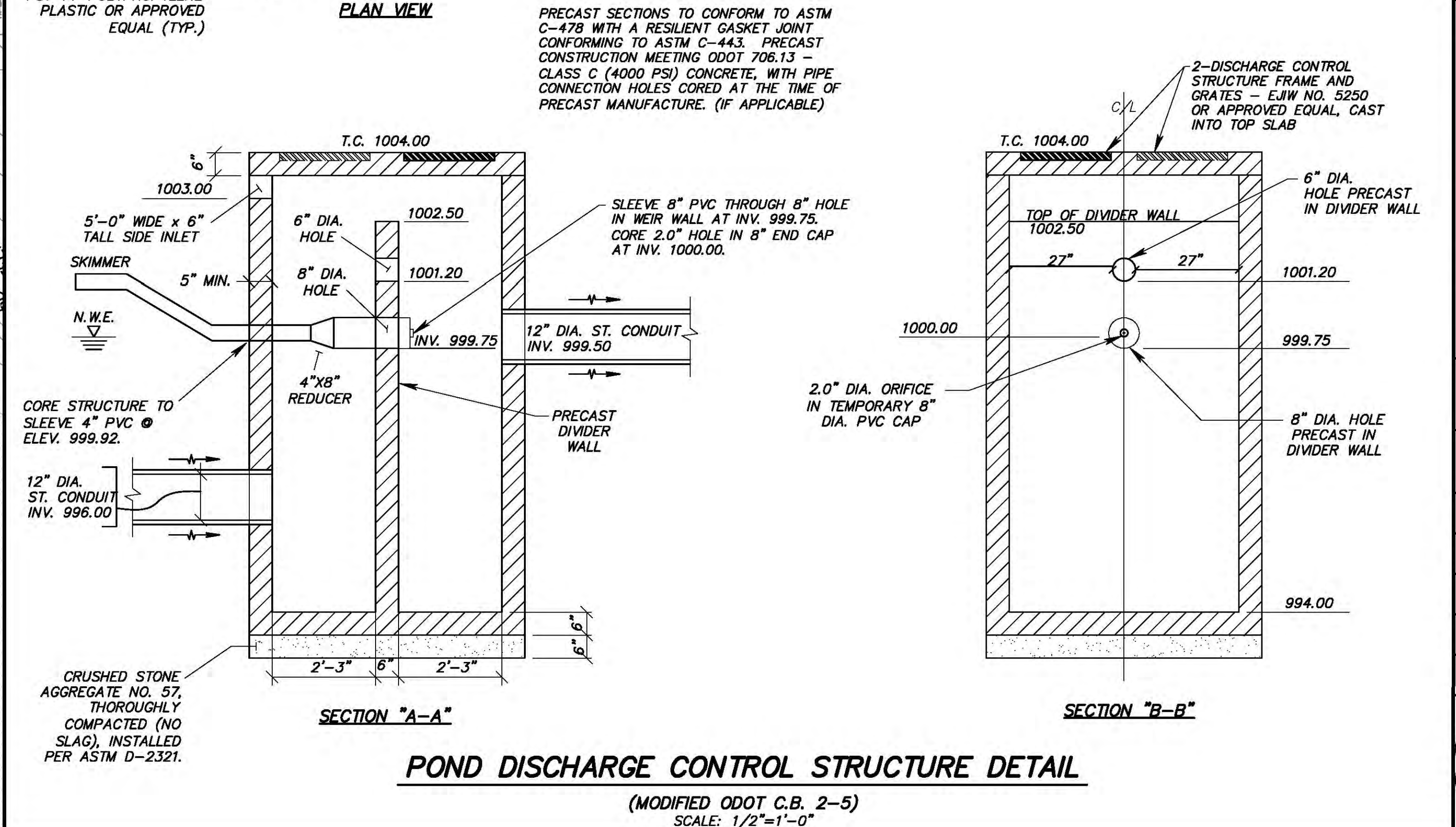
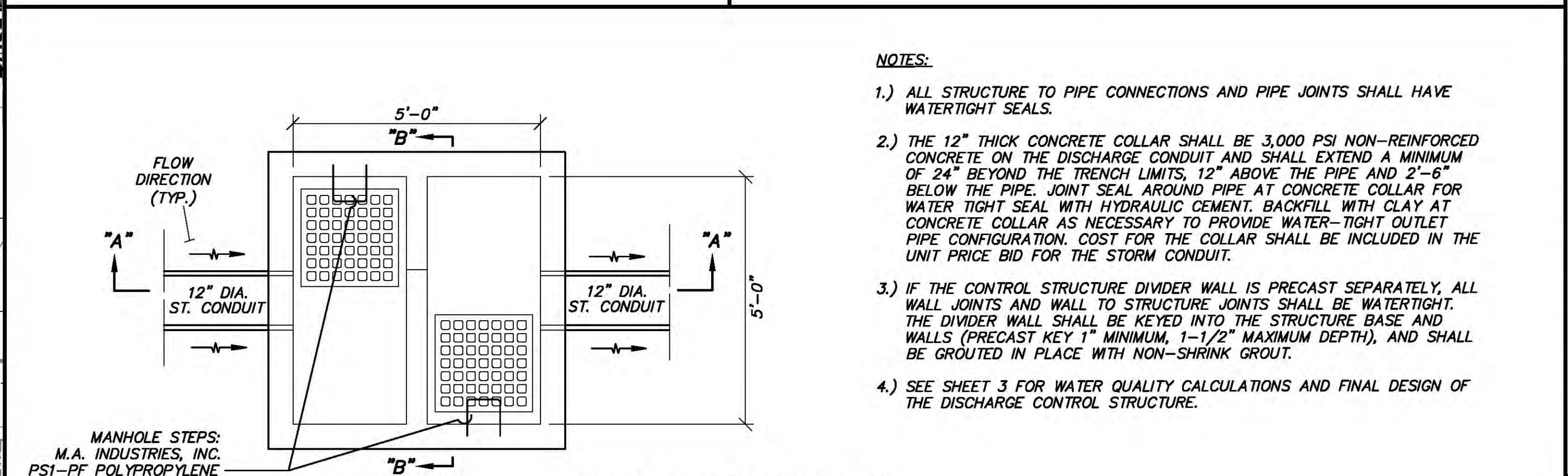
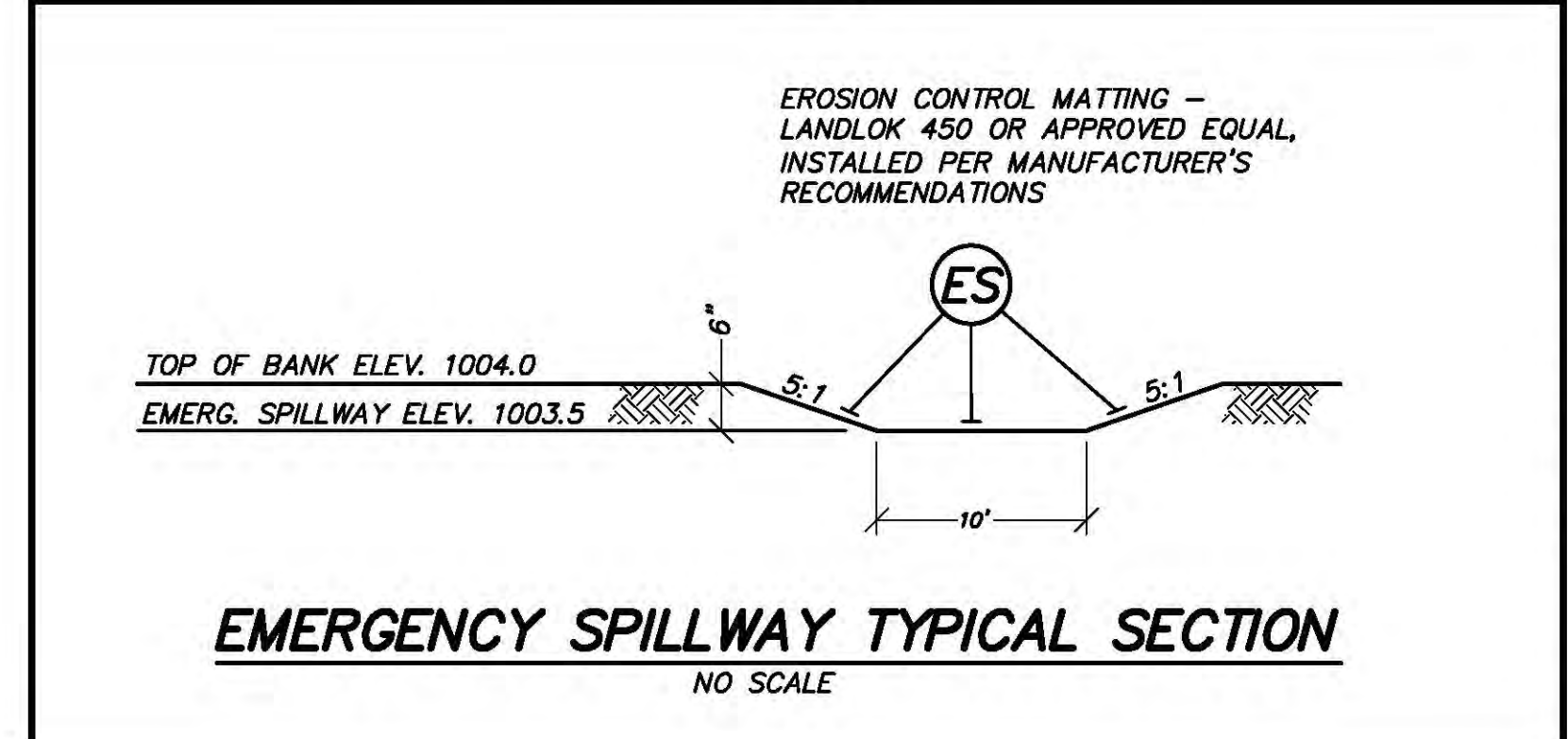
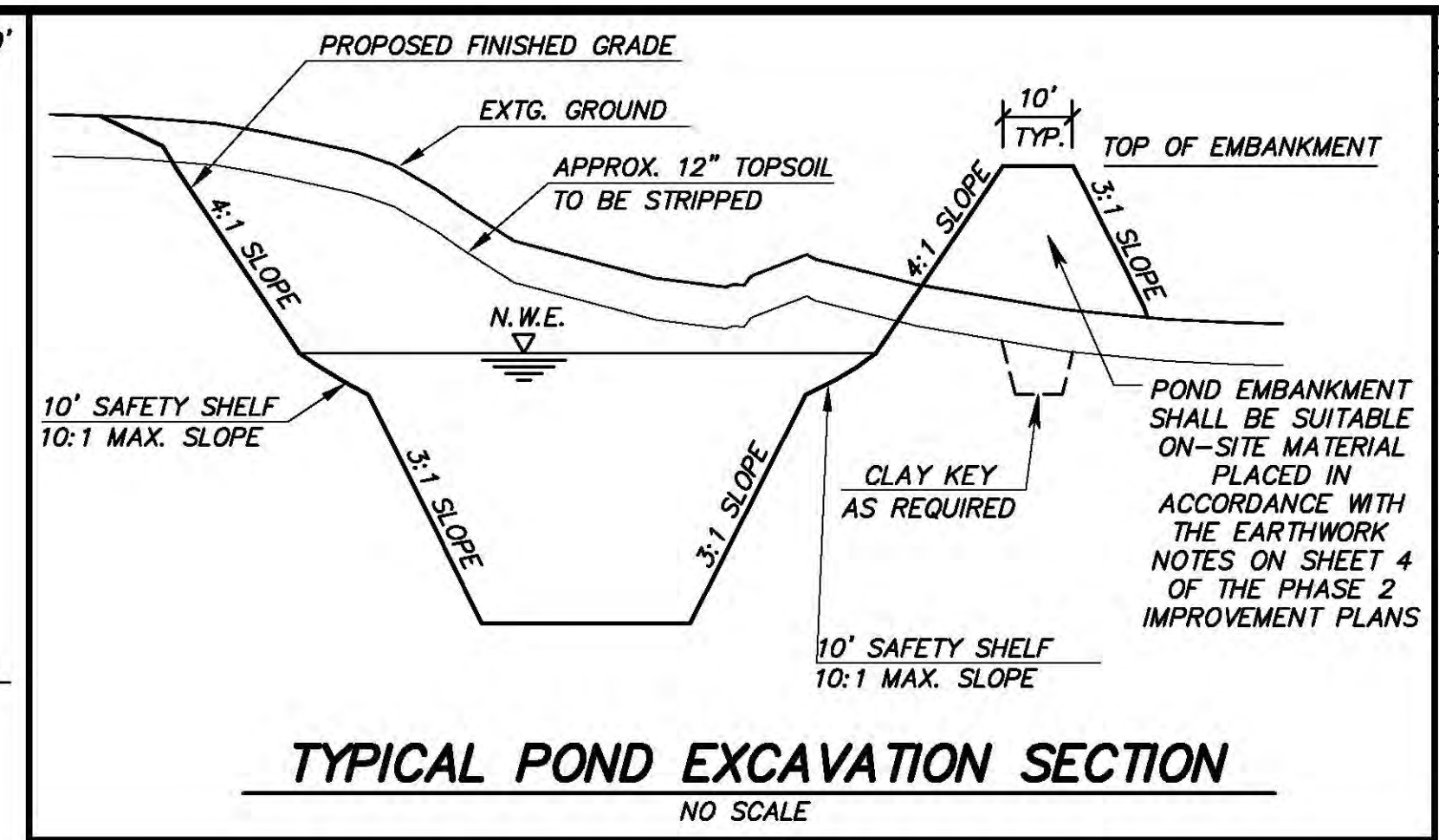
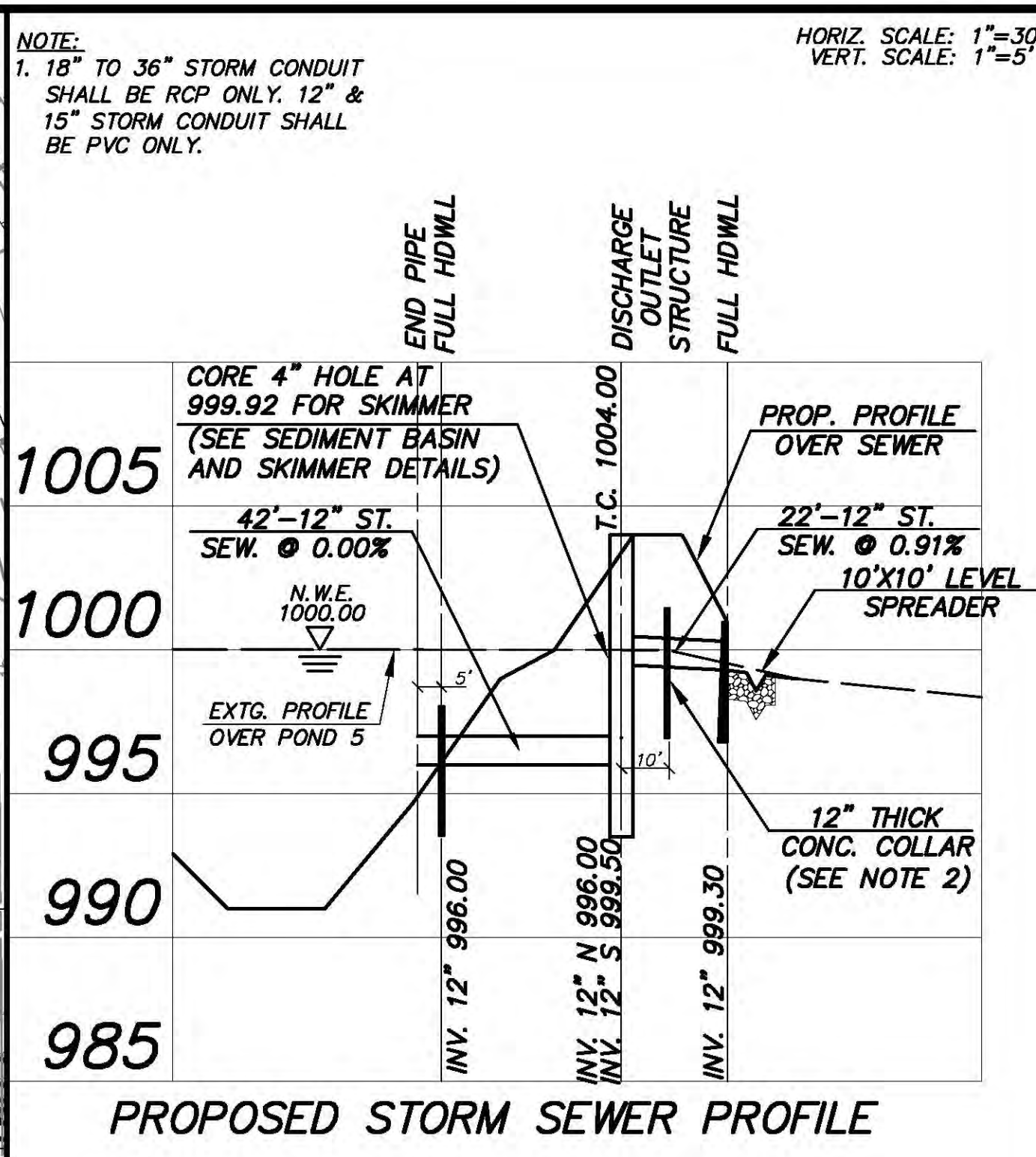
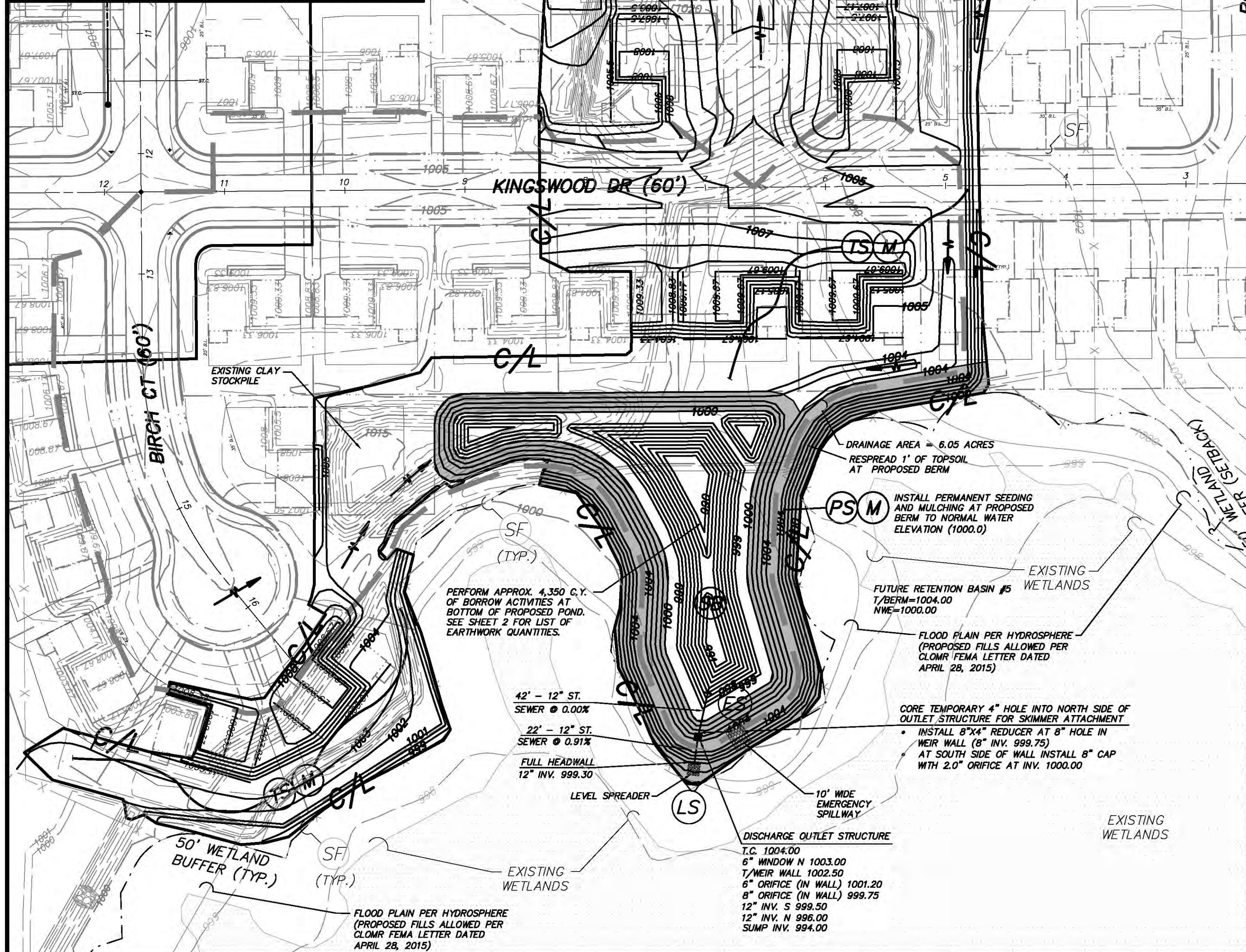
LEGEND

SYMBOL	DESCRIPTION
(SF)	- EXTG. SILT FENCE (FILTER FABRIC FENCE)
(SF)	- PROP. SILT FENCE (FILTER FABRIC FENCE)
(D)	- DRAINAGE WAY ROUTING
(TSM)	- TEMPORARY SEEDING AND MULCHING
(PSM)	- PERMANENT SEEDING AND MULCHING
(SB)	- SEDIMENT BASIN
(ES)	- EMERGENCY SPILLWAY
(LS)	- LEVEL SPREADER

ALL DISTURBED AREAS TO REMAIN DORMANT FOR MORE THAN TWENTY-ONE DAYS (OR UPON COMPLETION) MUST BE STABILIZED WITH TEMPORARY SEEDING AND MULCHING.

NOTES:

- 1.) PRIOR TO ANY GRADING ALL TOPSOIL SHALL BE STRIPPED WITHIN THE PROPOSED CONSTRUCTION LIMITS.
- 2.) ALL COMPACTION SHALL BE IN ACCORDANCE WITH THE EARTHWORK NOTES ON SHEET 4 OF THE PHASE 2 IMPROVEMENT PLANS, INCLUDING SPREADING LIFTS NOT TO EXCEED 8 INCHES IN DEPTH AND COMPACTION AT THE SPECIFIED MOISTURE CONTENT UNTIL ITS DENSITY IS NOT LESS THAN 98 PERCENT OF THE MAXIMUM LABORATORY DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR METHOD OF MOISTURE DENSITY RELATIONSHIP TESTING. THE WORK SHALL BE DONE USING COMPACTION EQUIPMENT THAT WILL PROVIDE THE REQUIRED IN PLACE DENSITY WITHOUT BREAKING DOWN THE UNDERLYING SOILS.
- 3.) WORK IS PROPOSED WITHIN 100' OF WETLAND AREAS. THEREFOR THE PROTECTION / CONSTRUCTION METHODS OF THE CITY OF HUDSON LDC SECTION 1207 AND ENGINEERING STANDARDS 1.18 APPLY. ALL WORK WITHIN 100' OF WETLANDS SHOWN SHALL ADHERE TO ALL APPLICABLE CITY OF HUDSON REQUIREMENTS.



REVISIONS

S.W.P.P. DETAILS & LEGENDS - FUTURE POND NO. 5 THE RESERVE AT RIVER OAKS - PHASE 2 CITY OF HUDSON SUMMIT COUNTY, OHIO

DONALD G. BOHNING & ASSOCIATES, INC.
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 M: (texted) 614-727-3196 (4272-F) and Prof. Deposition 4-22-16.dwg 6/23/2016 - 12:57pm

HORIZ. SCALE: AS NOTED
 VERT. SCALE: AS NOTED
 DATE: MAY, 2016
 ORDER NO. 4272-F

1/3

WATER QUALITY CALCULATIONS PROVIDED FOR FUTURE PHASE 4 OF RIVER OAKS SUBDIVISION

POST-CONSTRUCTION STORMWATER MANAGEMENT CALCULATIONS

Project: The Reserve at River Oaks - Phase 2, Pond 5 Expansion
City of Hudson, Ohio

Discussion:

For the proposed project, a wet extended detention pond was chosen as the post-construction storm water treatment BMP. This practice was selected because of the ability to perform extended detention within the retention pond, and because of the effectiveness in treating the required Water Quality Volume.

Conclusion:

The following calculations indicate that, for the proposed pond, the Post-Construction Storm water treatment is sized to meet the design requirements of the Ohio EPA's NPDES Permit and the guidelines listed in the Ohio Rainwater and Land Development Manual (2006).

Basin #5 (Wet Extended Detention):

Total Drainage Area [A] = 7.81 acres
Low Density Residential Drainage Area Runoff Coefficient [C] = 0.3
(C) value per NPDES Permit Part III G.2.e.ii)
Water Quality Storm [P] = 0.75 inch in 24 hours (per NPDES Permit)

Determination of Wet Quality Volume
 $WQ_v = C \times P \times A \times 12 = (0.3 \times 0.75 \times 7.81 / 12) = 0.1464 \text{ ac-ft}$
= 6,377 cubic feet

Per NPDES Permit requirements for a wet extended detention pond:
Minimum Permanent Pool Volume = $WQ_v \times 0.75 = 4,783 \text{ cubic feet}$
Required Extended Detention Volume = $WQ_v \times 0.75 = 4,783 \text{ cubic feet}$
Forebay Pool Volume for Sediment Storage = $WQ_v \times 0.20 = 1,275 \text{ cubic feet}$

Elevation	Area (S.F.)	Δ Volume (C.F.)	Σ Volume (C.F.)
990	1,051	---	---
991	2,086	1,570	1,570
992	3,196	2,641	4,211
993	4,694	3,945	8,156
994	6,155	5,425	13,581
995	7,709	6,932	20,513
996	9,778	8,744	29,257
997	12,256	11,017	40,274
998	15,025	13,641	53,915
999	18,021	16,523	70,438
1000	25,772	21,897	92,335

Elevation	Area (S.F.)	Δ Volume (C.F.)	Σ Volume (C.F.)
1000	25,772	---	---
1001	29,707	27,740	27,740
1002	33,717	31,712	59,452
1003	37,839	35,778	95,230
1004	42,063	39,951	135,181

Extended Detention Elevation (Elevation at Σ Volume = 4,783 C.F.) = 1000.17

Elevation	Area (S.F.)	Δ Volume (C.F.)	Σ Volume (C.F.)
996	192	---	---
997	430	331	331
998	714	587	898
999	1,114	929	1,827

Elevation	Area (S.F.)	Δ Volume (C.F.)	Σ Volume (C.F.)
996	192	---	---
997	260	392	392
998	556	758	1,150
999	1,408	1,882	2,332

Total Forebay Sediment Storage Volume Provided = 4,189 cubic feet > 1,275 cubic feet

Calculation of Drawdown Time

Minimum drawdown time [T] = 24 hours for a wet extended detention basin
(To drawdown from the ED elevation of 1000.17 to the normal water elevation of 1000.00)
Maximum $Q_{max} = 4,783 \text{ c.f.} / 86,400 \text{ sec} = 0.0554 \text{ cfs}$
Assume $Q_{avg} = 1/2 Q_{max}$

For a 2.00" diameter outlet orifice (A = 0.0218 sq. ft., center of orifice elevation = 1000.09):
At Elev. = 1000.17, H = 0.09'
 $Q_{avg} = 0.61 \times 0.0218 \text{ sq. ft.} \times \sqrt{64.4 \times 0.09 \text{ ft.}}$
= 0.0320 cfs
 $Q_{avg} = 0.0160 \text{ cfs} < \text{Max. } Q_{avg} = 0.0554 \text{ cfs}$

Drawdown time: $T = 4,783 \text{ c.f.} / 0.0160 \text{ cfs} = 298,338 \text{ sec} = 83.64 \text{ hours} > 24 \text{ hours}$

Verify that the upper 50% of the Extended Detention Volume will drain in no less than 1/3 of the required drain time:

50% of $0.75WQ_v = 0.5 \times 4,783 \text{ c.f.} = 2,391.5 \text{ c.f.}$
1/3 of T = $T_{1/3} = 13 \times 24 \text{ hours} = 8 \text{ hours}$
Maximum $Q_{avg} = 2,391.5 \text{ c.f.} / 28,800 \text{ sec} = 0.0830 \text{ cfs}$

50% of $0.75WQ_v$ (Elevation at Σ Volume = 2,391.5 c.f.) = 1000.09
At Elev. = 1000.09, H = 0.09'

Using the discharge equation for a partially submerged vertical orifice:
 $Q_{avg} = C \times A \times \sqrt{2gh}$

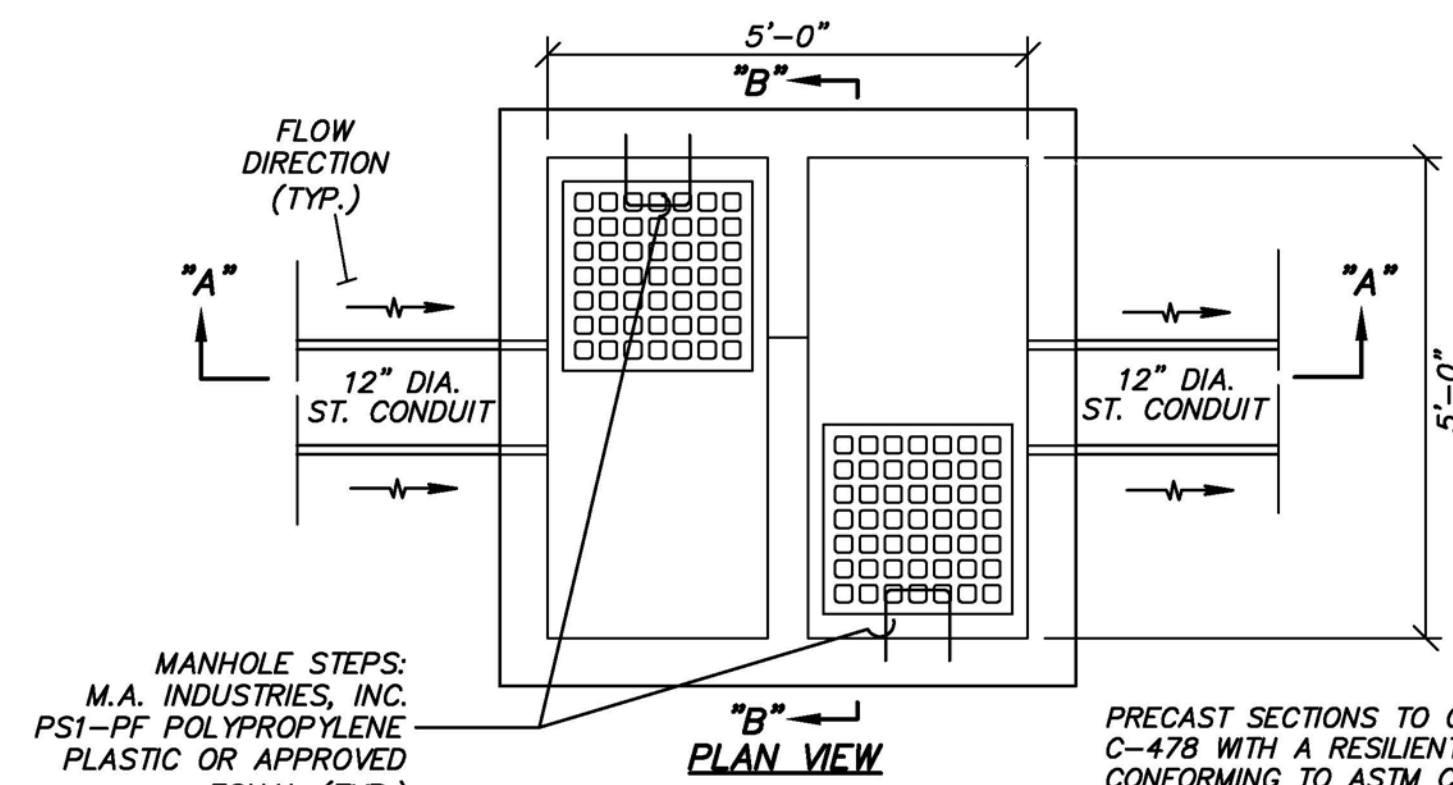
where:
A = submerged area of flow = 0.012 sq. ft.
C = 0.61 (discharge coefficient)
g = 32.2 ft/sec²
h = effective head (1/2 of total head H) = 0.045 ft.

$Q_{avg} = 0.61 \times 0.012 \times \sqrt{2 \times 32.2 \times 0.045 \text{ ft.}}$
= 0.0125 cfs
 $Q_{avg} = (Q_{avg} \times 28,800 \text{ sec}) / 2 = (0.0320 \times 28,800) / 2 = 0.0223 \text{ cfs}$

Drawdown time: $T_{1/3} = 2,391.5 \text{ c.f.} / 0.0223 \text{ cfs} = 107,242 \text{ sec} = 29.79 \text{ hours} > 8 \text{ hours}$

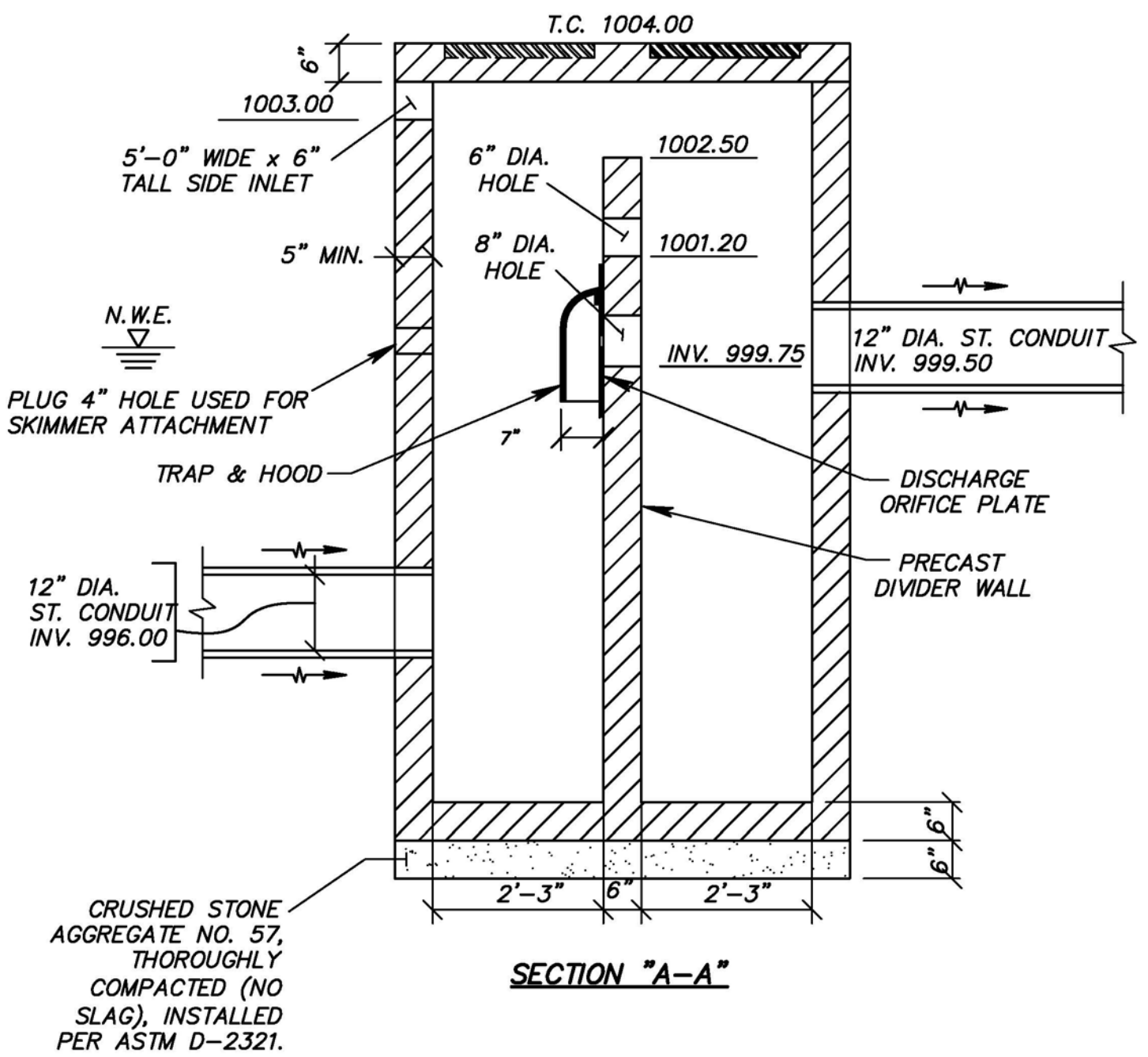
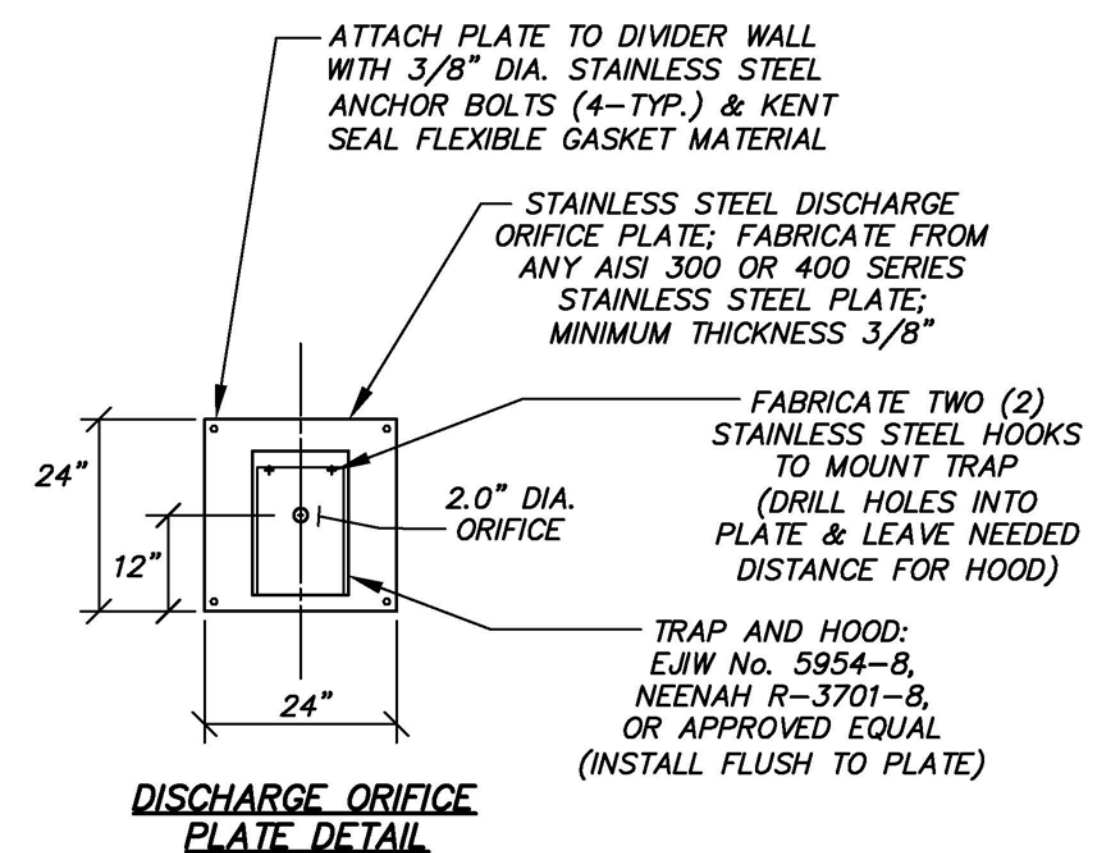
NOTES:

- 1.) ALL STRUCTURE TO PIPE CONNECTIONS AND PIPE JOINTS SHALL HAVE WATERTIGHT SEALS.
- 2.) THE 12" THICK CONCRETE COLLAR SHALL BE 3,000 PSI NON-REINFORCED CONCRETE ON THE DISCHARGE CONDUIT AND SHALL EXTEND A MINIMUM OF 24" BEYOND THE TRENCH LIMITS, 12" ABOVE THE PIPE AND 2'-6" BELOW THE PIPE. JOINT SEAL AROUND PIPE AT CONCRETE COLLAR FOR WATER TIGHT SEAL WITH HYDRAULIC CEMENT. BACKFILL WITH CLAY AT CONCRETE COLLAR AS NECESSARY TO PROVIDE WATER-TIGHT OUTLET PIPE CONFIGURATION. COST FOR THE COLLAR SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE STORM CONDUIT.
- 3.) IF THE CONTROL STRUCTURE DIVIDER WALL IS PRECAST SEPARATELY, ALL WALL JOINTS AND WALL TO STRUCTURE JOINTS SHALL BE WATERTIGHT. THE DIVIDER WALL SHALL BE KEYPED INTO THE STRUCTURE BASE AND WALLS (PRECAST KEY 1" MINIMUM, 1-1/2" MAXIMUM DEPTH), AND SHALL BE GROUTED IN PLACE WITH NON-SHRINK GROUT.
- 4.) STRUCTURE DETAIL IS SHOWN FOR REFERENCE ONLY. AFTER PHASE 4 OF THE RIVER OAKS SUBDIVISION IS COMPLETED, SKIMMER SHALL BE REMOVED AND DISCHARGE ORIFICE PLATE AND HOOD SHALL BE INSTALLED.

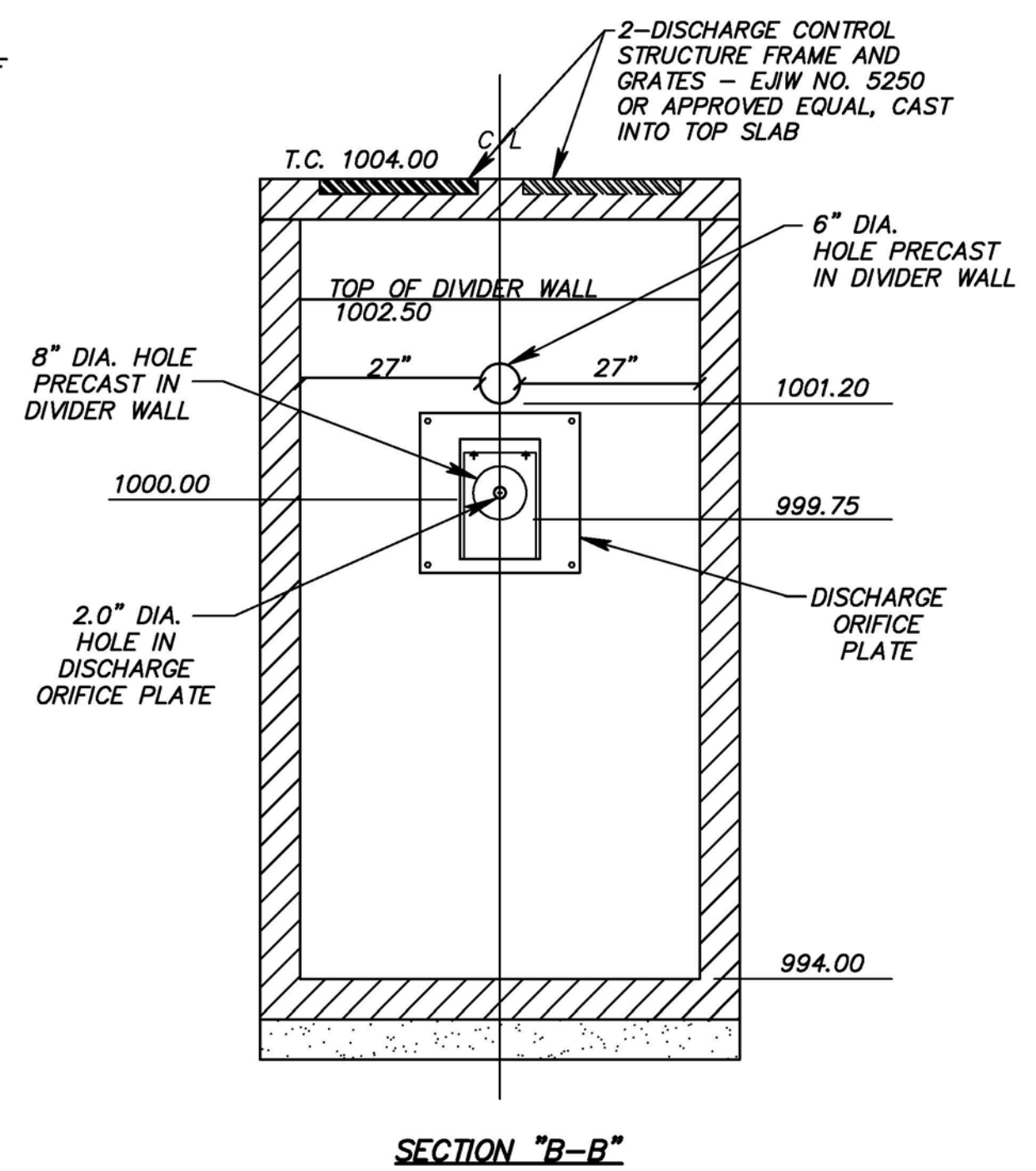


MANHOLE STEPS:
M.A. INDUSTRIES, INC.
PSI-PF POLYPROPYLENE
PLASTIC OR APPROVED
EQUAL (TYP.)

PRECAST SECTIONS TO CONFORM TO ASTM C-478 WITH A RESILIENT GASKET JOINT CONFORMING TO ASTM C-443. PRECAST CONSTRUCTION MEETING ODOT 706.13 - CLASS C (4000 PSI) CONCRETE, WITH PIPE CONNECTION HOLES CORED AT THE TIME OF PRECAST MANUFACTURE. (IF APPLICABLE)



CRUSHED STONE
AGGREGATE NO. 57,
THOROUGHLY
COMPACTED (NO
SLAG), INSTALLED
PER ASTM D-2321.



POND DISCHARGE CONTROL STRUCTURE DETAIL * SEE NOTE 4 *

(MODIFIED ODOT C.B. 2-5)
SCALE: 1/2"=1'-0"

FINAL DISCHARGE CONTROL STRUCTURE - FUTURE POND NO. 5
THE RESERVE AT RIVER OAKS - PHASE 2
CITY OF HUDSON
SUMMIT COUNTY, OHIO

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 An Equal Opportunity Employer M/F/V

HORIZ. SCALE: AS NOTED
 VERT. SCALE: AS NOTED
 DRN: T.C. E.K.
 DATE: MAY, 2016
 ORDER NO.: 4272-F

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