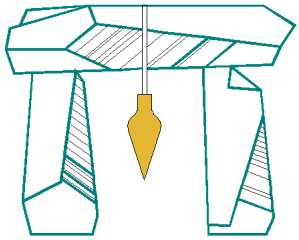
DeCelle-Burke-Sala



& Associates, Inc.

Site Engineering Report

for

Parkside Apartments

and

Parkside Condominiums

Chapter 40B Residential Projects
at
383-385 Washington Street
in
Braintree, Massachusetts

Prepared by:

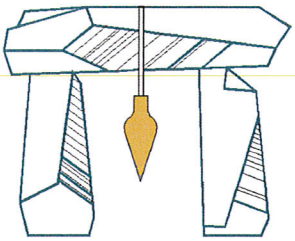
DeCelle-Burke-Sala & Associates, Inc.
1266 Furnace Brook Parkway, #401
Quincy, MA 02169

Prepared for:

383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118

Revised October 7, 2019

DeCelle-Burke-Sala



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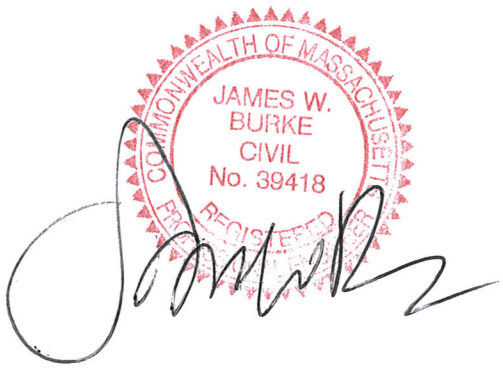


Table of Contents

SECTION 1 - PROJECT NARRATIVE

Existing Conditions

The project locus is made up of three lots. One lot is a forty-foot wide private right-of-way owned by the applicant that provides access off of Storrs Avenue and is known as Alves Avenue. It is approximately 8,949 square feet (s.f.) and was improved to provide driveway access to the abutting property at 14 Storrs Avenue and the other two lots comprising of the project locus. The lot and driveway have a steep, transverse gradient, approximately 7.5%. The elevations range from elevation 66 at the southeast corner to elevation 54 at the northeast corner. All elevations are based on the North American Vertical Datum of 1988 (NAVD88). This private right-of-way also provides utility access for gas, overhead power and communications to the main project lot and appears to provide sewer service for the abutting property, 14 Storrs Avenue. No vegetation exists on the lot.

The adjacent second lot is approximately 28,720 s.f. and is unimproved. The surface is approximately 50% paved with the remaining surface being mostly broken pavement and gravel. No significant vegetation exists on the parcel except for the overgrowth near the southerly property line. It has a steep grade ranging in elevation from 64 at the southeast corner of the lot to elevation 50 located at the northwest corner. The lot directly abuts Archbishop Williams High School track and field facility. The property is encumbered by an existing twenty-foot sewer easement that runs parallel with the southerly and westerly property lines. An existing 8" sewer is located within the easement and provides public sewer service for several properties in the area including the project locus and the athletic field. The sewer connects to the public sewer located in Storrs Avenue. The property is currently used as unauthorized overflow parking for athletic, business and residential related routines.

The largest lot of the project locus is 76,524 s.f. and is improved with three buildings a parking lot and service utilities. It is benefitted and currently only accessed by a twenty-foot wide access easement from Washington Street. The site was previously used as an automobile related service lot for multiple owners. The site is serviced by public water from the Washington Street via the access easement, public sewer, gas, overhead electric and site drainage. The site is encumbered by an existing ten-foot wide drain easement near the northerly property line extending from Washington Street to the Archbishop Williams athletic field. A 12" drain pipe conveys stormwater generated off of the project site, abutting properties as well as Washington Street to a manhole located at the common property line for the athletic field. An 18" drain extends from this manhole under the athletic field to an eventual outfall located across Storrs Avenue. Project locus drainage is limited in treatment and control. The site is also steep in grade ranging from a high southeasterly elevation of 84 to a low elevation of 58 to 60 along the westerly property line. There is no significant vegetation except for the overgrowth along the edges of the property.

The entire project locus is 114,193 s.f., is zoned General Business with the Village Overlay District. It directly abuts a Residential B zone but the lot directly abutting the project locus is developed as an athletic field. The Braintree Masons Lodge and a detention basin abuts directly to the south, while a municipal parking lot and several business located along Washington Street abuts the project locus to the east. Storrs Avenue abuts the project locus to the north which has several uses such as single family homes, multi-family homes, mixed uses, businesses and a temple.

Proposed Conditions

The full project consists of two developments, Parkside Apartments and Parkside Condominiums. The larger development is a single 72–unit apartment building sitting on 96,796 s.f. titled Parkside Apartments. The smaller development is a two-building, 8-unit condominium project on 17,397 s.f. known as Parkside Condominiums. The larger lot includes the current existing Lot A which includes all the existing buildings, the private right-of-way lot and subdivided portions of the gravel and pavement lot known as Lot 2. The remaining land of Lot 2 provides the land for smaller development. Lot 2 is be divided into three lots, Lots 2A, 2B and 2C. Lots 2A and 2C are proposed to join Lot A.

Parkside Apartments includes one 72-unit residential building with an underground parking garage and surface parking. The building has a 29,860± square feet footprint, is 47 feet tall and has three (3) stories. The parking totals 127 parking spaces with 48 surface parking spaces 81 garage parking spaces. Access to the underground garage is on the north side of the building.

Parkside Condominiums consists of two town house buildings with eight (8) total units, five in the building off of Storrs Avenue and three units in the building off of the access easement. All units will have a one car garage with a tandem space in front for a total of 22 spaces for the development.

New utility services will be installed and new mains will be installed to extend or upgrade existing infrastructure. A new 8" CLDI water main is proposed to be tapped off the 8" DI main on Storrs Avenue. The proposed 8" CLDI main will extend along the access easement and project driveway up to Parkside Apartment building and be capped. One 4" CLDI domestic service with a gate valve, and one 4" CLDI fire protection service with a gate valve shall be extended to the new building to provide fire protection and domestic water service for the new apartment building, respectively. The two town house buildings will both be serviced from the new main and will both have a 2" copper service with a sidewalk curb valve shutoff with a 6" CLDI fire pipe and gate valve in the street. Two new hydrants shall be installed along the access drive from Storrs Avenue and the existing hydrant located at the property line near Parkingway shall be evaluated for re-use.

Sewer mains and manholes will be added to the system to upgrade and direct flows accordingly. A sewer main connecting two existing manholes will be removed and redirected to new sewer main located in the access easement. A portion of the existing sewer running along the westerly property line shall remain in use. This existing sewer shall be extended to the Archbishop Williams High School field to provide sewer to the concession stand. The two condominium buildings 6" SDR 35 PVC sewer services shall connect to this existing sewer extension as well. The new 8" sewer main shall provide continued service for all existing connected properties while also providing service to the new apartment building. An oil/water separator will be installed to the collect spills inside of the parking garage. Area drains will connect with a ductile iron sewer pipe to the oil/water separator where wastewater will be treated and then conveyed to the public sewer system.

All existing stormwater management controls onsite will be removed and disposed of legally, except for the existing drain main that is located in the ten-foot wide drain easement. A large amount of flow shall be removed from this existing 18" drain pipe, captured on-site treated and allowed to recharge to the maximum extent allowed by the existing soils. The stormwater management systems consist of three separate large Cultec 330 Recharger chamber systems with catch basins and deep sump drain manholes. The Parkside Apartments roof runoff will be collected in a series of interior and exterior roof leaders and conveyed to the chamber systems. Parking lot and driveway stormwater runoff shall be captured by seven (7) deep sump catch basins and associated deep sump drain manholes. Each deep sump structure

shall be fitted with a "Snout". The "Snout" provides for improved oil, floatable pollutants, trash, debris and suspended solids to be removed from the captured stormwater. It is our beleief that this treatment train provides the required 44% removal rate for TSS to allow for the stormwater to be recharged by the Cultec Recharger systems where the stormwater be retained to infiltrate back into the soil. The runoff that is not retained will be detained and allowed to overflow out of the chamber systems and into the town system on Storrs Avenue. The result of this retention/detention system is a significant reduction in stormwater volume and peak flow released off-site. The water quality of the stormwater released is also significantly improved. The surrounding neighborhood and environment benefit from improved flood control and improved water quality

The upper stormwater management system, known as System "A" consists of 143 Cultec 330 Recharger chambers and is located in the entrance circle to Parkside Apartments. The chambers will be configured in a 13x11 layout with drain manholes feeding manifold pipes on each end. The mid stormwater management system, known as System "B", is located in the parking lot, behind the smaller townhome building adjacent to the apartment building. System "B" is 65 chambers in size and laid out in a 13x5 configuration. The lower system, known as System "C", is located between the townhome buildings. System "C" is 70 chambers in size and laid out in 7x10 configuration. All systems shall be fed through deep sump catch basins and drain manholes with manifolds pipes installed to spread the flow evenly through each system. All systems will have observation ports on the four corners with caps brought to match the final grade for inspection.

Gas, electric and communication services will be provided, designed and installed per the utility purveyors. Gas service is proposed to be brought up the access easement to the apartment building. Underground electric service is proposed to be pulled off the utility pole on the eastern boundary of the locus. The underground electric will go to a transformer which will feed the apartment building. The town homes will be serviced by gas and overhead electric services as depicted on the site plans.

Stormwater Management

Stormwater calculations required to show compliance with the Massachusetts Stormwater Management Standards have been prepared by this office. We generated hydrographs for both existing and proposed conditions to compare overall storm water offsite for various storms. We calculated land coverage numbers (CN) and used minimums for Times of Concentration for both existing and proposed conditions for hydrograph generation. The proposed site drainage decreases the stormwater runoff volume and peak flows for each storm event. This allows the project to be in compliance with Standard 2 the MassDEP Stormwater Management Requirements. The results of the calculations are tabulated below for comparison with the existing and proposed condition values. The project also complies with the other stormwater management standards outlined in the MassDEP Stormwater Management Requirements. The project complies with the following Standards:

Standard 1	No new stormwater conveyances discharge untreated stormwater directly to the waters of the Commonwealth;
Standard 2	Post-Development peak discharge rates are less than pre-development;
Standard 3	The recharge volume required for this project is exceeded.

Standard 4		The site uses deep sump catch basins and drain manholes to reach the 44% of TSS removal prior to the treated stormwater is conveyed to underground infiltration systems. The 80% overall TSS reduction is met.
Standard 5	-	N/A
Standard 6		N/A
Standard 7		It is our understanding that all Standards are met despite the project being a redevelopment of a commercial site.
Standard 8		An Erosion Control Plan, which covers the responsible techniques and Best Management Practices to be used during construction is attached to this report.
Standard 9		A Long Term Operation and Maintenance Plan is attached to this report.
Standard 10		All illicit discharges to the stormwater management system are and will be prohibited. The Operational and Maintenance Plan provided outlines that the Property Manager is responsible for the implementing of the OMP and overseeing activities at the facility to prevent illicit discharges to the drainage system from occurring.

It is our belief that the project complies with the Stormwater Management Standards to the maximum extent practicable. The project as proposed will protect the Abutters in the short term through proper construction and erosion protection techniques. It will also protect the environment form long term impacts due to the improved stormwater controls.

Stormwater Runoff Comparison Chart for Pre- and Post-Construction Off-site Flow to Storrs Avenue (Reach 1R)

2-Year Storm (3.38")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	13.69	Flow off-site	6.91

10-Year Storm (5.22")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	18.75	Flow off-site	10.92

25-Year Storm (6.36")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	20.95	Flow off-site	13.40

100-Year Storm (8.12")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	24.38	Flow off-site	18.06

Stormwater Runoff Comparison Chart for Pre- and Post-Construction Off-site Flow to Athletic Field (Reach 2R)

2-Year Storm (3.38")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	0.24	Flow off-site	0.00

10-Year Storm (5.22")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	0.86	Flow off-site	0.05

25-Year Storm (6.36")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	1.33	Flow off-site	0.15

100-Year Storm (8.12")			
Existing Conditions		Proposed Conditions	
Area Description	Flow (CFS)	Area Description	Flow (CFS)
Flow off-site	2.14	Flow off-site	0.46

Stormwater Volume Comparison Chart for Pre- and Post-Construction Off-site Flow to Storrs Avenue (Reach 1R)

2-Year Storm (3.38")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	1.078	Flow off-site	0.561

10-Year Storm (5.22")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	1.791	Flow off-site	0.923

25-Year Storm (6.36")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	2.241	Flow off-site	1.306

100-Year Storm (8.12")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	2.942	Flow off-site	1.931

Stormwater Volume Comparison Chart for Pre- and Post-Construction Off-site Flow to Athletic Field (Reach 2R)

2-Year Storm (3.38")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	0.028	Flow off-site	0.001

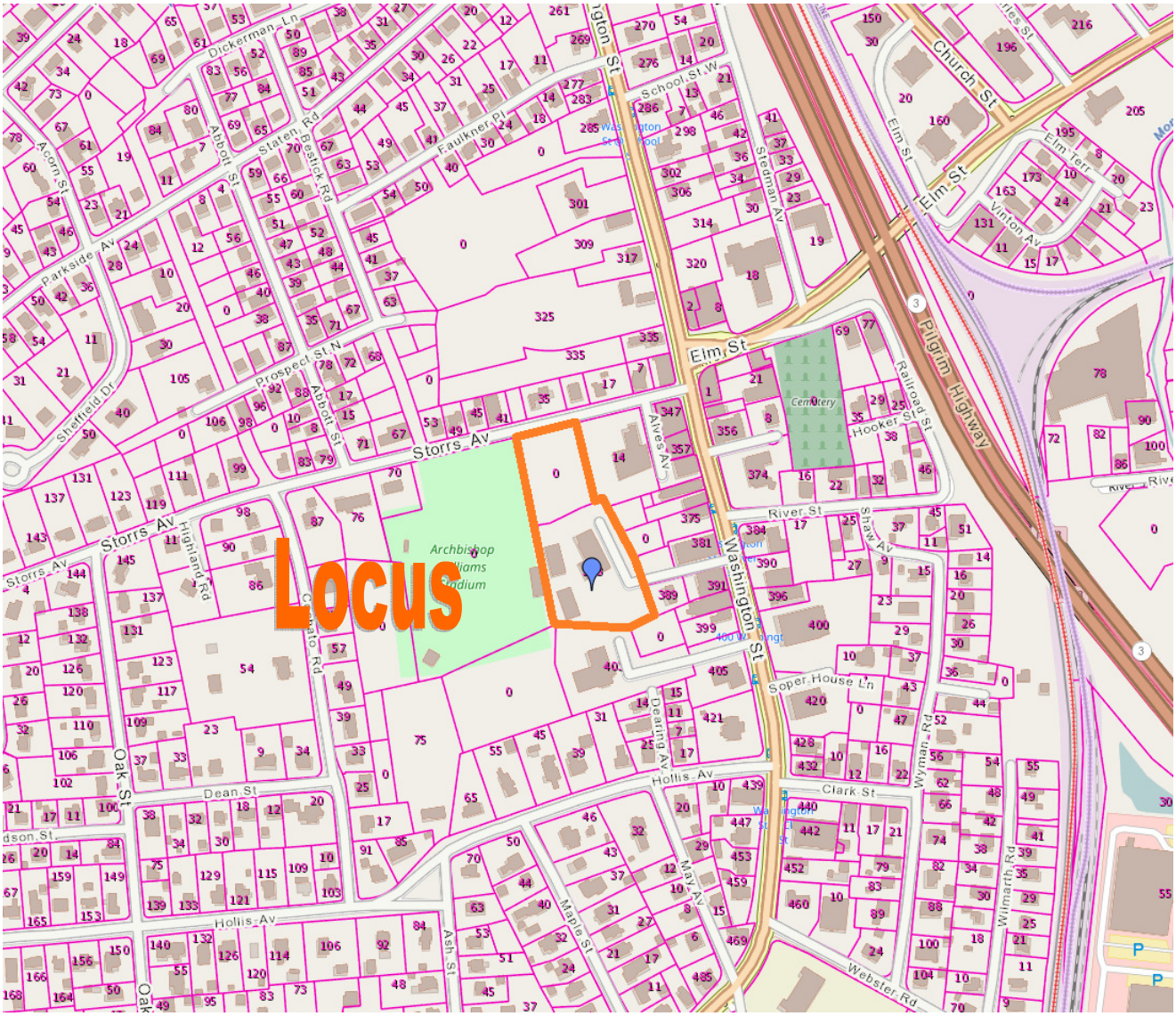
10-Year Storm (5.22")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	0.710	Flow off-site	0.010

25-Year Storm (6.36")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	0.103	Flow off-site	0.021

100-Year Storm (8.12")			
Existing Conditions		Proposed Conditions	
Area Description	Volume (AF)	Area Description	Volume (AF)
Flow off-site	0.160	Flow off-site	0.042

SECTION 2 – SUPPORTING MAPS

Assessors Map
USGS Map
Soils Map
NHESP Map
FEMA Map



Map 2028 Lots 31

DATE:	TITLE:	SCALE:
October 7, 2019	***Assessors Map***	***NOT TO SCALE***

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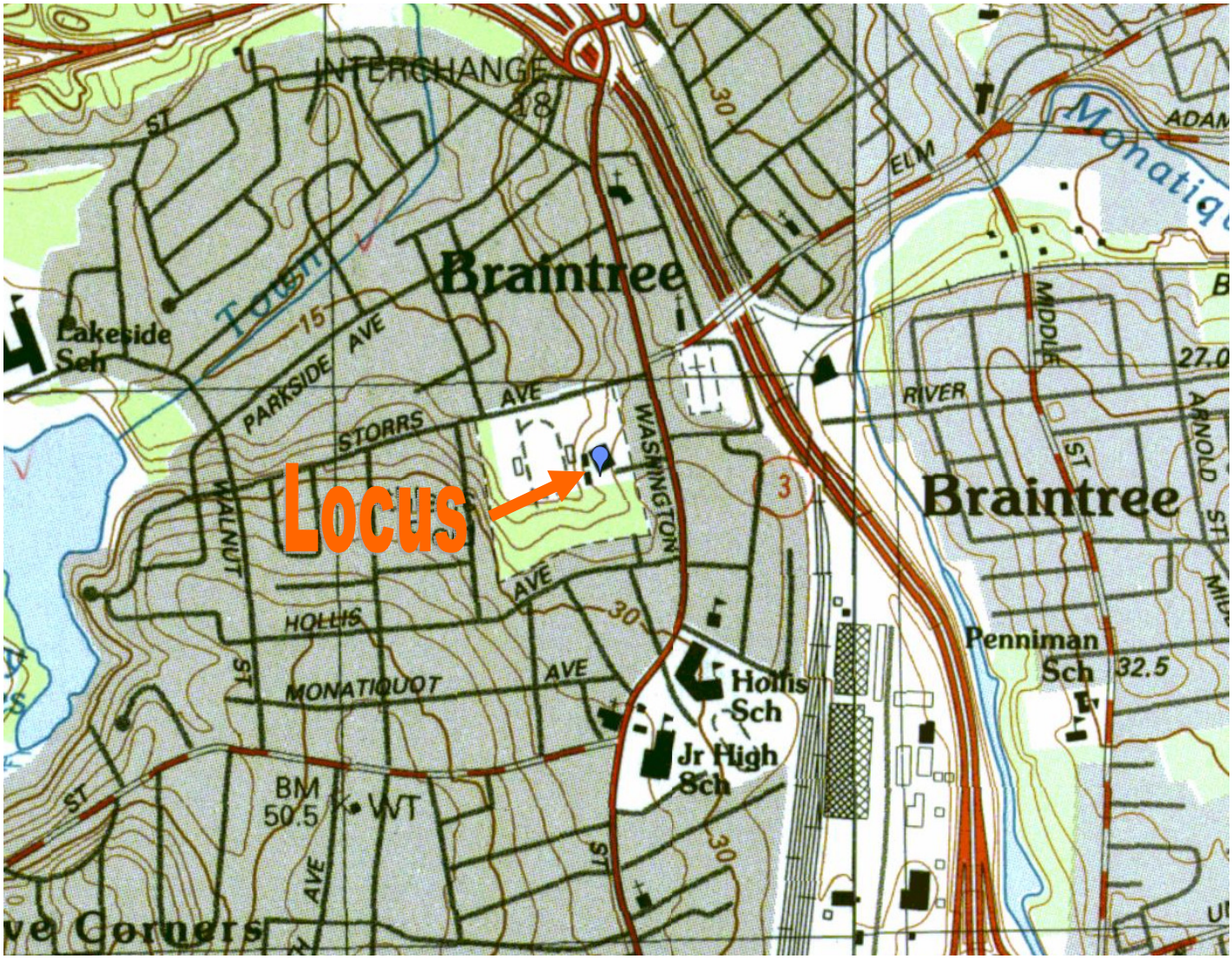
(617) 405-5100 (O) (617) 405-5101 (F)

PROJECT TITLE:

Parkside Apartments & Condos
40B Residential Project
383-385 Washington Street
Braintree, MA 02184



DATE:	TITLE:	SCALE:
October 7, 2019	**USGS Map**	*NOT TO SCALE*

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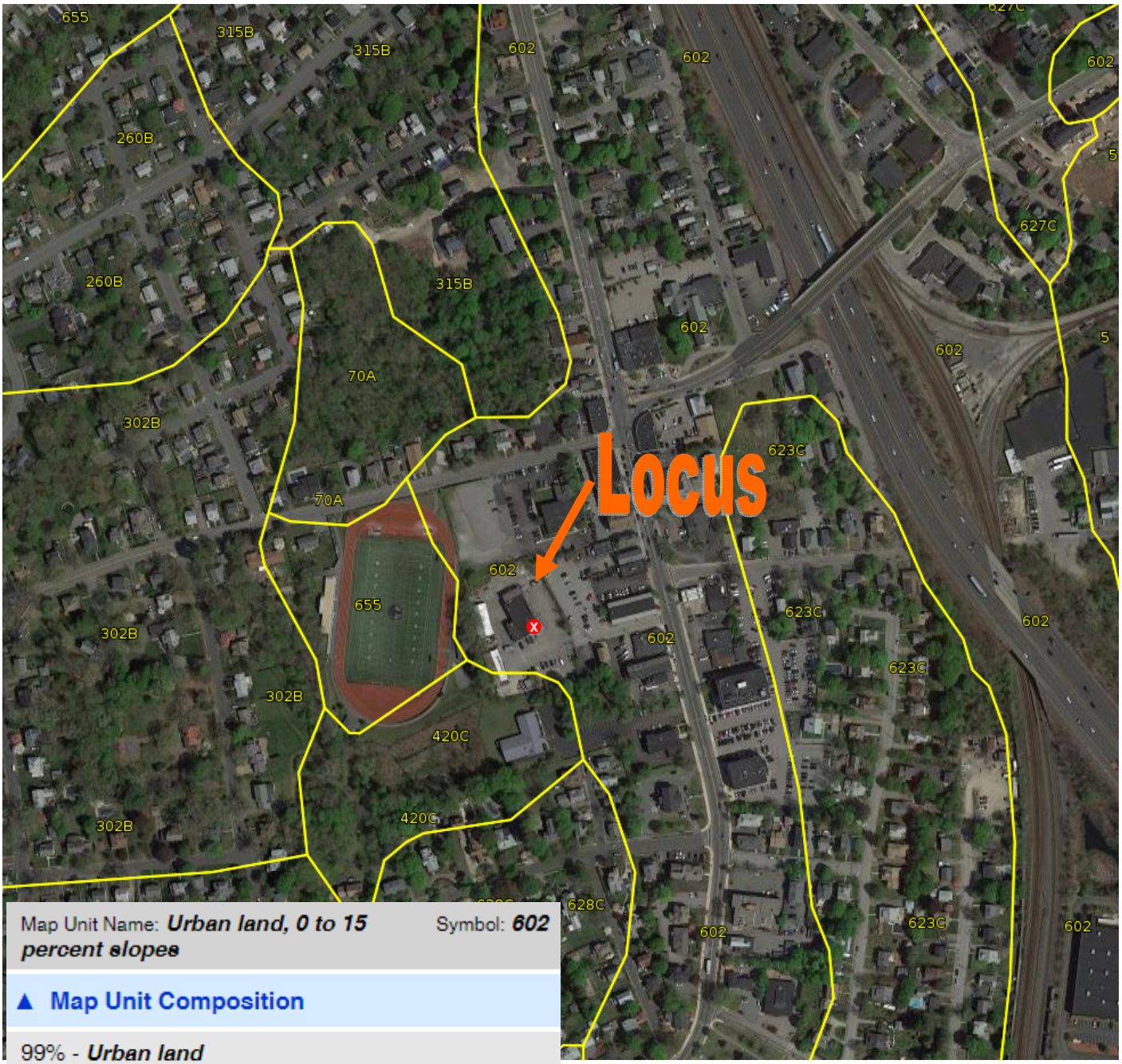

DATE:	TITLE:	SCALE:
October 7, 2019	**Soils Map**	*NOT TO SCALE*

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DATE:	TITLE:	SCALE:
October 7, 2019	**NHESP Map**	*NOT TO SCALE*

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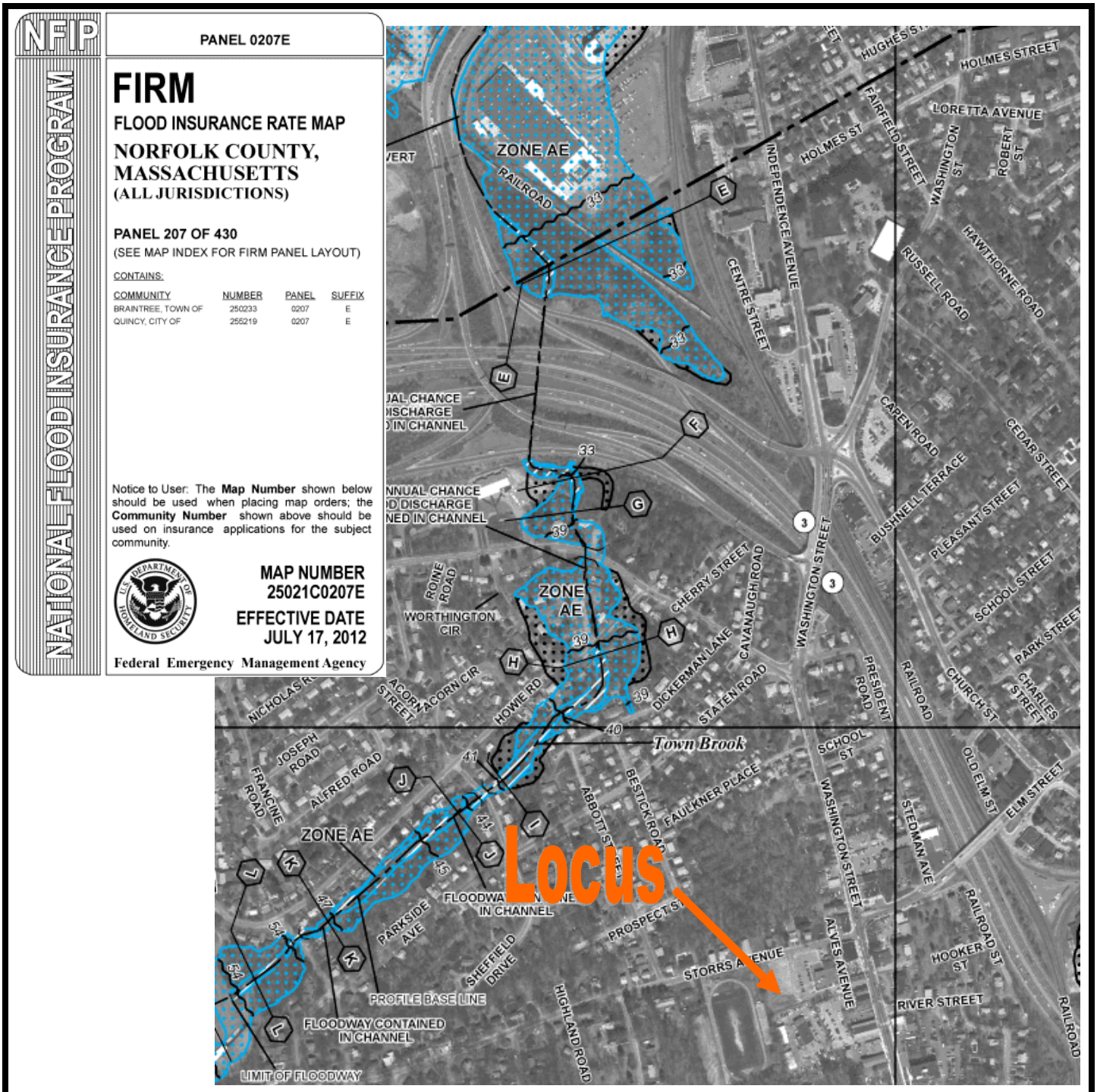

DATE:	TITLE:	SCALE:
October 7, 2019	***FEMA Flood Map***	NTS

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PROJECT TITLE:

Parkside Apartments & Condos
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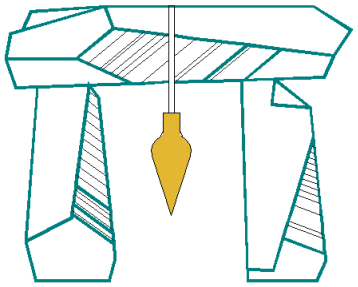
Braintree, MA 02184

SECTION 3 – MANAGEMENT PLANS

Stormwater Operation & Maintenance Plan
Erosion and Sedimentation Control Plan

DeCelle-Burke-Sala



& Associates, Inc.

Stormwater Operation & Site Maintenance Plan
for

Parkside Condominiums
A Chapter 40B Residential Project
at
383-385 Washington Street
in
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Prepared by:

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Suite 401
Quincy, MA 02169

Prepared for:

383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118

Revised October 7, 2019

Introduction

This Stormwater Operation & Maintenance Plan is (OMP) for the two residential buildings and property located off of Storrs Avenue Braintree, Massachusetts ab d was constructed with the apartment building located at 383 Washington Street. The OMP is outlined below to provide long term operation and maintenance procedures of the stormwater controls installed to manage the stormwater flow generated on the site and improve runoff quality. The landowners are required to implement the procedures and ensure the long term benefits of the stormwater controls approved and installed for this project. The OMP provides simple operational and maintenance procedures for the stormwater control structures as well as perform various tasks to remove pollutants from areas that would have potential to be picked up on site and moved via stormwater offsite.

The landowners, who will form a condominium association, shall be responsible to inspect, maintain and operate the stormwater management system as well as inspect the grounds for eroded areas and collected pollutants. Appointing a responsible person in charge to implement this OMP on behalf of the condominium association is preferred but the landowners shall be responsible at all times for implementing this OMP. The purpose of the OMP is to maintain the long term benefits from the Stormwater Management features constructed that support groundwater recharge and pollution prevention.

Responsible Party - Parkside Condominium Association
c/o The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118
617-556-2900

The responsible party listed above is responsible for inspecting, maintaining and keeping copies of maintenance records for the following plan and will be referred to as the Site Manager for the remainder of this report. If another individual/company is responsible for the every day management of the property the name and contact information shall be made available to the Braintree Conservation Commission. The responsible party can expect a yearly budget of $1,500 to $1,800 per year to maintain this site. The inspection and maintenance report generated by the Site manager shall be submitted to the Braintree Conservation Commission for review and record.

Non-Structural Operations

Surface Parking Lot Sweeping

Street sweeping will be performed twice during the year, in April-May and in September-October. The Site Manager shall contract with a property management company that provides street sweeping services. The contractor shall be a company in good standing in the Commonwealth of Massachusetts and experienced in performing these services. All sweepings shall be disposed of by the hired company off-site in a legal manner.

Snow Management

Proper snow management practices will be implemented to minimize runoff and pollutant loading impacts. Plowed or shoveled snow will be placed in pervious areas at the edges of the parking lot where it can slowly infiltrate. Snow will be placed on to pervious areas that are not subject to excessive shade from buildings or vegetation. All accumulated sediment from

snowmelt shall be removed each spring. If excessive snow inhibits movement around the site or the stormwater management facilities the contractor will be responsible to remove the snow from the site and disposed of in a legal manner.

Structural Operations

Catch Basins and Deep Sump Drain Manholes (DMH)

The catch basins and drain manholes were installed to capture stormwater and separate sediment. To ensure maximum capacity and efficiency, the deep sump catch basins and DMH sumps will be cleaned when half of the available capacity of the sump has been used or at a minimum of once per year. The Manager shall inspect the sumps at least twice per year. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning stormwater sumps with a vacuum truck. All sediment and water retrieved from the tanks and sumps shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written inspection report of which an example form is attached.

Underground Cultec Chambers

The underground Cultec chambers were installed to recharge stormwater runoff from the roof of the building and recharge the driveway runoff. The roof runoff does not generate sediment and with two levels of treatment for the roadway and parking runoff, the infiltration chambers shall remain effective for a long period of time, Inspection ports are brought to grade to allow the Site Manager to observe if the chambers are ponding or accumulating sediment and clean as necessary . The Manager shall inspect the chambers twice per year. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning underground chambers with a vacuum truck. All sediment and water retrieved from the chambers shall be shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written inspection report of which an example form is attached.

Site Management

The site shall be inspected on a quarterly basis for rutting, potholes, broken berms, depressions eroded areas and any other site damage caused by vehicular or human activity. The landscaped areas shall be raked as necessary to maintain a their grade. Grassed areas shall be raked out and seeded as needed to maintain an even vegetated surface. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in paving to repair any potholes, broken berms or other damaged paved area. The Manager shall hire a landscaper in good standing in the Commonwealth of Massachusetts with experience in re-vegetating eroded areas.

Record Keeping

Records of the inspections and maintenance for the Non-Structural and Structural Operations performed or organized by Site Manager for the property shall be up to date, available for review and inspection on-site and submitted to the Town of Braintree Conservation Commission for review and record. An example record keeping sheet is attached.

Parkside Condominiums

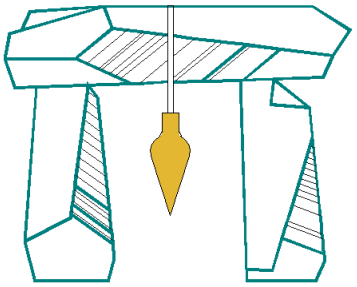
Stormwater Operation & Site Maintenance Plan

INSPECTION SCHEDULE AND EVALUATION CHECKLIST

Best Management Practice	Inspection Frequency	Date Inspected	Contractor	Current Conditions and Minimum Maintenance / Repairs, if necessary	Completed Maintenance / Repair (i.e. date, contractor, tasks complete, etc...)
Site Sweeping	Biannual				
Catch Basins, Water Quality Manholes and Drain Manholes	Biannual				
Cultec Chambers	Biannual				
Parking Area	Quarterly				
Vegetated Areas	Quarterly				
Overall Site Condition	Quarterly				

Property Manager: _____ **Date** _____

DeCelle-Burke-Sala



& Associates, Inc.

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Prepared for:

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519 Albany Street, Suite 200
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Revised October 7, 2019

Introduction

This Stormwater Operation & Maintenance Plan (OMP) for the residential building and property located at 383-385 Washington Street Braintree, Massachusetts. The OMP is outlined below to provide long term operation and maintenance procedures of the stormwater controls installed to manage the stormwater flow generated on the site and improve runoff quality. The landowners are required to implement the procedures and ensure the long term benefits of the stormwater controls approved and installed for this project. The OMP provides simple operational and maintenance procedures for the stormwater control structures as well as perform various tasks to remove pollutants from areas that would have potential to be picked up on site and moved via stormwater offsite.

The landowners shall be responsible to inspect, maintain and operate the stormwater management system as well as inspect the grounds for eroded areas and collected pollutants. Appointing a responsible person in charge to implement this OMP on behalf of the landowner is preferred but the landowners shall be responsible at all times for implementing this OMP. The purpose of the OMP is to maintain the long term benefits from the Stormwater Management features constructed that support groundwater recharge and pollution prevention.

Responsible Party - 383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118
617-556-2900

The responsible party listed above is responsible for inspecting, maintaining and keeping copies of maintenance records for the following plan and will be referred to as the Site Manager for the remainder of this report. If another individual/company is responsible for the every day management of the property the name and contact information shall be made available to the Braintree Conservation Commission. The responsible party can expect a yearly budget of $2,000 to $2,800 per year to maintain this site. The inspection and maintenance report generated by the Site manager shall be submitted to the Braintree Conservation Commission for review and record.

Non-Structural Operations

Surface Parking Lot Sweeping

Street sweeping will be performed twice during the year, in April-May and in September-October. The Site Manager shall contract with a property management company that provides street sweeping services. The contractor shall be a company in good standing in the Commonwealth of Massachusetts and experienced in performing these services. All sweepings shall be disposed of by the hired company off-site in a legal manner.

Snow Management

Proper snow management practices will be implemented to minimize runoff and pollutant loading impacts. Plowed or shoveled snow will be placed in pervious areas at the edges of the parking lot where it can slowly infiltrate. Snow will be placed on to pervious areas that are not subject to excessive shade from buildings or vegetation. All accumulated sediment from snowmelt shall be removed each spring. If excessive snow inhibits movement around the site or the stormwater management facilities the contractor will be responsible to remove the snow from the site and disposed of in a legal manner.

Structural Operations

Catch Basins and Deep Sump Drain Manholes (DMH)

The catch basins and drain manholes were installed to capture stormwater and separate sediment. To ensure maximum capacity and efficiency, the deep sump catch basins and DMH sumps will be cleaned when half of the available capacity of the sump has been used or at a minimum of once per year. The Manager shall inspect the sumps at least twice per year. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning stormwater sumps with a vacuum truck. All sediment and water retrieved from the tanks and sumps shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written inspection report of which an example form is attached.

Underground Cultec Chambers

The underground Cultec chambers were installed to recharge stormwater runoff from the roof of the building and recharge the driveway runoff. The roof runoff does not generate sediment and with two levels of treatment for the roadway and parking runoff, the infiltration chambers shall remain effective for a long period of time, Inspection ports are brought to grade to allow the Site Manager to observe if the chambers are ponding or accumulating sediment and clean as necessary . The Manager shall inspect the chambers twice per year. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning underground chambers with a vacuum truck. All sediment and water retrieved from the chambers shall be shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written inspection report of which an example form is attached.

Oil/Water Separator

The oil/water separator is not part of the stormwater management system but it is designed to prevent the covered garage to be a source of pollution. The separator is designed to capture heavy amount of oil or perhaps gasoline by allowing the pollutants to float on top of a deep water sump. The separator is required in all covered parking garages and is connected to the public sewer. If a spill of gasoline or oil occurs within the garage the separator is designed to allow these pollutants to float on top of the water present in the separator. If a spill occurs the Manager shall contact a contractor in good standing in the Commonwealth of Massachusetts with experience in cleaning oil/water separators with a vacuum truck. The separator shall be filled with clean water before being put on line. All of the contaminated water retrieved from the separator shall be shall be disposed of by the hired company off-site in a legal manner. The Manager shall provide a written report of the incident.

Site Management

The site shall be inspected on a quarterly basis for rutting, potholes, broken berms, depressions eroded areas and any other site damage caused by vehicular or human activity. The landscaped areas shall be raked as necessary to maintain a their grade. Grassed areas shall be raked out and seeded as needed to maintain an even vegetated surface. The Manager shall hire a contractor in good standing in the Commonwealth of Massachusetts with experience in paving to repair any potholes, broken berms or other damaged paved area. The Manager shall hire a landscaper in good standing in the Commonwealth of Massachusetts with experience in re-vegetating eroded areas.

Record Keeping

Records of the inspections and maintenance for the Non-Structural and Structural Operations performed or organized by Site Manager for the property shall be up to date, available for review and inspection on-site and submitted to the Town of Braintree Conservation Commission for review and record. An example record keeping sheet is attached.

Parkside Apartments

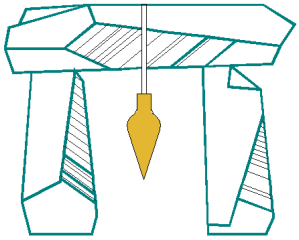
Stormwater Operation & Site Maintenance Plan

INSPECTION SCHEDULE AND EVALUATION CHECKLIST

Best Management Practice	Inspection Frequency	Date Inspected	Contractor	Current Conditions and Minimum Maintenance / Repairs, if necessary	Completed Maintenance / Repair (i.e. date, contractor, tasks complete, etc...)
Site Sweeping	Biannual				
Catch Basins, Water Quality Manholes and Drain Manholes	Biannual				
Cultec Chambers	Biannual				
Oil/Water Separator	Biannual				
Parking Lot	Quarterly				
Vegetated Areas	Quarterly				
Overall Site Condition	Quarterly				

Property Manager: _____ **Date** _____

DeCelle-Burke-Sala



& Associates, Inc.

Erosion & Sedimentation Control Plan
for
Parkside Apartments & Parkside Condominiums
A Chapter 40B Residential Project
at
383-385 Washington Street
in
Braintree, Massachusetts

Prepared by:

DeCelle-Burke-Sala & Associates, Inc.
1266 Furnace Brook Parkway
Suite 401
Quincy, MA 02169

Prepared for:

383 Washington Street, LLC
The Holland Companies
519 Albany Street, Suite 200
Boston, MA 02118

Revised October 7, 2019

Table of Contents

1.0 - Plan Objectives

- To protect abutting properties and wetland resources from construction related pollutant impacts generated from land disturbance and construction activities located adjacent to environmentally sensitive areas;

- Control existing, and potential erosion, sediment transport and pollutant impact events by installing and maintaining construction related Best Management Practices (BMP's) to reduce and/or prevent the discharge of stormwater pollutants into wetland resources of the Commonwealth of Massachusetts;

- To protect surface stormwater quality, ground water quality, and minimize off-site sediment transport into the wetland resources during construction;

- To prevent local and off-site flooding by controlling peak rates and volumes of stormwater runoff during construction; and

- To eliminate illicit discharges to stormwater drainage systems that causes pollution during construction.

2.0 - Introduction

This Erosion and Sedimentation Control Plan (The "Plan") has been devised for the construction of a 70-unit residential building and two town homes with eight additional units. Locus is 383 Washington Street, Braintree MA. The purpose of the Plan is to protect the surrounding environment from contaminated stormwater during construction of the development. The stormwater will be treated before release and surfaces stabilized to minimize erosive events by implementing, installing and maintaining construction related Best Management Practices (BMP's) to reduce and/or prevent the discharge of stormwater pollutants into wetland resources of the Commonwealth of Massachusetts. The BMP's are described in the Stormwater Management Standards developed by the Massachusetts Department for Environmental Protection and it is our belief that short term construction related pollution prevention generated from this site can be achieved.

3.0 - Current Site Conditions

The project locus is made up of three lots. One lot is a forty-foot wide private right-of-way owned by the applicant that provides access off of Storrs Avenue and is known as Alves Avenue. It is approximately 8,949 square feet (s.f.) and was improved to provide driveway access to the abutting property at 14 Storrs Avenue and the other two lots comprising of the project locus. The lot and driveway have a steep, transverse gradient, approximately 7.5%. The elevations range from elevation 66 at the southeast corner to elevation 54 at the northeast corner. All elevations are based on the North American Vertical Datum of 1988 (NAVD88). This private right-of-way also provides utility access for gas, overhead power and communications to the main project lot and appears to provide sewer service for the abutting property, 14 Storrs Avenue. No vegetation exists on the lot.

The adjacent second lot is approximately 28,720 s.f. and is unimproved. The surface is approximately 50% paved with the remaining surface being mostly broken pavement and gravel. No significant vegetation exists on the parcel except for the overgrowth near the southerly property line. It has a steep grade ranging in elevation from 64 at the southeast corner of the lot to elevation 50 located at the northwest corner. The lot directly abuts Archbishop Williams High School track and field facility. The property is encumbered by an existing twenty-foot sewer easement that runs parallel with the southerly and westerly property lines. An existing 8" sewer is located within the easement and provides public sewer service for several properties in the area including the project locus and the athletic field. The sewer connects to the public sewer located in Storrs Avenue. The property is currently used as unauthorized overflow parking for athletic, business and residential related routines.

The largest lot of the project locus is 76,524 s.f. and is improved with three buildings a parking lot and service utilities. It is benefitted and currently only accessed by a twenty-foot wide access easement from Washington Street. The site was previously used as an automobile related service lot for multiple owners. The site is serviced by public water from the Washington Street via the access easement, public sewer, gas, overhead electric and site drainage. The site is encumbered by an existing ten-foot wide drain easement near the northerly property line extending from Washington Street to the Archbishop Williams athletic field. A 12" drain pipe conveys stormwater generated off of the project site, abutting properties as well as Washington Street to a manhole located at the common property line for the athletic field. An 18" drain extends from this manhole under the athletic field to an eventual outfall located across Storrs Avenue. Project locus drainage is limited in treatment and control. The site is also steep in grade ranging from a high southeasterly elevation of 84 to a low elevation of 58 to 60 along the westerly property line. There is no significant vegetation except for the overgrowth along the edges of the property.

The entire project locus is 114,193 s.f., is zoned General Business with the Village Overlay District. It directly abuts a Residential B zone but the lot directly abutting the project locus is developed as an athletic field. The Braintree Masons Lodge and a detention basin abuts directly to the south, while a municipal parking lot and several business located along Washington Street abuts the project locus to the east. Storrs Avenue abuts the project locus to the north which has several uses such as single family homes, multi-family homes, mixed uses, businesses and a temple.

4.0 - Project Description

The full project consists of two developments, Parkside Apartments and Parkside Condominiums. The larger development is a single 72–unit apartment building sitting on 96,796 s.f. titled Parkside Apartments. The smaller development is a two-building, 8-unit condominium project on 17,397 s.f. known as Parkside Condominiums. The larger lot includes the current existing Lot A which includes all the existing buildings, the private right-of-way lot and subdivided portions of the gravel and pavement lot known as Lot 2. The remaining land of Lot 2 provides the land for smaller development. Lot 2 is be divided into three lots, Lots 2A, 2B and 2C. Lots 2A and 2C are proposed to join Lot A.

Parkside Apartments includes one 72-unit residential building with an underground parking garage and surface parking. The building has a 29,860± square feet footprint, is 47 feet tall and

has three (3) stories. The parking totals 127 parking spaces with 48 surface parking spaces 81 garage parking spaces. Access to the underground garage is on the north side of the building.

Parkside Condominiums consists of two town house buildings with eight (8) total units, five in the building off of Storrs Avenue and three units in the building off of the access easement. All units will have a one car garage with a tandem space in front for a total of 22 spaces for the development.

New utility services will be installed and new mains will be installed to extend or upgrade existing infrastructure. A new 8" CLDI water main is proposed to be tapped off the 8" DI main on Storrs Avenue. The proposed 8" CLDI main will extend along the access easement and project driveway up to Parkside Apartment building and be capped. One 4" CLDI domestic service with a gate valve, and one 4" CLDI fire protection service with a gate valve shall be extended to the new building to provide fire protection and domestic water service for the new apartment building, respectively. The two town house buildings will both be serviced from the new main and will both have a 2" copper service with a sidewalk curb valve shutoff with a 6" CLDI fire pipe and gate valve in the street. Two new hydrants shall be installed along the access drive from Storrs Avenue and the existing hydrant located at the property line near Parkingway shall be evaluated for re-use.

Sewer mains and manholes will be added to the system to upgrade and direct flows accordingly. A sewer main connecting two existing manholes will be removed and redirected to new sewer main located in the access easement. A portion of the existing sewer running along the westerly property line shall remain in use. This existing sewer shall be extended to the Archbishop Williams High School field to provide sewer to the concession stand. The two condominium buildings 6" SDR 35 PVC sewer services shall connect to this existing sewer extension as well. The new 8" sewer main shall provide continued service for all existing connected properties while also providing service to the new apartment building. An oil/water separator will be installed to the collect spills inside of the parking garage. Area drains will connect with a ductile iron sewer pipe to the oil/water separator where wastewater will be treated and then conveyed to the public sewer system.

All existing stormwater management controls onsite will be removed and disposed of legally, except for the existing drain main that is located in the ten-foot wide drain easement. A large amount of flow shall be removed from this existing 18" drain pipe, captured on-site treated and allowed to recharge to the maximum extent allowed by the existing soils. The stormwater management systems consist of three separate large Cultec 330 Recharger chamber systems with catch basins and deep sump drain manholes. The Parkside Apartments roof runoff will be collected in a series of interior and exterior roof leaders and conveyed to the chamber systems. Parking lot and driveway stormwater runoff shall be captured by seven (7) deep sump catch basins and associated deep sump drain manholes. Each deep sump structure shall be fitted with a "Snout". The "Snout" provides for improved oil, floatable pollutants, trash, debris and suspended solids to be removed from the captured stormwater. It is our beleief that this treatment train provides the required 44% removal rate for TSS to allow for the stormwater to be recharged by the Cultec Recharger systems where the stormwater be retained to infiltrate back into the soil. The runoff that is not retained will be detained and allowed to overflow out of the chamber systems and into the town system on Storrs Avenue. The result of this retention/detention system is a significant reduction in stormwater volume and peak flow released off-site. The water quality

of the stormwater released is also significantly improved. The surrounding neighborhood and environment benefit from improved flood control and improved water quality

The upper stormwater management system, known as System "A" consists of 143 Cultec 330 Recharger chambers and is located in the entrance circle to Parkside Apartments. The chambers will be configured in a 13x11 layout with drain manholes feeding manifold pipes on each end. The mid stormwater management system, known as System "B", is located in the parking lot, behind the smaller townhome building adjacent to the apartment building. System "B" is 65 chambers in size and laid out in a 13x5 configuration. The lower system, known as System "C", is located between the townhome buildings. System "C" is 70 chambers in size and laid out in 7x10 configuration. All systems shall be fed through deep sump catch basins and drain manholes with manifolds pipes installed to spread the flow evenly through each system. All systems will have observation ports on the four corners with caps brought to match the final grade for inspection.

Gas, electric and communication services will be provided, designed and installed per the utility purveyors. Gas service is proposed to be brought up the access easement to the apartment building. Underground electric service is proposed to be pulled off the utility pole on the eastern boundary of the locus. The underground electric will go to a transformer which will feed the apartment building. The town homes will be serviced by gas and overhead electric services as depicted on the site plans.

5.0 - Erosion & Sedimentation Control Plan

The contractor shall implement an Erosion and Sedimentation Control Plan that protects the surrounding environment from sediment laden stormwater runoff generated during construction activities and from other pollutants generated from construction activities such as litter and dust. Construction sequencing is part of managing a site as is implementing many BMP's that assist in controlling construction related pollutants.

5.1 - Major Construction Sequence for Site

The sequence is developed to contain all potential sedimentation and erosion incidents that could occur during the construction of the project. The contractor however is responsible to manage the site effectively to control offsite sediment transport which may not be included in this plan. The sequence will coordinate the work within the erosion barrier and coordinate other sedimentation control features to reduce the stress upon a silt fence as well as limit off-site sediment transport. The sequencing is as follows:

- Place safety fence around property to limit access and protect the public.
- Place erosion control barrier at limit of work where possible. The barrier shall be silt sock or stacked sand bags on any paved surfaces.
- Provide inlet protection for existing drainage structures on and off-site to minimize sediment buildup in the catch basins.
- Install crushed stone construction entrance to reduce soil tracking off-site by construction vehicles.
- Raze existing buildings.
- Extend utility mains onto property.
- Prepare area and install Cultec chambers to receive stormwater runoff.

- Excavate for new foundation.
- Extend utilities to foundation.
- Construct floor slab and foundation.
- Begin vertical construction of building.
- Install final landscaping, including hydroseed, plantings, lightpoles, walkways, handicap ramps and stairs.
- Clean up site.

The contractor has several procedures to perform to maintain the site. They include but are not limited to:

- Clean erosion control barrier of debris, silt and sand.
- Replace erosion control barrier at limit of work as needed. Barrier to be inspected on a weekly basis.
- Remove and replace crushed stone apron when stone is overburdened with silt.
- Sweep the site as necessary to minimize vehicle soil tracking and sediment laden runoff.
- Any stockpiled soils to be covered to minimize fugitive dust and ringed with erosion control barrier to minimize sediment transport.
- Maintain a covered dumpster on site to minimize wind blown debris from littering neighborhood and resource areas.
- Have a water truck onsite during the demolition portion of the project and during rough grading to minimize fugitive dust.
- Clean abutting property and nearby downstream catch basins of debris and sediment.

5.2 - Best Management Practices

The contractor shall use various types of structural and non-structural methodologies to minimize offsite polluting from construction activities. The following is a list of some BMP's that can be utilized; however, it is the contractor's responsibility to implement his strategies to minimize offsite sediment transport and fugitive dust and trash.

5.2.1 - Dumpster

The contractor shall have a dumpster on-site for the disposal of construction debris. The contractor shall cover the dumpster as needed to prevent wind blown debris from becoming litter in the environment.

5.2.2 - Mechanical or Hand Sweeper

The contractor shall sweep the site by mechanical means or by hand to reduce the sediment build-up on-site. This will reduce the surrounding area becoming impacted from construction related offsite sediment pollution.

5.2.3 - Crushed Stone Construction Apron

A crushed stone apron shall be installed at the entrance to the site to assist in removing caked soil on construction vehicles tires. The apron shall be a minimum of twenty-five feet long and twenty-five feet wide. The contractor shall inspect the apron on a daily basis and supplement new stone as needed

5.2.4 - Erosion Control Barrier

An erosion control barrier shall be installed at the down-gradient Limit of Work and used around the site as needed. The barrier shall be used around soil stockpiles and localized excavations on site. The barrier needs to be effective in controlling sediment transport and not becoming strained as the project moves forward. The contractor shall inspect the barrier weekly or after a large storm event to identify any stressed areas and replace the barrier as needed. The barrier can be one or many of several types. Stacked sand bags will be effective on paved sites. The contractor shall inspect the barriers on a daily basis and repair the barriers as needed.

5.2.5 - Dust Control

The use of a water truck or other method to spray water over the site during the dry season to minimize blown dust shall be implemented. The water shall not be excessively spread so erosive forces occur. The contractor shall sweep the pavement once installed and cover stockpiled soils as needed to minimize dust.

5.2.6 - Disturbed Surface Maintenance

The contractor shall stabilize the ground surface as needed to prevent erosion. Stabilization of surfaces includes the placement of pavement, rip rap, soldier piles, wood bark mulch and the establishment of vegetated surfaces. Upon the completion of construction of a particular phase, all surfaces should be stabilized even though it is apparent that future construction efforts will cause their disturbance. Vegetated cover should be established during the proper growing season and should be enhanced by soil adjustment for proper pH, nutrients and moisture content. Surfaces that are disturbed by erosion processes or vandalism should be stabilized as soon as possible. Areas where construction activities have permanently or temporarily ceased should be stabilized within 14 days from the date of last construction activity, except when construction activity will resume within 21 days (e.g., the total time period that construction activity is temporarily ceased is less than 21 days). Hydro-mulching of grass surfaces is recommended, especially if seeding of the surfaces is required outside the normal growing season. Mulching may be used for temporary stabilization. Haybale dikes or silt fences should be set where required to trap products of erosion and should be maintained on a continuing basis during the construction process. Wheel ruts should be filled in and graded to prevent concentration of stormwater runoff. Vehicle tracks leading downhill should be blocked during periods of intense precipitation by hay bales, dikes or silt fences which should be constructed to entrap the sediment.

5.2.7 - Temporary Stormwater Controls

The contractor shall rough grade the site as to not concentrate the stormwater runoff and cause erosive forces. The contractor shall use a level spreader or other temporary stormwater control device to treat construction site runoff for suspended solids. The

catch basins and manholes can be installed to assist in capturing the construction site runoff once installed but the sumps will need to be cleaned out of all sediment before connecting the tanks to the recharge system and final paving. The use of silt sacks on the catch basin will help minimize the cleaning of the sumps. The contractor shall sweep the pavement once installed as needed to minimize suspended solids in the stormwater.

5.2.8 - Inlet Protection Control

The contractor shall install catch basin silt sacks on and off-site as needed to protect from construction related sediment. The silt sacks shall be inspected weekly to determine if replacement or repairs are needed.

SECTION 4 – STORMWATER MANAGEMENT DATA

Checklist for Stormwater Report
Standard 3 Compliance
Standard 4 Compliance (TSS Removal)
Existing Conditions HydroCAD Calculations
- **2-Year**
- **10-Year**
- **25-Year**
- **100-Year**

Proposed Conditions HydroCAD Calculations
- **2-Year**
- **10-Year**
- **25-Year**
- **100-Year**

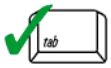
Watershed Maps
- **Existing Conditions**
- **Proposed Conditions**

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

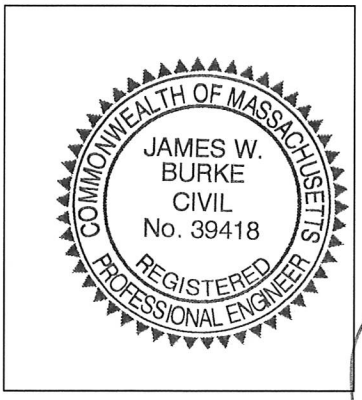
Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature



10/7/19

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☒ Redevelopment

☐ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

- ☒ No disturbance to any Wetland Resource Areas
- ☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)
- ☐ Reduced Impervious Area (Redevelopment Only)
- ☐ Minimizing disturbance to existing trees and shrubs
- ☐ LID Site Design Credit Requested:
  - ☐ Credit 1
  - ☐ Credit 2
  - ☐ Credit 3
- ☐ Use of "country drainage" versus curb and gutter conveyance and pipe
- ☐ Bioretention Cells (includes Rain Gardens)
- ☐ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)
- ☐ Treebox Filter
- ☐ Water Quality Swale
- ☐ Grass Channel
- ☐ Green Roof
- ☐ Other (describe): _____

Standard 1: No New Untreated Discharges

- ☒ No new untreated discharges
- ☐ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth
- ☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☐ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☐ Static ☒ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☐ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☐ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☐ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

☐ Limited Project

☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.

☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area

☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff

☐ Bike Path and/or Foot Path

☒ Redevelopment Project

☐ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☐ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☒ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☐ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☒ Description and delineation of public safety features;
- ☒ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

Standard 3 Compliance

Calculation Sheet

DeCelle-Burke-Sala & Associates, Inc.

Project: Parkside Apartment & Parkside Condominiur
383–385 Washington Street
Braintree, MA 02184

Client: 383 Washington Street LLC

Date: October 7, 2019

Standard 3 Compliance

Overall

Find: Recharge Volume Requirement

Given: Rv = (AF)

Rv = (impervious area x depth factor)

A = 203,164 s.f. impervious area F= 0.6 " for A-soils

Solve: Rv = 203,164 s.f. x 0.6 "/12'= 10158.20 c.f.

Rv = 10158 c.f./43,560 s.f= 0.233 acre/ft

Find: Recharge System Infiltration Rate; i

Given: i= A x RR

Rawls Rate for in-situ-soils = RR = 2.41 in/hr

System A	Recharge System Size	96.5	x	56.7	= 5471.55 s.f.
System B	Recharge System Size	95.5	x	26.7	= 2549.85 s.f.
System C	Recharge System Size	75.5	x	37.3	= 2816.15 s.f.

Solve: i= (2816.15s.f. x in/hr)/(12in/ft X 60min/hr X 60sec/min)

i= 0.3052 cfs i= 0.1422 cfs i= 0.1571 cfs

DeCelle-Burke-Sala Asscociates, Inc.
1266 Furnace Brook Pkwy., #401 Quincy, MA 02169
617-405-5100 (o) 617-405-5101 (f)

Calculation Sheet

Project: Parkside Apartment & Parkside Condominiur
383--385 Washington Street
Braintree, MA 02184
Client: 383 Washington Street LLC

Date: October 7, 2019

DeCelle-Burke-Sala & Associates, Inc.

Standard 3 Compliance continued...					
Determine if Recharge System can handle Required Recharge Volume; Rv					
Given:	Rv = 0.233 acre/ft				
	Recharge Field Height = 5.5 ft	5.0 ft	4.5 ft		
Find:	Depth of Rv within Recharge Field				
Solve:	**See HydroCAD Calculations Attached**				
	Rainfall Depth generating 0.233 ac/ft is 2.81 in				
System A	Corresponding Field Depth is 71.86 - 70.00	=	1.86	ft.	
System B	Corresponding Field Depth is 59.05 - 58.00	=	1.05	ft.	
System B	Corresponding Field Depth is 54.78 - 53.50	=	1.28	ft.	
	Drawdown Time, T				
Find:	T= Rv / (A x RR)	RR= 2.41 in/hr			
	OK				
Given:	Recharge Systems= 5471.55 s.f.,	2549.85 s.f.,	2816.15 s.f.,		
	Rv= 6142.00 c.f.	Rv= 1655.00 c.f.	Rv= 2439.00 c.f.		
6142 c.f./(5471.55 s.f. x 2.41 in/hr)12in/ft	=	5.59 hrs	<	72 hrs	
1655 c.f./(2549.85 s.f. x 2.41 in/hr)12in/ft	=	3.23 hrs	<	72 hrs	
2439 c.f./(2816.15 s.f. x 2.41 in/hr)12in/ft	=	4.31 hrs	<	72 hrs	

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1266 Furnace Brook Pkwy., #401 Quincy, MA 02169
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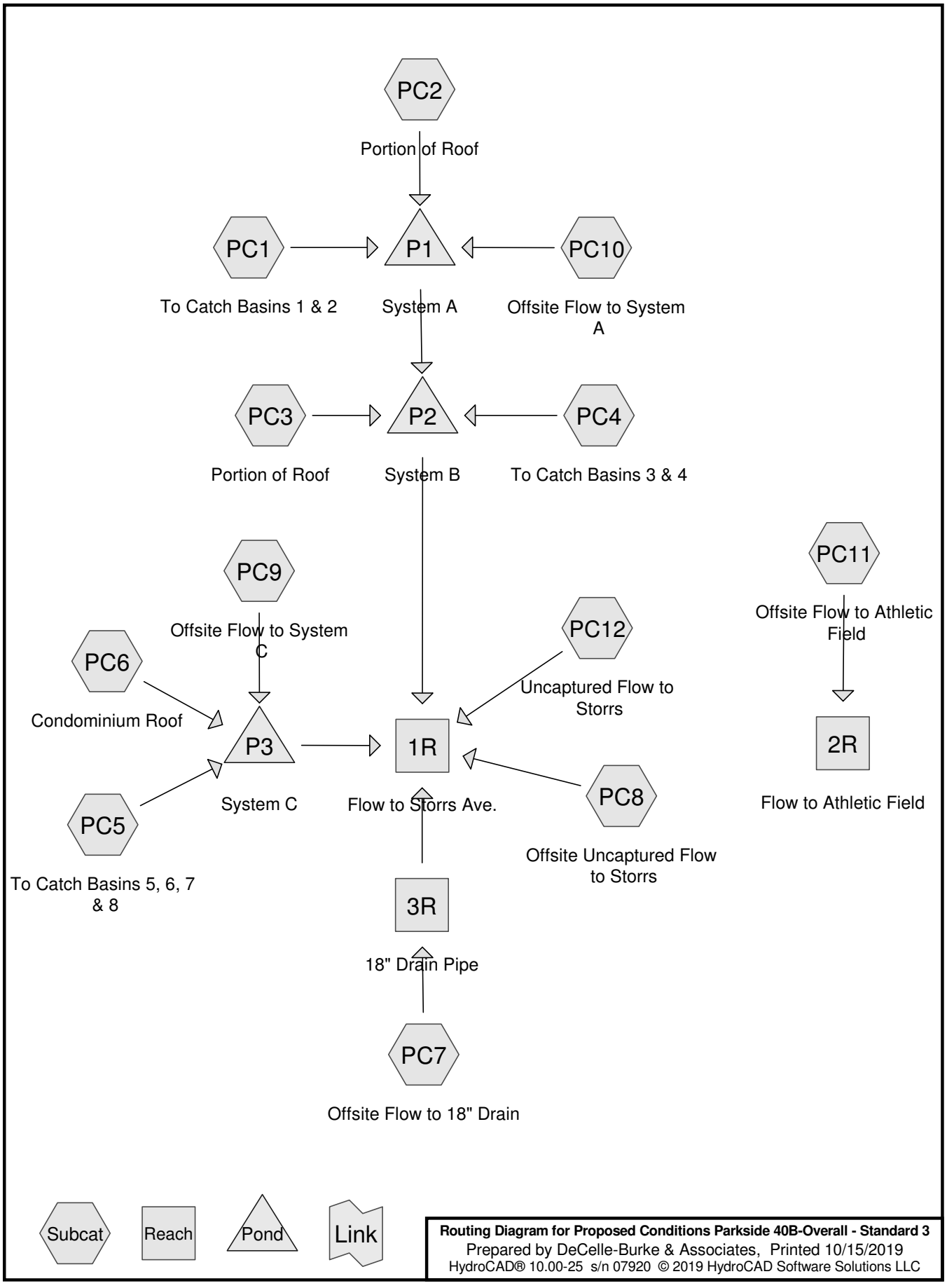


Routing Diagram for Proposed Conditions Parkside 40B-Overall - Standard 3

Prepared by DeCelle-Burke & Associates, Printed 10/15/2019

Summary for Subcatchment PC1: To Catch Basins 1 & 2

Runoff = 0.35 cfs @ 12.10 hrs, Volume= 0.013 af, Depth> 0.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
11,777	98	Paved parking, HSG A
9,165	39	>75% Grass cover, Good, HSG A
20,942	72	Weighted Average
9,165		43.76% Pervious Area
11,777		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC10: Offsite Flow to System A

Runoff = 1.74 cfs @ 12.08 hrs, Volume= 0.073 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
23,889	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
27,898	98	Weighted Average
27,898		100.00% Impervious Area
4,009		14.37% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC11: Offsite Flow to Athletic Field

Runoff = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Adj	Description
148	98		Paved parking, HSG A
1,272	98		Unconnected pavement, HSG A
13,243	39		>75% Grass cover, Good, HSG A
14,663	45	42	Weighted Average, UI Adjusted
13,243			90.32% Pervious Area
1,420			9.68% Impervious Area
1,272			89.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC12: Uncaptured Flow to Storrs

Runoff = 0.17 cfs @ 12.10 hrs, Volume= 0.007 af, Depth> 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG A
2,461	39	>75% Grass cover, Good, HSG A
2,167	98	Water Surface, 0% imp, HSG A
6,992	77	Weighted Average
4,628		66.19% Pervious Area
2,364		33.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC2: Portion of Roof

Runoff = 1.29 cfs @ 12.08 hrs, Volume= 0.054 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
20,610	98	Unconnected roofs, HSG A
20,610		100.00% Impervious Area
20,610		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC3: Portion of Roof

Runoff = 0.50 cfs @ 12.08 hrs, Volume= 0.021 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
7,978	98	Unconnected roofs, HSG A
7,978		100.00% Impervious Area
7,978		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC4: To Catch Basins 3 & 4

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.017 af, Depth> 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
9,980	98	Paved parking, HSG A
4,440	39	>75% Grass cover, Good, HSG A
14,420	80	Weighted Average
4,440		30.79% Pervious Area
9,980		69.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC5: To Catch Basins 5, 6, 7 & 8

Runoff = 0.90 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
19,333	98	Paved parking, HSG A
4,744	39	>75% Grass cover, Good, HSG A
1,877	39	>75% Grass cover, Good, HSG A
25,954	83	Weighted Average
6,621		25.51% Pervious Area
19,333		74.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC6: Condominium Roof

Runoff = 0.16 cfs @ 12.08 hrs, Volume= 0.007 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
2,630	98	Unconnected roofs, HSG A
2,630		100.00% Impervious Area
2,630		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC7: Offsite Flow to 18" Drain

Runoff = 3.57 cfs @ 12.08 hrs, Volume= 0.151 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
44,417	98	Paved parking, HSG A
12,811	98	Roofs, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment PC8: Offsite Uncaptured Flow to Storrs

Runoff = 2.06 cfs @ 12.08 hrs, Volume= 0.087 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
26,900	98	Paved parking, HSG A
6,097	98	Unconnected roofs, HSG A
32,997	98	Weighted Average
32,997		100.00% Impervious Area
6,097		18.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC9: Offsite Flow to System C

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.013 af, Depth> 1.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.81"

Area (sf)	CN	Description
4,905	98	Paved parking, HSG A
4,905		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Reach 1R: Flow to Storrs Ave.

Inflow Area = 5.109 ac, 88.83% Impervious, Inflow Depth > 0.57" for Custom event
Inflow = 5.67 cfs @ 12.10 hrs, Volume= 0.242 af
Outflow = 5.67 cfs @ 12.10 hrs, Volume= 0.242 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Flow to Athletic Field

Inflow Area = 0.337 ac, 9.68% Impervious, Inflow Depth = 0.00" for Custom event
Inflow = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs

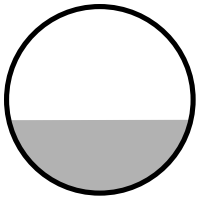
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 1.314 ac,100.00% Impervious, Inflow Depth > 1.37" for Custom event
Inflow = 3.57 cfs @ 12.08 hrs, Volume= 0.151 af
Outflow = 3.53 cfs @ 12.11 hrs, Volume= 0.149 af, Atten= 1%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.48 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 3.45 fps, Avg. Travel Time= 1.6 min

Peak Storage= 213 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Pond P1: System A

Inflow Area = 1.594 ac, 86.80% Impervious, Inflow Depth > 1.06" for Custom event
Inflow = 3.37 cfs @ 12.09 hrs, Volume= 0.141 af
Outflow = 0.31 cfs @ 12.97 hrs, Volume= 0.047 af, Atten= 91%, Lag= 53.2 min
Discarded = 0.31 cfs @ 12.97 hrs, Volume= 0.047 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 71.86' @ 12.97 hrs Surf.Area= 5,468 sf Storage= 4,072 cf

Plug-Flow detention time= 23.3 min calculated for 0.047 af (34% of inflow)
Center-of-Mass det. time= (not calculated: outflow precedes inflow)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	6,817 cf	**56.67'W x 96.50'L x 5.54'H Field A** 30,304 cf Overall - 7,581 cf Embedded = 22,722 cf x 30.0% Voids
#2A	71.50'	7,581 cf	**Cultec R-330XLHD** x 143 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 11 rows
#3	73.00'	38 cf	**4.00'D x 3.00'H Storage of Catch Basin Above Invert** -Impervious
		14,436 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	73.50'	**12.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 73.50' / 61.50' S= 0.0667 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.31 cfs @ 12.97 hrs HW=71.86' (Free Discharge)
1=Exfiltration (Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=70.00' TW=63.00' (Fixed TW Elev= 63.00')
2=Culvert (Controls 0.00 cfs)

Summary for Pond P2: System B

Inflow Area = 2.109 ac, 85.19% Impervious, Inflow Depth > 0.21" for Custom event
Inflow = 0.92 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.14 cfs @ 12.59 hrs, Volume= 0.019 af, Atten= 84%, Lag= 30.1 min
Discarded = 0.14 cfs @ 12.59 hrs, Volume= 0.019 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 59.05' @ 12.59 hrs Surf.Area= 2,547 sf Storage= 869 cf

Plug-Flow detention time= 20.3 min calculated for 0.019 af (50% of inflow)
Center-of-Mass det. time= 4.2 min (731.4 - 727.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,818 cf	**26.67'W x 95.50'L x 5.04'H Field A** 12,839 cf Overall - 3,446 cf Embedded = 9,393 cf x 30.0% Voids
#2A	59.00'	3,446 cf	**Cultec R-330XLHD** x 65 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		6,264 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	60.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 57.20' S= 0.0933 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.14 cfs @ 12.59 hrs HW=59.05' (Free Discharge)
1=Exfiltration (Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=58.00' TW=59.50' (Fixed TW Elev= 59.50')
2=Culvert (Controls 0.00 cfs)

Summary for Pond P3: System C

Inflow Area = 0.769 ac, 80.23% Impervious, Inflow Depth > 0.87" for Custom event
Inflow = 1.37 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.16 cfs @ 12.83 hrs, Volume= 0.022 af, Atten= 88%, Lag= 44.3 min
Discarded = 0.16 cfs @ 12.83 hrs, Volume= 0.022 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 54.78' @ 12.83 hrs Surf.Area= 2,819 sf Storage= 1,476 cf

Plug-Flow detention time= 21.3 min calculated for 0.022 af (40% of inflow)
Center-of-Mass det. time= 1.6 min (729.3 - 727.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	53.50'	2,722 cf	**37.33'W x 75.50'L x 4.54'H Field A** 12,801 cf Overall - 3,729 cf Embedded = 9,072 cf x 30.0% Voids
#2A	54.50'	3,729 cf	**Cultec R-330XLHD** x 70 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		6,451 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	56.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.60' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.16 cfs @ 12.83 hrs HW=54.78' (Free Discharge)
↑**1=Exfiltration** (Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=53.50' (Free Discharge)
↑**2=Culvert** (Controls 0.00 cfs)

Calculation Sheet

DeCelle-Burke-Sala & Associates, Inc.

Project: Parkside Apartment & Parkside Condominiur
383–385 Washington Street
Braintree, MA 02184

Client: 383 Washington Street LLC

Date: October 7, 2019

Standard 3 Compliance

System "A"

Find: Recharge Volume Requirement

Given: Rv = (AF)

Rv = (impervious area x depth factor)

A = 60,285 s.f. impervious area F= 0.6 " for A-soils

Solve: Rv = 60,285 s.f. x 0.6 "/12'= 3014.25 c.f.

Rv = 3014.25 c.f./43,560 s.f= 0.069 acre/ft

Find: Recharge System Infiltration Rate; i

Given: i= A x RR

Rawls Rate for in-situ-soils = RR = 2.41 in/hr

Recharge System Size 96.5 x 56.7 = 5471.55 s.f.

Solve: i= 471.55s.f. x 2.41in/hr)/(12in/ft X 60min/hr X 60sec/mi

i= 0.3052 cfs

DeCelle-Burke-Sala Asscociates, Inc.
1266 Furnace Brook Pkwy., #401 Quincy, MA 02169
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Calculation Sheet

Project: Parkside Apartment & Parkside Condominiur
383--385 Washington Street

Client: 383 Washington Street LLC

Date: October 7, 2019

DeCelle-Burke-Sala & Associates, Inc.

Standard 3 Compliance continued...

Determine if Recharge System can handle Required Recharge Volume; Rv

Given: Rv = 0.069 acre/ft

Recharge Field Height = 5.5 ft

Find: Depth of Rv within Recharge Field

Solve: **See HydroCAD Calculations Attached**

Rainfall Depth generating 0.069 ac/ft is 1.54 in

Corresponding Field Depth is 70.86 - 70.00 = 0.86 ft.

OK

Drawdown Time, T

Find: T= Rv / (A x RR)

Given: Recharge System= 5471.55 s.f. RR= 2.41 in/hr

Rv= 3014.25 c.f.

3014.25 c.f./(5471.55 s.f. x 2.41 in/hr)12in/ft

= 2.74 hrs < 72 hrs **CHECKS OK**

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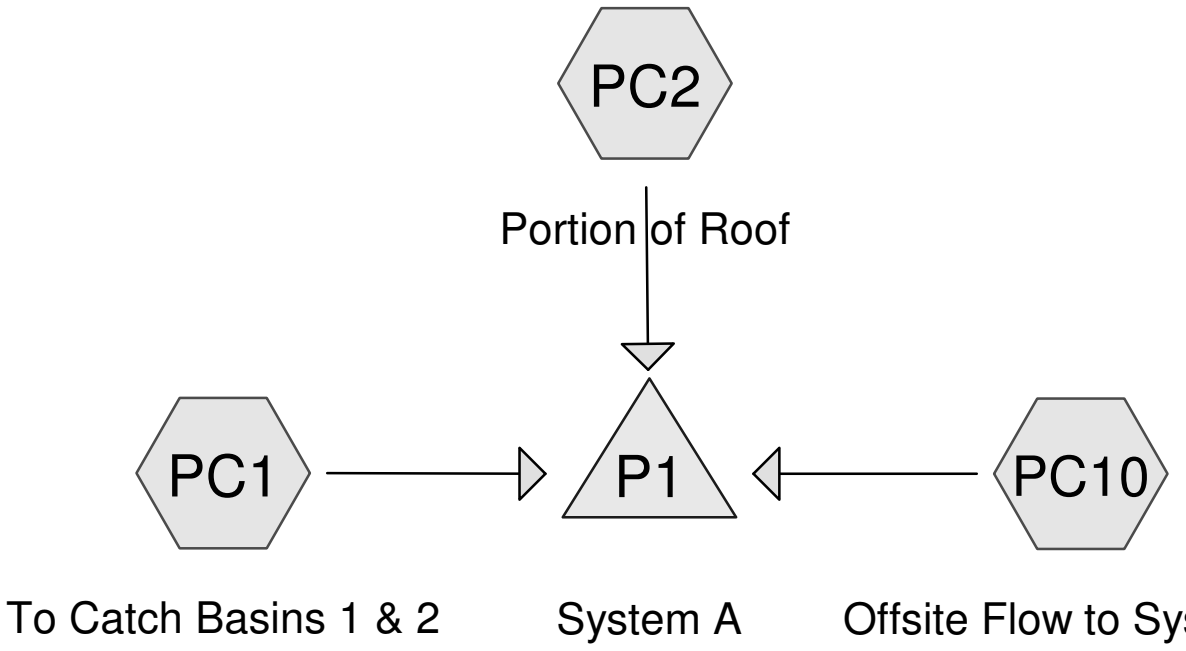

Subcat Reach Pond Link

Routing Diagram for Proposed Conditions Parkside 40B-Systm A - Standard 3

Prepared by DeCelle-Burke & Associates, Printed 10/15/2019

Summary for Subcatchment PC1: To Catch Basins 1 & 2

Runoff = 0.03 cfs @ 12.33 hrs, Volume= 0.001 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.54"

Area (sf)	CN	Description
11,777	98	Paved parking, HSG A
9,165	39	>75% Grass cover, Good, HSG A
20,942	72	Weighted Average
9,165		43.76% Pervious Area
11,777		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC10: Offsite Flow to System A

Runoff = 0.92 cfs @ 12.08 hrs, Volume= 0.039 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.54"

Area (sf)	CN	Description
23,889	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
27,898	98	Weighted Average
27,898		100.00% Impervious Area
4,009		14.37% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC2: Portion of Roof

Runoff = 0.68 cfs @ 12.08 hrs, Volume= 0.029 af, Depth> 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.54"

Area (sf)	CN	Description
20,610	98	Unconnected roofs, HSG A
20,610		100.00% Impervious Area
20,610		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Pond P1: System A

Inflow Area = 1.594 ac, 86.80% Impervious, Inflow Depth > 0.52" for Custom event
Inflow = 1.61 cfs @ 12.08 hrs, Volume= 0.069 af
Outflow = 0.31 cfs @ 12.53 hrs, Volume= 0.040 af, Atten= 81%, Lag= 26.8 min
Discarded = 0.31 cfs @ 12.53 hrs, Volume= 0.040 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 70.86' @ 12.53 hrs Surf.Area= 5,468 sf Storage= 1,417 cf

Plug-Flow detention time= 20.0 min calculated for 0.040 af (59% of inflow)
Center-of-Mass det. time= 6.1 min (731.1 - 725.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	6,817 cf	**56.67'W x 96.50'L x 5.54'H Field A** 30,304 cf Overall - 7,581 cf Embedded = 22,722 cf x 30.0% Voids
#2A	71.50'	7,581 cf	**Cultec R-330XLHD** x 143 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 11 rows
#3	73.00'	38 cf	**4.00'D x 3.00'H Storage of Catch Basin Above Invert** -Impervious
		14,436 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	73.50'	**12.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.50' / 61.50' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.31 cfs @ 12.53 hrs HW=70.86' (Free Discharge)
1=Exfiltration (Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=70.00' TW=63.00' (Fixed TW Elev= 63.00')
2=Culvert (Controls 0.00 cfs)

Calculation Sheet

DeCelle-Burke-Sala & Associates, Inc.

Project: Parkside Apartment & Parkside Condominiur
383–385 Washington Street
Braintree, MA 02184

Client: 383 Washington Street LLC

Date: October 7, 2019

Standard 3 Compliance

System "B"

Find: Recharge Volume Requirement

Given: Rv = (AF)

Rv = (impervious area x depth factor)

A = 17,958 s.f. impervious area F= 0.6 " for A-soils

Solve: Rv = 17,958 s.f. x 0.6 "/12'= 897.90 c.f.

Rv = 897.90 c.f./43,560 s.f= 0.021 acre/ft

Find: Recharge System Infiltration Rate; i

Given: i= A x RR

Rawls Rate for in-situ-soils = RR = 2.41 in/hr

Recharge System Size 95.5 x 26.7 = 2549.85 s.f.

Solve: i= 549.85s.f. x 2.41in/hr)/(12in/ft X 60min/hr X 60sec/mi

i= 0.1422 cfs

DeCelle-Burke-Sala Asscociates, Inc.
1266 Furnace Brook Pkwy., #401 Quincy, MA 02169
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Calculation Sheet

Project: Parkside Apartment & Parkside Condominiur
383--385 Washington Street

Client: 383 Washington Street LLC

Date: October 7, 2019

DeCelle-Burke-Sala & Associates, Inc.

Standard 3 Compliance continued...

Determine if Recharge System can handle Required Recharge Volume; Rv

Given: Rv = 0.021 acre/ft

Recharge Field Height = 5.0 ft

Find: Depth of Rv within Recharge Field

Solve: **See HydroCAD Calculations Attached**

Rainfall Depth generating 0.021 ac/ft is 1.9 in

Corresponding Field Depth is 58.42 - 58.00 = 0.42 ft.

OK

Drawdown Time, T

Find: T= Rv / (A x RR)

Given: Recharge System= 2549.85 s.f. RR= 2.41 in/hr

Rv= 897.90 c.f.

897.9 c.f./(2549.85 s.f. x 2.41 in/hr)12in/ft

= 1.75 hrs < 72 hrs **CHECKS OK**

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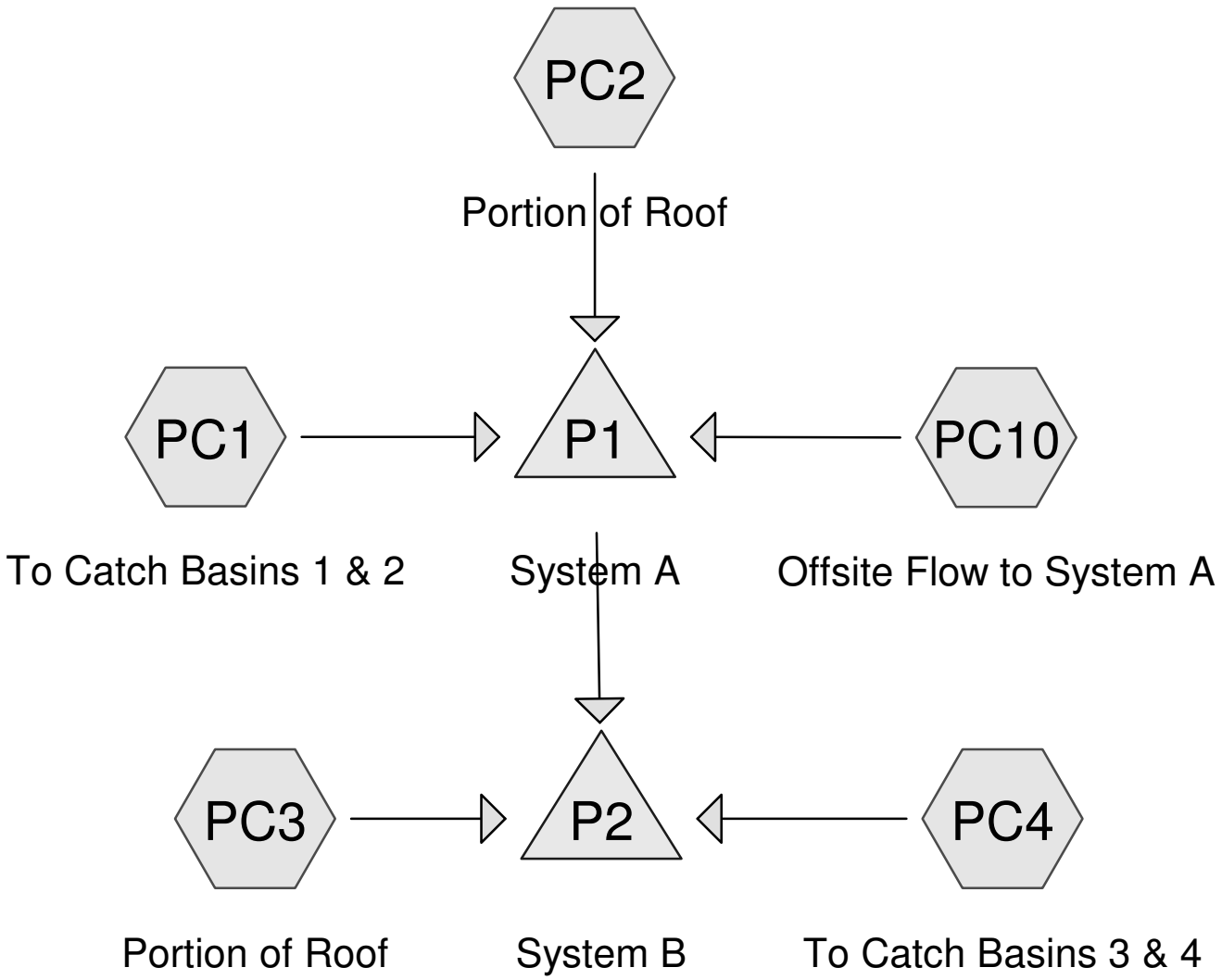

Subcat Reach Pond Link

Routing Diagram for Proposed Conditions Parkside 40B-Systm B - Standard 3

Prepared by DeCelle-Burke & Associates, Printed 10/15/2019

Summary for Subcatchment PC1: To Catch Basins 1 & 2

Runoff = 0.08 cfs @ 12.13 hrs, Volume= 0.004 af, Depth> 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.90"

Area (sf)	CN	Description
11,777	98	Paved parking, HSG A
9,165	39	>75% Grass cover, Good, HSG A
20,942	72	Weighted Average
9,165		43.76% Pervious Area
11,777		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC10: Offsite Flow to System A

Runoff = 1.16 cfs @ 12.08 hrs, Volume= 0.049 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.90"

Area (sf)	CN	Description
23,889	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
27,898	98	Weighted Average
27,898		100.00% Impervious Area
4,009		14.37% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC2: Portion of Roof

Runoff = 0.85 cfs @ 12.08 hrs, Volume= 0.036 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.90"

Area (sf)	CN	Description
20,610	98	Unconnected roofs, HSG A
20,610		100.00% Impervious Area
20,610		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC3: Portion of Roof

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.014 af, Depth> 0.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.90"

Area (sf)	CN	Description
7,978	98	Unconnected roofs, HSG A
7,978		100.00% Impervious Area
7,978		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC4: To Catch Basins 3 & 4

Runoff = 0.18 cfs @ 12.10 hrs, Volume= 0.007 af, Depth> 0.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=1.90"

Area (sf)	CN	Description
9,980	98	Paved parking, HSG A
4,440	39	>75% Grass cover, Good, HSG A
14,420	80	Weighted Average
4,440		30.79% Pervious Area
9,980		69.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Pond P1: System A

Inflow Area = 1.594 ac, 86.80% Impervious, Inflow Depth > 0.66" for Custom event
Inflow = 2.08 cfs @ 12.09 hrs, Volume= 0.088 af
Outflow = 0.31 cfs @ 12.59 hrs, Volume= 0.043 af, Atten= 85%, Lag= 30.1 min
Discarded = 0.31 cfs @ 12.59 hrs, Volume= 0.043 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 71.27' @ 12.59 hrs Surf.Area= 5,468 sf Storage= 2,079 cf

Plug-Flow detention time= 21.1 min calculated for 0.043 af (49% of inflow)

Center-of-Mass det. time= 3.7 min (728.9 - 725.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	6,817 cf	**56.67'W x 96.50'L x 5.54'H Field A** 30,304 cf Overall - 7,581 cf Embedded = 22,722 cf x 30.0% Voids
#2A	71.50'	7,581 cf	**Cultec R-330XLHD** x 143 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 11 rows
#3	73.00'	38 cf	**4.00'D x 3.00'H Storage of Catch Basin Above Invert** -Impervious
		14,436 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	73.50'	**12.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 73.50' / 61.50' S= 0.0667 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.31 cfs @ 12.59 hrs HW=71.27' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=70.00' TW=63.00' (Fixed TW Elev= 63.00')
↑—**2=Culvert** (Controls 0.00 cfs)

Summary for Pond P2: System B

Inflow Area = 2.109 ac, 85.19% Impervious, Inflow Depth > 0.12" for Custom event
Inflow = 0.50 cfs @ 12.09 hrs, Volume= 0.021 af
Outflow = 0.14 cfs @ 12.46 hrs, Volume= 0.016 af, Atten= 72%, Lag= 22.3 min
Discarded = 0.14 cfs @ 12.46 hrs, Volume= 0.016 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Peak Elev= 58.42' @ 12.46 hrs Surf.Area= 2,547 sf Storage= 322 cf

Plug-Flow detention time= 17.0 min calculated for 0.016 af (79% of inflow)
Center-of-Mass det. time= 9.0 min (737.1 - 728.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,818 cf	**26.67'W x 95.50'L x 5.04'H Field A** 12,839 cf Overall - 3,446 cf Embedded = 9,393 cf x 30.0% Voids
#2A	59.00'	3,446 cf	**Cultec R-330XLHD** x 65 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		6,264 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	60.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 57.20' S= 0.0933 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.14 cfs @ 12.46 hrs HW=58.42' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.14 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=58.00' TW=59.50' (Fixed TW Elev= 59.50')
↑—**2=Culvert** (Controls 0.00 cfs)

Calculation Sheet

DeCelle-Burke-Sala & Associates, Inc.

Project: Parkside Apartment & Parkside Condominiur
383–385 Washington Street
Braintree, MA 02184

Client: 383 Washington Street LLC

Date: October 7, 2019

Standard 3 Compliance

System "C"

Find: Recharge Volume Requirement

Given: Rv = (AF)

Rv = (impervious area x depth factor)

A = 28,745 s.f. impervious area F= 0.6 " for A-soils

Solve: Rv = 28,745 s.f. x 0.6 "/12'= 1437.25 c.f.

Rv = 1437.25 c.f./43,560 s.f= 0.033 acre/ft

Find: Recharge System Infiltration Rate; i

Given: i= A x RR

Rawls Rate for in-situ-soils = RR = 2.41 in/hr

Recharge System Size 75.5 x 37.3 = 2816.15 s.f.

Solve: i= 816.15s.f. x 2.41in/hr)/(12in/ft X 60min/hr X 60sec/mi

i= 0.1571 cfs

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1266 Furnace Brook Pkwy., #401 Quincy, MA 02169
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Calculation Sheet

Project: Parkside Apartment & Parkside Condominiur
383--385 Washington Street

Client: 383 Washington Street LLC

Date: October 7, 2019

DeCelle-Burke-Sala & Associates, Inc.

Standard 3 Compliance continued...

Determine if Recharge System can handle Required Recharge Volume; Rv

Given: Rv = 0.033 acre/ft

Recharge Field Height = 4.5 ft

Find: Depth of Rv within Recharge Field

Solve: **See HydroCAD Calculations Attached**

Rainfall Depth generating 0.033 ac/ft is 2.02 in

Corresponding Field Depth is 54.29 - 53.50 = 0.79 ft.

OK

Drawdown Time, T

Find: T= Rv / (A x RR)

Given: Recharge System= 2816.15 s.f. RR= 2.41 in/hr

Rv= 1437.25 c.f.

1437.25 c.f./(2816.15 s.f. x 2.41 in/hr)12in/ft

= 2.54 hrs < 72 hrs **CHECKS OK**

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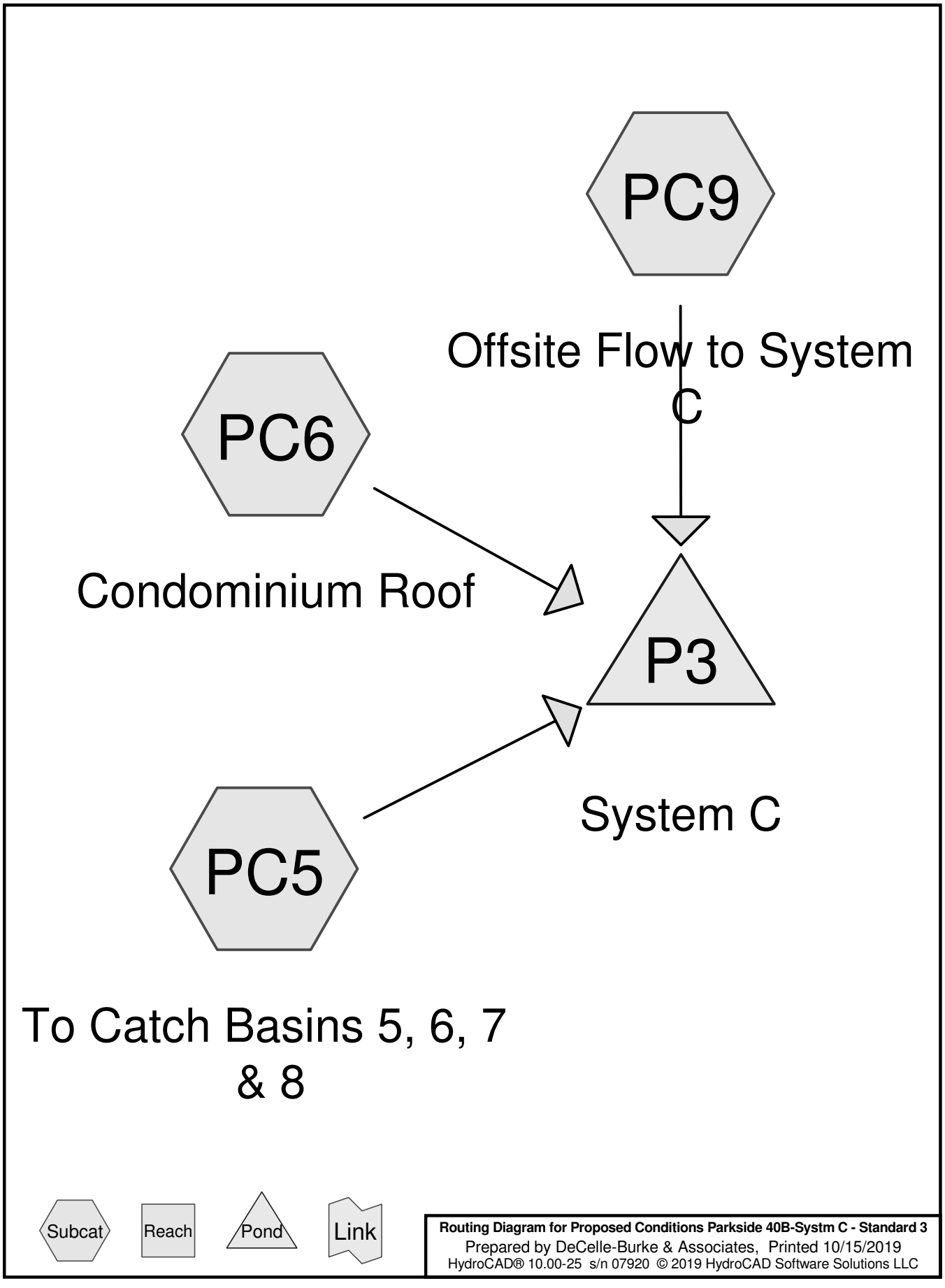


Routing Diagram for Proposed Conditions Parkside 40B-Systm C - Standard 3

Prepared by DeCelle-Burke & Associates, Printed 10/15/2019

Summary for Subcatchment PC5: To Catch Basins 5, 6, 7 & 8

Runoff = 0.48 cfs @ 12.09 hrs, Volume= 0.019 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.02"

Area (sf)	CN	Description
19,333	98	Paved parking, HSG A
4,744	39	>75% Grass cover, Good, HSG A
1,877	39	>75% Grass cover, Good, HSG A
25,954	83	Weighted Average
6,621		25.51% Pervious Area
19,333		74.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC6: Condominium Roof

Runoff = 0.12 cfs @ 12.08 hrs, Volume= 0.005 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.02"

Area (sf)	CN	Description
2,630	98	Unconnected roofs, HSG A
2,630		100.00% Impervious Area
2,630		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC9: Offsite Flow to System C

Runoff = 0.22 cfs @ 12.08 hrs, Volume= 0.009 af, Depth> 0.97"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs
Type III 24-hr Custom Rainfall=2.02"

Area (sf)	CN	Description
4,905	98	Paved parking, HSG A
4,905		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Pond P3: System C

Inflow Area = 0.769 ac, 80.23% Impervious, Inflow Depth > 0.51" for Custom event
Inflow = 0.81 cfs @ 12.09 hrs, Volume= 0.033 af
Outflow = 0.16 cfs @ 12.55 hrs, Volume= 0.019 af, Atten= 80%, Lag= 27.6 min
Discarded = 0.16 cfs @ 12.55 hrs, Volume= 0.019 af
Primary = 0.00 cfs @ 11.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 11.00-13.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 54.29' @ 12.55 hrs Surf.Area= 2,819 sf Storage= 670 cf

Plug-Flow detention time= 19.2 min calculated for 0.019 af (59% of inflow)
Center-of-Mass det. time= 6.0 min (734.9 - 728.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	53.50'	2,722 cf	**37.33'W x 75.50'L x 4.54'H Field A** 12,801 cf Overall - 3,729 cf Embedded = 9,072 cf x 30.0% Voids
#2A	54.50'	3,729 cf	**Cultec R-330XLHD** x 70 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		6,451 cf	Total Available Storage

Storage Group A created with Chamber Wizard

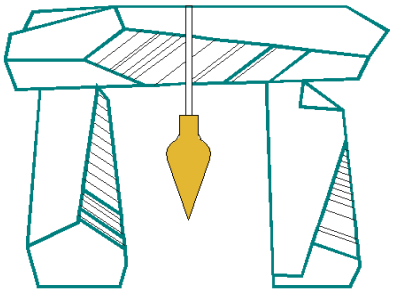
Device	Routing	Invert	Outlet Devices
#1	Discarded	53.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	56.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.60' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.16 cfs @ 12.55 hrs HW=54.29' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 11.00 hrs HW=53.50' (Free Discharge)
↑—**2=Culvert** (Controls 0.00 cfs)

Standard 4 Compliance (TSS Removal)

DeCelle-Burke-Sala



& Associates, Inc.

Project: **Parkside Apartments**
Location: **383 Washington Street, Braintree MA**
Date: **2/2/2017**

Subject: **Total Suspended Solids Removal Calculations**

BMP	TSS Removal	Start Load	Amount Removed	Remaining Load
4' Deep Sump Catch Basins	25%	100%	25%	75%
4' Deep Sump Water Quality Manho	25%	75%	19%	56%
Underground Recharge Chambers	70%	56%	39%	17%
Remaining Load		17%	0%	17%

DeCelle-Burke-Sala Associates, Inc.
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PH:(617)-405-5100 FX:(617)-405-5101

DeCelle-Burke-Sala & Associates, Inc.

Job No. **185.033**
Project: **Parkside Apartments & Townhoses**
Location: **383-385 Washington Street**
Braintree, MA
Date: **10/7/2019**

Subject: **Water Quality Inlet Design - WQ1 - System A**
(Ref: Hazen Equation for Sedimentation)

A = (NQ/Vo)x((((1-E)^(-1/N))-1))

A=	Area of the Settling Zone	**Find**
N=	Number of Cells	**2**
Vo=	Design Settling Velocity	**0.029 FPS**
Q=	Design Inflow	**2.65 CFS**
E=	Settling Efficiency	**44.00%**

Find "A" given Vo = 0.029 fps (correlates with very fine sand)

Drainage Area is 35,666 s.f. 100% impervious

N = 1 One Compartment Tank)

E = 44% (Sufficient when Combined w/ Infiltration Basins)

(N*Q) / Vo =	182.8
((1-E)^(-1/N))-1 =	0.3

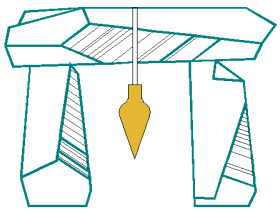
A = 61.5

Design Flow, Q, is based on the 2-year storm flow from hydology model.

***** Use a a single 4' diameter catch basin and a 8' Diameter Deep Sump Structure**

Provides 62.8 s.f. of settling zone, which exceeds the square footage above.

DeCelle-Burke-Sala



& Associates, Inc.

Job No. **185.033**
Project: **Parkside Apartments & Townhoses**
Location: **383-385 Washington Street**
Braintree, MA
Date: **10/7/2019**

Subject: **Water Quality Inlet Design - WQ1 - System B**
(Ref: Hazen Equation for Sedimentation)

A = (NQ/Vo)x((((1-E)^(-1/N))-1))

A=	Area of the Settling Zone	**Find**
N=	Number of Cells	**2**
Vo=	Design Settling Velocity	**0.029 FPS**
Q=	Design Inflow	**0.59 CFS**
E=	Settling Efficiency	**44.00%**

Find "A" given Vo = 0.029 fps (correlates with very fine sand)

Drainage Area is 9,980 s.f. 100% impervious

N = 2 Two Tanks)

E = 44% (Sufficient when Combined w/ Infiltration Basins)

(N*Q) / Vo =	40.7
((1-E)^(-1/N))-1 =	0.3

A = 13.7

Design Flow, Q, is based on the 2-year storm flow from hydology model.

***** Use a a single 4' diameter catch basin and a 4' Diameter Deep Sump Structure**

Provides 25.2 s.f. of settling zone, which exceeds the square footage above.

DeCelle-Burke-Sala & Associates, Inc.

Job No. **185.033**
Project: **Parkside Apartments & Townhoses**
Location: **383-385 Washington Street**
Braintree, MA
Date: **10/7/2019**

Subject: **Water Quality Inlet Design - WQ1 - System C**
(Ref: Hazen Equation for Sedimentation)

A = (NQ/Vo)x((((1-E)^(-1/N))-1))

A=	Area of the Settling Zone	**Find**
N=	Number of Cells	**2**
Vo=	Design Settling Velocity	**0.029 FPS**
Q=	Design Inflow	**1.60 CFS**
E=	Settling Efficiency	**44.00%**

Find "A" given Vo = 0.029 fps (correlates with very fine sand)

Drainage Area is 24,238 s.f. 100% impervious

N = 2 Two Tanks)

E = 44% (Sufficient when Combined w/ Infiltration Basins)

(N*Q) / Vo =	110.3
((1-E)^(-1/N))-1 =	0.3

A = 37.1

Design Flow, Q, is based on the 2-year storm flow from hydology model.

***** Use a a single 4' diameter catch basin and a 6' Diameter Deep Sump Structure**

Provides 40.9 s.f. of settling zone, which exceeds the square footage above.

Rational Method Calculations

Project: **Parkside Apartments & Condominiums**
383-385 Washington Street Braintree, MA
Client: **383-385 Washington Street LLC**

Date: **10/7/19**

Prepared by: **DeCelle-Burke-Sala & Associates, Inc**
1266 Furnace Brook Pkwy., #401
Quincy MA 02169
617-405-5100

DeCelle-Burke-Sala
& Associates, Inc.

DRAINAGE CALCULATIONS FOR A 25-YEAR STORM, CHEZY-MANNING'S FORMULA, N=0.011, HDPE PIPE

STRUCTURE		DESC.	AREA	"C"	CA	(min.)		I	Q	L	S	DIA.	QFULL	VFULL	Q/	V/	V	D/V	RIM	INVERT	INVERT
from	to		(acres)		(acres)	PIPE	Tc	(in/hr)	(cfs)	(ft)	(ft/ft)	(in.)	(cfs)	(ft/s)	QFULL	VFULL	(ft/s)	(min.)		IN	OUT
A-CB1	CB1	PAVE	0.64	0.90	0.58																
		GRASS	0.16	0.35	0.06																
CB1	DMH2		0.81	0.79	0.63		6.00	6.39	4.06	7	0.014	12	5.00	6.36	0.81	1.13	7.19	0.02			
A-CB2	CB2	PAVE	0.27	0.90	0.24																
		GRASS	0.05	0.35	0.02																
CB2	DMH2		0.32	0.82	0.26		6.00	6.39	1.65	7	0.014	12	5.00	6.36	0.33	0.93	5.92	0.02			
DMH2	SYS A		1.12	0.797	0.89	0.02	6.02	6.39	5.70	14	0.020	12	5.97	7.60	0.96	1.15	8.74	0.03			
A-CB3	CB3	PAVE	0.10	0.90	0.09																
CB3	SYS B	GRASS	0.00	0.35	0.00																
			0.11	0.88	0.09		6.00	6.39	0.60	46	0.017	10	3.42	6.28	0.18	0.70	4.39	0.17			
A-CB4	CB4	PAVE	0.13	0.90	0.11																
CB4	SYS B	GRASS	0.10	0.35	0.03																
			0.22	0.66	0.15		6.00	6.39	0.95	85	0.015	10	3.21	5.89	0.29	0.81	4.77	0.30			

Project: **Parkside Apartments & Condominiums**
383-385 Washington Street Braintree, MA
Client: **383-385 Washington Street LLC**

Date: **10/7/19**

Prepared by: **DeCelle-Burke-Sala & Associates, Inc**
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DeCelle-Burke-Sala & Associates, Inc.

DRAINAGE CALCULATIONS FOR A 25-YEAR STORM, CHEZY-MANNING'S FORMULA, N=0.011, HDPE PIPE

STRUCTURE		DESC.	AREA	"C"	CA	(min.)		I	Q	L	S	DIA.	QFULL	VFULL	Q/	V/	V	D/V	RIM	INVERT	INVERT
from	to		(acres)		(acres)	PIPE	Tc	(in/hr)	(cfs)	(ft)	(ft/ft)	(in.)	(cfs)	(ft/s)	QFULL	VFULL	(ft/s)	(min.)		IN	OUT
A-CB5	CB5	PAVE	0.20	0.90	0.18																
		GRASS	0.06	0.35	0.02																
CB5	WQ4		0.26	0.77	0.20		6.00	6.39	1.28	60	0.050	10	5.81	10.64	0.22	0.72	7.66	0.13			
A-CB6	CB6	PAVE	0.05	0.90	0.05																
		GRASS	0.05	0.35	0.02																
CB6	WQ4		0.10	0.64	0.06		6.00	6.39	0.40	7	0.014	12	5.00	6.36	0.08	0.93	5.92	0.02			
A-CB7	CB7	PAVE	0.13	0.90	0.11																
CB7	WQ4	GRASS	0.00	0.35	0.00																
			0.13	0.88	0.12		6.00	6.39	0.74	38	0.005	10	1.88	3.45	0.39	0.90	3.11	0.20			
WQ4	SYS C		0.49	0.775	0.38	0.20	6.20	6.35	2.40	23	0.009	10	2.42	4.44	0.99	1.15	5.10	0.08			
A-CB8	CB8	PAVE	0.25	0.90	0.22																
CB8	SYS C	GRASS	0.02	0.35	0.01																
			0.26	0.86	0.23		6.00	6.39	1.46	3	0.033	10	4.74	8.69	0.31	0.83	7.21	0.01			

Project: **Parkside Apartments & Condominiums**
383-385 Washington Street Braintree, MA
Client: **383-385 Washington Street LLC**

Date: **10/7/19**

Prepared by: **DeCelle-Burke-Sala & Associates, Inc**
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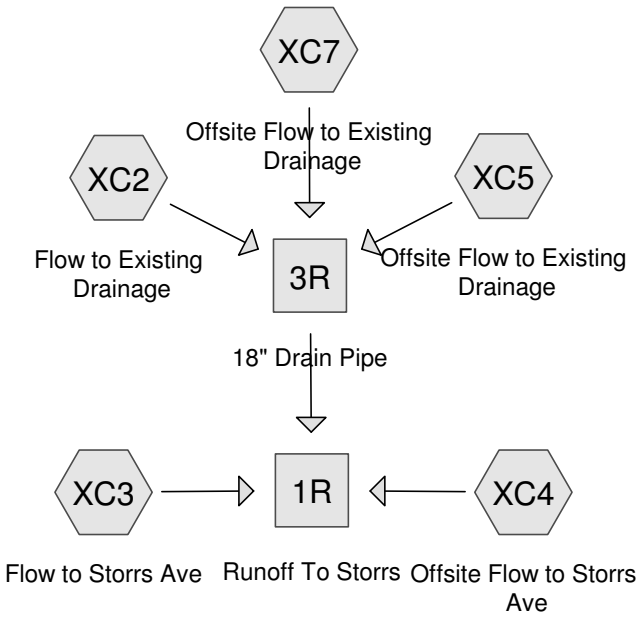
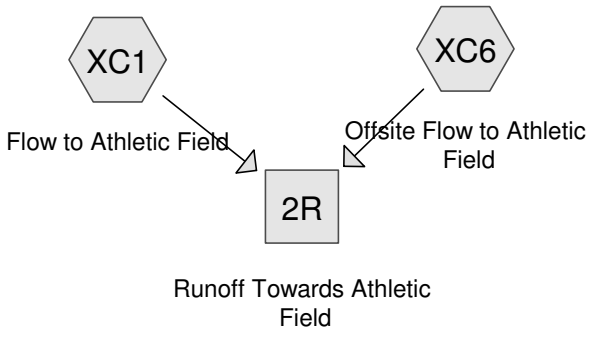
DeCelle-Burke-Sala & Associates, Inc.

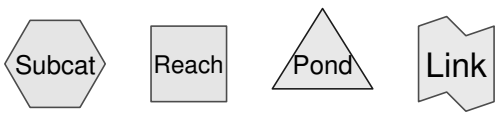
DRAINAGE CALCULATIONS FOR A 25-YEAR STORM, CHEZY-MANNING'S FORMULA, N=0.011, HDPE PIPE

STRUCTURE		DESC.	AREA	"C"	CA	(min.)		I	Q	L	S	DIA.	QFULL	VFULL	Q/	V/	V	D/V	RIM	INVERT	INVERT
from	to		(acres)		(acres)	PIPE	Tc	(in/hr)	(cfs)	(ft)	(ft/ft)	(in.)	(cfs)	(ft/s)	QFULL	VFULL	(ft/s)	(min.)		IN	OUT
ROOF2	SYS A	PAVE	0.47	0.90	0.43																
		GRASS	0.00	0.35	0.00																
	SYS A		0.47	0.90	0.43		6.00	6.39	2.72	7	0.029	10	4.39	8.05	0.62	0.72	5.79	0.02			
ROOF3	SYS B	PAVE	0.18	0.90	0.16																
		GRASS	0.00	0.35	0.00																
	SYS B		0.18	0.90	0.16		6.00	6.39	1.05	96	0.008	10	2.37	4.35	0.44	0.95	4.13	0.39			
A-CB7	CB7	PAVE	0.13	0.90	0.11																
CB7	WQ4	GRASS	0.00	0.35	0.00																
			0.13	0.88	0.12		6.00	6.39	0.74	38	0.005	10	1.88	3.45	0.39	0.90	3.11	0.20			
WQ4	SYS C		0.79	0.897	0.71	0.20	6.20	6.35	4.49	23	0.009	10	2.42	4.44	1.85	1.15	5.10	0.08			
A-CB8	CB8	PAVE	0.25	0.90	0.22																
CB8	SYS C	GRASS	0.02	0.35	0.01																
			0.26	0.86	0.23		6.00	6.39	1.46	3	0.033	10	4.74	8.69	0.31	0.83	7.21	0.01			

Existing Conditions HydroCAD Calculations
2-Year
10-Year
25-Year
100-Year
Watershed Maps
Existing Conditions
Proposed Conditions







Routing Diagram for Existing Conditions Parkside 40B
Prepared by DeCelle-Burke & Associates, Printed 10/15/2019

Summary for Subcatchment XC1: Flow to Athletic Field

Runoff = 0.11 cfs @ 12.14 hrs, Volume= 0.016 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
5,243	98	Paved parking, HSG A
3,328	98	Roofs, HSG A
13,395	30	Brush, Good, HSG A
21,966	57	Weighted Average
13,395		60.98% Pervious Area
8,571		39.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC2: Flow to Existing Drainage

Runoff = 3.14 cfs @ 12.09 hrs, Volume= 0.232 af, Depth= 2.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
31,981	98	Paved parking, HSG A
10,504	98	Unconnected roofs, HSG A
3,728	30	Brush, Good, HSG A
46,213	93	Weighted Average
3,728		8.07% Pervious Area
42,485		91.93% Impervious Area
10,504		24.72% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC3: Flow to Storrs Ave

Runoff = 1.63 cfs @ 12.09 hrs, Volume= 0.118 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
20,922	98	Paved parking, HSG A
11,240	96	Gravel surface, HSG A
13,850	30	Brush, Good, HSG A
46,012	77	Weighted Average
25,090		54.53% Pervious Area
20,922		45.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC4: Offsite Flow to Storrs Ave

Runoff = 2.86 cfs @ 12.08 hrs, Volume= 0.228 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
31,807	98	Paved parking, HSG A
6,096	98	Unconnected roofs, HSG A
37,903	98	Weighted Average
37,903		100.00% Impervious Area
6,096		16.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC5: Offsite Flow to Existing Drainage

Runoff = 1.95 cfs @ 12.08 hrs, Volume= 0.156 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
21,877	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
25,886	98	Weighted Average
25,886		100.00% Impervious Area
4,009		15.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC6: Offsite Flow to Athletic Field

Runoff = 0.15 cfs @ 12.08 hrs, Volume= 0.012 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
2,009	98	Paved parking, HSG A
2,009		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC7: Offsite Flow to Existing Drainage

Runoff = 4.32 cfs @ 12.08 hrs, Volume= 0.345 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
12,811	98	Roofs, HSG A
44,417	98	Paved parking, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 1R: Runoff To Storrs

Inflow Area = 4.895 ac, 86.49% Impervious, Inflow Depth = 2.64" for 2yr event
Inflow = 13.69 cfs @ 12.10 hrs, Volume= 1.078 af
Outflow = 13.69 cfs @ 12.10 hrs, Volume= 1.078 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Runoff Towards Athletic Field

Inflow Area = 0.550 ac, 44.13% Impervious, Inflow Depth = 0.60" for 2yr event
Inflow = 0.24 cfs @ 12.11 hrs, Volume= 0.028 af
Outflow = 0.24 cfs @ 12.11 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

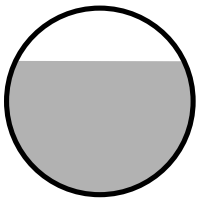
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 2.969 ac, 97.12% Impervious, Inflow Depth = 2.96" for 2yr event
Inflow = 9.41 cfs @ 12.08 hrs, Volume= 0.732 af
Outflow = 9.31 cfs @ 12.11 hrs, Volume= 0.732 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.89 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.33 fps, Avg. Travel Time= 2.4 min

Peak Storage= 446 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.07'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Subcatchment XC1: Flow to Athletic Field

Runoff = 0.63 cfs @ 12.10 hrs, Volume= 0.051 af, Depth= 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
5,243	98	Paved parking, HSG A
3,328	98	Roofs, HSG A
13,395	30	Brush, Good, HSG A
21,966	57	Weighted Average
13,395		60.98% Pervious Area
8,571		39.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC2: Flow to Existing Drainage

Runoff = 5.15 cfs @ 12.08 hrs, Volume= 0.390 af, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
31,981	98	Paved parking, HSG A
10,504	98	Unconnected roofs, HSG A
3,728	30	Brush, Good, HSG A
46,213	93	Weighted Average
3,728		8.07% Pervious Area
42,485		91.93% Impervious Area
10,504		24.72% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC3: Flow to Storrs Ave

Runoff = 3.48 cfs @ 12.09 hrs, Volume= 0.247 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
20,922	98	Paved parking, HSG A
11,240	96	Gravel surface, HSG A
13,850	30	Brush, Good, HSG A
46,012	77	Weighted Average
25,090		54.53% Pervious Area
20,922		45.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC4: Offsite Flow to Storrs Ave

Runoff = 4.45 cfs @ 12.08 hrs, Volume= 0.361 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
31,807	98	Paved parking, HSG A
6,096	98	Unconnected roofs, HSG A
37,903	98	Weighted Average
37,903		100.00% Impervious Area
6,096		16.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC5: Offsite Flow to Existing Drainage

Runoff = 3.04 cfs @ 12.08 hrs, Volume= 0.247 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
21,877	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
25,886	98	Weighted Average
25,886		100.00% Impervious Area
4,009		15.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC6: Offsite Flow to Athletic Field

Runoff = 0.24 cfs @ 12.08 hrs, Volume= 0.019 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
2,009	98	Paved parking, HSG A
2,009		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC7: Offsite Flow to Existing Drainage

Runoff = 6.71 cfs @ 12.08 hrs, Volume= 0.546 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
12,811	98	Roofs, HSG A
44,417	98	Paved parking, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 1R: Runoff To Storrs

Inflow Area = 4.895 ac, 86.49% Impervious, Inflow Depth = 4.39" for 10yr event
Inflow = 18.75 cfs @ 12.09 hrs, Volume= 1.791 af
Outflow = 18.75 cfs @ 12.09 hrs, Volume= 1.791 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Runoff Towards Athletic Field

Inflow Area = 0.550 ac, 44.13% Impervious, Inflow Depth = 1.54" for 10yr event
Inflow = 0.86 cfs @ 12.10 hrs, Volume= 0.071 af
Outflow = 0.86 cfs @ 12.10 hrs, Volume= 0.071 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

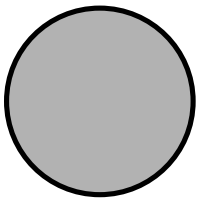
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 2.969 ac, 97.12% Impervious, Inflow Depth = 4.78" for 10yr event
Inflow = 14.89 cfs @ 12.08 hrs, Volume= 1.183 af
Outflow = 11.38 cfs @ 12.05 hrs, Volume= 1.183 af, Atten= 24%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.99 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.67 fps, Avg. Travel Time= 2.1 min

Peak Storage= 583 cf @ 12.05 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Subcatchment XC1: Flow to Athletic Field

Runoff = 1.04 cfs @ 12.10 hrs, Volume= 0.080 af, Depth= 1.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
5,243	98	Paved parking, HSG A
3,328	98	Roofs, HSG A
13,395	30	Brush, Good, HSG A
21,966	57	Weighted Average
13,395		60.98% Pervious Area
8,571		39.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC2: Flow to Existing Drainage

Runoff = 6.37 cfs @ 12.08 hrs, Volume= 0.490 af, Depth= 5.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
31,981	98	Paved parking, HSG A
10,504	98	Unconnected roofs, HSG A
3,728	30	Brush, Good, HSG A
46,213	93	Weighted Average
3,728		8.07% Pervious Area
42,485		91.93% Impervious Area
10,504		24.72% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC3: Flow to Storrs Ave

Runoff = 4.70 cfs @ 12.09 hrs, Volume= 0.334 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
20,922	98	Paved parking, HSG A
11,240	96	Gravel surface, HSG A
13,850	30	Brush, Good, HSG A
46,012	77	Weighted Average
25,090		54.53% Pervious Area
20,922		45.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC4: Offsite Flow to Storrs Ave

Runoff = 5.43 cfs @ 12.08 hrs, Volume= 0.444 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
31,807	98	Paved parking, HSG A
6,096	98	Unconnected roofs, HSG A
37,903	98	Weighted Average
37,903		100.00% Impervious Area
6,096		16.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC5: Offsite Flow to Existing Drainage

Runoff = 3.71 cfs @ 12.08 hrs, Volume= 0.303 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
21,877	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
25,886	98	Weighted Average
25,886		100.00% Impervious Area
4,009		15.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC6: Offsite Flow to Athletic Field

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.024 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
2,009	98	Paved parking, HSG A
2,009		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC7: Offsite Flow to Existing Drainage

Runoff = 8.19 cfs @ 12.08 hrs, Volume= 0.670 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
12,811	98	Roofs, HSG A
44,417	98	Paved parking, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 1R: Runoff To Storrs

Inflow Area = 4.895 ac, 86.49% Impervious, Inflow Depth = 5.49" for 25yr event
Inflow = 20.95 cfs @ 12.09 hrs, Volume= 2.241 af
Outflow = 20.95 cfs @ 12.09 hrs, Volume= 2.241 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Runoff Towards Athletic Field

Inflow Area = 0.550 ac, 44.13% Impervious, Inflow Depth = 2.25" for 25yr event
Inflow = 1.33 cfs @ 12.09 hrs, Volume= 0.103 af
Outflow = 1.33 cfs @ 12.09 hrs, Volume= 0.103 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

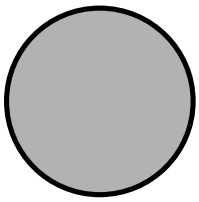
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 2.969 ac, 97.12% Impervious, Inflow Depth = 5.91" for 25yr event
Inflow = 18.27 cfs @ 12.08 hrs, Volume= 1.463 af
Outflow = 11.12 cfs @ 12.02 hrs, Volume= 1.463 af, Atten= 39%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.99 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.84 fps, Avg. Travel Time= 1.9 min

Peak Storage= 583 cf @ 12.02 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Subcatchment XC1: Flow to Athletic Field

Runoff = 1.78 cfs @ 12.09 hrs, Volume= 0.130 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
5,243	98	Paved parking, HSG A
3,328	98	Roofs, HSG A
13,395	30	Brush, Good, HSG A
21,966	57	Weighted Average
13,395		60.98% Pervious Area
8,571		39.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC2: Flow to Existing Drainage

Runoff = 8.25 cfs @ 12.08 hrs, Volume= 0.644 af, Depth= 7.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
31,981	98	Paved parking, HSG A
10,504	98	Unconnected roofs, HSG A
3,728	30	Brush, Good, HSG A
46,213	93	Weighted Average
3,728		8.07% Pervious Area
42,485		91.93% Impervious Area
10,504		24.72% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC3: Flow to Storrs Ave

Runoff = 6.61 cfs @ 12.09 hrs, Volume= 0.474 af, Depth= 5.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
20,922	98	Paved parking, HSG A
11,240	96	Gravel surface, HSG A
13,850	30	Brush, Good, HSG A
46,012	77	Weighted Average
25,090		54.53% Pervious Area
20,922		45.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC4: Offsite Flow to Storrs Ave

Runoff = 6.94 cfs @ 12.08 hrs, Volume= 0.571 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
31,807	98	Paved parking, HSG A
6,096	98	Unconnected roofs, HSG A
37,903	98	Weighted Average
37,903		100.00% Impervious Area
6,096		16.08% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC5: Offsite Flow to Existing Drainage

Runoff = 4.74 cfs @ 12.08 hrs, Volume= 0.390 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
21,877	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
25,886	98	Weighted Average
25,886		100.00% Impervious Area
4,009		15.49% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC6: Offsite Flow to Athletic Field

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
2,009	98	Paved parking, HSG A
2,009		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment XC7: Offsite Flow to Existing Drainage

Runoff = 10.47 cfs @ 12.08 hrs, Volume= 0.863 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
12,811	98	Roofs, HSG A
44,417	98	Paved parking, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Reach 1R: Runoff To Storrs

Inflow Area = 4.895 ac, 86.49% Impervious, Inflow Depth = 7.21" for 100yr event
Inflow = 24.38 cfs @ 12.08 hrs, Volume= 2.942 af
Outflow = 24.38 cfs @ 12.08 hrs, Volume= 2.942 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Runoff Towards Athletic Field

Inflow Area = 0.550 ac, 44.13% Impervious, Inflow Depth = 3.49" for 100yr event
Inflow = 2.14 cfs @ 12.09 hrs, Volume= 0.160 af
Outflow = 2.14 cfs @ 12.09 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

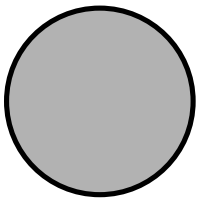
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 2.969 ac, 97.12% Impervious, Inflow Depth = 7.67" for 100yr event
Inflow = 23.46 cfs @ 12.08 hrs, Volume= 1.897 af
Outflow = 11.41 cfs @ 11.99 hrs, Volume= 1.897 af, Atten= 51%, Lag= 0.0 min

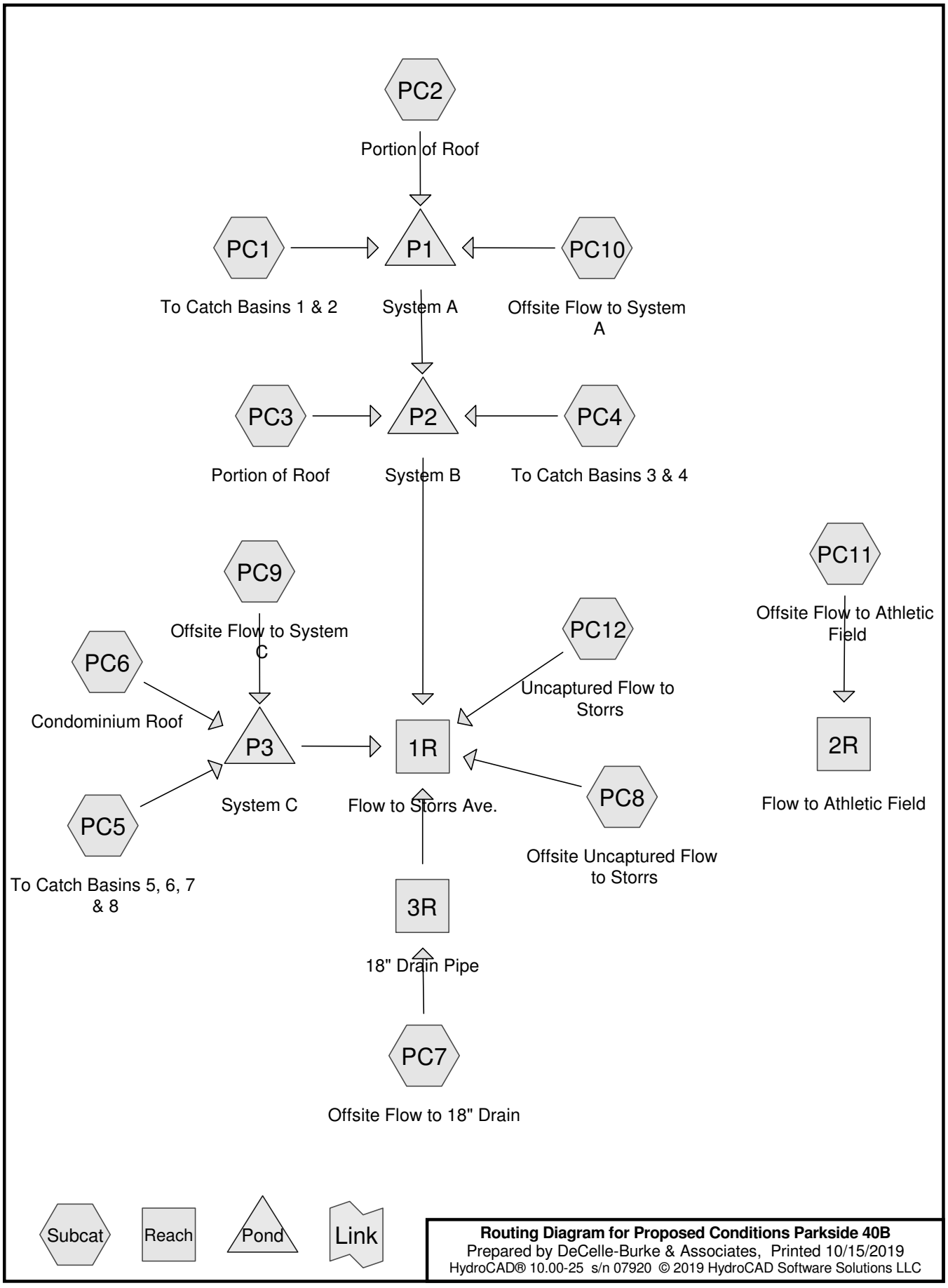
Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.99 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 3.07 fps, Avg. Travel Time= 1.8 min

Peak Storage= 583 cf @ 11.99 hrs
Average Depth at Peak Storage= 1.50'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Proposed Conditions HydroCAD Calculations
2-Year
10-Year
25-Year
100-Year



Routing Diagram for Proposed Conditions Parkside 40B
Prepared by DeCelle-Burke & Associates, Printed 10/15/2019

Summary for Subcatchment PC1: To Catch Basins 1 & 2

Runoff = 0.55 cfs @ 12.10 hrs, Volume= 0.042 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
11,777	98	Paved parking, HSG A
9,165	39	>75% Grass cover, Good, HSG A
20,942	72	Weighted Average
9,165		43.76% Pervious Area
11,777		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC10: Offsite Flow to System A

Runoff = 2.10 cfs @ 12.08 hrs, Volume= 0.168 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
23,889	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
27,898	98	Weighted Average
27,898		100.00% Impervious Area
4,009		14.37% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC11: Offsite Flow to Athletic Field

Runoff = 0.00 cfs @ 16.98 hrs, Volume= 0.001 af, Depth= 0.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Adj	Description
148	98		Paved parking, HSG A
1,272	98		Unconnected pavement, HSG A
13,243	39		>75% Grass cover, Good, HSG A
14,663	45	42	Weighted Average, UI Adjusted
13,243			90.32% Pervious Area
1,420			9.68% Impervious Area
1,272			89.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC12: Uncaptured Flow to Storrs

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.018 af, Depth= 1.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG A
2,461	39	>75% Grass cover, Good, HSG A
2,167	98	Water Surface, 0% imp, HSG A
6,992	77	Weighted Average
4,628		66.19% Pervious Area
2,364		33.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC2: Portion of Roof

Runoff = 1.55 cfs @ 12.08 hrs, Volume= 0.124 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
20,610	98	Unconnected roofs, HSG A
20,610		100.00% Impervious Area
20,610		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC3: Portion of Roof

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.048 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
7,978	98	Unconnected roofs, HSG A
7,978		100.00% Impervious Area
7,978		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC4: To Catch Basins 3 & 4

Runoff = 0.59 cfs @ 12.09 hrs, Volume= 0.043 af, Depth= 1.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
9,980	98	Paved parking, HSG A
4,440	39	>75% Grass cover, Good, HSG A
14,420	80	Weighted Average
4,440		30.79% Pervious Area
9,980		69.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC5: To Catch Basins 5, 6, 7 & 8

Runoff = 1.45 cfs @ 12.09 hrs, Volume= 0.103 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
19,333	98	Paved parking, HSG A
4,744	39	>75% Grass cover, Good, HSG A
1,877	98	Roofs, HSG A
25,954	87	Weighted Average
4,744		18.28% Pervious Area
21,210		81.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC6: Condominium Roof

Runoff = 0.20 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
2,630	98	Unconnected roofs, HSG A
2,630		100.00% Impervious Area
2,630		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC7: Offsite Flow to 18" Drain

Runoff = 4.32 cfs @ 12.08 hrs, Volume= 0.345 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
44,417	98	Paved parking, HSG A
12,811	98	Roofs, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment PC8: Offsite Uncaptured Flow to Storrs

Runoff = 2.49 cfs @ 12.08 hrs, Volume= 0.199 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
26,900	98	Paved parking, HSG A
6,097	98	Unconnected roofs, HSG A
32,997	98	Weighted Average
32,997		100.00% Impervious Area
6,097		18.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC9: Offsite Flow to System C

Runoff = 0.37 cfs @ 12.08 hrs, Volume= 0.030 af, Depth= 3.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 2yr Rainfall=3.38"

Area (sf)	CN	Description
4,905	98	Paved parking, HSG A
4,905		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Reach 1R: Flow to Storrs Ave.

Inflow Area = 5.109 ac, 89.68% Impervious, Inflow Depth = 1.32" for 2yr event
Inflow = 6.91 cfs @ 12.10 hrs, Volume= 0.561 af
Outflow = 6.91 cfs @ 12.10 hrs, Volume= 0.561 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Flow to Athletic Field

Inflow Area = 0.337 ac, 9.68% Impervious, Inflow Depth = 0.03" for 2yr event
Inflow = 0.00 cfs @ 16.98 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 16.98 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

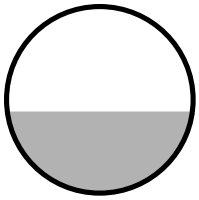
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 1.314 ac,100.00% Impervious, Inflow Depth = 3.15" for 2yr event
Inflow = 4.32 cfs @ 12.08 hrs, Volume= 0.345 af
Outflow = 4.26 cfs @ 12.11 hrs, Volume= 0.345 af, Atten= 1%, Lag= 1.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 5.76 fps, Min. Travel Time= 1.0 min
Avg. Velocity = 1.89 fps, Avg. Travel Time= 2.9 min

Peak Storage= 244 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.65'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Pond P1: System A

Inflow Area = 1.594 ac, 86.80% Impervious, Inflow Depth = 2.51" for 2yr event
Inflow = 4.20 cfs @ 12.09 hrs, Volume= 0.334 af
Outflow = 0.31 cfs @ 13.31 hrs, Volume= 0.334 af, Atten= 93%, Lag= 73.8 min
Discarded = 0.31 cfs @ 13.31 hrs, Volume= 0.334 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 72.20' @ 13.31 hrs Surf.Area= 5,468 sf Storage= 5,554 cf

Plug-Flow detention time= 138.8 min calculated for 0.334 af (100% of inflow)
Center-of-Mass det. time= 138.7 min (907.7 - 769.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	6,817 cf	**56.67'W x 96.50'L x 5.54'H Field A** 30,304 cf Overall - 7,581 cf Embedded = 22,722 cf x 30.0% Voids
#2A	71.50'	7,581 cf	**Cultec R-330XLHD** x 143 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 11 rows
#3	73.00'	38 cf	**4.00'D x 3.00'H Storage of Catch Basin Above Invert** -Impervious
		14,436 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	73.50'	**12.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 73.50' / 61.50' S= 0.0667 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.31 cfs @ 13.31 hrs HW=72.20' (Free Discharge)
1=Exfiltration (Controls 0.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=70.00' TW=63.00' (Fixed TW Elev= 63.00')
2=Culvert (Controls 0.00 cfs)

Summary for Pond P2: System B

Inflow Area = 2.109 ac, 85.19% Impervious, Inflow Depth = 0.52" for 2yr event
Inflow = 1.19 cfs @ 12.09 hrs, Volume= 0.091 af
Outflow = 0.15 cfs @ 12.75 hrs, Volume= 0.091 af, Atten= 88%, Lag= 39.9 min
Discarded = 0.15 cfs @ 12.75 hrs, Volume= 0.091 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Peak Elev= 59.25' @ 12.75 hrs Surf.Area= 2,547 sf Storage= 1,277 cf

Plug-Flow detention time= 63.4 min calculated for 0.091 af (100% of inflow)
Center-of-Mass det. time= 63.4 min (858.4 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,818 cf	**26.67'W x 95.50'L x 5.04'H Field A** 12,839 cf Overall - 3,446 cf Embedded = 9,393 cf x 30.0% Voids
#2A	59.00'	3,446 cf	**Cultec R-330XLHD** x 65 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		6,264 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	60.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 57.20' S= 0.0933 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.15 cfs @ 12.75 hrs HW=59.25' (Free Discharge)
1=Exfiltration (Controls 0.15 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=58.00' TW=59.50' (Fixed TW Elev= 59.50')
2=Culvert (Controls 0.00 cfs)

Summary for Pond P3: System C

Inflow Area = 0.769 ac, 85.83% Impervious, Inflow Depth = 2.32" for 2yr event
Inflow = 2.01 cfs @ 12.09 hrs, Volume= 0.148 af
Outflow = 0.16 cfs @ 13.19 hrs, Volume= 0.148 af, Atten= 92%, Lag= 66.1 min
Discarded = 0.16 cfs @ 13.19 hrs, Volume= 0.148 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 55.27' @ 13.19 hrs Surf.Area= 2,819 sf Storage= 2,537 cf

Plug-Flow detention time= 129.6 min calculated for 0.148 af (100% of inflow)
Center-of-Mass det. time= 129.6 min (927.4 - 797.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	53.50'	2,722 cf	**37.33'W x 75.50'L x 4.54'H Field A** 12,801 cf Overall - 3,729 cf Embedded = 9,072 cf x 30.0% Voids
#2A	54.50'	3,729 cf	**Cultec R-330XLHD** x 70 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		6,451 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	56.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.60' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.16 cfs @ 13.19 hrs HW=55.27' (Free Discharge)
↑—**1=Exfiltration** (Controls 0.16 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=53.50' (Free Discharge)
↑—**2=Culvert** (Controls 0.00 cfs)

Summary for Subcatchment PC1: To Catch Basins 1 & 2

Runoff = 1.33 cfs @ 12.09 hrs, Volume= 0.095 af, Depth= 2.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
11,777	98	Paved parking, HSG A
9,165	39	>75% Grass cover, Good, HSG A
20,942	72	Weighted Average
9,165		43.76% Pervious Area
11,777		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC10: Offsite Flow to System A

Runoff = 3.27 cfs @ 12.08 hrs, Volume= 0.266 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
23,889	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
27,898	98	Weighted Average
27,898		100.00% Impervious Area
4,009		14.37% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC11: Offsite Flow to Athletic Field

Runoff = 0.05 cfs @ 12.35 hrs, Volume= 0.010 af, Depth= 0.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Adj	Description
148	98		Paved parking, HSG A
1,272	98		Unconnected pavement, HSG A
13,243	39		>75% Grass cover, Good, HSG A
14,663	45	42	Weighted Average, UI Adjusted
13,243			90.32% Pervious Area
1,420			9.68% Impervious Area
1,272			89.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC12: Uncaptured Flow to Storrs

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.038 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG A
2,461	39	>75% Grass cover, Good, HSG A
2,167	98	Water Surface, 0% imp, HSG A
6,992	77	Weighted Average
4,628		66.19% Pervious Area
2,364		33.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC2: Portion of Roof

Runoff = 2.42 cfs @ 12.08 hrs, Volume= 0.196 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
20,610	98	Unconnected roofs, HSG A
20,610		100.00% Impervious Area
20,610		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC3: Portion of Roof

Runoff = 0.94 cfs @ 12.08 hrs, Volume= 0.076 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
7,978	98	Unconnected roofs, HSG A
7,978		100.00% Impervious Area
7,978		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC4: To Catch Basins 3 & 4

Runoff = 1.20 cfs @ 12.09 hrs, Volume= 0.085 af, Depth= 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
9,980	98	Paved parking, HSG A
4,440	39	>75% Grass cover, Good, HSG A
14,420	80	Weighted Average
4,440		30.79% Pervious Area
9,980		69.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC5: To Catch Basins 5, 6, 7 & 8

Runoff = 2.58 cfs @ 12.09 hrs, Volume= 0.187 af, Depth= 3.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
19,333	98	Paved parking, HSG A
4,744	39	>75% Grass cover, Good, HSG A
1,877	98	Roofs, HSG A
25,954	87	Weighted Average
4,744		18.28% Pervious Area
21,210		81.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC6: Condominium Roof

Runoff = 0.31 cfs @ 12.08 hrs, Volume= 0.025 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
2,630	98	Unconnected roofs, HSG A
2,630		100.00% Impervious Area
2,630		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC7: Offsite Flow to 18" Drain

Runoff = 6.71 cfs @ 12.08 hrs, Volume= 0.546 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
44,417	98	Paved parking, HSG A
12,811	98	Roofs, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment PC8: Offsite Uncaptured Flow to Storrs

Runoff = 3.87 cfs @ 12.08 hrs, Volume= 0.315 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
26,900	98	Paved parking, HSG A
6,097	98	Unconnected roofs, HSG A
32,997	98	Weighted Average
32,997		100.00% Impervious Area
6,097		18.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC9: Offsite Flow to System C

Runoff = 0.58 cfs @ 12.08 hrs, Volume= 0.047 af, Depth= 4.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 10yr Rainfall=5.22"

Area (sf)	CN	Description
4,905	98	Paved parking, HSG A
4,905		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Reach 1R: Flow to Storrs Ave.

Inflow Area = 5.109 ac, 89.68% Impervious, Inflow Depth = 2.20" for 10yr event
Inflow = 10.92 cfs @ 12.10 hrs, Volume= 0.935 af
Outflow = 10.92 cfs @ 12.10 hrs, Volume= 0.935 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Flow to Athletic Field

Inflow Area = 0.337 ac, 9.68% Impervious, Inflow Depth = 0.37" for 10yr event
Inflow = 0.05 cfs @ 12.35 hrs, Volume= 0.010 af
Outflow = 0.05 cfs @ 12.35 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

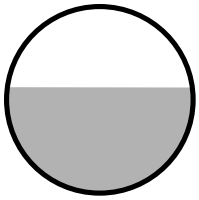
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 1.314 ac,100.00% Impervious, Inflow Depth = 4.98" for 10yr event
Inflow = 6.71 cfs @ 12.08 hrs, Volume= 0.546 af
Outflow = 6.64 cfs @ 12.11 hrs, Volume= 0.546 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.44 fps, Min. Travel Time= 0.9 min
Avg. Velocity = 2.17 fps, Avg. Travel Time= 2.5 min

Peak Storage= 341 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.85'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Pond P1: System A

Inflow Area = 1.594 ac, 86.80% Impervious, Inflow Depth = 4.19" for 10yr event
Inflow = 7.01 cfs @ 12.08 hrs, Volume= 0.557 af
Outflow = 0.42 cfs @ 13.85 hrs, Volume= 0.474 af, Atten= 94%, Lag= 105.8 min
Discarded = 0.32 cfs @ 13.85 hrs, Volume= 0.460 af
Primary = 0.10 cfs @ 13.85 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 73.67' @ 13.85 hrs Surf.Area= 5,468 sf Storage= 11,144 cf

Plug-Flow detention time= 260.0 min calculated for 0.474 af (85% of inflow)
Center-of-Mass det. time= 193.8 min (956.9 - 763.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	6,817 cf	**56.67'W x 96.50'L x 5.54'H Field A** 30,304 cf Overall - 7,581 cf Embedded = 22,722 cf x 30.0% Voids
#2A	71.50'	7,581 cf	**Cultec R-330XLHD** x 143 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 11 rows
#3	73.00'	38 cf	**4.00'D x 3.00'H Storage of Catch Basin Above Invert** -Impervious
		14,436 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	73.50'	**12.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 73.50' / 61.50' S= 0.0667 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.32 cfs @ 13.85 hrs HW=73.67' (Free Discharge)
1=Exfiltration (Controls 0.32 cfs)

Primary OutFlow Max=0.10 cfs @ 13.85 hrs HW=73.67' TW=63.00' (Fixed TW Elev= 63.00')
2=Culvert (Inlet Controls 0.10 cfs @ 1.11 fps)

Summary for Pond P2: System B

Inflow Area = 2.109 ac, 85.19% Impervious, Inflow Depth = 0.99" for 10yr event
Inflow = 2.13 cfs @ 12.09 hrs, Volume= 0.174 af
Outflow = 0.21 cfs @ 14.14 hrs, Volume= 0.174 af, Atten= 90%, Lag= 123.0 min
Discarded = 0.15 cfs @ 14.14 hrs, Volume= 0.167 af
Primary = 0.06 cfs @ 14.14 hrs, Volume= 0.008 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Peak Elev= 60.13' @ 14.14 hrs Surf.Area= 2,547 sf Storage= 3,009 cf

Plug-Flow detention time= 168.8 min calculated for 0.174 af (100% of inflow)
Center-of-Mass det. time= 168.7 min (959.2 - 790.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,818 cf	**26.67'W x 95.50'L x 5.04'H Field A** 12,839 cf Overall - 3,446 cf Embedded = 9,393 cf x 30.0% Voids
#2A	59.00'	3,446 cf	**Cultec R-330XLHD** x 65 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		6,264 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	60.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 57.20' S= 0.0933 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.15 cfs @ 14.14 hrs HW=60.13' (Free Discharge)
1=Exfiltration (Controls 0.15 cfs)

Primary OutFlow Max=0.06 cfs @ 14.14 hrs HW=60.13' TW=59.50' (Fixed TW Elev= 59.50')
2=Culvert (Inlet Controls 0.06 cfs @ 0.97 fps)

Summary for Pond P3: System C

Inflow Area = 0.769 ac, 85.83% Impervious, Inflow Depth = 4.05" for 10yr event
Inflow = 3.47 cfs @ 12.09 hrs, Volume= 0.259 af
Outflow = 0.51 cfs @ 12.59 hrs, Volume= 0.251 af, Atten= 85%, Lag= 30.1 min
Discarded = 0.17 cfs @ 12.59 hrs, Volume= 0.221 af
Primary = 0.34 cfs @ 12.59 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 56.33' @ 12.59 hrs Surf.Area= 2,819 sf Storage= 4,645 cf

Plug-Flow detention time= 209.0 min calculated for 0.251 af (97% of inflow)
Center-of-Mass det. time= 189.3 min (974.5 - 785.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	53.50'	2,722 cf	**37.33'W x 75.50'L x 4.54'H Field A** 12,801 cf Overall - 3,729 cf Embedded = 9,072 cf x 30.0% Voids
#2A	54.50'	3,729 cf	**Cultec R-330XLHD** x 70 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		6,451 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	56.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.60' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.17 cfs @ 12.59 hrs HW=56.33' (Free Discharge)
↑**1=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=0.34 cfs @ 12.59 hrs HW=56.33' (Free Discharge)
↑**2=Culvert** (Inlet Controls 0.34 cfs @ 1.53 fps)

Summary for Subcatchment PC1: To Catch Basins 1 & 2

Runoff = 1.85 cfs @ 12.09 hrs, Volume= 0.132 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
11,777	98	Paved parking, HSG A
9,165	39	>75% Grass cover, Good, HSG A
20,942	72	Weighted Average
9,165		43.76% Pervious Area
11,777		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC10: Offsite Flow to System A

Runoff = 3.99 cfs @ 12.08 hrs, Volume= 0.327 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
23,889	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
27,898	98	Weighted Average
27,898		100.00% Impervious Area
4,009		14.37% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC11: Offsite Flow to Athletic Field

Runoff = 0.15 cfs @ 12.13 hrs, Volume= 0.021 af, Depth= 0.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Adj	Description
148	98		Paved parking, HSG A
1,272	98		Unconnected pavement, HSG A
13,243	39		>75% Grass cover, Good, HSG A
14,663	45	42	Weighted Average, UI Adjusted
13,243			90.32% Pervious Area
1,420			9.68% Impervious Area
1,272			89.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC12: Uncaptured Flow to Storrs

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.051 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG A
2,461	39	>75% Grass cover, Good, HSG A
2,167	98	Water Surface, 0% imp, HSG A
6,992	77	Weighted Average
4,628		66.19% Pervious Area
2,364		33.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC2: Portion of Roof

Runoff = 2.95 cfs @ 12.08 hrs, Volume= 0.241 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
20,610	98	Unconnected roofs, HSG A
20,610		100.00% Impervious Area
20,610		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC3: Portion of Roof

Runoff = 1.14 cfs @ 12.08 hrs, Volume= 0.093 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
7,978	98	Unconnected roofs, HSG A
7,978		100.00% Impervious Area
7,978		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC4: To Catch Basins 3 & 4

Runoff = 1.59 cfs @ 12.09 hrs, Volume= 0.113 af, Depth= 4.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
9,980	98	Paved parking, HSG A
4,440	39	>75% Grass cover, Good, HSG A
14,420	80	Weighted Average
4,440		30.79% Pervious Area
9,980		69.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC5: To Catch Basins 5, 6, 7 & 8

Runoff = 3.29 cfs @ 12.09 hrs, Volume= 0.241 af, Depth= 4.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
19,333	98	Paved parking, HSG A
4,744	39	>75% Grass cover, Good, HSG A
1,877	98	Roofs, HSG A
25,954	87	Weighted Average
4,744		18.28% Pervious Area
21,210		81.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC6: Condominium Roof

Runoff = 0.38 cfs @ 12.08 hrs, Volume= 0.031 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
2,630	98	Unconnected roofs, HSG A
2,630		100.00% Impervious Area
2,630		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC7: Offsite Flow to 18" Drain

Runoff = 8.19 cfs @ 12.08 hrs, Volume= 0.670 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
44,417	98	Paved parking, HSG A
12,811	98	Roofs, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment PC8: Offsite Uncaptured Flow to Storrs

Runoff = 4.72 cfs @ 12.08 hrs, Volume= 0.386 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
26,900	98	Paved parking, HSG A
6,097	98	Unconnected roofs, HSG A
32,997	98	Weighted Average
32,997		100.00% Impervious Area
6,097		18.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC9: Offsite Flow to System C

Runoff = 0.70 cfs @ 12.08 hrs, Volume= 0.057 af, Depth= 6.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 25yr Rainfall=6.36"

Area (sf)	CN	Description
4,905	98	Paved parking, HSG A
4,905		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Reach 1R: Flow to Storrs Ave.

Inflow Area = 5.109 ac, 89.68% Impervious, Inflow Depth = 3.10" for 25yr event
Inflow = 13.40 cfs @ 12.10 hrs, Volume= 1.321 af
Outflow = 13.40 cfs @ 12.10 hrs, Volume= 1.321 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Flow to Athletic Field

Inflow Area = 0.337 ac, 9.68% Impervious, Inflow Depth = 0.74" for 25yr event
Inflow = 0.15 cfs @ 12.13 hrs, Volume= 0.021 af
Outflow = 0.15 cfs @ 12.13 hrs, Volume= 0.021 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

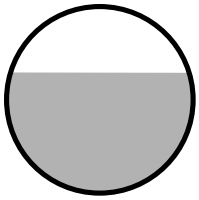
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 1.314 ac,100.00% Impervious, Inflow Depth = 6.12" for 25yr event
Inflow = 8.19 cfs @ 12.08 hrs, Volume= 0.670 af
Outflow = 8.11 cfs @ 12.11 hrs, Volume= 0.670 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.73 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.31 fps, Avg. Travel Time= 2.4 min

Peak Storage= 398 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.97'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Pond P1: System A

Inflow Area = 1.594 ac, 86.80% Impervious, Inflow Depth = 5.27" for 25yr event
Inflow = 8.79 cfs @ 12.08 hrs, Volume= 0.700 af
Outflow = 1.86 cfs @ 12.50 hrs, Volume= 0.594 af, Atten= 79%, Lag= 25.1 min
Discarded = 0.32 cfs @ 12.50 hrs, Volume= 0.481 af
Primary = 1.54 cfs @ 12.50 hrs, Volume= 0.113 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 74.27' @ 12.50 hrs Surf.Area= 5,468 sf Storage= 12,331 cf

Plug-Flow detention time= 216.8 min calculated for 0.593 af (85% of inflow)
Center-of-Mass det. time= 150.4 min (911.0 - 760.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	6,817 cf	**56.67'W x 96.50'L x 5.54'H Field A** 30,304 cf Overall - 7,581 cf Embedded = 22,722 cf x 30.0% Voids
#2A	71.50'	7,581 cf	**Cultec R-330XLHD** x 143 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 11 rows
#3	73.00'	38 cf	**4.00'D x 3.00'H Storage of Catch Basin Above Invert** -Impervious
		14,436 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	73.50'	**12.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 73.50' / 61.50' S= 0.0667 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.32 cfs @ 12.50 hrs HW=74.27' (Free Discharge)
1=Exfiltration (Controls 0.32 cfs)

Primary OutFlow Max=1.54 cfs @ 12.50 hrs HW=74.27' TW=63.00' (Fixed TW Elev= 63.00')
2=Culvert (Inlet Controls 1.54 cfs @ 2.36 fps)

Summary for Pond P2: System B

Inflow Area = 2.109 ac, 85.19% Impervious, Inflow Depth = 1.82" for 25yr event
Inflow = 2.73 cfs @ 12.09 hrs, Volume= 0.320 af
Outflow = 1.61 cfs @ 12.63 hrs, Volume= 0.320 af, Atten= 41%, Lag= 32.8 min
Discarded = 0.15 cfs @ 12.63 hrs, Volume= 0.186 af
Primary = 1.46 cfs @ 12.63 hrs, Volume= 0.134 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Peak Elev= 60.75' @ 12.63 hrs Surf.Area= 2,547 sf Storage= 4,115 cf

Plug-Flow detention time= 113.3 min calculated for 0.320 af (100% of inflow)
Center-of-Mass det. time= 113.3 min (899.2 - 785.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,818 cf	**26.67'W x 95.50'L x 5.04'H Field A** 12,839 cf Overall - 3,446 cf Embedded = 9,393 cf x 30.0% Voids
#2A	59.00'	3,446 cf	**Cultec R-330XLHD** x 65 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		6,264 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	60.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 57.20' S= 0.0933 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.15 cfs @ 12.63 hrs HW=60.75' (Free Discharge)
1=Exfiltration (Controls 0.15 cfs)

Primary OutFlow Max=1.46 cfs @ 12.63 hrs HW=60.75' TW=59.50' (Fixed TW Elev= 59.50')
2=Culvert (Inlet Controls 1.46 cfs @ 2.32 fps)

Summary for Pond P3: System C

Inflow Area = 0.769 ac, 85.83% Impervious, Inflow Depth = 5.15" for 25yr event
Inflow = 4.37 cfs @ 12.08 hrs, Volume= 0.330 af
Outflow = 1.40 cfs @ 12.38 hrs, Volume= 0.310 af, Atten= 68%, Lag= 18.0 min
Discarded = 0.17 cfs @ 12.38 hrs, Volume= 0.231 af
Primary = 1.24 cfs @ 12.38 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 56.67' @ 12.38 hrs Surf.Area= 2,819 sf Storage= 5,198 cf

Plug-Flow detention time= 179.7 min calculated for 0.310 af (94% of inflow)
Center-of-Mass det. time= 147.1 min (926.8 - 779.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	53.50'	2,722 cf	**37.33'W x 75.50'L x 4.54'H Field A** 12,801 cf Overall - 3,729 cf Embedded = 9,072 cf x 30.0% Voids
#2A	54.50'	3,729 cf	**Cultec R-330XLHD** x 70 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		6,451 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	56.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.60' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.17 cfs @ 12.38 hrs HW=56.67' (Free Discharge)
↑**1=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=1.23 cfs @ 12.38 hrs HW=56.67' (Free Discharge)
↑**2=Culvert** (Inlet Controls 1.23 cfs @ 2.20 fps)

Summary for Subcatchment PC1: To Catch Basins 1 & 2

Runoff = 2.70 cfs @ 12.09 hrs, Volume= 0.192 af, Depth= 4.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
11,777	98	Paved parking, HSG A
9,165	39	>75% Grass cover, Good, HSG A
20,942	72	Weighted Average
9,165		43.76% Pervious Area
11,777		56.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC10: Offsite Flow to System A

Runoff = 5.11 cfs @ 12.08 hrs, Volume= 0.421 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
23,889	98	Paved parking, HSG A
4,009	98	Unconnected roofs, HSG A
27,898	98	Weighted Average
27,898		100.00% Impervious Area
4,009		14.37% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC11: Offsite Flow to Athletic Field

Runoff = 0.46 cfs @ 12.11 hrs, Volume= 0.042 af, Depth= 1.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Adj	Description
148	98		Paved parking, HSG A
1,272	98		Unconnected pavement, HSG A
13,243	39		>75% Grass cover, Good, HSG A
14,663	45	42	Weighted Average, UI Adjusted
13,243			90.32% Pervious Area
1,420			9.68% Impervious Area
1,272			89.58% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC12: Uncaptured Flow to Storrs

Runoff = 1.00 cfs @ 12.09 hrs, Volume= 0.072 af, Depth= 5.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
2,364	98	Paved parking, HSG A
2,461	39	>75% Grass cover, Good, HSG A
2,167	98	Water Surface, 0% imp, HSG A
6,992	77	Weighted Average
4,628		66.19% Pervious Area
2,364		33.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC2: Portion of Roof

Runoff = 3.77 cfs @ 12.08 hrs, Volume= 0.311 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
20,610	98	Unconnected roofs, HSG A
20,610		100.00% Impervious Area
20,610		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC3: Portion of Roof

Runoff = 1.46 cfs @ 12.08 hrs, Volume= 0.120 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
7,978	98	Unconnected roofs, HSG A
7,978		100.00% Impervious Area
7,978		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC4: To Catch Basins 3 & 4

Runoff = 2.19 cfs @ 12.09 hrs, Volume= 0.158 af, Depth= 5.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
9,980	98	Paved parking, HSG A
4,440	39	>75% Grass cover, Good, HSG A
14,420	80	Weighted Average
4,440		30.79% Pervious Area
9,980		69.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC5: To Catch Basins 5, 6, 7 & 8

Runoff = 4.37 cfs @ 12.08 hrs, Volume= 0.326 af, Depth= 6.57"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
19,333	98	Paved parking, HSG A
4,744	39	>75% Grass cover, Good, HSG A
1,877	98	Roofs, HSG A
25,954	87	Weighted Average
4,744		18.28% Pervious Area
21,210		81.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC6: Condominium Roof

Runoff = 0.48 cfs @ 12.08 hrs, Volume= 0.040 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
2,630	98	Unconnected roofs, HSG A
2,630		100.00% Impervious Area
2,630		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC7: Offsite Flow to 18" Drain

Runoff = 10.47 cfs @ 12.08 hrs, Volume= 0.863 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
44,417	98	Paved parking, HSG A
12,811	98	Roofs, HSG A
57,228	98	Weighted Average
57,228		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry,**

Summary for Subcatchment PC8: Offsite Uncaptured Flow to Storrs

Runoff = 6.04 cfs @ 12.08 hrs, Volume= 0.497 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
26,900	98	Paved parking, HSG A
6,097	98	Unconnected roofs, HSG A
32,997	98	Weighted Average
32,997		100.00% Impervious Area
6,097		18.48% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Subcatchment PC9: Offsite Flow to System C

Runoff = 0.90 cfs @ 12.08 hrs, Volume= 0.074 af, Depth= 7.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Type III 24-hr 100yr Rainfall=8.12"

Area (sf)	CN	Description
4,905	98	Paved parking, HSG A
4,905		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Minimum Tc**

Summary for Reach 1R: Flow to Storrs Ave.

Inflow Area = 5.109 ac, 89.68% Impervious, Inflow Depth = 4.57" for 100yr event
Inflow = 18.93 cfs @ 12.12 hrs, Volume= 1.947 af
Outflow = 18.93 cfs @ 12.12 hrs, Volume= 1.947 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

Summary for Reach 2R: Flow to Athletic Field

Inflow Area = 0.337 ac, 9.68% Impervious, Inflow Depth = 1.50" for 100yr event
Inflow = 0.46 cfs @ 12.11 hrs, Volume= 0.042 af
Outflow = 0.46 cfs @ 12.11 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs

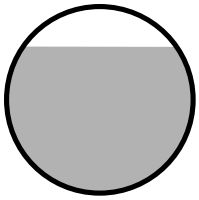
Summary for Reach 3R: 18" Drain Pipe

Inflow Area = 1.314 ac,100.00% Impervious, Inflow Depth = 7.88" for 100yr event
Inflow = 10.47 cfs @ 12.08 hrs, Volume= 0.863 af
Outflow = 10.35 cfs @ 12.11 hrs, Volume= 0.863 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Max. Velocity= 6.98 fps, Min. Travel Time= 0.8 min
Avg. Velocity = 2.49 fps, Avg. Travel Time= 2.2 min

Peak Storage= 490 cf @ 12.09 hrs
Average Depth at Peak Storage= 1.18'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 10.83 cfs

18.0" Round Pipe
n= 0.013
Length= 330.0' Slope= 0.0106 '/'
Inlet Invert= 49.01', Outlet Invert= 45.50'



Summary for Pond P1: System A

Inflow Area = 1.594 ac, 86.80% Impervious, Inflow Depth = 6.95" for 100yr event
Inflow = 11.58 cfs @ 12.08 hrs, Volume= 0.924 af
Outflow = 3.97 cfs @ 12.36 hrs, Volume= 0.789 af, Atten= 66%, Lag= 16.5 min
Discarded = 0.33 cfs @ 12.36 hrs, Volume= 0.506 af
Primary = 3.64 cfs @ 12.36 hrs, Volume= 0.283 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 75.49' @ 12.36 hrs Surf.Area= 5,468 sf Storage= 14,344 cf

Plug-Flow detention time= 172.1 min calculated for 0.789 af (85% of inflow)
Center-of-Mass det. time= 107.3 min (864.8 - 757.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	70.00'	6,817 cf	**56.67'W x 96.50'L x 5.54'H Field A** 30,304 cf Overall - 7,581 cf Embedded = 22,722 cf x 30.0% Voids
#2A	71.50'	7,581 cf	**Cultec R-330XLHD** x 143 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 11 rows
#3	73.00'	38 cf	**4.00'D x 3.00'H Storage of Catch Basin Above Invert** -Impervious
		14,436 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	70.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 0.00'
#2	Primary	73.50'	**12.0" Round Culvert** L= 180.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 73.50' / 61.50' S= 0.0667 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.33 cfs @ 12.36 hrs HW=75.49' (Free Discharge)
1=Exfiltration (Controls 0.33 cfs)

Primary OutFlow Max=3.64 cfs @ 12.36 hrs HW=75.49' TW=63.00' (Fixed TW Elev= 63.00')
2=Culvert (Inlet Controls 3.64 cfs @ 4.64 fps)

Summary for Pond P2: System B

Inflow Area = 2.109 ac, 85.19% Impervious, Inflow Depth = 3.20" for 100yr event
Inflow = 5.17 cfs @ 12.18 hrs, Volume= 0.562 af
Outflow = 4.22 cfs @ 12.49 hrs, Volume= 0.560 af, Atten= 18%, Lag= 18.8 min
Discarded = 0.15 cfs @ 12.49 hrs, Volume= 0.208 af
Primary = 4.06 cfs @ 12.49 hrs, Volume= 0.353 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs
Peak Elev= 62.35' @ 12.49 hrs Surf.Area= 2,547 sf Storage= 5,738 cf

Plug-Flow detention time= 78.5 min calculated for 0.560 af (100% of inflow)
Center-of-Mass det. time= 77.0 min (855.7 - 778.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	58.00'	2,818 cf	**26.67'W x 95.50'L x 5.04'H Field A** 12,839 cf Overall - 3,446 cf Embedded = 9,393 cf x 30.0% Voids
#2A	59.00'	3,446 cf	**Cultec R-330XLHD** x 65 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 5 rows
		6,264 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	58.00'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	60.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 60.00' / 57.20' S= 0.0933 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

Discarded OutFlow Max=0.15 cfs @ 12.49 hrs HW=62.35' (Free Discharge)
1=Exfiltration (Controls 0.15 cfs)

Primary OutFlow Max=4.06 cfs @ 12.49 hrs HW=62.35' TW=59.50' (Fixed TW Elev= 59.50')
2=Culvert (Inlet Controls 4.06 cfs @ 5.17 fps)

Summary for Pond P3: System C

Inflow Area = 0.769 ac, 85.83% Impervious, Inflow Depth = 6.86" for 100yr event
Inflow = 5.75 cfs @ 12.08 hrs, Volume= 0.440 af
Outflow = 3.05 cfs @ 12.21 hrs, Volume= 0.406 af, Atten= 47%, Lag= 7.7 min
Discarded = 0.17 cfs @ 12.21 hrs, Volume= 0.244 af
Primary = 2.89 cfs @ 12.21 hrs, Volume= 0.162 af

Routing by Stor-Ind method, Time Span= 0.00-25.00 hrs, dt= 0.01 hrs / 2
Peak Elev= 57.43' @ 12.21 hrs Surf.Area= 2,819 sf Storage= 5,937 cf

Plug-Flow detention time= 145.9 min calculated for 0.406 af (92% of inflow)
Center-of-Mass det. time= 105.9 min (879.2 - 773.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	53.50'	2,722 cf	**37.33'W x 75.50'L x 4.54'H Field A** 12,801 cf Overall - 3,729 cf Embedded = 9,072 cf x 30.0% Voids
#2A	54.50'	3,729 cf	**Cultec R-330XLHD** x 70 Inside #1 Effective Size= 47.8"W x 30.0"H => 7.45 sf x 7.00'L = 52.2 cf Overall Size= 52.0"W x 30.5"H x 8.50'L with 1.50' Overlap Row Length Adjustment= +1.50' x 7.45 sf x 7 rows
		6,451 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	53.50'	**2.410 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 1.00'
#2	Primary	56.00'	**12.0" Round Culvert** L= 30.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 56.00' / 55.60' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf

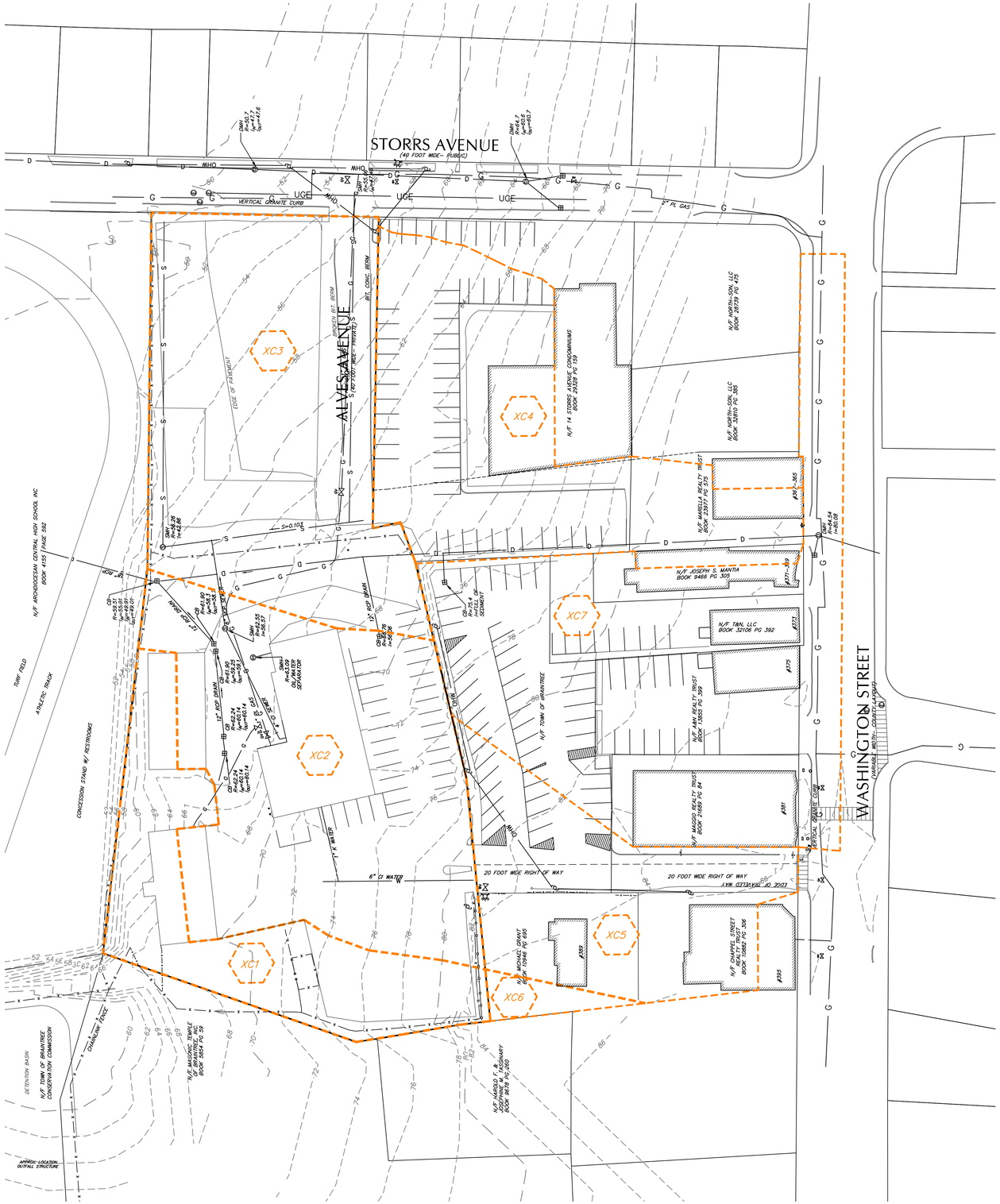
Discarded OutFlow Max=0.17 cfs @ 12.21 hrs HW=57.43' (Free Discharge)
↑**1=Exfiltration** (Controls 0.17 cfs)

Primary OutFlow Max=2.88 cfs @ 12.21 hrs HW=57.43' (Free Discharge)
↑**2=Culvert** (Inlet Controls 2.88 cfs @ 3.67 fps)

Watershed Maps
Existing Conditions
Proposed Conditions

DESCRIPTION	XC1 FLOW TO ATHLETIC FIELD	XC2 FLOW TO EXISTING DRAINS	XC3 FLOW TO STORRS AVE.	XC4 OFFSITE FLOW TO STORRS AVE.	XC5 OFFSITE FLOW TO EXISTING DRAINS	XC6 OFFSITE FLOW TO ATHLETIC FIELD	XC7 OFFSITE FLOW TO 18" DRAIN	TOTAL
PAVEMENT	5,243 S.F.	31,981 S.F.	20,922 S.F.	31,807 S.F.	21,877 S.F.	2,009 S.F.	44,417 S.F.	158,256 S.F.
ROOF	3,328 S.F.	10,504 S.F.	0 S.F.	6,096 S.F.	4,009 S.F.	0 S.F.	12,811 S.F.	36,748 S.F.
GRAVEL	0 S.F.	0 S.F.	11,240 S.F.	0 S.F.	0 S.F.	0 S.F.	0 S.F.	11,240 S.F.
LAWN	13,395 S.F.	3,728 S.F.	13,850 S.F.	0 S.F.	0 S.F.	0 S.F.	0 S.F.	30,973 S.F.
TOTAL	21,966 S.F.	46,213 S.F.	46,012 S.F.	37,903 S.F.	25,886 S.F.	2,009 S.F.	57,228 S.F.	237,126 S.F.

MA STATE PLANE NAD83



LEGEND:

EXISTING:		PROPOSED:
	– LOCUS PROPERTY LINE	
	– TREE LINE	
S	– SEWER MANHOLE (SMH)	S
D	– DRAIN MANHOLE (DMH)	D
	– CATCH BASIN (CB)	
	– STONEWALL	
GV	– GAS VALVE	GV
	– WATER VALVE	
	– WATER SERVICE	
	– HYDRANT	
	– UTILITY POLE	
N/F	– NOW OR FORMERLY	N/F
	– IRON PIPE OR REBAR	
D	– DRAIN PIPE	D
W	– WATER MAIN	W
G	– GAS SERVICE	G
E	– UNDERGROUND POWER	E
	– UNDERGROUND TELEPHONE	
OHW	– OVERHEAD WIRES	OHW
S	– SEWER MAIN	S
LSA	– LANDSCAPED AREA	LSA
280	– GRADE	280
X15.61	– SPOT GRADE	15X6
x—x—x—x—x—x	– CHAIN LINK FENCE	x—x—x—x—x—x
	– TEST PIT	
	– CONIFEROUS TREE	
	– DECIDUOUS TREE	
	– TO BE REMOVED	TBR

DeCelle-Burke-Sala

1266 Furnace Brook Parkway #401
Quincy, MA 02169
617-405-5100(o) 617-405-5101(f)
www.decelle-burke-sala.com

GENERAL NOTES:

ZONING: GENERAL BUSINESS

MINIMUM REQUIREMENTS:
AREA: 15,000 S.F.
FRONT SETBACK: 10'
SIDE SETBACK: 10'
REAR SETBACK: 20'
LOT FRONTAGE/WIDTH: 50'/100'
MAX HEIGHT: 3 STY
BUILDING COVERAGE: 70%
MIN OPEN SPACE: 10%

CURRENT OWNER:

383 WASHINGTON TREET LLC
519 ALBANY STREET, SUITE 200
BOSTON, MA 02122

DEED REFERENCE:
Book 30862 Page 314
Book 14283 Page 545
Book 14283 Page 550

PLAN REFERENCE:

Book 455 Page 272
Book 4284 Page 179
LC PLAN 3751D

ASSESSORS REFERENCE:

MAP 2028 LOT 31

PROJECT TITLE & LOCATION:

PARKSIDE APARTMENTS
40B RESIDENTIAL PROJECT
in
BRAINTREE, MA

PLAN TITLE:

EXISTING WATERSHED

PREPARED FOR:

THE HOLLAND COMPANIES
519 ALBANY STREET
SUITE 200
BOSTON, MA 02118

DATE: FEBRUARY 2, 2017
REVISED: OCTOBER 7, 2019

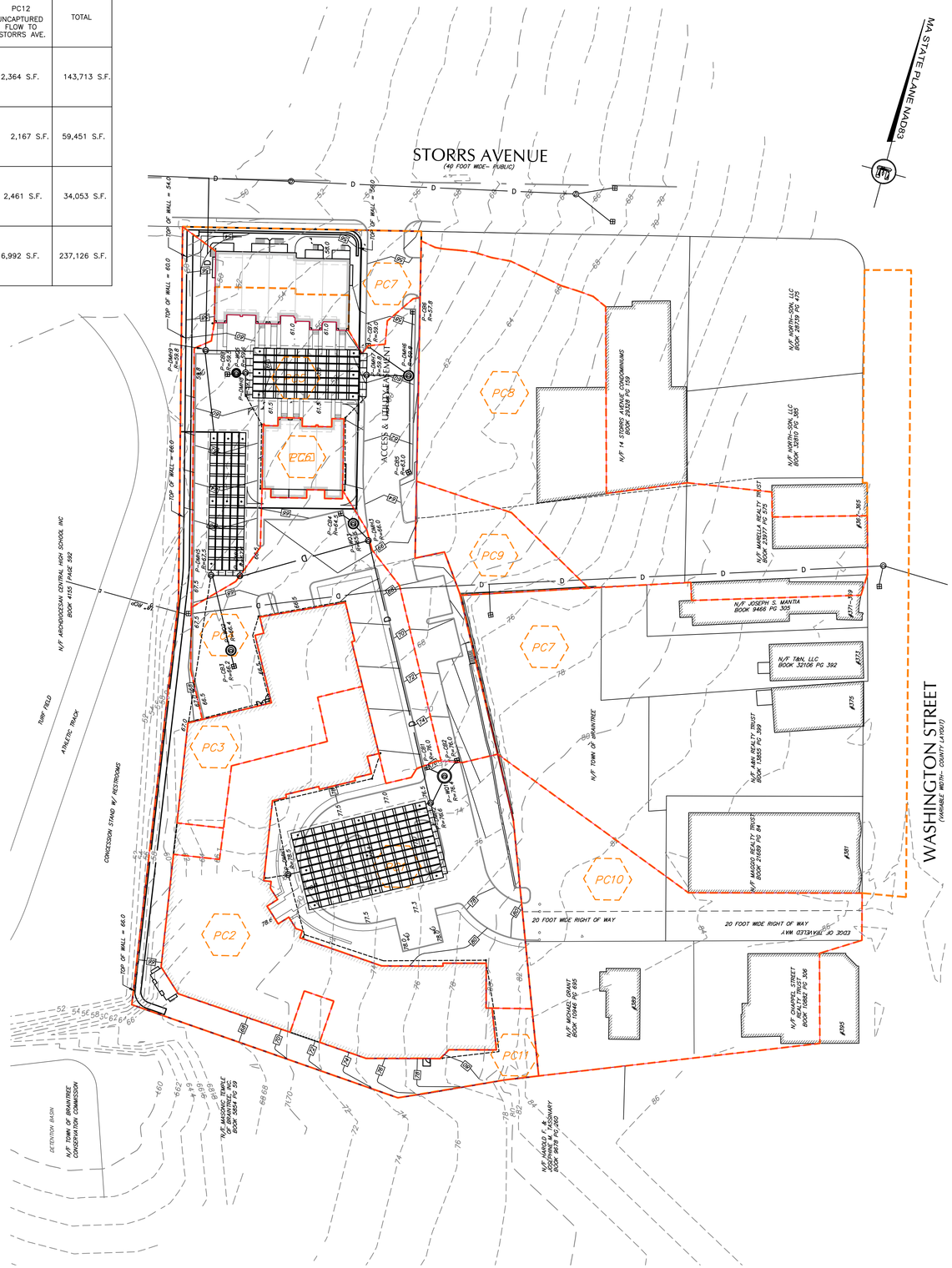
JOB NUMBER: 185.033 | SHEET 1 OF 2

40 20 0 40 80
SCALE: 1"=40'

DESCRIPTION	PC1 FLOW TO CATCH BASINS 1 & 2	PC2 PORTION OF APARTMENT ROOF	PC3 PORTION OF APARTMENT ROOF	PC4 FLOW TO CATCH BASINS 3 & 4	PC5 FLOW TO CATCH BASINS 5, 6, 7 & 8	PC6 CONDOMINIUM ROOFS	PC7 OFFSITE FLOW TO 18" DRAIN	PC8 OFFSITE UNCAPTURED FLOW TO STORRS AVE.	PC9 OFF SITE FLOW TO SYSTEM C	PC10 OFF SITE FLOW TO SYSTEM A	PC11 OFFSITE FLOW TO ATHLETIC FIELD	PC12 UNCAPTURED FLOW TO STORRS AVE.	TOTAL
PAVEMENT	11,777 S.F.	0 S.F.	0 S.F.	9,980 S.F.	19,333 S.F.	0 S.F.	44,417 S.F.	26,900 S.F.	4,905 S.F.	23,889 S.F.	148 S.F.	2,364 S.F.	143,713 S.F.
ROOF	0 S.F.	20,610 S.F.	7,978 S.F.	0 S.F.	1,877 S.F.	2,630 S.F.	12,811 S.F.	6,097 S.F.	0 S.F.	4,009 S.F.	1,272 S.F.	2,167 S.F.	59,451 S.F.
LAWN	9,165 S.F.	0 S.F.	0 S.F.	4,440 S.F.	4,744 S.F.	0 S.F.	0 S.F.	0 S.F.	0 S.F.	0 S.F.	13,243 S.F.	2,461 S.F.	34,053 S.F.
TOTAL	20,942 S.F.	20,610 S.F.	7,978 S.F.	14,420 S.F.	25,954 S.F.	2,630 S.F.	57,228 S.F.	32,997 S.F.	4,905 S.F.	27,898 S.F.	14,663 S.F.	6,992 S.F.	237,126 S.F.

LEGEND:

EXISTING:		PROPOSED:
	– LOCUS PROPERTY LINE	
	– TREE LINE	
S	– SEWER MANHOLE (SMH)	S
D	– DRAIN MANHOLE (DMH)	D
	– CATCH BASIN (CB)	
	– STONEWALL	
GV	– GAS VALVE	GV
WV	– WATER VALVE	WV
	– WATER SERVICE	
	– HYDRANT	
	– UTILITY POLE	
N/F	– NOW OR FORMERLY	N/F
	– IRON PIPE OR REBAR	
D	– DRAIN PIPE	D
W	– WATER MAIN	W
G	– GAS SERVICE	G
E	– UNDERGROUND POWER	E
	– UNDERGROUND TELEPHONE	
OHW	– OVERHEAD WIRES	OHW
S	– SEWER MAIN	S
LSA	– LANDSCAPED AREA	LSA
280	– GRADE	280
X15.61	– SPOT GRADE	15X6
x—x—x—x—x—x—x	– CHAIN LINK FENCE	x—x—x—x—x—x—x
	– TEST PIT	
	– CONIFEROUS TREE	
	– DECIDUOUS TREE	
	– TO BE REMOVED	TBR



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GENERAL NOTES:

ZONING: GENERAL BUSINESS

MINIMUM REQUIREMENTS:

AREA: 15,000 S.F.

FRONT SETBACK: 10'

SIDE SETBACK: 10'

REAR SETBACK: 20'

LOT FRONTAGE/WIDTH: 50'/100'

MAX HEIGHT: 3 STY

BUILDING COVERAGE: 70%

MIN OPEN SPACE: 10%

CURRENT OWNER:

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LC PLAN 3751D

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MAP 2028 LOT 31

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PARKSIDE APARTMENTS
40B RESIDENTIAL PROJECT
in
BRAINTREE, MA

PLAN TITLE:

PROPOSED WATERSHED

PREPARED FOR:

THE HOLLAND COMPANIES
519 ALBANY STREET
SUITE 200
BOSTON, MA 02118

DATE: FEBRUARY 2, 2017

REVISED: OCTOBER 7, 2019

JOB NUMBER: 185.033 | SHEET 2 OF 2

40 20 0 40 80

SCALE: 1"=40'