ATTACHMENT 10 - StormTech SC-740 Chamber Adjustment Request, David Evans and Associates, Inc.

King County
Department of Permitting and Environmental Review
35030 SE Douglas Street, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711
www.kingcounty.gov

Surface Water Design Manual Requirements / Standards Adjustment* Request

For alternate formats, call 206-296-6600.

Project Name: ***Maple Valley Asphalt Plant***	Permitting Project File No: ***COMM18-0014*** Permitting Engineer/Planner Name:
Project Address: ***18825 SE Renton Maple Valley RD, 98058***	Design Engineer: ***Richard Tomkins, PE*** Phone: ***(425) 415-2094***
Applicant/Agent**: ***Lakeside Industries Inc. (Karen Deal)*** Phone: ***(425) 313-2600***	Signature of Design Engineer: Date: *5/27/20*
Signature of Applicant/Agent: Date: 05/27/2020	Engineering Firm Name: ***David Evans and Associates Inc.***
Address: ***6505 226th Place SE, Suite 200*** City, State, ZIP: ***Issaquah, WA 98027***	Address: ***20300 Woodinville-Snohomish Road NE, Suite A*** City, State, ZIP: ***Woodinville, WA 98072***

INSTRUCTIONS TO APPLICANT/DESIGN ENGINEER:
Please be sure to include all materials (Level One Downstream Analysis, Certification of Applicant Status form, sketches, photos, and maps) that may assist in complete review and consideration of this adjustment request. Failure to provide all pertinent information may result in delayed processing or denial of request. Please submit two complete copies of this request, application form, and applicable fee to the Department of Permitting and Environmental Review, 35030 SE Douglas Street, Suite 210 in Snoqualmie, WA 98065-9266. For more information, call 206-296-6600.

****Applicant/Agent is the individual financially responsible for all fees**

REFER TO CHAPTER 1, SECTION 1.4 OF THE *SURFACE WATER DESIGN MANUAL* FOR ADJUSTMENTS

DESCRIPTION OF ADJUSTMENT REQUEST: ☐ Standard ☐ Complex ☐ Experimental ☐ Blanket ☐ Pre-application

Allow the use of the proposed StormTech SC-740 Chamber system as an alternative infiltration system designed to meet the requirements for flow control.

APPLICABLE VERSION KCSWDM: ☐ 1990 (11/95)* ☐ 1998 (9/98) ☐ 2005 (1/05)
☒ *2016 (4/16)* *(Note: the term "variance" replaced by "adjustment")

APPLICABLE SECTION(S) OF STANDARDS:

Section 5.2.1 - General Requirements for Infiltration Facilities
Section 5.2.6 - Alternative Infiltration Systems

JUSTIFICATION PER KCSWDM SECTION 1.4.2: ☒ See attachments listed below.
Refer to attached Memorandum

AUTHORIZATION SIGNATURES:

DETERMINATION: ☐ Approval ☐ Conditional Approval (see below) ☐ Denial
☐ DNRP/WLRD Approval Signed: _____ Date: _____ (Experimental & Blanket only)
Permitting Staff Recommendation Signed: _____ Date: _____

Conditions of Approval:
☐ See attached memo dated: _____

Permitting DIRECTOR / DESIGNEE:

Permitting, Engineering Review Supervisor:	**Permitting, Site Engineering & Planning Supervisor**
Signed: Date:	Signed: Date:

Check out the Permitting Web site at www.kingcounty.gov/permits

DAVID EVANS
AND ASSOCIATES INC.

MEMORANDUM

DATE: May 20, 2020

TO: King County
Department of Permitting and Environmental Review
35030 SE Douglas Street, Suite 210
Snoqualmie, WA 98065

FROM: Rick Tomkins, PE

SUBJECT: StormTech SC-740 Chamber Adjustment Request

PROJECT: Lakeside Industries – Maple Valley Asphalt Facility
COMM18-0014

The purpose of this memorandum is to provide supporting information for a standard adjustment application associated with Lakeside Industries' Maple Valley Asphalt Facility project (COMM18-0014). The standard adjustment is requesting the allowable use of StormTech's SC-740 Chamber system as an alternative infiltration system to meeting the project's requirements for flow control.

It is our opinion that the StormTech SC-740 Chamber system meets the criteria for granting an adjustment. The chamber system will produce comparable results to a standard infiltration system while meeting the same objectives for safety, function, appearance, environmental protection and maintainability.

The proposed system meets all the general requirements for infiltration facilities as specified in KCSWDM Section 5.2.1 and the additional design criteria in KCSWDM Section 5.2.6.1.

Refer to the attached for the design calculations and supporting documentation.

- Reference A: Site Plan
- Reference B: Sheet 11 of the Site Engineering Plans
- Reference C: Excerpts from the Technical Information Report
- Reference D: StormTech's SC-740 Chamber System Preliminary Design Plan Set

Attachments/Enclosures: References A-D

Reference A

PNT OF THE EAST 1/2 OF THE NE 1/4, SEC. 16, TWP. 24N., RGE. 6E., W.M.

CEDAR RIVER

200 OHWM RURAL SHORELINE JURISDICTION

RENTON-MAPLE VALLEY SE (SR 169)

WETLAND C

STREAM B

PRE-SETTLING VAULT

EQUIPMENT STORAGE LEAN-TO

25' FRONTAGE SETBACK

LARGE SAND FILTER

STREAM C

ROW WETLAND

STORMTECH CHAMBER INFILTRATION GALLERY

OFFICE

20' SETBACK, TYP.

COVERED AGGREGATE STORAGE BINS (TYP)

STREAM A

EXISTING DOMESTIC WELL HOUSE

WETLAND A

WETLAND B

NORTH

0 20 40 80

SCALE: 1" = 40'

Plot Date: 5/19/2020 4:2 PM By: Travis Wageman
Save Date: 5/19/2020 4:21 PM By: TJM File: P:\LKS00000002\0400CAD\EC\Exhibits\Final\2020-04-1 - Site Plan\2020-04-1 - LKSD0002 Site Plan.dwg

triad
a division of David Evans and Associates, Inc.
20300 Woodinville-Snohomish Rd NE
Suite A • Woodinville, WA 98072
p: 425.415.2000 f: 425.486.5059
w: triadassociates.net

SITE PLAN EXHIBIT

LAKESIDE INDUSTRIES, INC.

MAPLE VALLEY ASPHALT FACILITY

18825 RENTON-MAPLE VALLEY SE (SR 169)
KING COUNTY, WASHINGTON

REVIEWED BY:			
NO.	DATE	REVISION	BY CK

DATE:

CADD: TJW

DESIGNED: TJW

STAMP NOT VALID UNLESS SIGNED AND DATED

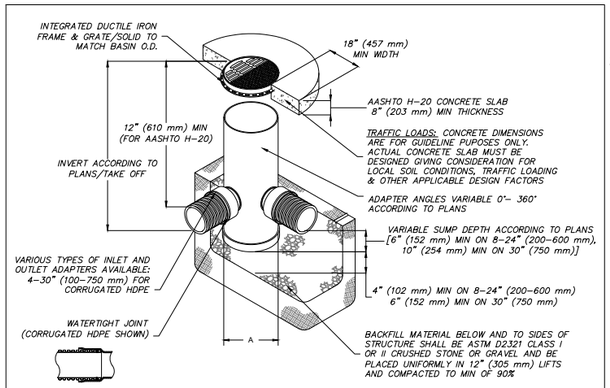
FIRST SUBMITTAL DATE: N/A

SCALE: HORZ.: 1"=40' VERT.: N/A

PROJECT NO.
LKSD00000002

SHEET NO.
1
OF 1

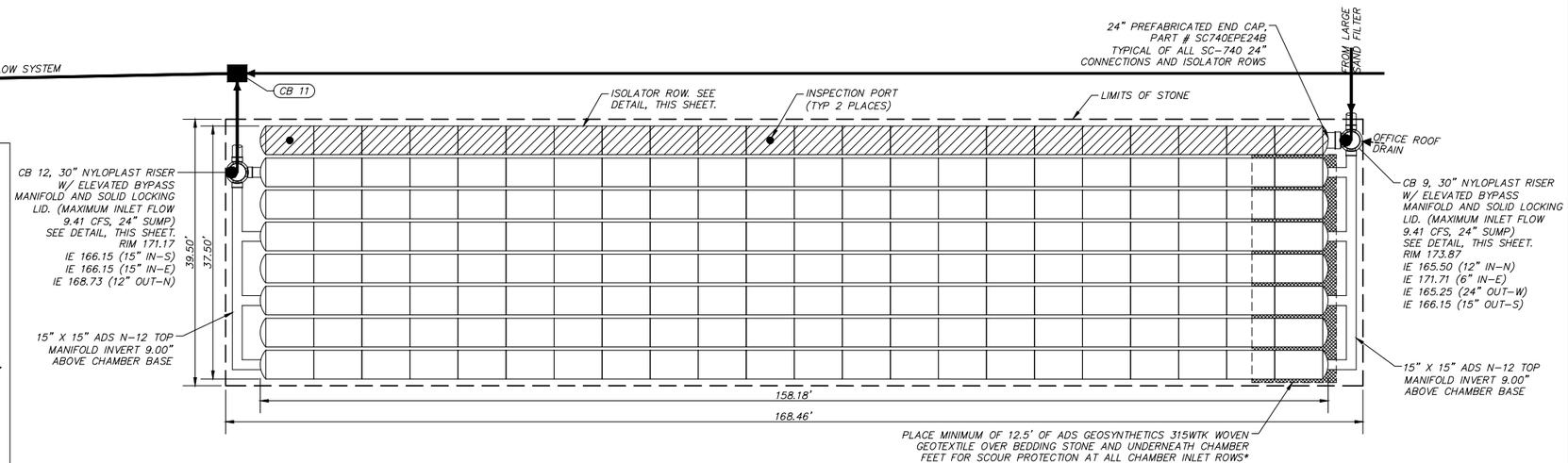
Reference B



NOTES:

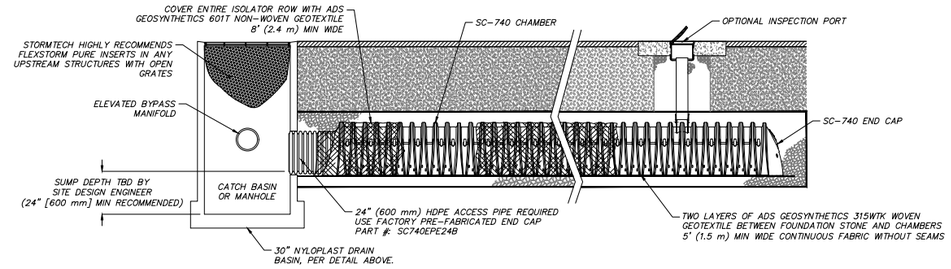
1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

NYLOPLAST DRAIN BASIN DETAIL
NTS

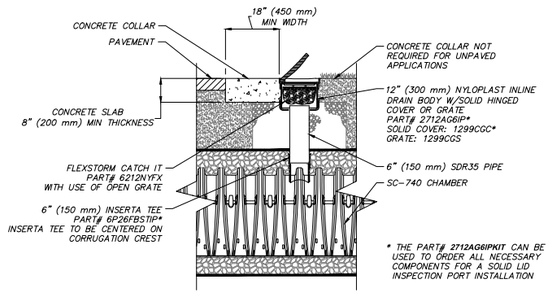


STORMTECH SC-740 CHAMBER SYSTEM PLAN VIEW (176 CHAMBERS REQUIRED)
SCALE: 1"=10'

SEE SHEET 2 FOR SUBGRADE PROTECTION REQUIREMENTS



SC-740 ISOLATOR ROW DETAIL
NTS



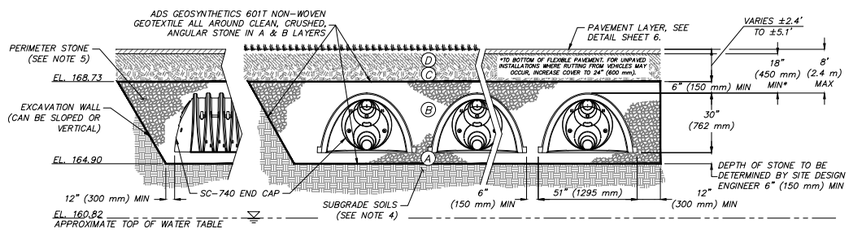
SC-740 6" (150 mm) INSPECTION PORT DETAIL
NTS

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

	MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

STORMTECH SC-740 CHAMBER SYSTEM TYPICAL CROSS SECTION DETAIL
NTS

FACILITY CALCULATIONS

STORAGE		ASBUILT
MAX LIVE STORAGE EL	= 168.73	
BOTTOM OF LIVE STORAGE EL	= 164.90	
STORAGE REQUIRED	= ±8,342 CF	
STORAGE PROVIDED	= ±14,804 CF	

FLOW RATES

Q2 = 3.31 CFS
Q10 = 4.87 CFS
Q100 = 6.98 CFS

STAGE-STORAGE TABLE

STAGE (FT)	VOLUME (CF)
164.90	0
165.40	1,298
165.90	3,061
166.40	5,699
166.90	8,208
167.40	10,526
167.90	12,524
168.40	13,938
168.73	14,804

* EXTENTS OF GEOTEXTILE FABRIC TO BE CONFIRMED BY PROJECT GEOTECHNICAL ENGINEER

CONTRACTOR SHALL INSTALL STORMTECH CHAMBERS ACCORDING TO MANUFACTURER'S RECOMMENDATIONS AND FOLLOWING SITE SPECIFIC LAYOUT FROM THE MANUFACTURER. CONTACT ENGINEER IF A CONFLICT EXISTS.*

THIS INFILTRATION FACILITY WAS DESIGNED WITH A LONG-TERM INFILTRATION RATE OF 20 INCHES PER HOUR. RATE SHALL BE CONFIRMED PRIOR TO FACILITY CONSTRUCTION BY GEOTECHNICAL ENGINEER USING THE METHODOLOGY REQUIRED BY THE COUNTY.

KING COUNTY DDES APPROVAL

Review Engineer	Date
Senior Engineer	Date
Wally Archuketa, P.E. DEVELOPMENT ENGINEER	Date

DAVID EVANS AND ASSOCIATES INC.
20300 Woodinville Snohomish Rd NE
Woodinville Washington 98072
Phone: 425.415.2000

INFILTRATION FACILITY DETAILS

MAPLE VALLEY ASPHALT FACILITY
LAKESIDE INDUSTRIES, INC.
18825 RENTON-MAPLE VALLEY SE (SR 169)
KING COUNTY, WASHINGTON

NO.	DATE	REVISION	BY	CK
5	5/1/20	REVISIONS PER CITY COMMENTS DATED 11/18/19	TJW	MAT

REVIEWED BY: MAT DATE: CADD: DJD DESIGNED: TJW

STAMP NOT VALID UNLESS SIGNED AND DATED

FIRST SUBMITTAL DATE: 11/5/18
SCALE: HORIZ.: VERT.:

PROJECT NO. LKSD00000002

SHEET NO. 12 OF 33

Plot Date: 4/30/2020 9:24 AM By: Travis Wagerman
Save Date: 4/28/2020 8:30 AM By: TJW
File: P:\LKSD00000002\04-00CAD\EC\SHEETS\Final\Site Engineering Plans\DT-F-LKSD0002-RU.dwg

Reference C

4.4 INFILTRATION FACILITY ANALYSIS

The LID and Level 2 Flow Control requirements will be addressed by full infiltration of the targeted surfaces via a StormTech Chamber infiltration gallery.

4.4.1 Groundwater, Mounding Analysis, and PIT Test Results

Given our plan to fully infiltrate all project site runoff, depth to groundwater needed to be determined. The site's proximity to the Cedar River suggested that the water table might be relatively shallow. On January 18, 2018, exploration pits were dug by Associated Earth Sciences, Inc. (AESI) for use in determining the thickness of fill above the underlying unsaturated native material. The location of each exploration pit, existing monitoring wells, and a cross-section through the site can be seen on the *Soil Cross-Sections Exhibit* located at the end of this section. This was useful in determining the appropriate location for the proposed StormTech Chamber infiltration gallery, as the bottom of the gallery must be below the fill but above the saturated layer.

Depth to the saturated layer was established by monitoring ground water levels at two locations in proximity to the proposed gallery location. Farallon Consulting installed pressure transducers in Monitoring Wells 4 and 5 on March 7, 2018, and proceeded to gather continuous water level monitoring data. Farallon's initial data indicated that groundwater levels peaked just after the middle of April. Using this data, AESI subsequently established elevation 160.82 as a reasonable estimate of the seasonal high water table, in the area of the proposed infiltration gallery. Accordingly, the bottom to the StormTech Chamber infiltration gallery was set at elevation 164.9, embedded approximately one foot into the underlying unsaturated native material. This provides slightly greater than four feet of separation from the assumed seasonal high water table.

Farallon's continued monitoring all wells onsite from March 2018 to April 2019. The results of the monitoring showed the peak groundwater elevations to be 157.57 for Monitoring Well 4 and 160.03 for Monitoring Well 5. The summation of Farallon's monitoring data can be seen on the *Seasonal High Water Table Exhibit,* attached at the end of this section for reference.

The data shows that the proposed infiltration gallery will see a peak elevation of approximately 160.31 below it. This is well below the assumed elevation of 160.82, providing an additional factor of safety between the seasonal high groundwater table and the bottom of the proposed infiltration gallery.

A requirement of infiltration facilities is that unless a mounding analysis is performed, a minimum separation of five feet must be provided between the bottom of the facility and the measured seasonal high water. With a mounding analysis, this separation can be reduced to three feet. On October 2, 2018, AESI completed a mounding analysis demonstrating that the StormTech Chamber facility would cause a maximum groundwater mound elevation of half an inch. More information regarding the mounding analysis can be found in *Section 6 – Special Reports and Studies*.

On April 24, 2018, AESI preformed a PIT test on the unsaturated native material beneath the fill layer, near the center of the proposed infiltration gallery, and at approximate elevation 164.9. The results showed a very high infiltration rate for the native material (800 in/hr). AESI recommended that for the purposes of design the maximum allowed infiltration rate should be used. The 2016 KCSWDM lists a maximum design infiltration rate of 20 inches per hour.

4.4.2 StormTech SC-740 Infiltration Facility

The infiltration facility will be constructed out of an ADS StormTech chambers system. The chamber system was sized using the following assumptions:

- ADS StormTech SC-740 chambers and endcaps were utilized.
- The systems were sized in collaboration with StormTech manufacturer, Advanced Drainage Systems (ADS).
- The porosity of the washed rock was assumed to be 0.40, per StormTech's *Tech Sheet #1 Porosity of Structural Backfill* (attached at the end of this section).
- The long-term infiltration rate for the facility is assumed to be 20 inches per hour, as recommended by AESI, and is the maximum rate allowed per the 2016 KCSWDM.

The tributary area to the infiltration facility of 8.74 acres can be seen on the *Targeted Surfaces Exhibit* located at the end of this section. The tributary area was modeled using WWHM, the documentation for the Developed Conditions can be found at the end of this section. The developed peak flows for the tributary area are shown on the next page:

Developed Conditions to Facility:

C, Lawn, Flat	= 1.57 acres
C, Forest, Steep	= 0.31 acres
Roads Flat	= 5.62 acres
Roof Tops	= 1.07 acres
Pond	= 0.17 acres
Total	**= 8.74 acres**

The Developed Condition yields the following peak flows:

Return Period	Flow (cfs)
2 year	3.313242
5 year	4.234194
10 year	4.865571
25 year	5.690361
50 year	6.325559
100 year	6.97935

The peak flows for the 100-year storm events for the Historic Condition and Developed Condition are 1.38 cfs and 6.98 cfs respectively. Because the difference between the historic and developed peak flows is greater than 0.15 cfs (for 15 min time steps), the targeted surfaces are subject to the conservation flow control and the low impact development performance standards of the 2016 KCSWDM. These standards will be met by fully infiltrating the stormwater tributary to the facility.

The WWHM time series for the developed flows were sent to ADS for assistance in sizing and designing the StormTech chamber facility. ADS was instructed to incorporate a 10% volumetric factor of safety into their facility design. The resulting facility footprint will be 6,490 sf with a length to width ration of 4.15 (164.3’ L x 39.5’ W), and will have an overall depth of 46 inches (or 3.83 feet). An incremental cumulative volume spreadsheet was produced by ADS and was used to create a stage-storage discharge table (SSD) within WWHM to model the infiltration facility. The results of the WWHM model and SSD table have been attached at the end of this section.

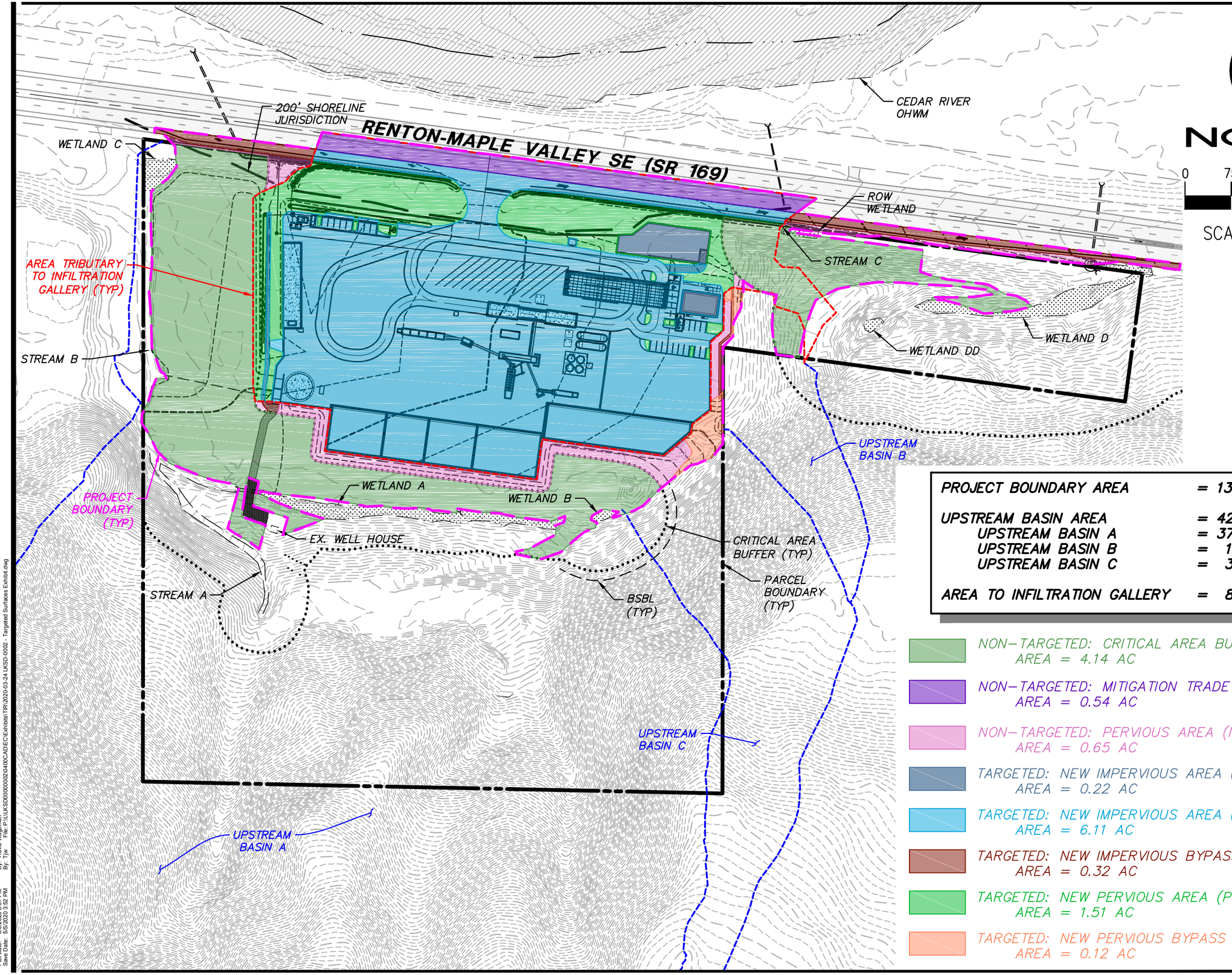
The results of the WWHM model showed the peak water elevation within the facility to be 167.00. The design overflow elevation of the infiltration facility is at 168.73. Interpolating between stages on the ADS spreadsheet shows the required live storage volume of the facility to be equal to 8,707 cubic feet. The total live storage volume provided is 14,804 cubic feet.

Infiltration Facility Live Storage Volumes:

Required Live Storage Volume = 8,707 cu-ft
Provided Live Storage Volume = 14,804 cu-ft

The additional 10% volumetric factor of safety added by ADS resulted in a 10% larger facility footprint. This larger footprint increased the infiltration capacity of the facility, which accounts for the 1.73' of depth between the peak water elevation and the design overflow elevation. This additional facility depth is a safety factor designed to account for any reduction in infiltration capacity due to sedimentation and compaction during construction and long-term sedimentation over the life of the facility.

The StormTech Chamber infiltration gallery consists of 176 SC-740 chambers (85.4" x 51" x 30") confined within an envelope of clean crushed drain rock (46" thick), and is located under the pavement in the northeast portion of the project site. Drainage is released to the gallery following pre-treatment using a CP Separator/Pre-settling Vault/Large Sand Filter treatment train. The facility is sized to fully infiltrate 100-year storm flows; however, an emergency overflow route is provided should flows exceed facility capacity. This overflow route consists of pipe and open channel elements that will safely convey drainage to the 30" CMP culvert under highway SR 169 (Culvert 2), which discharges to the Cedar River. The infiltration gallery will be privately owned and maintained.



NORTH

0 75 150 300

SCALE: 1" = 150'

PROJECT BOUNDARY AREA	= 13.61 ACRES
UPSTREAM BASIN AREA	= 42.14 ACRES
UPSTREAM BASIN A	= 37.29 ACRES
UPSTREAM BASIN B	= 1.19 ACRES
UPSTREAM BASIN C	= 3.66 ACRES
AREA TO INFILTRATION GALLERY	= 8.74 ACRES

- NON-TARGETED: CRITICAL AREA BUFFER ENHANCEMENT AREA = 4.14 AC
- NON-TARGETED: MITIGATION TRADE AREA (PGIS) AREA = 0.54 AC
- NON-TARGETED: PERVIOUS AREA (NON-PGPS) AREA = 0.65 AC
- TARGETED: NEW IMPERVIOUS AREA (NON-PGIS) AREA = 0.22 AC
- TARGETED: NEW IMPERVIOUS AREA (PGIS) AREA = 6.11 AC
- TARGETED: NEW IMPERVIOUS BYPASS AREA (PGIS) AREA = 0.32 AC
- TARGETED: NEW PERVIOUS AREA (PGPS) AREA = 1.51 AC
- TARGETED: NEW PERVIOUS BYPASS AREA (PGPS) AREA = 0.12 AC

DAVID EVANS AND ASSOCIATES INC.
20800 Woodinville Snohomish Rd NE
Woodinville Washington 98072
Phone: 425.462.2000

TARGETED SURFACES EXHIBIT

LAKESIDE INDUSTRIES, INC.

MAPLE VALLEY ASPHALT PLANT

18625 RENTON-MAPLE VALLEY SE (SR 169) WASHINGTON
KING COUNTY,

NO.	DATE	REVISION	BY	CK

REVIEWED BY: DESIGNED:
DATE: CADD:

STAMP NOT VALID UNLESS SIGNED AND DATED

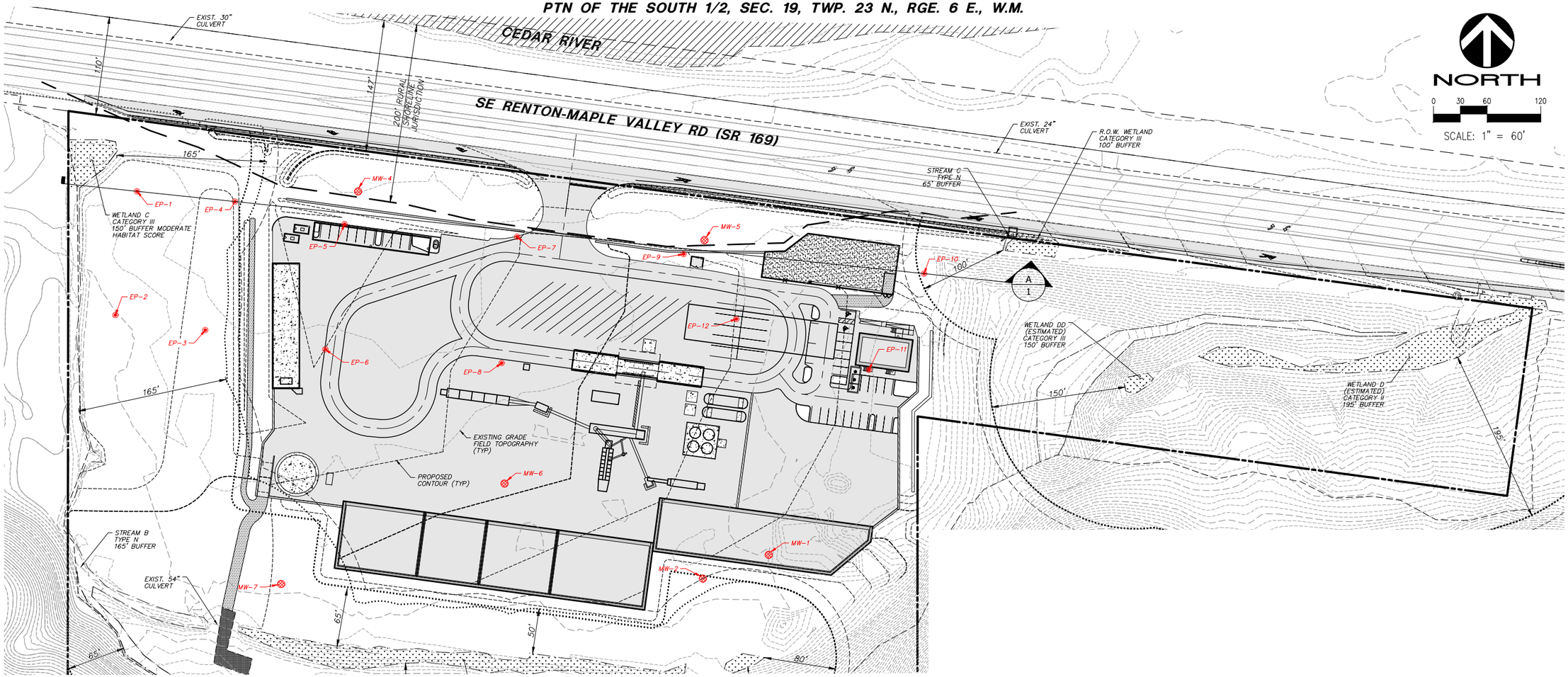
FIRST SUBMITTAL DATE: 10/2/18
SCALE: HORIZ.: 1"=150' VERT.: N/A

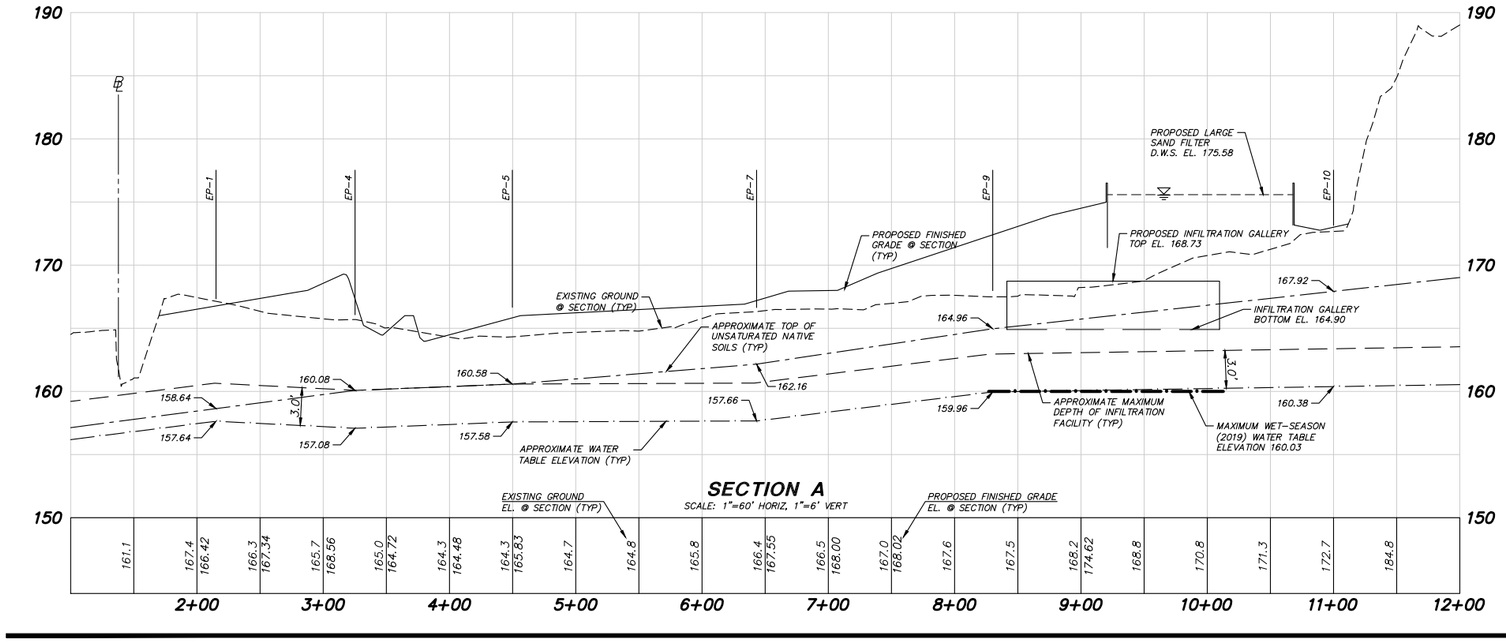
PROJECT NO.
LKSD00000002

SHEET NO.
1
OF 1

Plot Date: 5/5/2020 3:57 PM By: Travis Wagerman
Save Date: 5/5/2020 3:52 PM By: TJW
File: P:\LLKSD\00000002\0400CAD\EC\Exhibits\TIR\2020-03-24 LKSD-0002 - Targeted Surfaces Exhibit.dwg

PTN OF THE SOUTH 1/2, SEC. 19, TWP. 23 N., RGE. 6 E., W.M.





SECTION A
SCALE: 1"=60' HORIZ, 1"=6' VERT

DAVID EVANS AND ASSOCIATES INC.
20300 Woodinville Snohomish Rd NE
Woodinville Washington 98072
Phone: 425.415.2000

SOIL CROSS-SECTIN EXHIBIT

LAKESIDE INDUSTRIES, INC.

MAPLE VALLEY ASPHALT FACILITY

18825 RENTON-MAPLE VALLEY SE (SR 169) WASHINGTON

KING COUNTY

NO.	DATE	REVISION	BY	CK

REVIEWED BY:
DATE:
DESIGNED: tjw
CADD: tjw

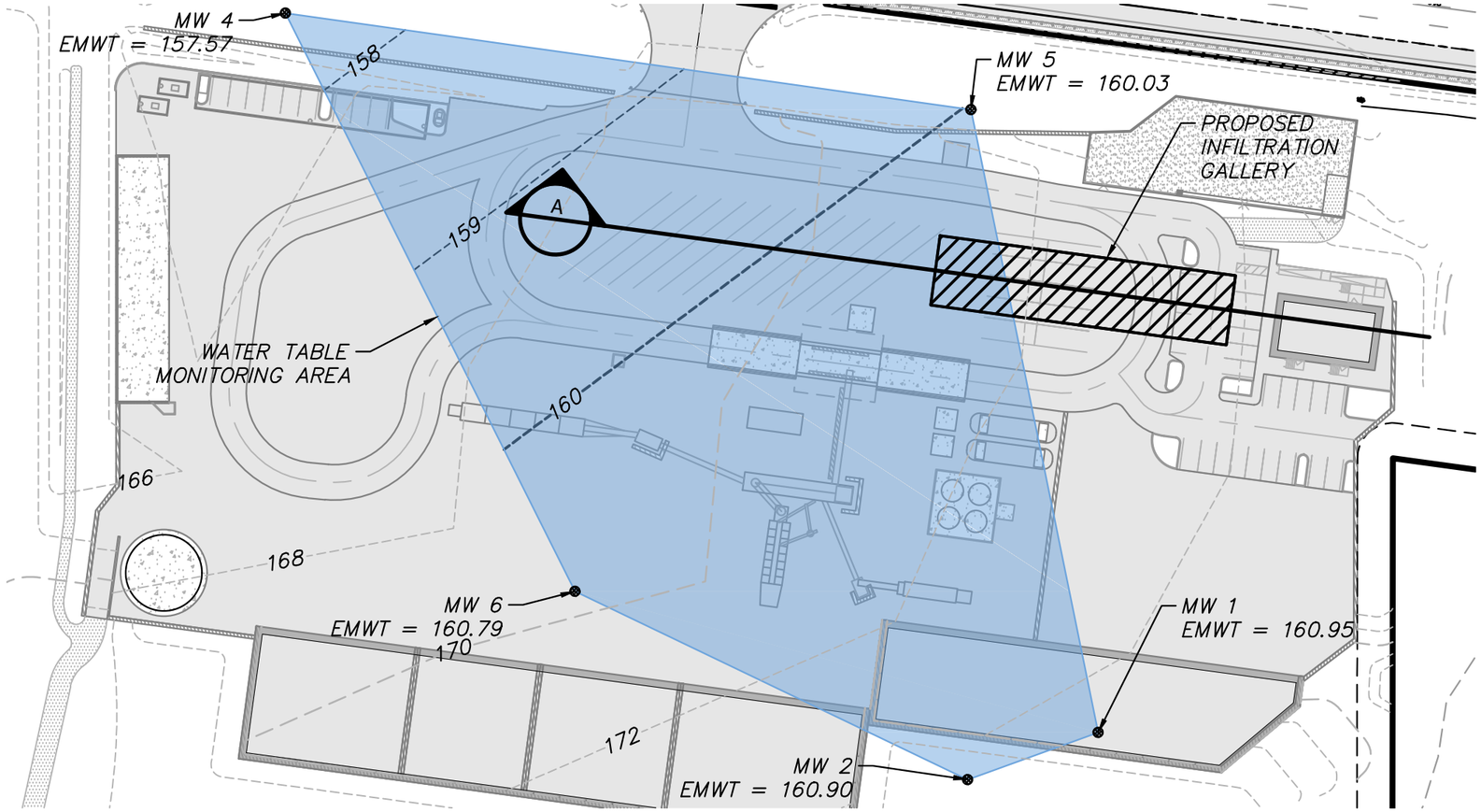
STAMP NOT VALID UNLESS SIGNED AND DATED

FIRST SUBMITTAL DATE:
SCALE: HORIZ.: 1"=60' VERT.: 1"=6'

PROJECT NO.

SHEET NO.
1
OF 1

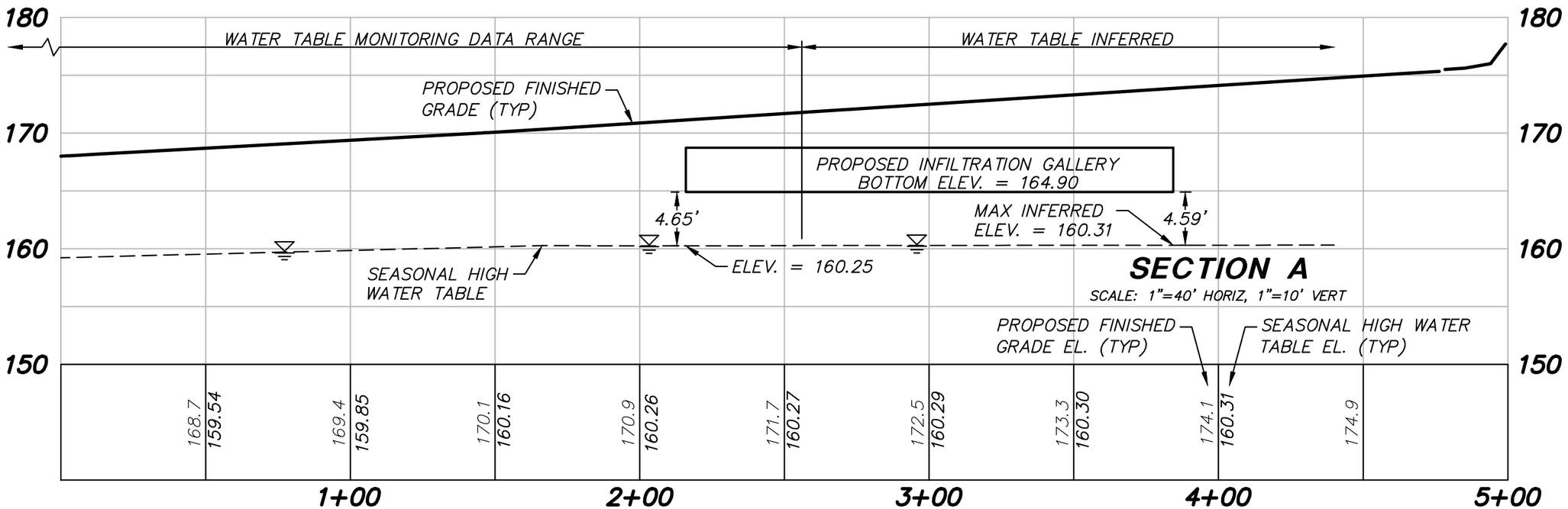
By: Travis Wageman
By: TJW File P:\LKSD00000002\0400CAD\ECExhibits\Final\2020-05-05 Soil Cross-Section\2020-05-05 LKSD-0002 Soil Cross-Sections Exhibit.dwg
Plot Date: 5/19/2020 4:09 PM
Save Date: 5/19/2020 4:07 PM



NORTH

0 40 80 160

EMWT = ELEVATION OF MAXIMUM WATER TABLE



DAVID EVANS AND ASSOCIATES INC.
20300 Woodinville Snohomish Rd NE
Woodinville Washington 98072
Phone: 425.485.2000

SEASONAL HIGH WATER TABLE EXHIBIT
PLAN AND PROFILE

LAKESIDE INDUSTRIES, INC.

MAPLE VALLEY ASPHALT PLANT

18825 RENTON-MAPLE VALLEY SE (SR 169) WASHINGTON
KING COUNTY,

DATE: BY: CK:
REVISION
REVIEWED BY: DATE
NO:
CADD:
DESIGNED:

FIRST SUBMITTAL DATE: ----
SCALE: HORIZ.: 1"=80' VERT.: 1"=10'

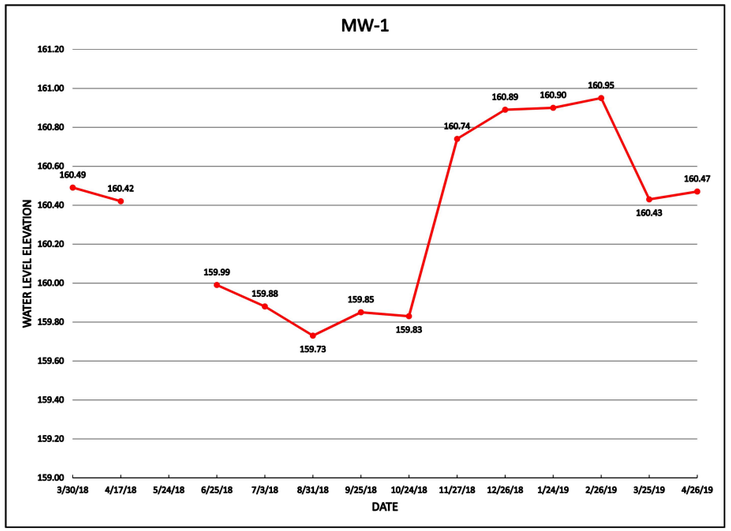
PROJECT NO.
LKSD00000002

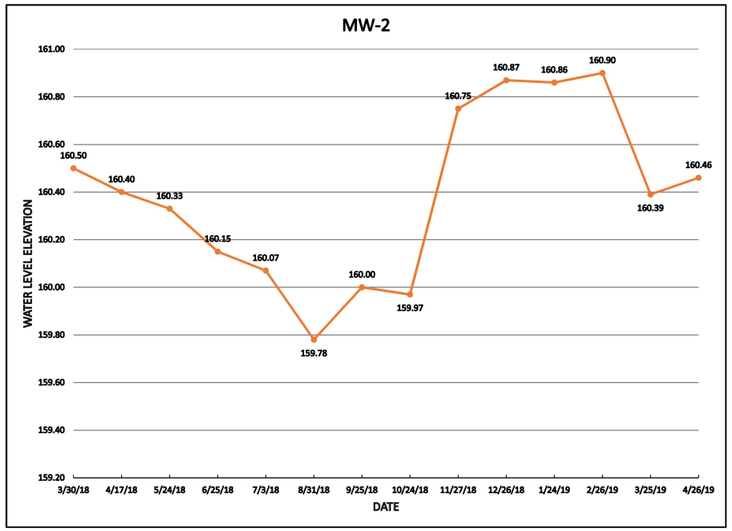
SHEET NO.
1
OF 2

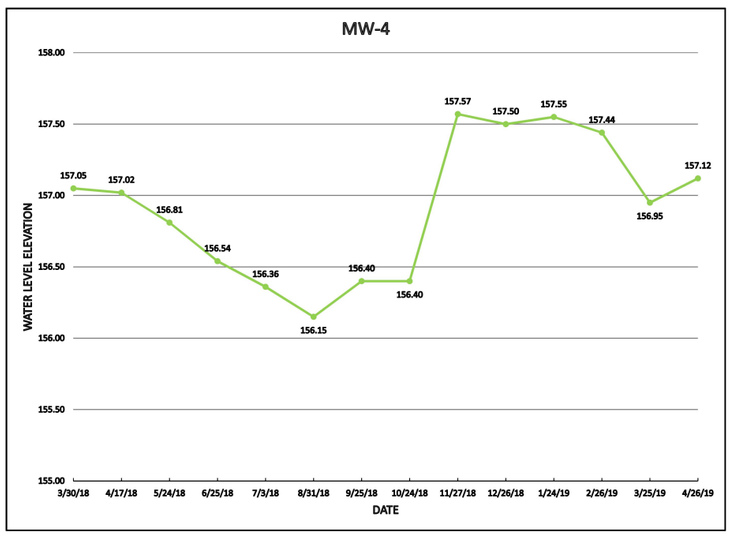
Plot Date: 5/19/2020 4:04 PM By: Travis Wageman
Save Date: 5/19/2020 4:02 PM By: TJw File: P:\LILKSD00000002\0400CAD\EC\Exhibits\TIR\2020-05-19 LKSD-0002 - Seasonal High Water Table Exhibit.dwg

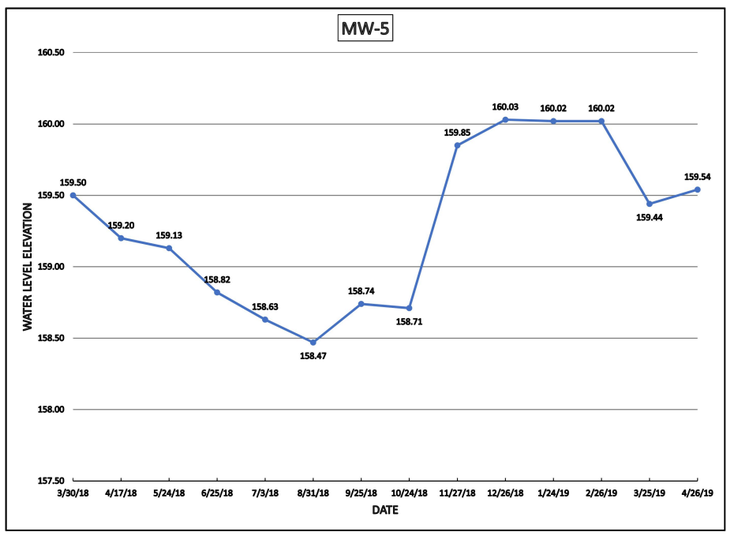
Monitoring Location	3/30/2018	4/17/2018	5/24/2018	6/25/2018	7/3/2018	8/31/2018	9/25/2018	10/24/2018	11/27/2018	12/26/2018	1/24/2019	2/26/2019	3/25/2019	4/26/2019
	Water Level Elevation[1]													
MW-1	160.49	160.42		159.99	159.88	159.73	159.85	159.83	160.74	160.89	160.90	160.95	160.43	160.47
MW-2	160.50	160.40	160.33	160.15	160.07	159.78	160.00	159.97	160.75	160.87	160.86	160.90	160.39	160.46
MW-4	157.05	157.02	156.81	156.54	156.36	156.15	156.40	156.40	157.57	157.50	157.55	157.44	156.95	157.12
MW-5	159.50	159.20	159.13	158.82	158.63	158.47	158.74	158.71	159.85	160.03	160.02	160.02	159.44	159.54
MW-6	160.39	160.47	160.10	159.89	159.78	159.60	159.78	159.77	160.58	160.77	160.75	160.79	160.29	160.38

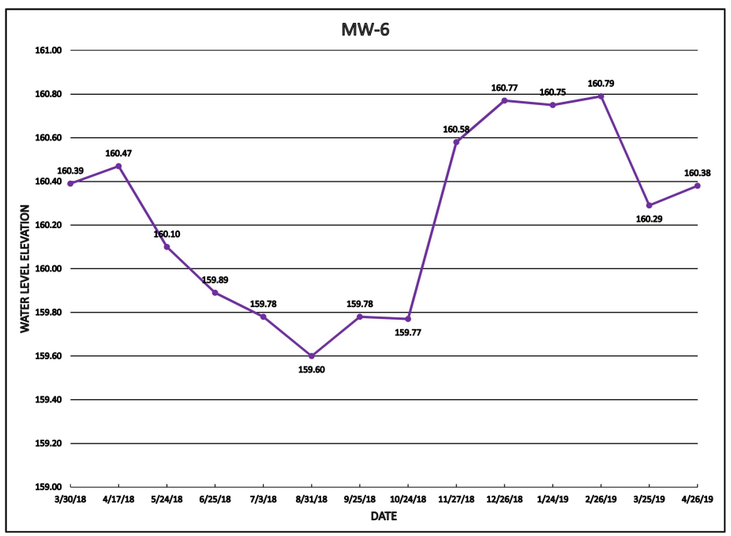
1 – WATER LEVEL ELEVATIONS PROVIDED BY FARALLON CONSULTING, L.L.C.











DAVID EVANS AND ASSOCIATES INC.
2200 Woodinville Snohomish Rd NE
Woodinville Washington 98072
Phone: 425.415.2000

SEASONAL HIGH WATER TABLE EXHIBIT
MONITORING DATA AND GRAPHS

LAKESIDE INDUSTRIES, INC.

MAPLE VALLEY ASPHALT PLANT
18825 RENTON-MAPLE VALLEY SE (SR 169)
KING COUNTY, WASHINGTON

DATE: BY: CK
REVIEWED BY:
NO. DATE REVISION
CADD: DESIGNED:

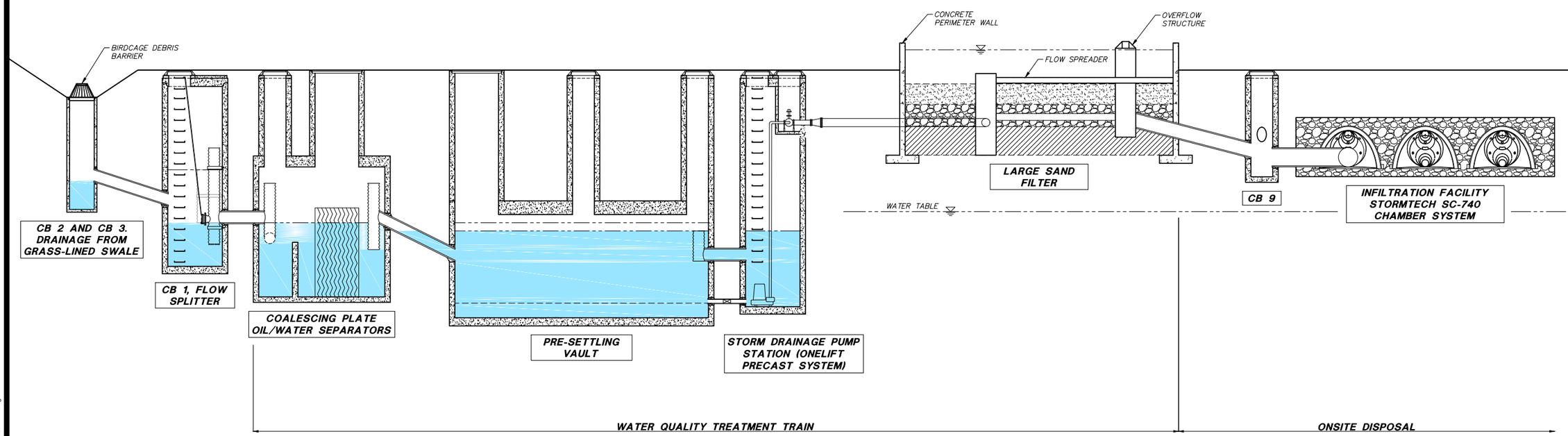
FIRST SUBMITTAL DATE: ----
SCALE: HORIZ.: 1"=80' VERT.: 1"=10'

PROJECT NO.
LKSD00000002

SHEET NO.
2
OF 2

Plot Date: 5/19/2020 4:04 PM By: Travis Wageman
Save Date: 5/19/2020 4:02 PM By: TJW File: P:\LLKSD00000002\0400CAD\EC\Exhibits\TIR\2020-05-19 LKSD-0002 - Seasonal High Water Table Exhibit.dwg

PTN OF THE EAST 1/2 OF THE NE 1/4, SEC. 16, TWP. 24N., RGE. 6E., W.M.



DAVID EVANS AND ASSOCIATES INC.
20300 Woodinville Snohomish Rd NE
Woodinville Washington 98072
Phone: 425.415.2000

SCHEMATIC STORM DRAINAGE SYSTEM PROFILE

LAKESIDE INDUSTRIES, INC.

MAPLE VALLEY ASPHALT FACILITY

18825 RENTON-MAPLE VALLEY SE (SR 169) KING COUNTY, WASHINGTON

NO.	DATE	REVISION	BY	CK
	5/1/20	REVISIONS PER CITY COMMENTS DATED 11/18/19	TJW	RAT

REVIEWED BY: RAT
DESIGNED: TJW
DRAWN: TJW
CADD: DJD

STAMP NOT VALID UNLESS SIGNED AND DATED

FIRST SUBMITTAL DATE: 11/5/18
SCALE: HORIZ.: VERT.:

PROJECT NO.
LKSD00000002

SHEET NO.
13
OF 33

KING COUNTY DDES APPROVAL

Review Engineer	Date
Senior Engineer	Date
Wally Archuketa, P.E. DEVELOPMENT ENGINEER	Date

Plot Date: 4/30/2020 9:24 AM
Save Date: 4/28/2020 8:30 AM
By: Travis Wageman
By: TJW File P:\LLKSD00000002\0400CAD\EC\SHEETS\Final\Site Engineering Plans\DT-F-LKSD0002-RU.dwg

HISTORIC AND DEVELOPED CONDITIONS MODELING

WWHM2012
PROJECT REPORT

Project Name: 2020-02-19 Ex vs Prop. Flows to Gallery
Site Name :
Site Address:
City :
Report Date : 4/14/2020
Gage : Seatac
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 1.17
Version Date: 2019/09/13
Version : 4.2.17

PREDEVELOPED LAND USE

Name: Historic Conditions to Gallery
Bypass: No
Groundwater: No

Pervious Land Use	acre
C, Forest, Flat	8.43
C, Forest, Steep	0.31
Pervious Total	8.74

Impervious Land Use	acre
Impervious Total	0.0
Basin Total	8.74

MITIGATED LAND USE

Name: Developed Conditions to Gallery
Bypass: No
Groundwater: No

Pervious Land Use	acre
C, Lawn, Flat	1.57
C, Forest, Steep	0.31
Pervious Total	1.88

Impervious Land Use	acre
ROADS FLAT	5.62
ROOF TOPS FLAT	1.07
POND	0.17
Impervious Total	6.86
Basin Total	8.74

ANALYSIS RESULTS

Stream Protection Duration

Predeveloped Land Use Totals for POC #1
Total Pervious Area: 8.74
Total Impervious Area: 0.0

Mitigated Land Use Totals for POC #1
Total Pervious Area: 1.88
Total Impervious Area: 6.86

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow (cfs)
2 year	0.348072
5 year	0.573576
10 year	0.744697
25 year	0.983779
50 year	0.177631
100 year	1.384427

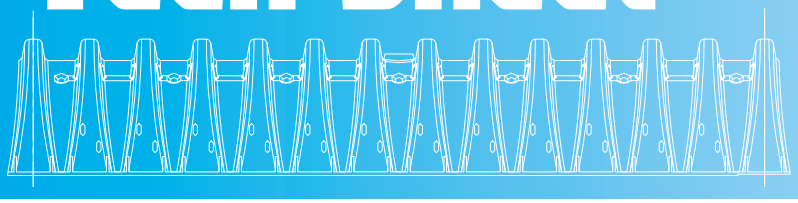
Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow (cfs)
2 year	3.313242
5 year	4.234194
10 year	4.865571
25 year	5.690361
50 year	6.325559
100 year	6.97935

Water Quality BMP Flow and Volume for POC #1
On-line facility volume: 1.053 **acre-feet**
On-line facility target flow: 1.2991 **cfs.**
Adjusted for 15 min: 1.2991 **cfs.**
Off-line facility target flow: 0.7318 **cfs.**
Adjusted for 15 min: 0.7318 **cfs.**

Perlnd and Implnd Changes
No changes have been made.

Tech Sheet



StormTech®
Detention • Retention • Water Quality
A division of ADS®

Porosity of Structural Backfill

Tech Sheet # 1
November 2012

General:
StormTech advises that a porosity of 40% is appropriate to use for the storage capacity of structural aggregate used in the bedding and embedment zones around StormTech chambers. This memo provides technical support for the use of a porosity of 40%. The major points of the memo are:

- 40% porosity is appropriate for the clean, open graded, angular aggregate material StormTech recommends for foundation and embedment.
- Most of the porosity data available is based on a compacted condition. StormTech requires compaction of the foundation (bedding) and allows dumped aggregate embedment around the chambers.
- Test data indicates that the average porosity of all gradations of the *compacted* foundation is approximately 40%. The porosity of the *dumped* backfill in the embedment zone is typically greater than 40% and the calculated weighted average porosity therefore exceeds 40% for typical StormTech systems.
- Porosity is protected from soils migration by a non-woven geotextile that surrounds the entire system. For some exfiltration systems, a drainage net is substituted for the geotextile on the bottom of the bed.

Terms:
Porosity (n) is defined as the volume voids over the total volume expressed as a percent: $n = (V_v / V_t) \times 100\%$. Other terms commonly used to describe porosity include; "voids" and "void space". A related term that should not be confused with porosity is *void ratio* (e) which is the volume of voids over the volume of solids expressed as a decimal: $e = V_v / V_s$.

Compilation of Known Test Data:

Sample	Data Source	Porosity	Bulk Density	Test / Description
AASHTO # 4	StormTech lab	39.9%	94.3 lbs/ft^3	dumped, corrected[1]
AASHTO # 57	StormTech lab	45.4%	87.2 lbs/ft^3	dumped, corrected[1]
AASHTO # 4	StormTech lab	37.4%	103.0 lbs/ft^3	jigged & tamped, corrected[1]
AASHTO # 57	StormTech lab	38.7%	97.7 lbs/ft^3	jigged & tamped, corrected[1]
AASHTO # 57	NTH lab	50 - 51%		tapped & agitated, dried[2]
AASHTO # 57	NTH lab	50 - 52 %		tapped & agitated, dried[2]
AASHTO # 3	NTH lab	53 - 54%		tapped & agitated, dried[2]
-1 ½"	Anderson Eng. Cons.	41.9%	96.8 lbs/ft^3	dry rodded, C29[3]
-1 ½"	Anderson Eng. Cons.	35.3%	101.7 lbs/ft^3	dry rodded, C29[3]
-1 ½"	Anderson Eng. Cons.	37.8%	98.6 lbs/ft^3	dry rodded, C29[3]
-1 ½"	Anderson Eng. Cons.	41.3%	93.6 lbs/ft^3	dry rodded, C29[3]
-1 ½"	Anderson Eng. Cons.	38.2%	98.7 lbs/ft^3	dry rodded, C29[3]
-3/4"	Anderson Eng. Cons.	38.5%	100.3 lbs/ft^3	dry rodded, C29[3]
-3/4"	Anderson Eng. Cons.	38.9%	97.9 bs/ft^3	dry rodded, C29[3]

Compilation of Known Test Data:

Sample	Data Source	Porosity	Bulk Density	Test / Description
AASHTO # 4	Universal Eng. Serv.	44.3%	78.6 lbs/ft^3	rodded C29[4]
AASHTO # 57	Universal Eng. Serv.	43.2%	79.8 lbs/ft^3	rodded C29[4]
AASHTO # 4	Universal Eng. Serv.	46.1%	70.8 lbs/ft^3	rodded C29[5]
AASHTO # 57	Universal Eng. Serv.	42.8%	74.8 lbs/ft^3	rodded C29[5]
-1 ½" Crushed Rock	CTL Thompson TX	46%	90.5 lbs/ft^3	rodded C29[6]
-1" Crushed Rock	CTL Thompson TX	45%	91.6 lbs/ft^3	rodded C29[6]
-1 ½" Crushed Conc	CTL Thompson TX	48%	77.1 lbs/ft^3	rodded C29[6]

[1]Testing was conducted by StormTech in October, 2003 using aggregate from Connecticut. Water was used to fill voids and a correction factor that reduced porosities by 3 to 16% was calculated and applied to correct for wall effects of the test container.

[2]Testing was conducted by NTH Consultants,Ltd. Exton, PA in December, 2002 for ADS. This was dry testing in accordance with the "Civil Engineering Reference Manual, Sixth Edition" by Michael R. Lindburg, PE.

[3]Testing was conducted by Anderson Engineering Consultants, Inc., Little Rock, AR in February, 2000 for 7 different aggregate samples from four suppliers in Arkansas.

[4]The material tested was lime rock from central Florida. Testing was conducted by Universal Engineering Sciences in Orlando, FL in November, 2005.

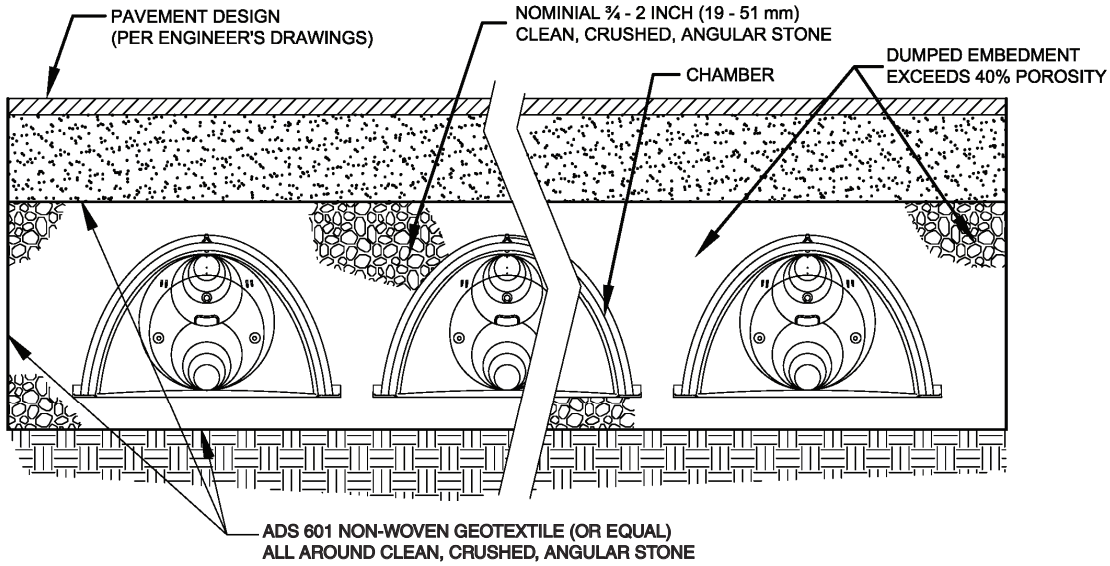
[5]The material tested was recycled, crushed concrete from central Florida. Testing was conducted by Universal Engineering Sciences in Orlando, FL in November, 2005.

[6]Testing was conducted by CTL | Thompson Texas, LLC in August, 2006.

ASTM C29 is the "Standard Test Method for Bulk Density (Unit Weight) and Voids in Aggregate".

Porosity References:

- "Urban Runoff Quality Management" WEF MOP 23 / ASCE MOP 87. Table 5.12 lists uniform sized gravel at 40%.
- "Controlling Urban Runoff:" by Thomas R. Schueler, July 1987 describes storage volume of the void space in the trench at 40% of the excavated trench volume.
- "On-site Stormwater Management: Applications for Landscape and Engineering" Second Edition by Bruce Ferguson and Thomas Debo states that open graded crushed stone has 40% void space.



ADS "Terms and Conditions of Sale" are available on the ADS website, www.ads-pipe.com
StormTech is a registered trademark of StormTech, Inc.
Universal Engineering Sciences is a registered trademark of Universal Engineering Sciences.

Project: REV2 Maple Valley Asphalt Plant - 7-30-18

StormTech
Detention • Retention • Water Quality
A division of ADS

Chamber Model -	SC-740	
Units -	**Imperial**	Click Here for Metric
Number of chambers -	176	
Voids in the stone (porosity) -	40	%
Base of STONE Elevation -	164.90	ft
Amount of Stone Above Chambers -	6	in
Amount of Stone Below Chambers -	10	in
Area of system -	6490	sf Min. Area - 5950 sf min. area

☑ Include Perimeter Stone in Calculations

Height of System *(inches)*	Incremental Single Chamber *(cubic feet)*	Incremental Total Chamber *(cubic feet)*	Incremental Stone *(cubic feet)*	Incremental Ch & St *(cubic feet)*	Cumulative Chamber *(cubic feet)*	Elevation *(feet)*	
46	0.00	0.00	216.33	216.33	14803.74	168.73	
45	0.00	0.00	216.33	216.33	14587.41	168.65	
44	0.00	0.00	216.33	216.33	14371.08	168.57	
43	0.00	0.00	216.33	216.33	14154.74	168.48	
42	0.00	0.00	216.33	216.33	13938.41	168.40	
41	0.00	0.00	216.33	216.33	13722.08	168.32	
40	0.05	9.68	212.46	222.14	13505.74	168.23	
39	0.16	28.67	204.86	233.54	13283.60	168.15	
38	0.28	49.62	196.48	246.11	13050.06	168.07	
37	0.60	106.30	173.81	280.11	12803.96	167.98	
36	0.80	141.10	159.89	300.99	12523.85	167.90	
35	0.95	167.32	149.41	316.72	12222.85	167.82	
34	1.07	189.11	140.69	329.80	11906.13	167.73	
33	1.18	207.77	133.23	340.99	11576.33	167.65	
32	1.27	222.76	127.23	349.99	11235.33	167.57	
31	1.36	238.48	120.94	359.42	10885.34	167.48	
30	1.45	255.92	113.96	369.89	10525.92	167.40	
29	1.52	268.35	108.99	377.34	10156.04	167.32	
28	1.58	278.49	104.94	383.43	9778.69	167.23	
27	1.64	289.04	100.72	389.76	9395.26	167.15	
26	1.70	299.11	96.69	395.80	9005.51	167.07	***100-YR EL. = 167.00***
25	1.75	308.52	92.93	401.44	8609.70	166.98	***VOLUME = 8,707 CF***
24	1.80	317.30	89.42	406.71	8208.26	166.90	
23	1.85	326.48	85.74	412.22	7801.55	166.82	
22	1.89	333.18	83.06	416.24	7389.33	166.73	
21	1.93	340.38	80.18	420.56	6973.09	166.65	
20	1.97	347.60	77.29	424.89	6552.52	166.57	
19	2.01	353.75	74.83	428.58	6127.63	166.48	
18	2.04	359.92	72.37	432.28	5699.05	166.40	
17	2.07	365.19	70.26	435.45	5266.76	166.32	
16	2.10	370.46	68.15	438.61	4831.31	166.23	
15	2.13	375.20	66.25	441.45	4392.70	166.15	
14	2.15	379.08	64.70	443.78	3951.25	166.07	
13	2.18	383.16	63.07	446.23	3507.47	165.98	
12	2.20	386.91	61.57	448.48	3061.24	165.90	
11	2.21	388.49	60.94	449.43	2612.76	165.82	
10	0.00	0.00	216.33	216.33	2163.33	165.73	
9	0.00	0.00	216.33	216.33	1947.00	165.65	
8	0.00	0.00	216.33	216.33	1730.67	165.57	
7	0.00	0.00	216.33	216.33	1514.33	165.48	
6	0.00	0.00	216.33	216.33	1298.00	165.40	
5	0.00	0.00	216.33	216.33	1081.67	165.32	
4	0.00	0.00	216.33	216.33	865.33	165.23	
3	0.00	0.00	216.33	216.33	649.00	165.15	
2	0.00	0.00	216.33	216.33	432.67	165.07	
1	0.00	0.00	216.33	216.33	216.33	164.98	

SC-740 INFILTRATION GALLERY SSD TABLE MODELING

WWHM2012
PROJECT REPORT

Project Name: SC-740 Infiltration Gallery (SSD)
Site Name :
Site Address:
City :
Report Date : 4/14/2020
Gage : Seatac
Data Start : 1948/10/01
Data End : 2009/09/30
Precip Scale: 1.17
Version Date: 2019/09/13
Version : 4.2.17

Low Flow Threshold for POC 1 : 50 Percent of the 2 Year

High Flow Threshold for POC 1: 50 year

PREDEVELOPED LAND USE

Name: Historic Area to SC-740
Bypass: No
Groundwater: No

Pervious Land Use	acre
C, Forest, Flat	8.43
C, Forest, Steep	0.31
Pervious Total	8.74

Impervious Land Use	acre
Impervious Total	0.0
Basin Total	8.74

MITIGATED LAND USE

Name: Historic Area to SC-740
Bypass: No
Groundwater: No

Pervious Land Use	acre
C, Forest, Steep	0.31
C, Lawn, Flat	1.57
Pervious Total	1.88

Impervious Land Use	acre
ROADS FLAT	5.62
ROOF TOPS FLAT	1.07

POND	**0.17**
Impervious Total	**6.86**
Basin Total	**8.74**

Element Flows To:

Surface	**Interflow**	**Groundwater**
Large Sand Filter	Large Sand Filter	

Name: Large Sand Filter
Bottom Length: 140.00 ft.
Bottom Width: 48.00 ft.
Depth: 3 ft.
Side slope 1: 0 To 1
Side slope 2: 0 To 1
Side slope 3: 0 To 1
Side slope 4: 0 To 1

Filtration On
Hydraulic conductivity: 1
Depth of filter medium: 1.5
Total Volume Infiltrated (ac-ft.): 1406.035
Total Volume Through Riser (ac-ft.): 73.163
Total Volume Through Facility (ac-ft.): 1479.198
Percent Infiltrated: 95.05
Total Precip Applied to Facility: 0
Total Evap From Facility: 0

Discharge Structure
Riser Height: 2.5 ft.
Riser Diameter: 21 in.

Element Flows To:

Outlet 1	**Outlet 2**
SC-740	SC-740

Sand Filter Hydraulic Table

Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.154	0.000	0.000	0.000
0.0333	0.154	0.005	0.000	0.159
0.0667	0.154	0.010	0.000	0.162
0.1000	0.154	0.015	0.000	0.165
0.1333	0.154	0.020	0.000	0.169
0.1667	0.154	0.025	0.000	0.172
0.2000	0.154	0.030	0.000	0.176
0.2333	0.154	0.036	0.000	0.179
0.2667	0.154	0.041	0.000	0.183
0.3000	0.154	0.046	0.000	0.186
0.3333	0.154	0.051	0.000	0.190
0.3667	0.154	0.056	0.000	0.193
0.4000	0.154	0.061	0.000	0.197
0.4333	0.154	0.066	0.000	0.200
0.4667	0.154	0.072	0.000	0.204

0.5000	0.154	0.077	0.000	0.207
0.5333	0.154	0.082	0.000	0.210
0.5667	0.154	0.087	0.000	0.214
0.6000	0.154	0.092	0.000	0.217
0.6333	0.154	0.097	0.000	0.221
0.6667	0.154	0.102	0.000	0.224
0.7000	0.154	0.108	0.000	0.228
0.7333	0.154	0.113	0.000	0.231
0.7667	0.154	0.118	0.000	0.235
0.8000	0.154	0.123	0.000	0.238
0.8333	0.154	0.128	0.000	0.242
0.8667	0.154	0.133	0.000	0.245
0.9000	0.154	0.138	0.000	0.248
0.9333	0.154	0.144	0.000	0.252
0.9667	0.154	0.149	0.000	0.255
1.0000	0.154	0.154	0.000	0.259
1.0333	0.154	0.159	0.000	0.262
1.0667	0.154	0.164	0.000	0.266
1.1000	0.154	0.169	0.000	0.269
1.1333	0.154	0.174	0.000	0.273
1.1667	0.154	0.180	0.000	0.276
1.2000	0.154	0.185	0.000	0.280
1.2333	0.154	0.190	0.000	0.283
1.2667	0.154	0.195	0.000	0.286
1.3000	0.154	0.200	0.000	0.290
1.3333	0.154	0.205	0.000	0.293
1.3667	0.154	0.210	0.000	0.297
1.4000	0.154	0.216	0.000	0.300
1.4333	0.154	0.221	0.000	0.304
1.4667	0.154	0.226	0.000	0.307
1.5000	0.154	0.231	0.000	0.311
1.5333	0.154	0.236	0.000	0.314
1.5667	0.154	0.241	0.000	0.318
1.6000	0.154	0.246	0.000	0.321
1.6333	0.154	0.252	0.000	0.324
1.6667	0.154	0.257	0.000	0.328
1.7000	0.154	0.262	0.000	0.331
1.7333	0.154	0.267	0.000	0.335
1.7667	0.154	0.272	0.000	0.338
1.8000	0.154	0.277	0.000	0.342
1.8333	0.154	0.282	0.000	0.345
1.8667	0.154	0.288	0.000	0.349
1.9000	0.154	0.293	0.000	0.352
1.9333	0.154	0.298	0.000	0.356
1.9667	0.154	0.303	0.000	0.359
2.0000	0.154	0.308	0.000	0.363
2.0333	0.154	0.313	0.000	0.366
2.0667	0.154	0.318	0.000	0.369
2.1000	0.154	0.324	0.000	0.373
2.1333	0.154	0.329	0.000	0.376
2.1667	0.154	0.334	0.000	0.380
2.2000	0.154	0.339	0.000	0.383
2.2333	0.154	0.344	0.000	0.387
2.2667	0.154	0.349	0.000	0.390
2.3000	0.154	0.354	0.000	0.394
2.3333	0.154	0.360	0.000	0.397
2.3667	0.154	0.365	0.000	0.401

2.4000	0.154	0.370	0.000	0.404
2.4333	0.154	0.375	0.000	0.407
2.4667	0.154	0.380	0.000	0.411
2.5000	0.154	0.385	0.000	0.414
2.5333	0.154	0.390	0.113	0.418
2.5667	0.154	0.396	0.319	0.421
2.6000	0.154	0.401	0.586	0.425
2.6333	0.154	0.406	0.901	0.428
2.6667	0.154	0.411	1.256	0.432
2.7000	0.154	0.416	1.646	0.435
2.7333	0.154	0.421	2.064	0.439
2.7667	0.154	0.426	2.506	0.442
2.8000	0.154	0.432	2.966	0.445
2.8333	0.154	0.437	3.438	0.449
2.8667	0.154	0.442	3.917	0.452
2.9000	0.154	0.447	4.397	0.456
2.9333	0.154	0.452	4.873	0.459
2.9667	0.154	0.457	5.339	0.463
3.0000	0.154	0.462	5.790	0.466
3.0333	0.154	0.468	6.221	0.470

Name: SC-740
Depth: 168.73 ft.

Element Flows To:
Outlet 1 **Outlet 2**

		SSD Table	Hydraulic Table				
Stage (feet)	**Area (ac.)**	**Volume (ac-ft.)**	**Manual**	**Infilt (cfs)**	**NotUsed**	**NotUsed**	**NotUsed**
0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
164.9	0.149	0.000	0.000	3.005	0.000	0.000	0.000
165.0	0.149	0.005	0.000	3.005	0.000	0.000	0.000
165.1	0.149	0.010	0.000	3.005	0.000	0.000	0.000
165.2	0.149	0.015	0.000	3.005	0.000	0.000	0.000
165.2	0.149	0.020	0.000	3.005	0.000	0.000	0.000
165.3	0.149	0.025	0.000	3.005	0.000	0.000	0.000
165.4	0.149	0.030	0.000	3.005	0.000	0.000	0.000
165.5	0.149	0.035	0.000	3.005	0.000	0.000	0.000
165.6	0.149	0.040	0.000	3.005	0.000	0.000	0.000
165.7	0.149	0.045	0.000	3.005	0.000	0.000	0.000
165.7	0.149	0.050	0.000	3.005	0.000	0.000	0.000
165.8	0.149	0.060	0.000	3.005	0.000	0.000	0.000
165.9	0.149	0.070	0.000	3.005	0.000	0.000	0.000
166.0	0.149	0.081	0.000	3.005	0.000	0.000	0.000
166.1	0.149	0.091	0.000	3.005	0.000	0.000	0.000
166.2	0.149	0.101	0.000	3.005	0.000	0.000	0.000
166.2	0.149	0.111	0.000	3.005	0.000	0.000	0.000
166.3	0.149	0.121	0.000	3.005	0.000	0.000	0.000
166.4	0.149	0.131	0.000	3.005	0.000	0.000	0.000
166.5	0.149	0.141	0.000	3.005	0.000	0.000	0.000
166.6	0.149	0.150	0.000	3.005	0.000	0.000	0.000
166.7	0.149	0.160	0.000	3.005	0.000	0.000	0.000
166.7	0.149	0.170	0.000	3.005	0.000	0.000	0.000
166.8	0.149	0.179	0.000	3.005	0.000	0.000	0.000

166.9	0.149	0.188	0.000	3.005	0.000	0.000	0.000
167.0	0.149	0.198	0.000	3.005	0.000	0.000	0.000
167.1	0.149	0.207	0.000	3.005	0.000	0.000	0.000
167.2	0.149	0.216	0.000	3.005	0.000	0.000	0.000
167.2	0.149	0.224	0.000	3.005	0.000	0.000	0.000
167.3	0.149	0.233	0.000	3.005	0.000	0.000	0.000
167.4	0.149	0.242	0.000	3.005	0.000	0.000	0.000
167.5	0.149	0.250	0.000	3.005	0.000	0.000	0.000
167.6	0.149	0.258	0.000	3.005	0.000	0.000	0.000
167.7	0.149	0.266	0.000	3.005	0.000	0.000	0.000
167.7	0.149	0.273	0.000	3.005	0.000	0.000	0.000
167.8	0.149	0.281	0.000	3.005	0.000	0.000	0.000
167.9	0.149	0.288	0.000	3.005	0.000	0.000	0.000
168.0	0.149	0.294	0.000	3.005	0.000	0.000	0.000
168.1	0.149	0.300	0.000	3.005	0.000	0.000	0.000
168.2	0.149	0.305	0.000	3.005	0.000	0.000	0.000
168.2	0.149	0.310	0.000	3.005	0.000	0.000	0.000
168.3	0.149	0.315	0.000	3.005	0.000	0.000	0.000
168.4	0.149	0.320	0.000	3.005	0.000	0.000	0.000
168.5	0.149	0.325	0.000	3.005	0.000	0.000	0.000
168.6	0.149	0.330	0.000	3.005	0.000	0.000	0.000
168.7	0.149	0.335	0.000	3.005	0.000	0.000	0.000
168.7	0.149	0.340	0.000	3.005	0.000	0.000	0.000

ANALYSIS RESULTS
Stream Protection Duration

Predeveloped Land use Totals for POC #1
Total Pervious Area: 8.74
Total Impervious Area: 0.0

Mitigated Land use Totals for POC #1
Total Pervious Area: 1.88
Total Impervious Area: 6.86

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow (cfs)
2 year	0.348072
5 year	0.573576
10 year	0.744697
25 year	0.983779
50 year	1.177631
100 year	1.384427

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow (cfs)
2 year	0
5 year	0
10 year	0
25 year	0
50 year	0
100 year	0

LID Report

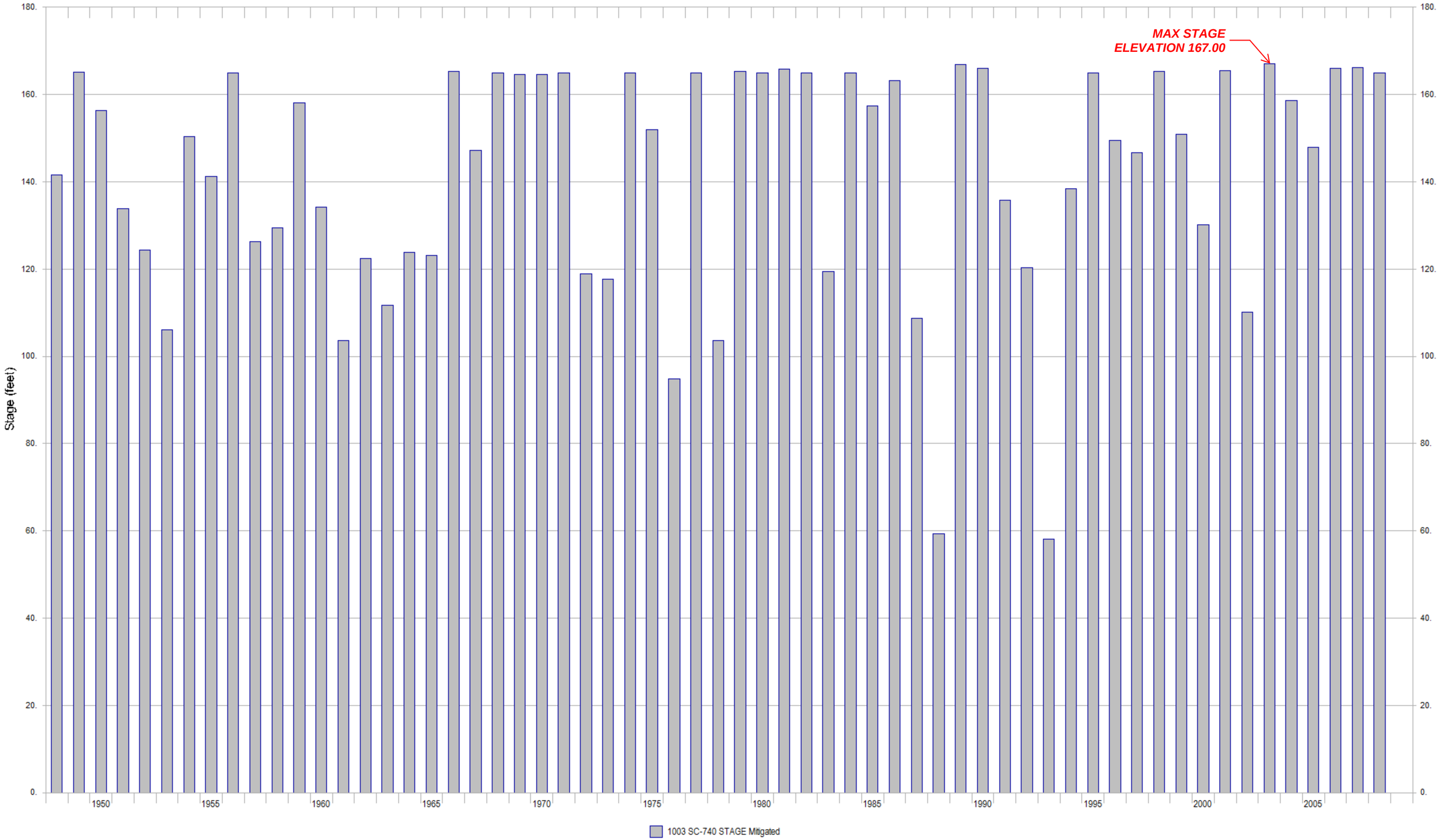
LID Technique	Used for Water Quality Treatment?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft.)	Cumulative Volume Infiltration Credit	Percent Water Quality Treated	Percent Volume Infiltrated	Comment
SC-740 POC	N	1216.84			N	100.00		
Large Sand FIlter	N	1346.07			N	0.00		
Total Volume Infiltrated		2562.91	0.00	0.00		47.48	0.00	No Treat. Credit

Compliance with LID Standard 8
Duration Analysis Result = Passed

Perlnd and Implnd Changes

No changes have been made.

Annual Max/Peak Values



Reference D

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER:	TIM SNELL 509-993-0813 TIM.SNELL@ADS-PIPE.COM
ADS SALES REP:	JOE SHEEHY 253-255-6302 JOE.SHEEHY@ADS-PIPE.COM
PROJECT NO:	S078165

ADVANCED DRAINAGE SYSTEMS, INC.

MAPLE VALLEY ASPHALT PLANT

MAPLE VALLEY, WASHINGTON

STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH SC-740 OR SC-310.
2. CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS.
3. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
4. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
5. CHAMBERS SHALL MEET ASTM F2922 (POLYETHYLENE) OR ASTM F2418-16 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
6. CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
7. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
   a. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
   b. A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 OR ASTM F2922 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
   c. STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
8. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310/SC-740 SYSTEM

1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
8. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
9. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
2. THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

CONCEPTUAL LAYOUT

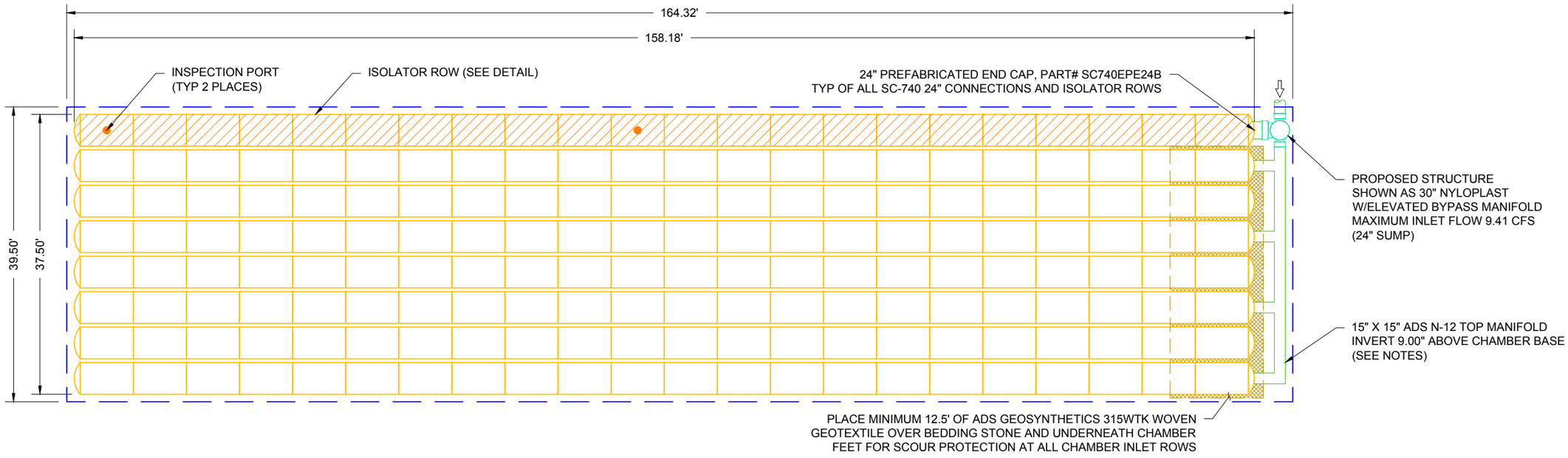
176	STORMTECH SC-740 CHAMBERS
16	STORMTECH SC-740 END CAPS
6	STONE ABOVE (in)
10	STONE BELOW (in)
40	% STONE VOID
14804	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
6490	SYSTEM AREA (ft²)
408	SYSTEM PERIMETER (ft)

CONCEPTUAL ELEVATIONS

176.23	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
170.23	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
169.73	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
169.73	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
169.73	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
168.73	TOP OF STONE
168.23	TOP OF SC-740 CHAMBER
166.48	15" TOP MANIFOLD INVERT
165.74	24" ISOLATOR ROW CONNECTION INVERT
165.73	BOTTOM OF SC-740 CHAMBER
164.90	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION**: THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.



MAPLE VALLEY ASPHALT PLANT

MAPLE VALLEY, WASHINGTON

DATE: 4-5-18 DRAWN: CTS

PROJECT #: S078165 CHECKED: CTS

REV	DWN	CKD	DESCRIPTION
4-16-18	CTS	CTS	ADJUST FOOTPRINT
7-30-18	SDM		UPDATED PER NOTES, WERE MC-3500

StormTech
Detention•Retention•Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

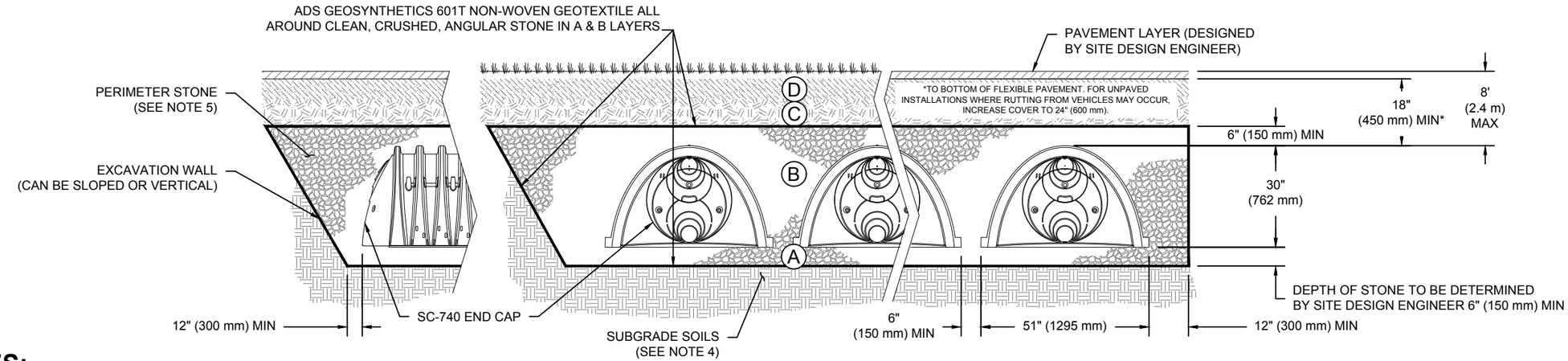
ADS ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026

0 15' 30'

ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

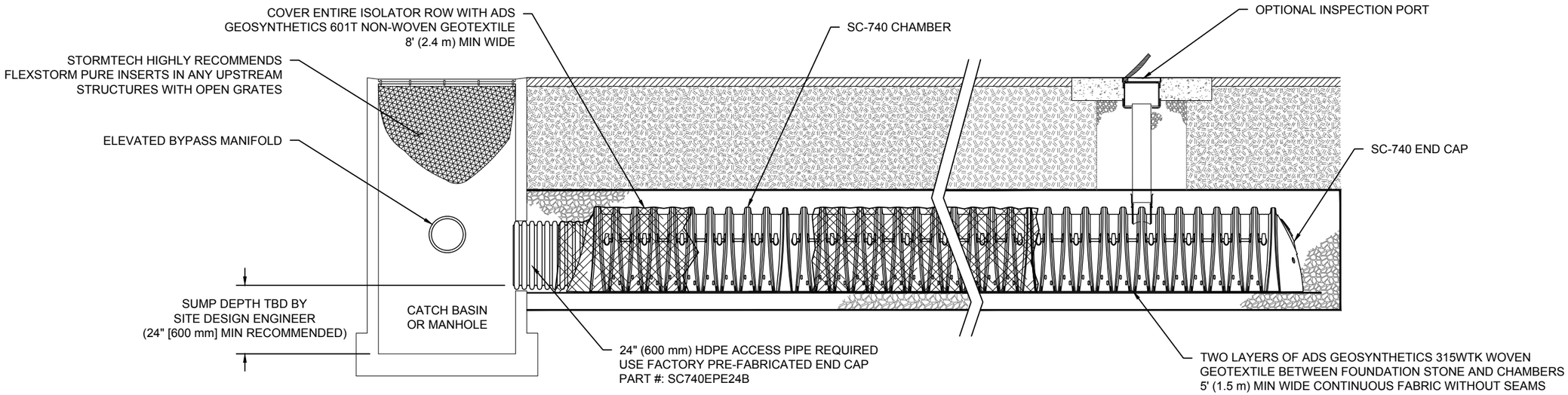
1. SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
6. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

MAPLE VALLEY ASPHALT PLANT
MAPLE VALLEY, WASHINGTON
DATE: 4-5-18 | DRAWN: CTS
PROJECT #: S078165 | CHECKED: CTS

REV	DWN	CKD	DESCRIPTION
4-16-18	CTS	CTS	ADJUST FOOTPRINT
7-30-18	SDM		UPDATED PER NOTES, WERE MC-3500

StormTech
Detention • Retention • Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

ADS
ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026



SC-740 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

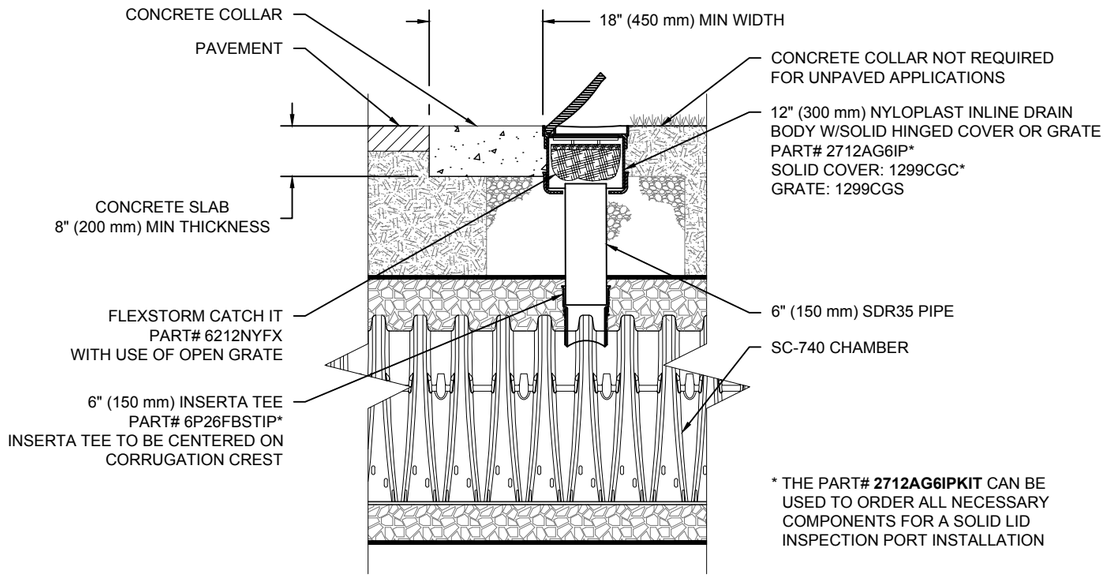
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



SC-740 6" (150 mm) INSPECTION PORT DETAIL
NTS

MAPLE VALLEY ASPHALT PLANT
MAPLE VALLEY, WASHINGTON
DATE: 4-5-18 | DRAWN: CTS | CHECKED: CTS | PROJECT #: S078165

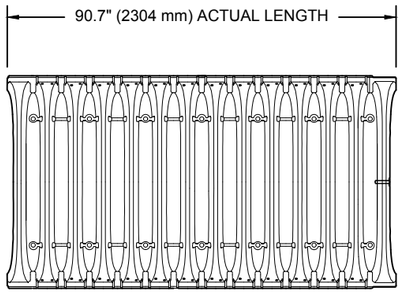
REV	DWN	CKD	DESCRIPTION
4-16-18	CTS	CTS	ADJUST FOOTPRINT
7-30-18	SDM		UPDATED PER NOTES, WERE MC-3500

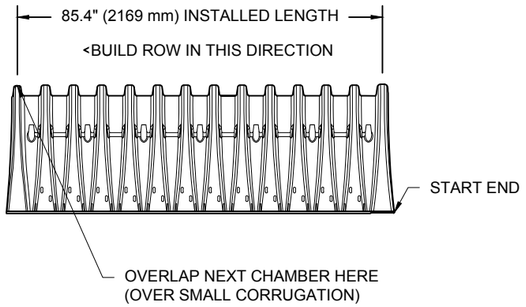
StormTech
Detention•Retention•Water Quality
70 INWOOD ROAD, SUITE 3 | ROCKY HILL | CT | 06067
860-529-8188 | 888-892-2694 | WWW.STORMTECH.COM

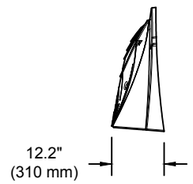
ADS
ADVANCED DRAINAGE SYSTEMS, INC.
4640 TRUEMAN BLVD
HILLIARD, OH 43026

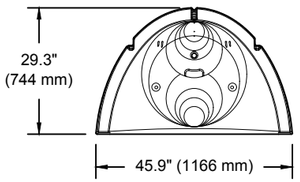
SC-740 TECHNICAL SPECIFICATION

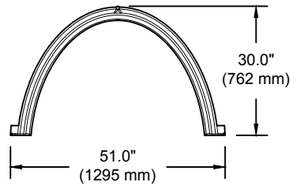
NTS







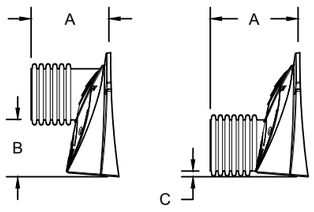




NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	51.0" X 30.0" X 85.4"	(1295 mm X 762 mm X 2169 mm)
CHAMBER STORAGE	45.9 CUBIC FEET	(1.30 m³)
MINIMUM INSTALLED STORAGE*	74.9 CUBIC FEET	(2.12 m³)
WEIGHT	75.0 lbs.	(33.6 kg)

*ASSUMES 6" (152 mm) STONE ABOVE, BELOW, AND BETWEEN CHAMBERS



PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
PRE-CORED END CAPS END WITH "PC"

PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	---
SC740EPE06B / SC740EPE06BPC			---	0.5" (13 mm)
SC740EPE08T /SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	---
SC740EPE08B / SC740EPE08BPC			---	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	---
SC740EPE10B / SC740EPE10BPC			---	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	---
SC740EPE12B / SC740EPE12BPC			---	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	---
SC740EPE15B / SC740EPE15BPC			---	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	---
SC740EPE18B / SC740EPE18BPC			---	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	---	0.1" (3 mm)

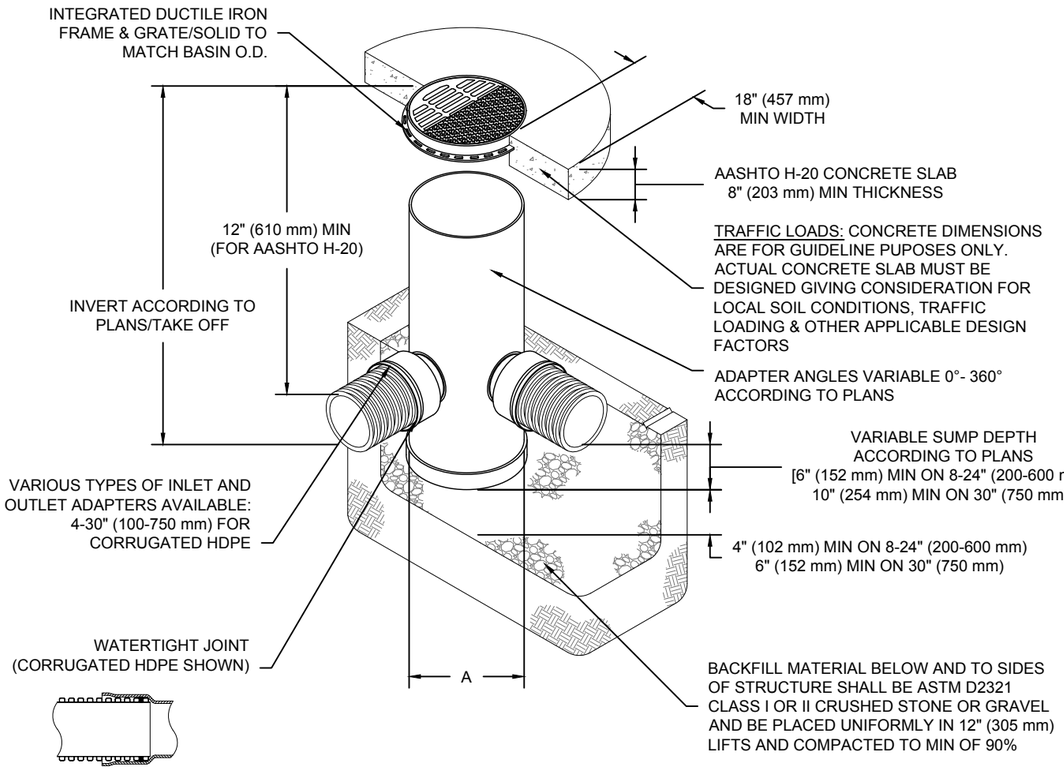
ALL STUBS, EXCEPT FOR THE SC740EPE24B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

* FOR THE SC740EPE24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL

NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

MAPLE VALLEY ASPHALT PLANT

MAPLE VALLEY, WASHINGTON

DATE: 4-5-18 DRAWN: CTS

PROJECT #: S078165 CHECKED: CTS

REV	DWN	CKD	DESCRIPTION
4-16-18	CTS	CTS	ADJUST FOOTPRINT
7-30-18	SDM		UPDATED PER NOTES, WERE MC-3500

3130 VERONA AVE
BUFORD, GA 30518
PHN (770) 932-2443
FAX (770) 932-2490
www.nyloplast-us.com

Nyloplast

4640 TRUEMAN BLVD
HILLIARD, OH 43026

ADS
ADVANCED DRAINAGE SYSTEMS, INC.