CITY COUNCIL

A. Roll Call

B. Invocation – Councilmember Shealy

C. Pledge of Allegiance

D. Presentations and Recognitions
   1. Proclamation recognizing Michael Moore, Chief Executive Officer of the International African American Museum
   2. A Resolution establishing a relationship between the City of Charleston and the City of Freetown, Sierra Leone, joining in a Sister Cities International Partnership to foster and strengthen relations and provide benefits to the respective communities
   3. Recognition of Mayoral Fellows

E. Public Hearings

   1. An ordinance to amend the zoning ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 245 Huger Street (Peninsula) (0.50 acre) (TMS# 459-01-03-048) (Council District 4), be rezoned so as to be included in the Accommodations Overlay Zone (A). The property is owned by Chase Furniture Company Inc. (Approved by the Planning Commission; Staff recommend disapproval)

   2. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 49 Archdale Street (Peninsula) (0.175 acre) (TMS# 457-04-03-071, 073, 074 & 054) (Council District 8), be rezoned from Limited Business (LB) classification to Urban Commercial (UC) classification. The property is owned by Yellow Dog Design and Development LLC.

   3. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 200 Spring Street (Peninsula) (0.422 acre) (TMS# 460-11-01-011) (Council District 3), be rezoned from General Business (GB) classification to Mixed-Use/Workforce Housing (MU-2/WH) classification. The property is owned by 200 Spring Street Development LLC.

   4. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 214 and 216 Spring Street and a portion of 31½ Ashton Street (Peninsula) (approx. 0.422 acre) (TMS# 460-11-01-016, 017 and a portion of 037) (Council District 3), be rezoned from General Business (GB) classification to Mixed-
Use/Workforce Housing (MU-2/WH) classification. The property is owned by Bergland Investments LLLP.

5. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 404 Woodland Shores Road (James Island) (0.50 acre) (TMS #343-11-00-104) (Council District 11), annexed into the City of Charleston June 18, 2019, be zoned Single-Family Residential (SR-1) classification. The property is owned by Nathaniel West.

6. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 2154 Wappoo Drive (James Island) (0.24 acre) (TMS #343-06-00-185) (Council District 11), annexed into the City of Charleston May 28, 2019, be zoned Single-Family Residential (SR-1) classification. The property is owned by Tyler Cox and Graham Cox.

7. An ordinance to amend Chapter 54 of the Code of the City of Charleston (Zoning Ordinance) by adding thereto a new part 15 entitled Transit Accommodations to set forth requirements for transit accommodations for multi-family projects, non-residential projects, and subdivisions with fifty (50) or more dwelling units that are reviewed by the Technical Review Committee in order to improve the mobility of the City by increasing opportunities and options for transportation. (AS AMENDED) (SECOND READING)

F. Act on Public Hearing Matters

G. Approval of City Council Minutes:

1. May 28, 2019

2. June 18, 2019 (Deferred)

H. Citizens Participation Period

I. Petitions and Communications:

a. Fast-Track Cities: Ending the AIDS Epidemic

b. Commission on Women Appointments

c. Commission on the Arts Appointments

d. Municipal Election Commission Appointment

e. Planning Commission Appointments
J. Council Communications:

(1) Request by Councilmember Waring that the State Attorney General provide a written opinion that identifies the state law which requires City Council to obtain the approval from the Planning Commission of an ordinance to change a procedure. (Councilmember Waring)

(2) Request by Councilmember Waring that a non-binding referendum be placed on the November 2019 election ballot asking the public whether they are in favor of going to Free-Board plus 2 once a homeowner sustains 50% or more damage to property, the cost of which will be paid by the homeowner and/or property owner. (Councilmember Waring)

(3) Resolution providing for an advisory referendum at the next general election on the question of whether the electors of the City of Charleston approve of City Council adopting an Ordinance to increase the Freeboard Requirement from one (1) foot to two (2) feet for new construction or substantial improvement of any residential or non-residential structure in the special flood hazard areas of the City.

K. Council Committee Reports:

1. Committee on Public Works and Utilities: (Meeting was held on July 15, 2019 at 2:00 p.m.)

   a. Acceptance and Dedication of Rights-of-Way and Easements

      (i) Approval to notify SCDOT that the City intends to accept maintenance responsibility for 680 LF of concrete sidewalk 9 street trees and 5 street lights on Sam Rittenberg Blvd (SC Hwy 7 & 171) and Orange Grove Road (S-726) in conjunction with the project at 1140 Sam Rittenberg Boulevard.

      (ii) Approval to notify SCDOT that the City intends to accept maintenance responsibility for 12 street trees on Meeting Street (S-107) and the I-26 off ramp in conjunction with the project located at 511 Meeting Street.

      (iii) Approval to notify SCDOT that the City intends to accept maintenance responsibility for 18 street trees and 4 street lights on Maybank Highway (SC HWY 700) to be constructed in conjunction with the Avalon at James Island project.

      (iv) Approval to notify SCDOT that the City intends to accept maintenance responsibility for street tree wells, bike racks and street lights in conjunction with the project at 1310 Meeting Street.

      (v) Swygert’s Landing, Phase 4, Acceptance and Dedication of Tebalt Drive (40’ R/W, 945.50 LF), a portion of Glasson Street (40’ R/W 300 LF), A portion of Claybrook Street (R/W varies, 799.17 LF). There are 26 lots. All infrastructure is completed.
(vi) Ashely Preserve, Acceptance and Dedication of a portion of Lantern Street (RW, 459 LF). There are 18 lots. All infrastructure with the exception of sidewalks has been completed. The sidewalks have been bonded.

b. Spring/Fishburne - D&F Professional Services Contract Amendment 17 Discussion

c. Spring/Fishburne - D&F Professional Services Contract Amendment 19 Discussion

d. King/Huger - JMT Professional Services Contract Discussion

e. National Fish and Wildlife Foundation Grant Application Discussion

f. Low Battery - Project Construction Discussion

g. Discussion of status of outfall maintenance general permit work by DHEC OCRM

h. Spring/Fishburne – Potential Ehrhardt St Shaft Schedule Discussion

2. Audit Committee (Meeting was held on July 15, 2019 at 3:00 p.m.)

   Review Mayor’s Division Audit Report

3. Committee on Public Works and Utilities: (Meeting was held on July 16, 2019 at 2:00 p.m.)

   a. Project Manager Updates

      (i) Forest Acres – Footbridge Design Considerations Discussion

      (ii) Low Battery Project – Construction Schedule Discussion

      (iii) Forest Acres – Footbridge Design Discussion

      (iv) Orleans Road – Repair Project Discussion

      (v) Fulton Street – Repair Project Discussion

      (vi) Lord Calvert – Construction Schedule Discussion

      (vii) Special Protection Area Tool Discussion

      (viii) Stormwater Design Standards Manual Discussion

   b. Floodplain Manager Updates
(i) Community Assistance Visit Update

(ii) Buyout Demolition Update

c. Executive Session in accordance with S.C. Code Section 30-4-70(a)(2) to receive legal advice related to contractual construction matters on the Spring Fishburne project

4. Committee on Ways and Means:

(Bids and Purchases

(Police Department: Approval of an after-the-fact item for a $12,700 increase in the grant award from $47,500 to $60,200 for the removal of five vessels from the Ashley River/Charleston Harbor area. This grant has already been accepted due to time constraints. Charleston City Marina agreed to provide a $5,000 match. There has been no increase to the match requirement since initial approval on April 9, 2019.

(Fire Department: Approval to apply for a HMEP grant in the amount of $12,500 for the Charleston FD-Haz-Mat Team to attend specialized training. Due to time constraints this grant was submitted on May 10, 2019. A 20% in-kind match is required for this grant. Salaries of personnel attending classes will be used. This is an after-the-fact approval.

(Stormwater: Approval to apply for the NFWF grant application that requires a 50/50 match of $125,000. If awarded, the grant would fund an Engineering and Final Design Plan regarding the acquired property sites in the Church Creek Drainage Basin area. The application is due on Monday, July 22, 2019. The City Match of $125,000 will be budgeted in 2020.

(Resiliency: Approval to accept the 2019 SC DHEC Solid Waste Reduction and Recycling grant in the amount of $35,000 to support a reusable bag giveaway, education program, and outreach and awareness project about reducing single-use plastics. No City match is required.

(Mayor's Office for Children Youth and Families: Approval to apply for the Youth Build grant application that requires a City match of $145,834 ($48,611 per year x 3 years). If approved, this grant would support 50 youth who dropped out of high school to receive their GED, complete a certification program at Trident Tech, and gain meaningful employment through SC Works, an American Job Center. The application is due on August 6, 2019. The City Match required is $145,834 and will be budgeted in 2020.

(Office of Cultural Affairs: Approval to accept a grant award in the amount of $5,376 from the South Carolina Department of Parks, Recreation and Tourism (Tourism Advertising Grant) to support the 2019 MOJA Arts Festival. A 1:1 City match is required. Matching funds will come from corporate sponsorships and paid admissions.

(Office of Cultural Affairs: Approval to accept a grant award in the amount of $1,628 from South Arts (Literary Arts Touring Grant) in support of literary programs of the 2019 Free Verse Festival. A 1:1 City match is required. Matching funds will come from corporate sponsorships.

(Office of Cultural Affairs: Approval to accept a grant award in the amount of $2,000 from the Jerry and Anita Zucker Family Endowment Fund of the Coastal Community Foundation of South Carolina. Funds will be used to support outreach programming of the 2019 Piccolo Spoleto Festival. No City match is required.

(Mayor's Office for Children Youth and Families: Approval to accept the Youth Service America Lead Agency grant award of $2,000 to engage youth in service on nationally recognized service dates including the 2020 MLK Day of Service and the 2020 Global Youth Service Day. No City match is required.
(Stormwater Management: Approval of Huger-King Street Drainage Improvements Professional Services Agreement with Johnson, Mirmiran & Thompson, Inc., in the amount of $405,061.21 for engineering services to provide updated hydrologic/hydraulic modeling, a detailed cost analysis for multiple improvement scenarios, grant funding research, permitting research, environmental and permitting services, property acquisition services, survey and design and construction administration services to improve the drainage conditions of the Huger Street Drainage Basin. This will obligate $405,061.21 of the $1,374,469 budget. Funding for this project is from the Cooper River Bridge TIF ($1,000,000) and a South Carolina Rural Infrastructure Authority Grant ($499,292). *(Pending recommendation of the Public Works and Utilities Committee)*

(Parks-Capital Projects: Approval of a SCDOT LPA Contract with Johnson, Mirmiran and Thompson in the amount of $178,364.30 for the engineering and permitting of the Huger Street Streetscape project. This revised contract replaces the original contract due to revisions associated with reducing the limits of the project to Morrison Dr.-Meeting St., modifications to the proposed street sections, and increase the project scope to include stormwater improvements. Approval of this Professional Services Contract will obligate $178,364.30 of the $2,562,108.00 of the project budget. The funding source for the project is Federal Mitigation Funds.

(Parks-Capital Projects: Approval of Huger Street Streetscape Supplemental No. 1 to the Agreement between SCDOT and the City to change the completion date to January 31, 2022. Approval of Supplemental No. 1 will obligate $0.00 of the $2,562,108 of the project budget. The funding source for this project is Federal Mitigation Funds.

(Parks-Capital Projects: Approval of CPD Forensic Lab increase P157074 with ESP Associates, Inc., in the amount of $3,980.34 for testing services outside the building footprint including backfill, sidewalk and soil evaluation, retaining wall testing and observations. Increasing P157074 will increase the PO amount from $36,915 to $40,895.34. The funding sources for this project are the 2015 Installment Purchase Revenue Bond ($7,392,186) and 2017 Installment Purchase Revenue Bond ($5,000,000).

(Parks-Capital Projects: Approval of the International African American Museum Owner's Agreement between the City and the International African American Museum non-profit in regards to the real property located at 14 Wharfside St. and the intentions to construct the IAAM Museum.

(Parks-Capital Projects: Approval of International African American Museum Construction Manager at Risk (CMAR) Fee Amendment #2 with Turner Construction Company in the amount of $58,457,323 as the Guaranteed Maximum Price (GMP) for Construction Services of the IAAM Building Shell and Site Work. With the approval of the project budget, Staff is authorized to award and/or amend contracts less than $40,000 to the extent contingency funds exist in the Council Approved budget.

(Parks-Capital Projects: Approval of the International African American Museum Construction Management Contract with Cumming Construction Management, Inc. in the amount of $767,689 for construction and project management services for Phase I of construction (core & shell) of the International African American Museum.

(Parks-Capital Projects: Approval of the International African American Museum Professional Services Contract with S&ME Inc., in the amount of $163,800 for materials testing and inspection services for the International African American Museum construction project.

(Parks-Capital Projects: Approval of the International African American Museum Undergrounding Other Work in Progress (OWIP) Agreement with Dominion Energy in the amount of $843,909 for engineering services and construction to convert overhead electric distribution to underground services on Concord St.
(Stormwater: Approval of a Memorandum of Understanding between the Army Corps of Engineers, SHPO, and City of Charleston related to construction and repair of historic property. (Pending approval by the Public Works and Utilities Committee)

(An ordinance establishing the Morrison Drive Redevelopment Project Area; making certain findings of blight within the Redevelopment Project Area; designating and defining redevelopment projects consisting of public improvements within the Redevelopment Project Area; designating appropriate redevelopment project costs; approving an overall redevelopment plan; providing for notice and public hearing in connection with the foregoing; and other matters related thereto.

(Stormwater Management: Approval of Spring-Fishburne US 17 Fee Amendment #17 with Davis and Floyd, Inc. in the amount of $348,208 for additional Design and Professional Service work in support of Phase 4 project work. (Pending recommendation by the Public Works and Utilities Committee)

(Stormwater Management: Approval of Spring-Fishburne US17 Phase 3 Fee Amendment #19 with Davis and Floyd in the amount of $1,171,514 for additional CEI services based upon the continuation of services beyond the original construction contract end date of July 5, 2019 to the current contract end date of October 11, 2019 and covers anticipated additional effort between the latest project date of completion (March 18, 2020). Approval of Fee Amendment #19 will increase the Phase 3 portion of the overall Professional Services Contract by $1,171,514 (from $5,300,670 to $6,472,184). The funding source for this work is the State Infrastructure Bank (SIB). (Pending recommendation by the Public Works and Utilities Committee)

(Legal Department: An ordinance to amend the fee schedule for building and trade permits attached hereto and incorporated herein by reference as Exhibit I, by providing an amended definition for plan review fee, by providing a new fee for plan revision review and by providing for additional permit fees associated with plan revisions for updated project scope of work that result in increased construction costs.

(Review Mayor’s Division Audit Report

(Approval to enter into a Special Use Permit with the U.S. National Park Service for the First Day Festival at Liberty Square. The Permit begins at 5:00 a.m. on August 18, 2019 and ends at 7:00 p.m. on August 18, 2019. There is no fee associated with the Permit. City must leave the area in the same condition as it was found.

(A Resolution authorizing the City of Charleston to acquire the Fort Pemberton sites and to enter into certain grant and loan agreements facilitating said acquisition.

(Approval of a Memorandum of Understanding between the City of Charleston and Washington Park Homeowners Association for acquisition of strip of property for $50,000 for drainage project in West Ashley.

(Request authorization for the City of Charleston to accept an access easement over 539 square feet of property located on Dills Bluff Road, shown on the attached plat, said property to be conveyed by the City to Galphin Lee Jackson, III, as set forth in Ordinance No. 2019-008, with the final form of the easement subject to approval by the City’s Corporation Counsel.

(Approval to authorize the Mayor to execute, on behalf of the City of Charleston, a Transfer Agreement conveying 2321 Birdie Garrett Street to Charleston Redevelopment Corporation (CRC) for the amount of $18,000 to develop a single-family detached affordable home for a person or household earning 120% or below the Area Median Income (AMI). The sale of the home is subject to the CRC’s Palmetto Community Land Trust guidelines. (TMS: 464-01-00-109; 2321 Birdie Garrett Street) [Ordinance]

(Approval to authorize the Mayor to execute, on behalf of the City, a Transfer and Development Agreements conveying 105 Hanover Street to Charleston County Human Services Commission dba Palmetto Community Action Partners for $68,090.95 for the development of
four affordable rental housing units subject to the City’s HOME Investment Partnerships Program Guidelines [Ordinance]
(Consider the following annexations:
- 2951 Bolton Road (TMS# 307-10-00-044) 0.32 acre, West Ashley (District 5). The property is owned by Joshua L. Bettinger and Shelby R. Walls.
- 0 Oakville Plantation Road (TMS#317-00-00-007) 10.47 acres, Johns Island (District 5). The property is owned by Keith W. Lackey.
- 2495 River Road (TMS#317-00-00-012) 4.75 acre, Johns Island (District 5). The property is owned by Gail Grimball.
- 2493 Summerland Drive (TMS#317-00-00-075) 9.91 acre, Johns Island (District 5). The property is owned by Gary S. Worth.
- 0 Summerland Drive (TMS# 317-00-00-076) 8.70 acre, Johns Island (District 5). The property is owned by Gary S. Worth.
(Update on City purchase of .46 acre waterfront property on James Island (Brantley Park)(greenbelt funds)
(Discussion regarding Sumar Street property in regards to the proposed CARTA lease (Councilmember Moody)
(Executive session in accordance with S.C. Code Section 30-4-70(a)(2) to receive legal advice regarding development plan for Ackerman Park, located at 55 Sycamore Avenue, in West Ashley, including possible need to condemn right-of-way for access to Park. Upon returning to open session, the Committee may or may not take action on this item.
(Executive session in accordance with S.C. Code Section 30-4-70(a)(2) to receive legal advice regarding proposal for Voluntary Cleanup Contract (“VCC”) Services from S&ME, Inc., relating to the former railroad right-of-way purchased by the City from Norfolk Southern. Upon returning to open session, Council may or may not take action on items discussed in Executive Session.
(Request for authorization for the Mayor to accept a Proposal for Voluntary Cleanup Contract (“VCC”) Services from S&ME, Inc., relating to the former railroad right-of-way purchased by the City from Norfolk Southern and to execute the attached Agreement for Services with S&ME, Inc., as a sole source provider, for a total fee of not to exceed $51,980.00, said fee not be exceeded without prior City Council approval. The funding for this project will come from the 2018 Recreation Bond.
(Annexation toolkit presentation - Tracy McKeel, Chief Innovation Officer

Give first reading to the following bills from Ways and Means:

An ordinance establishing the Morrison Drive Redevelopment Project Area; making certain findings of blight within the Redevelopment Project Area; designating and defining redevelopment projects consisting of public improvements within the Redevelopment Project Area; designating appropriate redevelopment project costs; approving an overall redevelopment plan; providing for notice and public hearing in connection with the foregoing; and other matters related thereto.

An ordinance authorizing the Mayor to execute on behalf of the City of Charleston (“City”) a Transfer Agreement and all other documents necessary to convey real property located at
105 Hanover Street (Charleston County TMS No. 459-05-01-077) to Charleston County Human Services Commission, doing business as Palmetto Community Action Partners, for $68,090.95, for the development of affordable rental housing, subject to the City’s HOME Investment Partnerships Program Guidelines

An ordinance authorizing the Mayor to execute on behalf of the City of Charleston ("City") a Transfer Agreement and all other documents necessary to convey real property located at 105 Hanover Street (Charleston County TMS No. 459-05-01-077) to Charleston County Human Services Commission, doing business as Palmetto Community Action Partners, for $68,090.95, for the development of affordable rental housing, subject to the City’s Home Investment Partnerships Program Guidelines

An ordinance to provide for the annexation of property known as 2951 Bolton Road (0.32 acre) (TMS# 307-10-00-044), West Ashley, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 5. The property is owned by Joshua L. Betttinger and Shelby R. Walls.

An ordinance to provide for the annexation of property known as 0 Oakville Plantation Road (10.47 acre) (TMS# 317-00-00-007), Johns Island, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 5. The property is owned by Keith W. Lackey.

An ordinance to provide for the annexation of property known as 2495 River Road (4.75 acre) (TMS# 317-00-00-012), Johns Island, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 5. The property is owned by Gail Grimbull

An ordinance to provide for the annexation of property known as 2493 Summerland Drive (9.91 acre) (TMS# 317-00-00-075), Johns Island, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 5. The property is owned by Gary S. Worth.

An ordinance to provide for the annexation of property known as 0 Summerland Drive (8.70 acre) (TMS# 317-00-00-076), Johns Island, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 5. The property is owned by Gary S. Worth.

L. Bills up for Third Reading:

1. An ordinance amending Chapter 27 of the Code of the City of Charleston, by amending Flood Hazard Prevention and Control Requirements in Section 27-117 to increase the Freeboard Requirement from one foot to two feet, effective August 1, 2019 (AS AMENDED)(DEFERRED)
M. Bills up for Second Reading:

(City Council may give second reading, order to third reading, give third reading, and order engrossed for ratification any bill listed on the agenda as a second reading.)

1. An ordinance to amend the Zoning Ordinance of the City of Charleston, South Carolina, by changing the Zone Map, which is a part thereof, so that the former right-of-way for Kinloch Court, also sometimes known as Kinlock Court (Peninsula) (approximately 0.09 acres) (Unzoned Right-of-Way) (Council District 4), be rezoned from Unzoned Right-of-Way to Limited Business (LB) classification. The property is owned by the City of Charleston.

2. An ordinance to amend the Zoning Ordinance of the City of Charleston, South Carolina, to change the Zone Map, which is a part thereof, so as to clarify that the former right-of-way for Kinloch Court, also sometimes known as Kinlock Court (Peninsula) (approximately 0.09 acres) (unzoned right-of-way) (Council District 4), is contained within the Amusement and Recreation Service, AR Overlay Zone. The property is owned by the City of Charleston.

3. An ordinance to amend Chapter 22 of the Code of the City of Charleston, South Carolina, to include violation of a posted park rule to the list of prohibited activities in a park.

4. An ordinance to amend Chapter 2, Section 152, to specify the term of office and staggered terms for the Recreation Commission.

5. An ordinance to provide for the annexation of property known as 1732 Elm Road (0.49 acre) (TMS# 355-11-00-120), West Ashley, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 10. The property is owned by Carol L. Jackson-Powell.

6. An ordinance to provide for the annexation of property known as 1617 Jessamine Road (0.14 acre) (TMS# 351-12-00-081), West Ashley, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 9. The property is owned by Albert Peter Shahid, III & Sarah Assemany Shahid.

7. An ordinance to provide for the annexation of property known as Clements Ferry Road (16.40 acres) (TMS# 275-00-00-005), Cainhoy, Berkeley County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 1. The property is owned by IVO Sands LLC.

8. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that property on Clements Ferry Road (Cainhoy) (approximately 16.40 acres) (TMS #275-00-00-005) (Council District 1), be zoned Rural Residential (RR-1) classification. The property is owned by IVO Sands LLC.

9. An ordinance to amend Chapter 54 of the Code of the City of Charleston (Zoning Ordinance) by amending Planned Unit Development (PUD) Master Plan and Development
Guidelines for property located on River Road and Maybank Highway (the Village at Fenwick PUD – Johns Island) (approximately 44.891 acres) (TMS# 346-00-00-004, 076 and portions of 346-00-00-258 and 259). (DEFERRED)

10. An ordinance to amend Part 15 (Mixed Use 1 - Workforce Housing District Mixed Use 2 - Workforce Housing District) of Article 2 (Land Use Regulations) of Chapter 54 of the Code of the City of Charleston, South Carolina (Zoning Ordinance), to implement the Federal Opportunity Zone Program, by creating certain incentives to encourage the development of “Opportunity Units” for households with incomes less than or equal to 60% of the Area Median Income (AMI). (DEFERRED)

11. An ordinance to amend Chapter 54 of the Code of the City of Charleston (Zoning Ordinance) by deleting Section 54-220 Accommodations Overlay Zone, and replacing said section with a new Section 54-220, Accommodations Overlay Zone, to, among other things: provide for the preservation or creation of Mixed-Use Districts; prohibit the displacement of housing by accommodations uses and consider the effects of dwelling units to be altered or replaced on the housing stock and whether requirements to protect the affordability of the dwelling units should be attached to an accommodations special exception approval; establish conditions on the displacement or reduction of office space by accommodations uses; prohibit the displacement of more than 25 percent of ground floor, store front retail space by accommodations uses on the property; to include a minimum and maximum size for accommodations facilities; to provide regulations for the design and location of guest drop off and pick up areas; to require the incorporation of meeting and conference space; to establish a limit on the number of full-service hotels; to provide for a contribution to the City of Charleston Affordable/Workforce Housing Account; and to subject violators of the provisions of this Section 54-220 to having their business license or certificate of occupancy revoked. (AS AMENDED)(DEFERRED)

13. An ordinance to provide for the annexation of property known as 1415 S Edgewater Drive (0.72 acre) (TMS# 349-13-00-095), West Ashley, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 11. The property is owned by Robert F. Kauffmann.(DEFERRED)

14. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 1415 South Edgewater Drive (West Ashley) (0.72 acre) (TMS #349-13-00-095) (Council District 11), be zoned Single-Family Residential (SR-1) classification. The property is owned by Robert F. Kauffmann. (DEFERRED FOR PUBLIC HEARING) Expires 11.27.19

15. An ordinance to provide for the annexation of property known as 1389 River Road (10.94 acres) (TMS# 311-00-00-025), Johns Island, Charleston County, to the City of Charleston, shown within the area annexed upon a map attached hereto and make it part of District 5. The property is owned by Knapp A Partnership. (DEFERRED)

16. An ordinance to provide for the annexation of property known as 1381 River Road (1.28 acres) (TMS# 311-00-00-097), Johns Island, Charleston County, to the City of Charleston,
shown within the area annexed upon a map attached hereto and make it part of District 5. The property is owned by Knapp A Partnership. (DEFERRED)

17. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 1335 King Street Extension (Peninsula) (0.37 acre) (TMS #464-14-00-079) (Council District 4), be rezoned from Light Industrial (LI) classification to Upper Peninsula (UP) classification. The property is owned by Joe Singleton. (DEFERRED) Expires 7.17.19 (WILL EXPIRE BY AUGUST MEETING)

18. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 1335 King Street Extension (Peninsula) (0.37 acre) (TMS #464-14-00-079) (Council District 4), be rezoned from the 2.5 Old City Height District classification to the 4-12 Old City Height District classification. The property is owned by Joe Singleton. (DEFERRED) Expires 7.17.19 (WILL EXPIRE BY AUGUST MEETING)

19. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that property located on King Street Extension and Montford Avenue (Peninsula) (0.10 acre) (TMS #464-14-00-080) (Council District 4), be rezoned from Single-Family Residential (SR-1) classification to Upper Peninsula (UP) classification. The property is owned by Horace A. Rokee. (DEFERRED) Expires 7.17.19 (WILL EXPIRE BY AUGUST MEETING)

20. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that property located on King Street Extension and Montford Avenue (Peninsula) (0.10 acre) (TMS #464-14-00-080) (Council District 4), be rezoned from the 2.5 Old City Height District classification to the 4-12 Old City Height District classification. The property is owned by Horace A. Rokee. (DEFERRED) Expires 7.17.19 (WILL EXPIRE BY AUGUST MEETING)

21. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 141 Meeting Street and 174 King Street (Peninsula) (1.061 acres) (TMS #457-08-04-003) (Council District 1), be rezoned from General Business (GB) classification to Urban Commercial (UC) classification. The property is owned by SCE&G. (DEFERRED) Expires 8.21.19

22. An ordinance to close and abandon Kinlock Court, a City right-of-way, said right-of-way running westerly approximately 200 feet from meeting street to the Interstate 26 right-of-way; and to further authorize the Mayor to execute Quit Claim Deeds and any other necessary documents, approved as to form by the Office of Corporation Counsel, to the owners of those properties abutting each side of Kinlock Court, conveying to each owner one-half of the width of Kinlock Court as said Kinlock Court abuts each owner’s property, subject to any and all easements or other matters of record. (DEFERRED)

N. Bills up for First Reading
1. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the zone map, which is part thereof, so that property located on River Road, Summerland Drive, and Oakville Plantation Road (Johns Island) (126.95 acre) (TMS #317-00-00-007, 317-00-00-011, 317-00-00-012, 317-00-00-075, 317-00-00-076, and 317-00-00-089) (Council District 5), be zoned, and existing Light Industrial (LI) classification be rezoned to Planned Unit Development (PUD) classification. The property is owned by Keith w. Lackey, Gail Grimball, and Gary s. Worth. *(The ordinance will be sent under separate cover by the Planning Department.)*

2. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that a portion of former Summerville Avenue right-of-way (Peninsula Neck) (approximately 1.4 acres) (Unzoned Right-of-Way) (Council District 4), be zoned General Business (GB) classification. The property is former right-of-way deeded to adjacent property owners. *(DEFERRED)*

3. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that 217 Ashley Avenue (Peninsula) (0.33 acre) (TMS #460-11-04-080) (Council District 6), be rezoned from Diverse Residential (DR-2F) classification to Limited Business (LB) classification. The property is owned by Trust of Robert J. Lowe, Jr. & Trust of Gwendolyn M. Lowe. *(The Planning Commission recommends disapproval.)* *(DEFERRED)* Expires 11.27.19

4. An ordinance to amend Chapter 21, Article II of the Code of the City of Charleston by adding a new Section 21-17 that prohibits building construction operations during certain hours. *(DEFERRED)*

5. An ordinance to amend the Zoning Ordinance of the City of Charleston by changing the Zone Map, which is a part thereof, so that property located on Sheppard Street and Saint Philip Street (Peninsula) (approximately 0.69 acre) (TMS #460-04-04-078, 460-04-04-080 and 460-04-04-086) (Council District 4), be rezoned to include it in the Short Term Rental Overlay Zone (ST) classification. The property is owned by Lowcountry Marketing Group LLC. *(DEFERRED)* Expires 7.17.19

6. An ordinance to amend provisions of Chapter 54 of the Code of the City of Charleston (Zoning Ordinance) by amending Part 17 – Upper Peninsula District pertaining to incentive options and particularly strengthening Workforce Housing; and by amending Sec. 54-201 (V), Base Zoning Districts to correct Upper Peninsula District; and by amending Article 3, Part 2, Sec 54-305 (B) pertaining to Upper Peninsula District; and by amending Article 3, Part 1, Sec. 54-301, Table 3.1 Height, Area and Setback Regulations, footnote 24, pertaining to correcting the Section number; and by amending Article 4, Part 4, Sec. 54-420, Table 1.2 allowed sign types by Zoning District to add Upper Peninsula District; and by amending Article 1, Part 1, Sec. 54-102 (b), Base Zoning District Classifications to add Upper Peninsula District. *(DEFERRED)* Expires 6.19.19 *(TO BE WITHDRAWN)*

O. Miscellaneous Business:
1. The next regular meeting of City Council will be Tuesday, August 20, 2019 at 5:00 p.m. at TBA.

In accordance with the Americans with Disabilities Act, people who need alternative formats, ASL (American Sign Language) interpretation or other accommodation please contact Janet Schumacher at (843) 577-1389 or email to schumacherj@charleston-sc.gov three business days prior to the meeting.
PROCLAMATION

WHEREAS, the City of Charleston wishes to recognize MICHAEL BOULWARE MOORE for his many achievements and contributions to the development of the International African American Museum, which is set to be built at Gadsden’s Wharf, the former port of arrival for nearly half of all Africans forced to North America; and

WHEREAS, MICHAEL BOULWARE MOORE is the great-great-grandson of Robert Smalls, an enslaved African who earned his freedom in 1862 by overtaking a Confederate ship in the Charleston Harbor. He sailed the vessel past five Confederate forts in the Atlantic Ocean before turning it over to Union forces. He became a captain in the Union Army and, post-Civil War, was elected to both houses of the South Carolina Legislature and to the U.S. House of Representatives; and

WHEREAS, in February of 2016, after serving on the International African American Museum board, MICHAEL BOULWARE MOORE was named the Museum’s president and Chief Executive Officer; and

WHEREAS, as President and CEO of the International African American Museum, MICHAEL BOULWARE MOORE has worked tirelessly to secure the future of this institution in Charleston and has led a remarkable effort to raise the significant funds needed to proceed with the building’s construction; and

WHEREAS, MICHAEL BOULWARE MOORE’s valuable set of skills and experience have informed both the design and construction of the Museum, as well as the development of its future exhibits, which will highlight the largely under told experiences and contributions of Americans of African descent; and

WHEREAS, MICHAEL BOULWARE MOORE possesses a true sense of service, passion and energy that has enriched the experiences of those fortunate enough to know and work with him, and that will make the International African American Museum all the more impactful for those who visit it; and

WHEREAS, I recognize MICHAEL BOULWARE MOORE and thank him for his tremendous contributions to the International African American Museum and to the City of Charleston and its citizens.

NOW, THEREFORE, I, John J. Tecklenburg, Mayor of the City of Charleston do hereby proclaim Tuesday, July 16, 2019 as:

MICHAEL BOULWARE MOORE DAY

IN WITNESS WHEREOF, I do hereby set my hand and cause the seal of Charleston to be affixed, this 16th day of July in the year of 2019.

John J. Tecklenburg, Mayor
A RESOLUTION

ESTABLISHING A RELATIONSHIP BETWEEN THE CITY OF CHARLESTON AND THE CITY OF FREETOWN, SIERRA LEONE, JOINING IN A SISTER CITIES INTERNATIONAL PARTNERSHIP TO FOSTER AND STRENGTHEN RELATIONS AND PROVIDE BENEFITS TO THE RESPECTIVE COMMUNITIES.

WHEREAS, the Sister Cities International program, also referred to as the Twin City program, was initiated after the Second World War to foster friendship and understanding between different cultures and to encourage trade and tourism; and

WHEREAS, the broad purpose of the program is the exchange of ideas through personal contact between the citizens of the United States of America and the peoples of other nations; and

WHEREAS, to implement this program, the City of Charleston and other communities in the United States have been requested by Sister Cities International to affiliate with cities in other nations of similar characteristics and mutual interest; and

WHEREAS, the City of Charleston has an interest in fostering a relationship with Freetown, Sierra Leone to build a cultural and historic port city relationship, recognizing that the cities share similar stories as reflected by our citizens of African descent, cuisine, agrarian and aquatic practices, art, dance and dialects; and

WHEREAS, the City of Charleston, through its Council, does recognize and endorse this program with the hope that it will lead to a lasting friendship between the people of Charleston and Freetown, Sierra Leone and opportunities to cultivate relationships in the areas of economic and trade development, tourism, historical exchanges and other opportunities.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF CHARLESTON AS FOLLOWS:
Section 1. That this Council on behalf of the people of Charleston does hereby extend an invitation to the government and the people of Freetown, Sierra Leone to participate with Charleston as its Sister City for the purpose of creating greater mutual understanding between the peoples of our two great cities and countries.

Section 2. The Mayor is hereby authorized to act as official representative of Charleston to carry out this program and is authorized to execute a Memorandum of Understanding declaring the relationship between the respective cities.

Section 3. That copies of this Resolution are to be sent to the appropriate public officials of Freetown, Sierra Leone, Sister Cities International in Washington, D.C., the Embassy of Sierra Leone in Washington, DC and the U.S. Embassy in Sierra Leone.

PASSED AND APPROVED, this ________ day of __________________, 2019.

__________________________________________
John J. Tecklenburg, Mayor
City of Charleston

ATTEST:

__________________________________________
Vanessa Turner Maybank
Clerk of Council
AN ORDINANCE

TO AMEND THE ZONING ORDINANCE OF THE CITY OF CHARLESTON BY CHANGING THE ZONE MAP, WHICH IS A PART THEREOF, SO THAT 245 HUGER STREET (PENINSULA) (0.50 ACRE) (TMS# 459-01-03-048) (COUNCIL DISTRICT 4, BE REZONED SO AS TO BE INCLUDED IN THE ACCOMMODATIONS OVERLAY ZONE (A). THE PROPERTY IS OWNED BY CHASE FURNITURE COMPANY INC.

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS OF CHARLESTON, IN CITY COUNCIL ASSEMBLED:

Section 1. That the Zoning Ordinance of the City of Charleston be, and the same hereby is amended, by changing the zone map thereof so as to rezone the property described in Section 2 hereof by changing the zoning designation to include the property in the Accommodations Overlay Zone (A) classification.

Section 2. The property to be rezoned is described as follows:
245 Huger Street (Peninsula) (0.50 acre) (TMS# 459-01-03-048)

Section 3. This ordinance shall become effective upon ratification.

Ratified in City Council this ______ day of
__________, in the Year of Our Lord
__________, in the ______ Year of Independence
of the United States of America.

By:
John J. Tecklenburg
Mayor, City of Charleston

Attest:
Vanessa Turner Maybank
Clerk of Council
Rezoning 1
245 Huger St (Peninsula)
TMS# 4590103048
0.50 ac.

Request rezoning to include the property in the Accommodations Overlay Zone (A).

Owner: Chase Furniture Company Inc
Applicant: Ben Chase
AN ORDINANCE

TO AMEND THE ZONING ORDINANCE OF THE CITY OF CHARLESTON BY CHANGING THE ZONE MAP, WHICH IS A PART THEREOF, SO THAT 49 ARCHDALE STREET (PENINSULA) (0.175 ACRE) (TMS# 457-04-03-071, 073, 074 & 054) (COUNCIL DISTRICT 8), BE REZONED FROM LIMITED BUSINESS (LB) CLASSIFICATION TO URBAN COMMERCIAL (UC) CLASSIFICATION. THE PROPERTY IS OWNED BY YELLOW DOG DESIGN AND DEVELOPMENT LLC.

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS OF CHARLESTON, IN CITY COUNCIL ASSEMBLED:

Section 1. That the Zoning Ordinance of the City of Charleston be, and the same hereby is amended, by changing the zone map thereof so as to rezone the property described in Section 2 hereof by changing the zoning designation from Limited Business (LB) classification to Urban Commercial (UC) classification.

Section 2. The property to be rezoned is described as follows:
49 Archdale Street (Peninsula) (0.175 acre) (TMS# 457-04-03-071, 073, 074 & 054)

Section 3. This ordinance shall become effective upon ratification.

Ratified in City Council this _____ day of
__________________________, in the Year of Our Lord
__________________________, in the _________ Year of Independence
of the United States of America.

By: __________________________
John J. Tecklenburg
Mayor, City of Charleston

Attest: __________________________
Vanessa Turner Maybank
Clerk of Council
City of Charleston

Planning Commission
June 19, 2019

Rezoning 2
49 Archdale St (Peninsula)
TMS# 4570403071, 073, 074 & 054
0.175 ac.

Request rezoning from Limited Business (LB) to Urban Commercial (UC).

Owner: Yellow Dog Design and Development LLC
Applicant: William Morrison – The Middleton Group
AN ORDINANCE

TO AMEND THE ZONING ORDINANCE OF THE CITY OF CHARLESTON BY CHANGING THE ZONE MAP, WHICH IS A PART THEREOF, SO THAT 200 SPRING STREET (PENINSULA) (0.422 ACRE) (TMS# 460-11-01-011) (COUNCIL DISTRICT 3), BE REZONED FROM GENERAL BUSINESS (GB) CLASSIFICATION TO MIXED-USE/WORKFORCE HOUSING (MU-2/WH) CLASSIFICATION. THE PROPERTY IS OWNED BY 200 SPRING STREET DEVELOPMENT LLC.

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS OF CHARLESTON, IN CITY COUNCIL ASSEMBLED:

Section 1. That the Zoning Ordinance of the City of Charleston be, and the same hereby is amended, by changing the zone map thereof so as to rezone the property described in Section 2 hereof by changing the zoning designation from General Business (GB) classification to Mixed-Use/Workforce Housing (MU-2/WH) classification.

Section 2. The property to be rezoned is described as follows:

200 Spring Street (Peninsula) (0.422 acre) (TMS# 460-11-01-011)

Section 3. This ordinance shall become effective upon ratification.

Ratified in City Council this ___ day of
____________, in the Year of Our Lord
____________, in the _______ Year of Independence
of the United States of America.

By:

John J. Tecklenburg
Mayor, City of Charleston

Attest:

Vanessa Turner Maybank
Clerk of Council
Rezoning 3
200 Spring St (Peninsula)
TMS# 4601101011
0.422 ac.
Request rezoning from General Business (GB) to Mixed-Use/Workforce Housing (MU-2/WH).
Owner/Applicant: 200 Spring Street Development LLC
AN ORDINANCE

TO AMEND THE ZONING ORDINANCE OF THE CITY OF CHARLESTON BY CHANGING THE ZONE MAP, WHICH IS A PART THEREOF, SO THAT 214 AND 216 SPRING STREET AND A PORTION OF 31½ ASHTON STREET (PENINSULA) (APPROX. 0.422 ACRE) (TMS# 460-11-01-016, 017 AND A PORTION OF 037) (COUNCIL DISTRICT 3), BE REZONED FROM GENERAL BUSINESS (GB) CLASSIFICATION TO MIXED-USE/WORKFORCE HOUSING (MU-2/WH) CLASSIFICATION. THE PROPERTY IS OWNED BY BERGLAND INVESTMENTS L.L.P.

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS OF CHARLESTON, IN CITY COUNCIL ASSEMBLED:

Section 1. That the Zoning Ordinance of the City of Charleston be, and the same hereby is amended, by changing the zone map thereof so as to rezone the property described in Section 2 hereof by changing the zoning designation from General Business (GB) classification to Mixed-Use/Workforce Housing (MU-2/WH) classification.

Section 2. The property to be rezoned is described as follows:

214 and 216 Spring Street and a portion of 31½ Ashton Street (Peninsula) TMS# 460-11-01-016, 017 and a portion of 037.

Section 3. This ordinance shall become effective upon ratification.

Ratified in City Council this ______ day of
__________________ in the Year of Our Lord
__________________, in the ______ Year of Independence
of the United States of America.

By:

John J. Tecklenburg
Mayor, City of Charleston

Attest:

Vanessa Turner Maybank
Clerk of Council
Rezoning 4
214 & 216 Spring St and
a portion of 31½ Ashton St
(Peninsula)
TMS# 4601101016, 017 & 037 (a portion)
approx. 0.422 ac.
Request rezoning from General Business (GB)
and Diverse Residential (DR-2F)
to Mixed-Use/Workforce Housing (MU-2/WH).

Owner: Bergland Investments LLLP
Applicant: JJR Development LLC
AN ORDINANCE

TO AMEND THE ZONING ORDINANCE OF THE CITY OF CHARLESTON BY CHANGING THE ZONE MAP, WHICH IS A PART THEREOF, SO THAT 404 WOODLAND SHORES ROAD (JAMES ISLAND) (0.50 ACRE) (TMS #343-11-00-104) (COUNCIL DISTRICT 11), ANNEXED INTO THE CITY OF CHARLESTON JUNE 18, 2019, BE ZONED SINGLE-FAMILY RESIDENTIAL (SR-1) CLASSIFICATION. THE PROPERTY IS OWNED BY NATHANIEL WEST.

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS OF CHARLESTON, IN CITY COUNCIL ASSEMBLED:

Section 1. That the Zoning Ordinance of the City of Charleston be, and the same hereby is amended, by changing the zone map thereof so that the below described property shall become a part thereof:

404 Woodland Shores Road (James Island) (0.50 acre) (TMS #343-11-00-104)

Section 2. That the said parcel of land described above shall be zoned Single-Family Residential (SR-1) classification.

Section 3. This ordinance shall become effective upon ratification.

Ratified in City Council this _____ day of ________________, in the Year of Our Lord ________________, in the __________ Year of Independence of the United States of America.

By:

John J. Tecklenburg
Mayor, City of Charleston

Attest:

Vanessa Turner Maybank
Clerk of Council
Zoning 1

404 Woodland Shores Rd (James Island)

TMS# 3431100104

0.50 ac.

Request zoning of Single-Family Residential (SR-1).
Zoned Single-Family Residential (R-4)
in Charleston County.

Owner: Nathaniel West
AN ORDINANCE

TO AMEND THE ZONING ORDINANCE OF THE CITY OF CHARLESTON BY CHANGING THE ZONE MAP, WHICH IS A PART THEREOF, SO THAT 2154 WAPPOO DRIVE (JAMES ISLAND) (0.24 ACRE) (TMS #343-06-00-185) (COUNCIL DISTRICT 11), ANNEXED INTO THE CITY OF CHARLESTON MAY 28, 2019, BE ZONED SINGLE-FAMILY RESIDENTIAL (SR-1) CLASSIFICATION. THE PROPERTY IS OWNED BY TYLER COX AND GRAHAM COX.

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS OF CHARLESTON, IN CITY COUNCIL ASSEMBLED:

Section 1. That the Zoning Ordinance of the City of Charleston be, and the same hereby is amended, by changing the zone map thereof so that the below described property shall become a part thereof:

2154 Wappoo Drive (James Island) (0.24 acre) (TMS #343-06-00-185)

Section 2. That the said parcel of land described above shall be zoned Single-Family Residential (SR-1) classification.

Section 3. This ordinance shall become effective upon ratification.

Ratified in City Council this _____ day of __________ in the Year of Our Lord __________, in the _____ Year of Independence of the United States of America.

By:

________________________
John J. Tecklenburg
Mayor, City of Charleston

Attest:

________________________
Vanessa Turner Maybank
Clerk of Council
Zoning 2

2154 Wappoo Dr (James Island)

TMS# 3430600185

0.24 ac.

Request zoning of Single-Family Residential (SR-1).
Zoned Single-Family Residential (R-4)
in Charleston County.

Owner: Tyler Cox and Graham Cox
AN ORDINANCE

TO AMEND CHAPTER 54 OF THE CODE OF THE CITY OF CHARLESTON (ZONING ORDINANCE) BY ADDING THERETO A NEW PART 15 ENTITLED TRANSIT ACCOMMODATIONS TO SET FORTH REQUIREMENTS FOR TRANSIT ACCOMMODATIONS FOR MULTI-FAMILY PROJECTS, NON-RESIDENTIAL PROJECTS, AND SUBDIVISIONS WITH FIFTY (50) OR MORE DWELLING UNITS THAT ARE REVIEWED BY THE TECHNICAL REVIEW COMMITTEE IN ORDER TO IMPROVE THE MOBILITY OF THE CITY BY INCREASING OPPORTUNITIES AND OPTIONS FOR TRANSPORTATION. (AS AMENDED)

BE IT ORDAINED BY THE MAYOR AND COUNCILMEMBERS OF CHARLESTON, IN CITY COUNCIL ASSEMBLED:

Section 1. Chapter 54 of the Code of the City of Charleston (Zoning Ordinance) is hereby amended by adding the following sections:

"Sec. 54-362 Reserved"

PART 15
TRANSIT ACCOMMODATIONS

Sec. 54-363 Purpose

To promote and support quality bus and transit services, to provide and enhance mobility options, reduce individual vehicle miles traveled, and to meet the transportation needs of the City of Charleston’s residents, workers, and visitors.

Sec. 54-364 Defined Terms

For the purposes of this article the following terms are defined and the term "transit" shall also mean "bus".

Transit Accommodations – Includes transit stops, transit shelters and associated infrastructure.
Transit Shelter – A permanently installed structure located at a transit stop that provides seating and protection from the weather for people waiting for a transit vehicle.

Transit Stop – A designated place where transit vehicles pause to allow for passenger boarding and disembarking. A transit stop is marked with a transit stop sign and shall include the appropriate infrastructure such as a stop pad and sidewalk connectivity, and may also include, but not limited to, amenities such as a shelter, benches and trash receptacles.

Transit Vehicle – A mode of transportation providing a schedule transportation service to the public.

Sec. 54-365 Applicability and Requirement Thresholds

a. Proposed improvements to multi-family residential properties, non-residential properties, and subdivisions with fifty (50) or more single-family or two-family dwelling units where there is new development, redevelopment, or changes to a building that require the approval of the Technical Review Committee (TRC) under Article 6 shall provide transit accommodations along existing or planned bus and transit routes as identified by the Berkeley-Charleston-Dorchester Council of Governments (BCD COG) in the Regional Transit Framework Plan as part of the Long Range Transportation Plan including transit stops, shelters, or other amenities when any of the following thresholds are met:
   1. The site development will generate vehicular trips that will impact the traffic operations of the adjacent streets or intersections so that the Level of Service (LOS) drops below LOS C or the adjacent streets or intersections are already operating below LOS C, as determined by a traffic impact analysis; or
   2. The site development will generate a minimum of 500 vehicular trips per day per the current edition of the Institute of Transportation Engineers’ (ITE) Trip Generation Handbook; or
   3. If the site development will generate a minimum of 2,500 daily vehicular trips per the ITE Trip Generation Handbook, has frontage on more than one public street, and is served by more than one public transit, then two transit accommodations will be required.

b. Transit accommodations will be reviewed during the TRC approval process; therefore, coordination with the Charleston Area Regional Transportation Authority (CARTA) is strongly recommended early in the development review process.

Sec. 54-366. Type of Transit Accommodations, Location, Design, and Installation

a. The type of Transit Accommodation required shall be determined by the City of Charleston Department of Traffic and Transportation. Size and capacity of transit accommodations should reflect the size of corresponding development, adjacent land uses, and planned future development. The TRC applicant shall provide documentation with associated exhibits regarding the proposed Transit Accommodations to be provided by the applicant, including location and design, prior to final TRC approval.

b. Location and design of Transit Accommodations shall be coordinated with the Department of Traffic and Transportation.
1. Transit Accommodations shall be provided in the public right-of-way; however these accommodations may be located outside of the public right-of-way and on the development site subject to all of the following:
   i. Transit Accommodations may be placed outside of a public right-of-way when deemed appropriate for the preservation of a grand tree, for the accommodation of utilities, for other necessary infrastructure, or for other purposes approved by TRC.
   ii. The developer shall provide a location on the development site within an acceptable proximity to the public right-of-way for the Transit Accommodations.
   iii. The developer shall provide a recorded public easement dedicated for the Transit Accommodations, maintenance, and the safe movement of pedestrians.

2. For Transit Accommodations to be constructed within a right-of-way that is not under the jurisdiction of the City of Charleston, the applicant shall provide a copy of the permit authorizing such work within the right-of-way. For SCDOT right-of-way, a copy of the SCDOT encroachment approval shall be submitted with a request for Final TRC approval.

3. Transit Accommodations shall comply with all other applicable City codes, ordinances, and design review requirements.

c. Prior to the issuance of the Certificate of Construction Completion Occupancy (Certificate of Occupancy) for multi-family and non-residential development sites or recordation of a final subdivision plat for subdivisions with single-family or two-family dwelling units, Transit Accommodations shall be provided by and installed by the developer and shall be inspected by the Department of Traffic and Transportation or its designee.”

Section 2. This Ordinance shall become effective upon ratification.

Ratified in City Council this ______ day of
___________ in the Year of Our Lord, 2019,
and in the____ Year of the Independence of
the United States of America

BY:

______________________________
John J. Tecklenburg
Mayor, City of Charleston

Attest:______________________________
Vanessa Turner Maybank
Clerk of Council
PARIS DECLARATION
1 December 2014
(amended 24 July 2018)

FAST-TRACK CITIES:
ENDING THE AIDS EPIDEMIC

Cities Achieving the 90-90-90 Targets on a Trajectory towards Getting to Zero

City: Charleston, SC
Date: 6/27/19

90% of people living with HIV knowing their HIV status
90% of people who know their HIV-positive status on treatment
90% of people on treatment with suppressed viral loads
PARIS DECLARATION ON FAST-TRACK CITIES

We stand at a defining moment in the AIDS response. Thanks to scientific breakthroughs, community activism and political commitment, we have a real opportunity to achieve the Sustainable Development Goals target of ending the AIDS epidemic by 2030. Cities have been heavily affected by the epidemic and have been at the forefront of responding to HIV. Cities are uniquely positioned to lead Fast-Track action towards achieving the 90-90-90 and other targets. Attaining these targets will put us on a trajectory towards getting to zero new HIV infections and zero AIDS-related deaths.

We recognize that ending AIDS requires a comprehensive approach that allows all people to access quality life-saving and life-enhancing prevention, treatment, care and support services for HIV, tuberculosis and viral hepatitis. Integrating these services into sexual, reproductive and mental health services is critical to achieving universal access to health care.

We can eliminate stigma and discrimination if we build our actions on scientific evidence. Understanding that successful HIV treatment and viral suppression prevents HIV transmission (Undetectable=Untransmittable) can help reduce stigma and encourage people living with HIV to initiate and adhere to HIV treatment.

Working together, cities can accelerate local actions towards ending the AIDS, tuberculosis and viral hepatitis epidemics globally by 2030. As called for by the New Urban Agenda, we will leverage our reach, infrastructure and human capacity to build a more equitable, inclusive, prosperous and sustainable future for all our residents, regardless of age, gender, sexual orientation and social and economic circumstances.

WE, THE MAYORS, COMMIT TO:

1. **End the AIDS epidemic in cities by 2030**
   We commit to achieve the 90-90-90 and other Fast-Track targets, which will put us firmly on the path to ending the AIDS, tuberculosis and viral hepatitis epidemics by 2030. We commit to provide sustained access to quality HIV testing, treatment and prevention services, including pre-exposure prophylaxis (PrEP), in support of a comprehensive approach to ending AIDS that also addresses tuberculosis, viral hepatitis, sexually transmitted infections, mental health, substance use disorders, and comorbidities associated with aging with HIV. We will eliminate HIV-related stigma and discrimination.

2. **Put people at the centre of everything we do**
   We will focus our efforts on all people who are vulnerable to HIV, tuberculosis, viral hepatitis and other diseases. We will help to realize and respect the human rights of all affected people and leave no one behind in our city’s AIDS, tuberculosis and viral hepatitis response. We will meaningfully include people living with HIV in decision-making around policies and programmes that affect their lives. We will act locally and in partnership with our communities to galvanize global support for healthy and resilient societies and for sustainable development.

3. **Address the causes of risk, vulnerability and transmission**
   We will use all means, including municipal ordinances, policies and programmes, to address factors that make people vulnerable to HIV and other diseases, including laws that discriminate
against or criminalize key populations. We will ensure that people affected by HIV enjoy equal participation in civil, political, social, economic and cultural life, free from prejudice, stigma, discrimination, violence or persecution. We will work closely with communities, clinical and service providers, law enforcement and other partners, and with marginalized and vulnerable populations, including slum dwellers, migrants and other displaced people, young women, sex workers, people who use drugs, gay men and other men who have sex with men and transgender people, to foster social equity.

4. Use our AIDS response for positive social transformation

Our leadership will leverage innovative social transformation to build societies that are equitable, inclusive, responsive, resilient and sustainable. We will integrate health and social programmes to improve the delivery of services, including for HIV, tuberculosis, viral hepatitis and other diseases. We will use advances in science, technology and communication to drive the social transformation agenda, including within the context of efforts to ensure equal access to education and learning.

5. Build and accelerate an appropriate response reflecting local needs

We will develop and promote services that are innovative, safe, accessible, equitable and free from stigma and discrimination. We will encourage and foster community leadership to build demand for, and to deliver, quality services that are responsive to local needs.

6. Mobilize resources for integrated public health and sustainable development

Investing in the AIDS response together with a strong commitment to public health and sustainable development is a sound investment in the future of our city that will yield increased productivity, shared prosperity and the overall well-being of our citizens. We will adapt our city plans and resources for a Fast-Track response to HIV, tuberculosis, viral hepatitis and other diseases within the context of an integrated public health approach. We will develop innovative funding strategies and mobilize additional resources to end the AIDS epidemic by 2030.

7. Unite as leaders

We commit to develop an action plan to guide our city’s Fast-Track efforts, embrace the transparent use of data to hold ourselves accountable and join with a network of cities to make the Paris Declaration a reality. Working in broad consultation with everyone concerned, we will regularly measure our results and adjust our responses to be faster, smarter and more effective. We will support other cities and share our experiences, knowledge and data about what works and what can be improved. We will report annually on our progress.

Signature: John TECKLENBURG
Mayor of Charleston, SC

Signature: José M. ZUNIGA
President/CEO, IAPAC

Anne HIDALGO
Mayor of Paris

Gunilla CARLSSON
UNAIDS

Maimunah Mohd SHARIF
UN-Habitat
City of Charleston

JOHN J. TECKLENBURG
MAYOR

MEMORANDUM

TO: City Councilmembers
FROM: John J. Tecklenburg, Mayor
DATE: July 16, 2019
RE: Commission on Women

The Commission on Women shall be comprised of fifteen (15) members. Individuals from the following groups shall be appointed to the commission; any one member of the commission may be a representative of more than one group: (1) Homemakers; (2) Indignant women; (3) Civic workers; (4) Non-professional working women; (5) women with legal experience; (6) Young Women; (7) Social Service workers; (8) Senior Citizens; (9) Educators. The commission shall include a member city council, appointed but the mayor with the approval of city council.

I am recommending the appointment of Patrice Witherspoon and Amanda Bunting Comen. Ms. Witherspoon is a health educator at the YWCA of the greater Charleston area. She works with several committees and coalitions such as SHAPE (Tri-county Sexual Health Awareness Prevention and Education Committee), Charleston World AIDS Day Committee, and All of Us Resource Center.

Ms. Comen is a graduate of the College of Charleston where she majored in Sociology and minored in Women’s Studies. She worked at the Center for Women for 12 years until she started her own social media management company, Social ABC’S. She also works closely with the College of Charleston’s Women’s and Gender Studies Community Advisory Board to further the empowerment of women.

- Patrice Witherspoon – new appointment – term expires 2/28/2022
- Amanda Bunting Comen – new appointment – term expires 2/28/2022
City of Charleston

JOHN J. TECKLENBURG
MAYOR

MEMORANDUM

TO: City Councilmembers

FROM: John J. Tecklenburg, Mayor

DATE: July 16, 2019

RE: Commission on the Arts

The Commission on the Arts consists of (13) members, two of whom shall be members of City Council. Consideration shall be given to professionals in, and to persons demonstrating knowledge of and appreciation for, the arts. The membership of the Commission should represent the broad arts constituency rather than individual disciplines, and the commission should have a balanced membership reflecting in-depth knowledge of the various disciplines, large and small institutions, educational institutions, individual artists, and principled of arts administration. The commission should reflect Charleston’s ethnic diversity.

I am recommending the appointment of Cara Leepson. Ms. Leepson has been active in the arts for her entire career. She received her Baccalaureate in Studio Art and Photography from Lynchburg University. She went on to receive a Master’s degree from Georgetown University in Museum Studies. She has been the Executive Director at Redux Contemporary Art since 2017. I believe she will make a great addition to the Commission on the Arts.

The following are my recommendations for the Commission on the Arts

- Cara Leepson – new appointment – term expires 2/28/2021
- Mark Sloan – reappointment – term expires 2/28/2021
- Quentin Baxter – reappointment – term expires 2/28/2021
- Steve Simon – reappointment – term expires 2/28/2021
- Kristen Alexander – reappointment – term expires 2/28/2021
- Steve Rosenberg – reappointment – term expires 2/28/2021
City of Charleston

JOHN J. TECKLENSBURG
MAYOR

MEMORANDUM

TO: City Councilmembers
FROM: John J. Tecklenburg, Mayor
DATE: July 16, 2019
RE: Appointment to Municipal Election Commission

I am requesting your appointment of Vertelle Amos Kenion to the Municipal Election Commission to replace Ms. Gordon-Rogers who recently resigned as a member of the Commission.

Ms. Kenion is a native of Charleston and is a graduate of Burke High School. She has devoted many years to helping the youths of the Charleston area. Among other endeavors, she was a Career Education Specialist and Resource Developer for high school students and designed an after school program for unwed teenage mothers. She has extensive community involvement and has dedicated her life to helping others. For your information, a biographical sketch of Ms. Kenion is attached.

I hope you will join me in supporting the appointment of Ms. Kenion to the Municipal Election Commission.

Vertelle Amos Kenion – new appointment – term expires 2/28/2025
Biographical Sketch
Vertelle Amos Kenion

Vertelle is a wife, mother, grandmother and volunteer. She is a native of Charleston, South Carolina and received her education in the Catholic and Public School systems. She is a 1960 graduate of Burke High School. Her academic focus was Business Administration.

Her professional background focused on preparing our youth for the future. She was a Career Education Specialist and Resource Developer for high school students. She conducted numerous workshops, organized and established the first Career/Job Fair in the City of Charleston for high school students in Charleston County School District. She designed an After School Program for Unwed Teenage Mothers and a program entitled “The Dilemma of Children Having Children”.

Vertelle enjoys cooking and after much thought, she opened a restaurant and catering business, Food For Thought, Incorporated, which she operated from 1989 – 2012.

Vertelle’ community involvement is extensive to include: NCNW, YWCA, NAACP and Art Forms and Theatre Concepts. She is a dedicated and committed volunteer
for the MOJA Arts Festival. She served as Chair of the MOJA Arts Festival Planning Committee and chaired the Community Tribute Luncheon until 2016.

Vertelle is a member of St. Patrick Catholic Church where she serves as Lector. She is also a catechist and prepares the children to receive First Holy Communion. She is a former president of the Pastoral Parish Council and currently serves as recorder for the Parish Pastoral Finance Council.

She is an active member of the Knights of Peter Claver and Knights of Peter Claver Ladies Auxiliary. She is serving a six year tenure as Supreme Lady of the Auxiliary representing approximately 10,000 ladies in the United States and South America.

Vertelle is the recipient of numerous awards for her service to the Church, Community and the Knights of Peter Claver and the Ladies Auxiliary.

Vertelle is married to Retired Master Sergeant Melvin L. Kenion (56 years) and they are the proud parents of Antonio Kenion and Antonette Boswell and grandparents to Carlos Boswell.
City of Charleston

JOHN J. TECKLENBURG
MAYOR

MEMORANDUM

TO: City Councilmembers

FROM: John J. Tecklenburg, Mayor

DATE: July 16, 2019

RE: Planning Commission Appointments

With the recent resignation of two Planning Commission members and the expiration of two other members’ terms, we had four member seats to fill with appointments and reappointments, respectively. In May, Council voted to appoint Erica Harrison to the Commission, so we now have one appointment to fill and two reappointments.

To replace Chris Fraser, who resigned in anticipation of serving the public in another capacity, I recommend Matthew L. Yaun. A resident of the Cainhoy area of the City, Mathew has a diverse background including service in the US Air Force, a family-owned business, and various leadership positions in public service. He is a retired veteran who volunteers much of his time with the Boys Scouts of America.

I am also recommending the reappointment of two current members whose terms have expired: Gordon Geer, the current Chair, and Angie Johnson. As requested by City Council, I have listed below the attendance records of each member. Records for state-required continuing education hours indicate neither have attended any sessions in the past year and must do so soon to remain eligible to continue serving. The City Planning Department will provide many opportunities for this to happen.

Matthew Yaun – New Appointment (replacing Chris Fraser) – Expires 2/28/2020
Erica Harrison – Appointed May 14, 2019 (replacing Elise Davis-McFarland) – Expires 2/28/2022
RESOLUTION

PROVIDING FOR AN ADVISORY REFERENDUM AT THE NEXT GENERAL ELECTION ON THE QUESTION OF WHETHER THE ELECTORS OF THE CITY OF CHARLESTON APPROVE OF CITY COUNCIL ADOPTING AN ORDINANCE TO INCREASE THE FREEBOARD REQUIREMENT FROM ONE (1) FOOT TO TWO (2) FEET FOR NEW CONSTRUCTION OR SUBSTANTIAL IMPROVEMENT OF ANY RESIDENTIAL OR NON-RESIDENTIAL STRUCTURE IN THE SPECIAL FLOOD HAZARD AREAS OF THE CITY.

WHEREAS, "freeboard" is an additional height above the FEMA mandated minimum elevation in flood prone areas to afford an extra measure of protection from storm surge and flooding; and

WHEREAS, communities that incorporate freeboard into their local floodplain ordinances can earn discounts on flood insurance premiums through the National Flood Insurance Program ("NFIP"); and

WHEREAS, City Council is considering adoption of an ordinance that would increase the freeboard requirement from one (1) foot to two (2) feet for new construction or substantial improvement of any residential or non-residential structure in special flood hazard areas in order to provide added flood protection and lower flood insurance rates for City residents; and

WHEREAS, the property owner is responsible for ensuring compliance with the freeboard requirement; and

WHEREAS, S.C. Code §5-7-30 authorizes City Council to conduct nonbinding advisory referenda to ascertain the desires of the electors on issues confronting City Council; and
WHEREAS, City Council desires to hold a nonbinding advisory referendum at the next general election on the question of whether the electors approve of City Council adopting an ordinance that would increase the freeboard requirement.

NOW, THEREFORE, BE IT RESOLVED BY THE MAYOR AND CITY COUNCIL OF THE CITY OF CHARLESTON, SOUTH CAROLINA, IN CITY COUNCIL ASSEMBLED:

SECTION 1. That a non-binding advisory referendum shall be added to the November 5, 2019 general election ballot to read as follows:

“Do you support City Council’s adoption of an ordinance that would require new construction or repair, reconstruction, improvement or addition to an existing structure, where the cumulative cost counted for a five-year period equals or exceeds fifty (50%) percent of the market value of the structure before the improvement or repair is started, or if the structure has been damaged and is being restored, before the damage occurred, to have the lowest floor elevated to two (2) feet above the level of the base flood elevation prescribed by the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) at the property location? Compliance with this requirement will be the responsibility of the property owner.

YES [ ]

NO [ ]

Those in favor of the question shall deposit/cast a ballot with a check or cross mark in the square after the word ‘YES,’ and those voting against the question shall deposit a ballot with a check or cross mark in the square after the word ‘NO.’

This referendum is a non-binding referendum and, if approved, an ordinance, enacted by City Council of the City of Charleston, will be necessary to implement the changes posed by the referendum question.”

SECTION 2. Pursuant to the requirements of Section 7-13-35, Code of Laws of South Carolina, 1976, the Municipal Election Commission of the City of Charleston shall cause to be published, at the times required by State law, notices of this election in The Post & Courier, a daily newspaper of general circulation in the City of Charleston published in Charleston, South Carolina.

SECTION 3. That the polling places and times for said election shall be the same as those utilized in the general election.
SECTION 4. That the Municipal Election Commission of the City be given notice of the passage of this Resolution and requested to do all things necessary to conduct the holding of the referendum at the next general election on November 5, 2019, in accordance with the laws of the State of South Carolina and be requested and directed as follows:

(a) to join the action of City Council in providing for the Notice of Referendum;
(b) to prescribe the form of ballot to be used in the referendum;
(c) to name the Managers of the Election;
(d) to provide polling places for the Election;
(e) to conduct the referendum, receive the returns thereof, and report the same to City Council; and
(f) to take other steps and prepare such other means as shall be necessary or required by law in order to properly conduct the referendum.

SECTION 5. This Resolution shall become effective upon the date of enactment.

PASSED AND APPROVED, this 16th day of July, 2019.

__________________________________________
John J. Tecklenburg, Mayor
City of Charleston

ATTEST:

__________________________________________
Vanessa Turner Maybank
Clerk of Council
Mr. Kirk R. Richards, P.E.
Assistant District Maintenance Engineer
SCDOT-District Six
6355 Fain Blvd.
North Charleston, SC 29406

RE: Maintenance of concrete sidewalk, street trees & street lights on Sam Rittenberg Blvd. (SC Hwy 7 & 171) & Orange Grove Rd. (S-726).

Dear Mr. Richards:

This letter concerns the proposed installation of concrete sidewalk, street trees & street lights to be constructed in conjunction with the project at 1140 Sam Rittenberg Blvd. (SC Hwy 7 & 171)

The City Council of Charleston, at its meeting held July 16, 2019, agreed to accept maintenance responsibility for the granite curb within the State maintained right-of-way shown on the attached drawing and which will be constructed under a valid SCDOT Encroachment Permit. The City of Charleston agrees to maintain this sidewalk and corner accessibility ramps in compliance with current ADA and SCDOT standards (ADA Standards for Transportation Facilities, SC Highway Design Manual, SCDOT Standard Drawings, AASHTO Guide for Development of Pedestrian Facilities).

Should there be any questions, please do not hesitate to contact me at 843-724-3754 or at obrien@charleston-sc.gov.

Sincerely,

Thomas F. O’Brien,
Director of Public Service
06/11/2019

Thomas O’Brien, Director of Public Service
Department of Public Service
City of Charleston
2 George Street, Suite 2100
Charleston, SC 29401

Dear Mr. O’Brien,

Our client, the Drayton-Parker Companies, is seeking to develop a Parker’s Kitchen Convenience Store at 1140 Sam Rittenberg Boulevard in Charleston. Over the past seven months, the project has gone through several TRC meetings, and has received approvals from the DRB, the DRC, and the approval of variances through the BZA. The City has indicated the following improvements within the public rights-of-way will be required: concrete sidewalks, street trees, and street lights. The improvements are more fully described below. SCDOT is requiring that the City of Charleston provide maintenance agreements to maintain these public improvements. It is our understanding that City Council must consider such a request at a subcommittee hearing. As such, please accept this letter as a formal request to be heard at the next such subcommittee hearing.

The improvements being required by the City are illustrated on the attached Site Plan and Landscape Plan, and are further described below:

Sam Rittenberg Boulevard right-of-way:
- 416 linear feet of 5’ wide concrete sidewalk
- Street trees comprised of:
  - 4 Natchez Crape Myrtles (2.5” caliper, min.)
  - 2 Sabal Palmettos (15’ to 16’ high)
  - 2 existing palm trees (12” DBH)
  - 1 existing Oak tree (24” DBH)
- 3 street light poles with fixtures
- 381 linear feet of conduit with wiring to serve the street lights

Orange Grove Road right-of-way:
- 264 linear feet of 5’ wide concrete sidewalk
- 2 street light poles with fixtures
- 311 linear feet of conduit with wiring to serve the street lights

Please don’t hesitate to contact me should you require any additional information to process this request.

Sincerely,

Joshua Cox, P.E.
Project Engineer

Attachments

CC: Thomas Mathewes, The Drayton-Parker Companies
Mr. Kirk R. Richards, P.E.
Assistant District Maintenance Engineer
SCDOT-District Six
6355 Fain Blvd.
North Charleston, SC 29406

RE: Maintenance of street trees on Meeting St. (S-107) & I-26 off ramp.

Dear Mr. Richards:

This letter concerns the proposed installation of street trees to be constructed in conjunction with the project at 511 Meeting St. (S-107)

The City Council of Charleston, at its meeting held July 16, 2019, agreed to accept maintenance responsibility for the granite curb within the State maintained right-of-way shown on the attached drawing and which will be constructed under a valid SCDOT Encroachment Permit. The City of Charleston agrees to maintain this sidewalk and corner accessibility ramps in compliance with current ADA and SCDOT standards (ADA Standards for Transportation Facilities, SC Highway Design Manual, SCDOT Standard Drawings, AASHTO Guide for Development of Pedestrian Facilities).

Should there be any questions, please do not hesitate to contact me at 843-724-3754 or at obrien@charleston-sc.gov.

Sincerely,

[Signature]

Thomas F. O’Brien,
Director of Public Service
Copy to:
Robert Hauck, GIS
Jennifer Papa, ADC Engineering

TFO/tmg
May 21, 2019

Mr. Tom O'Brien
City of Charleston
2 George Street
Charleston, SC 29401

subject: Proposed SCDOT Right-of-Way Improvements for Landscape
511 Meeting Street
Charleston, South Carolina
ADC Project No. 16039

Dear Tom:

Below is a list of proposed items, that SCDOT has requested the City be responsible for maintaining. This is also shown on the attached Exhibit. Please execute the attached Maintenance Partnership Agreement so that we may obtain an SCDOT Encroachment Permit for the landscaping.

12 EA Street Trees

If you have any questions or comments, please do not hesitate to contact me.

Sincerely,

ADC Engineering, Inc.

Jeff Webb, P.E.
Civil Project Manager

enclosures:
- SCDOT Appendix 1 – Maintenance Partnership Agreement
- EXH-C-1: SCDOT Right-of-Way Maintenance Exhibit
Mr. Kirk R. Richards, P.E.
Assistant District Maintenance Engineer
SCDOT-District Six
6355 Fain Blvd.
North Charleston, SC 29406

RE: Maintenance of street trees & street lights on Maybank Hwy (SC Hwy 700).

Dear Mr. Richards:

This letter concerns the proposed installation of street trees & street lights to be constructed in conjunction with Avalon Project on Maybank Hwy (SC Hwy 700)

The City Council of Charleston, at its meeting held July 16, 2019, agreed to accept maintenance responsibility for the granite curb within the State maintained right-of-way shown on the attached drawing and which will be constructed under a valid SCDOT Enroachment Permit. The City of Charleston agrees to maintain this sidewalk and corner accessibility ramps in compliance with current ADA and SCDOT standards (ADA Standards for Transportation Facilities, SC Highway Design Manual, SCDOT Standard Drawings, AASHTO Guide for Development of Pedestrian Facilities).

Should there be any questions, please do not hesitate to contact me at 843-724-3754 or at o'brien@dcharleston-sc.gov.

Sincerely,

Thomas F. O'Brien,
Director of Public Service

Copy to:

2 George Street, Suite 2100, Charleston, SC 29401-3506 · Phone (843) 724-3754 · fax (843) 973-7261
Mr. Kirk R. Richards, P.E.
Assistant District Maintenance Engineer
SCDOT-District Six
6355 Fain Blvd.
North Charleston, SC 29406

RE: Maintenance of bike racks, street lights & street tree well on Meeting St. (US Hwy 52).

Dear Mr. Richards:

This letter concerns the proposed installation of bike racks, street lights & street tree well to be constructed in conjunction with the project at 1310 Meeting St. (US Hwy 52)

The City Council of Charleston, at its meeting held July 16, 2019, agreed to accept maintenance responsibility for the granite curb within the State maintained right-of-way shown on the attached drawing and which will be constructed under a valid SCDOT Encroachment Permit. The City of Charleston agrees to maintain this sidewalk and corner accessibility ramps in compliance with current ADA and SCDOT standards (ADA Standards for Transportation Facilities, SC Highway Design Manual, SCDOT Standard Drawings, AASHTO Guide for Development of Pedestrian Facilities).

Should there be any questions, please do not hesitate to contact me at 843-724-3754 or at obrien@charleston-sc.gov.

Sincerely,

Thomas F. O’Brien,
Director of Public Service
Copy to:
Robert Hauck, GIS
Domonic Jones, Thomas & Hutton

TFO/tmg.
May 21, 2019

Mr. Tom O’Brien  
City of Charleston  
2 George Street  
Charleston, SC 29401

Re: Proposed SCDOT Right-of-Way Improvements  
1310 Meeting Street Apartments  
T&H J – 26841.0000

Dear Mr. O’Brien:

Below is a list of proposed items that SCDOT has requested the City to be responsible for maintaining. This is also shown on the attached Exhibit.

10 EA landscape tree wells on Meeting Street  
9 EA bike racks on Meeting Street  
7 EA light poles on Meeting Street

Should you have any questions or require additional information, please do not hesitate to contact me at (843) 725-5258, or via e-mail at jones@thomasandhutton.com. Thank you for your attention to the above referenced project.

Sincerely,

THOMAS & HUTTON

Domonic Jones, PE  
Project Manager

Enclosures: City of Charleston Right-of-Way Maintenance Exhibit
STATE OF SOUTH CAROLINA

COUNTY OF CHARLESTON

KNOWN ALL MEN BY THESE PRESENTS, that FIFTH THIRD BANK is the owner and holder of that certain mortgage, judgment, lis pendens, lien, delinquent tax lien, executed by Eastwood Construction, LLC, dated November 14, 2012, and recorded in the Office of the ROD for Charleston County in Book 0291 at Page 238 on November 14, 2012, with any and all amendments filed thereto, and the indebtedness secured thereby, does hereby, for value received, release and relinquish the lien of the aforesaid mortgage, judgment, lis pendens, lien, delinquent tax lien insofar, and insofar only, as it affects the following property:

ALL those certain streets, roads, drives, cul-de-sacs, and drainage easements situate, lying and being in the City of Charleston, County of Charleston, State of South Carolina, being shown and designated as, "CLAYBROOK ST, (NEW VARIABLE WIDTH PUBLIC R/W) (TYPE 4)"; "TEBALT DRIVE (40' PUBLIC R/W) (TYPE 4)"; "SARNOFF STREET (40' PUBLIC R/W) (TYPE 4)"; and "GLASSON STREET (40' PUBLIC R/W) (TYPE 4)" on that certain plat entitled, "FINAL SUBDIVISION PLEAS OF PHASE 4 SWYGERT'S LANDING PREPARED FOR EASTWOOD CONSTRUCTION, LLC JOHNS ISLAND, CITY OF CHARLESTON CHARLESTON COUNTY, SOUTH CAROLINA", prepared by Thomas & Hutton, dated September 5, 2018, and recorded in the ROD Office for Charleston County, South Carolina, in Plat Book 1234 at Page 5678.

Portion of TMS No.: 312-00-00-937

PROVIDED, HOWEVER, that the security of the said premises as set forth in the mortgage, judgment, lis pendens, lien, delinquent tax lien shall be preserved and protected in all respects except as to the property hereinabove referred to and described; and that the lien of the said instrument, except as hereby remised, released and discharged, shall remain in full force and effect.

IN WITNESS WHEREOF, Fifth Third Bank, by its Senior Vice President, Karen Morgan has caused its name to be hereunto subscribed and its seal to be hereunto affixed this 19th day of December, 2018.

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF

[Signature]
Witness Number 1

[Signature]
Witness Number 2

Fifth Third Bank
By: [Signature]
Name: Karen Morgan
Its: Senior Vice President

STATE OF MARYLAND

COUNTY OF MONTGOMERY

ACKNOWLEDGMENT

PERSONALLY appeared before me Margaret L. Arsenault and made oath that (s)he saw the within named Fifth Third Bank, by its Karen Morgan sign, seal and deliver the within written partial release and that (s)he witnessed the execution thereof this 19th day of December, 2018.

[Signature]
Margaret L. Arsenault
Notary Public for the State of Maryland
My commission expires: 3/23/2022

[Seal]
STATE OF SOUTH CAROLINA )
COUNTY OF CHARLESTON )

TITLE TO REAL ESTATE

KNOW ALL MEN BY THESE PRESENTS, that EASTWOOD CONSTRUCTION, LLC (“Grantor”), in the state aforesaid, for and in consideration of the sum of ONE AND 00/100 DOLLAR ($1.00), being the true consideration to it in hand paid at and before the sealing of these presents by the CITY OF CHARLESTON, the receipt whereof is hereby acknowledged, has granted, bargained, sold and released, and by these presents does grant, grant, sell and release unto the said CITY OF CHARLESTON (“Grantee”), its successors and assigns, forever, the following described property which is granted, bargained, sold and released for the use of the public forever:

All of the property underneath, above, and containing those certain streets, roads, drives, and cul-de-sacs situate, lying and being in the City of Charleston, County of Charleston, State of South Carolina, identified as:

CLAYBROOK ST. (NEW VARIABLE WIDTH PUBLIC R/W) (TYPE 4)
TEBALT DRIVE (40' PUBLIC R/W) (TYPE 4)
SARNOFF STREET (40' PUBLIC R/W) (TYPE 4)
GLASSON STREET (40' PUBLIC R/W) (TYPE 4)

as shown and designated on a plat entitled, “FINAL SUBDIVISION PLAT OF PHASE 4 SWYGERT’S LANDING PREPARED FOR EASTWOOD CONSTRUCTION, LLC JOHNS ISLAND, CITY OF CHARLESTON, CHARLESTON COUNTY, SOUTH CAROLINA”

prepared by F. Elliott Quinn, III, of Thomas & Hutton, dated September 5, 2018, and recorded on __________ in Plat Book ______ at Page _________ in the ROD Office for Charleston County. Said property butting and bounding, measuring and containing, and having such courses and distances as are shown on said plat. Reference being had to the aforesaid plat for a full and complete description, being all of the said dimensions, a little more or a little less.

This being a portion of the property conveyed to Grantor herein by deed of CAM Management, LLC, dated June 7, 2016, and recorded August 11, 2016, in the ROD Office for Charleston County, in Book 0575 at Page 233

Grantee’s Mailing Address:  
City of Charleston  
Department of Public Service  
Engineering Division  
2 George Street  
Suite 2100  
Charleston, South Carolina 29401

Portion of TMS No.:  
312-00-00-937
TOGETHER with all and singular, the rights, members, hereditaments and appurtenances to the said premises belonging, or in anywise incident or appertaining.

TO HAVE AND TO HOLD, all and singular, the said premises before mentioned unto the CITY OF CHARLESTON, its successors and assigns forever.

AND Grantor does hereby bind itself and its heirs, executors and administrators, to warrant and forever defend, all and singular, the said premises unto the said City of Charleston, heirs and assigns, against Grantor and its heirs, and all persons whomsoever lawfully claiming, or to claim the same or any part thereof.

WITNESS our Hand(s) and Seal(s) this ___ day of December ________ 2018.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF:

__________________________
Witness Number One

Megan F. Stevens
Printed Name

Callie Mclaughlin
Witness Number Two

__________________________
Printed Name

************

STATE OF SOUTH CAROLINA

COUNTY OF CHARLESTON

This foregoing instrument was acknowledged before me (the undersigned notary) by__________________________ , the VP of Sales __________of
Eastwood Construction, LLC, a South Carolina limited liability company, on this ___ day of December, 2018.

__________________________
Notary Public for South Carolina

My Commission Expires: 08/29/2025

Grantor:

Eastwood Construction, LLC

By: ____________________________
Name: R. Ron Matta
Its: VP of Sales
STATE OF SOUTH CAROLINA                  ) AFFIDAVIT
COUNTY OF CHARLESTON                   )

PERSONALLY appeared before me the undersigned, who being duly sworn, deposes and says:

1. I have read the information on this Affidavit and I understand such information.

2. The property known as Claybrooke Street, Tebbalt Drive, Sarnoff Street and Glasson Street, located in Swyger's Landing, Phase 4, Charleston County, South Carolina being a portion of Charleston County Tax Map Number 312-00-00-937 is being transferred by Eastwood Construction, LLC to the City of Charleston on the 6th day of December, 2018.

3. Check one of the following: The deed is:
   (a) ___ subject to the deed recording fee as a transfer for consideration paid or to be paid in money or money’s worth.
   (b) ___ subject to the deed recording fee as a transfer between a corporation, a partnership or other entity and a stockholder, partner, or owner of the entity, or is a transfer to a trust or as a distribution to a trust beneficiary.
   (c) X EXEMPT from the deed recording fee because of Exemption 2 (Transferring to a municipality)

4. Check one of the following if either item 3(a) or item 3(b) above has been checked.
   (a) ___ The fee is computed on the consideration paid or to be paid in money or money’s worth in the amount of n/a.
   (b) ___ The fee is computed on the fair market value of the realty, which is n/a
   (c) ___ The fee is computed on the fair market value of the realty as established for property tax purposes which is n/a

5. Check YES ___ or NO X ___ to the following: A lien or encumbrance existed on the land, tenement, or realty before the transfer and remained on the land, tenement, or realty after the transfer. (This includes, pursuant to Code Section 12-59-140(E)(6), any lien or encumbrance on realty in possession of a forfeited land commission which may subsequently be waived or reduced after the transfer under a signed contract or agreement between the lien holder and the buyer existing before the transfer.) If "Yes," the amount of the outstanding balance of this lien or encumbrance is n/a.

6. The DEED Recording Fee is computed as follows:
   (a) $ ___ 0.00 the amount listed in Item #4 above
   (b) $ ___ 0.00 the amount listed in Item #5 above (no amount, please zero)
   (c) $ ___ 0.00 subtract Line 6(b) from Line 6(a) and place the result here.

7. As required by Code Section 12-24-70, I state that I am a responsible person who was connected with the transaction as the closing attorney.

8. I understand that a person required to furnish this affidavit who willfully furnishes a false or fraudulent affidavit is guilty of a misdemeanor and, upon conviction, must be fined not more than one thousand dollars or imprisoned not more than one year or both.

   [Signature]
   Megan F. Stevens, Attorney for the Grantor

SWORN to before me this 6th day of December, 2018

[Signature]
Notary Public for South Carolina
My Commission expires: 11/29/2027
STATE OF SOUTH CAROLINA ) EXCLUSIVE STORM WATER DRAINAGE EASEMENTS
COUNTY OF CHARLESTON ) CITY OF CHARLESTON

This Agreement is made and entered into this ______ day of ___________20__, by and between the City of Charleston, a Municipal Corporation organized and existing pursuant to the laws of the State of South Carolina (herein the “City”), and Eastwood Construction, LLC (herein the “Owner”).

WHEREAS, THE CITY OF CHARLESTON, is desirous of maintaining storm water drainage ditches and appurtenances (“Storm Water System”) across a portion of Phase 4, Swygert’s Landing, property identified by and designated as Charleston County tax map number 312-00-00-937 and to accomplish this objective, the City must obtain certain easements from the Owner permitting the maintenance of the Storm Water System through the referenced portion of Phase 4, Swygert’s Landing, the Owner’s property as hereinafter described; and

WHEREAS, the undersigned Owner of the property is desirous of cooperating with the City and is minded to grant unto it certain permanent and exclusive storm water drainage easements in and to the property necessary therefor.

NOW, THEREFORE, in consideration of the foregoing and the benefits to be derived by the drainage improvements to the property, the Owner has granted, bargained, sold, released and conveyed by these present and does grant, bargain, sell, release and convey unto the City of Charleston all of those certain New City of Charleston Drainage Easements (or D.E.), being shown and designated as “NEW VARIABLE WIDTH CITY OF CHARLESTON DRAINAGE EASEMENT” (10), “NEW 20’ CITY OF CHARLESTON DRAINAGE EASEMENT” (4), “NEW 24’ CITY OF CHARLESTON DRAINAGE EASEMENT” (2), “NEW 26’ CITY OF CHARLESTON DRAINAGE EASEMENT”, “NEW 28’ CITY OF CHARLESTON DRAINAGE EASEMENT”, “NEW 30’ CITY OF CHARLESTON DRAINAGE EASEMENT”, and “NEW VARIABLE WIDTH PRIVATE/POA/HOA DRAINAGE EASEMENT AND CITY OF CHARLESTON ACCESS EASEMENT” (2), as such are identified on the above referenced property and which are more fully shown on that certain plat entitled:
“FINAL SUBDIVISION PLAT OF SWYGERT’S LANDING PHASE 4 PREPARED FOR EASTWOOD CONSTRUCTION, LLC JOHNS ISLAND, CITY OF CHARLESTON, CHARLESTON COUNTY, SOUTH CAROLINA”

Prepared and executed by F. Elliott Quinn, III, of Thomas & Hutton dated September 5, 2018, and recorded on ________________ in Plat Book ______ at Page ____________ in the ROD Office for Charleston County, South Carolina (herein the “Plat”). A copy of said plat is attached hereto as “Exhibit A” and incorporated herein.

SAID EXCLUSIVE STORM WATER DRAINAGE EASEMENTS having such size, shape, location, and butting and bounding as shown on said Plat, reference to which is hereby made for a more complete description.

The City shall at all times have the right of ingress and egress to the land affected by the said Exclusive and Permanent Storm Water Drainage Easements for purposes of periodic inspection, maintenance, repair and replacement of the Storm Water System. These Exclusive and Permanent Storm Water Drainage Easements shall be commercial in nature and shall run with the land.

The City has no obligation to repair, replace or to compensate the Owner for trees, plants, grass, shrubs or other elements damaged or destroyed within the confines of these Exclusive and Permanent Storm Water Drainage Easements during the conduct of its allowable activities as described above.
TO HAVE AND TO HOLD, all and singular, the said before mentioned unto the said CITY OF CHARLESTON, its successors and assigns, against Owner and its heirs and assigns, and all persons whomsoever lawfully claiming or to claim the same or any part thereof.
IN WITNESS WHEREOF, the parties have set the Hands and Seals the day and year above written.

WITNESSES:  

Witness #1  

Witness #2  

STATE OF SOUTH CAROLINA  

COUNTY OF CHARLESTON  

CITY OF CHARLESTON

By: Laura Cabiness  
Its: Public Service Director

ACKNOWLEDGEMENT

The foregoing instrument was acknowledged before me (the undersigned notary) by  

of the City of Charleston, a Municipal Corporation organized and existing pursuant to the laws of the State of South Carolina, on_____________.

Signature: ____________________________________________

Print Name of Notary: _________________________________

Notary Public for  

My Commission Expires: _____________________________

SEAL OF NOTARY

WITNESSES:

Witness #1

Witness #2

STATE OF SOUTH CAROLINA  

COUNTY OF CHARLESTON

ACKNOWLEDGEMENT

The foregoing instrument was acknowledged before me (the undersigned notary) by  

of Eastwood Construction, LLC, a South Carolina limited liability company, on behalf of the Owner on 11-20-18  

Signature: Callie Mclaughlin  

Print Name of Notary: Callie Mclaughlin  

Notary Public for  

My Commission Expires: 04/29/2025
STATE OF SOUTH CAROLINA   )
COUNTY OF CHARLESTON    )

TITLE TO REAL ESTATE

KNOW ALL MEN BY THESE PRESENTS, that SM CHARLESTON, LLC
(“Grantor”) in the state aforesaid, for and in consideration of the sum of
ONE AND 00/100 DOLLAR ($1.00), being the true consideration to it in hand paid at and before
the sealing of these presents by the CITY OF CHARLESTON, the receipt whereof is hereby
acknowledged, has granted, bargained, sold and released, and by these presents does grant, bargain,
sell and release unto the said CITY OF CHARLESTON (“Grantee”), its successors and assigns,
forever, the following described property which is granted, bargained, sold and released for the use
of the public forever:

All of the property underneath, above, and containing those certain streets, roads, drives,
and cul-de-sacs situate, lying and being in the City of Charleston, County of Charleston
State of South Carolina, identified as (list street names)  Lantern Street

as shown and designated on a plat entitled: FINAL PLAT SHOWING THE SUBDIVISION OF
TMS NO. 310-06-00-106 CONTAINING 5.220 ACRES INTO ASHLEY PRESERVE
(FORMERLY KNOWN AS GREENWAY PRESERVE) CONTAINING LOTS 1 THROUGH
18 (2.766 ACRES), RIGHT-OF-WAY (0.584 ACRES) AND HOMEOWNERS ASSOCIATION
AREAS (1.870 ACRES) PROPERTY OF SM CHARLESTON, LLC prepared by HLA, Inc.,
dated January 29, 2019, and recorded on _______________ in Plat Book ______ at Page _____
in the ROD Office for Charleston County.

Said property butting and bounding, measuring and containing, and having such courses and
distances as are shown on said plat. Reference being had to the aforesaid plat for a full and
complete description, being all of the said dimensions, a little more or a little less.

This being a portion of the property conveyed to Grantor herein by deed of the
Catalyst Builders, Inc. dated May 14, 2018 and recorded May 15, 2018 in Book 0718 at Page 985
in the Register of Deeds Office for Charleston County, South Carolina.

Grantee’s Mailing Address:
City of Charleston
Department of Public Service
Engineering Division
2 George Street
Suite 2100
Charleston, South Carolina 29401

Portion of TMS No.: 310-06-00-106
TOGETHER with all and singular, the rights, members, hereditaments and appurtenances to the said premises belonging, or in anywise incident or appertaining.

TO HAVE AND TO HOLD, all and singular, the said premises before mentioned unto the CITY OF CHARLESTON, its successors and assigns forever.

AND Grantor does hereby bind itself and its heirs, executors and administrators, to warrant and forever defend, all and singular, the said premises unto the said City of Charleston, heirs and assigns, against Grantor and its heirs, and all persons whomsoever lawfully claiming, or to claim the same or any part thereof.

WITNESS our Hand(s) and Seal(s) this 1st day of May 2019.

SIGNED, SEALED AND DELIVERED IN THE PRESENCE OF:

[Signature]
Witness Number One

Rogar J. Hunt
Printed Name

[Signature]
Witness Number Two
Theresa Brown
Printed Name

**********

STATE OF South Carolina
COUNTY OF Charleston

ACKNOWLEDGEMENT
This foregoing instrument was acknowledged before me (the undersigned notary) by
Mark Lipsey, the authorized agent of SM Charleston UC, a ________________________, on behalf of the Grantor on the 1st day of May 2019.

Signature of Notary: Theresa Brown
Print Name of Notary: Theresa Brown
Notary Public for South Carolina
My Commission Expires: 7-12-27

SEAL OF NOTARY
STATE OF SOUTH CAROLINA 

COUNTY OF CHARLESTON

AFFIDAVIT FOR TAXABLE OR EXEMPT TRANSFERS

PERSONALLY appeared before me the undersigned, who being duly sworn, deposes and says:

1. I have read the information on this affidavit and I understand such information.

2. The property was transferred by SM CHARLESTON, LLC to THE CITY OF CHARLESTON on ____________.

3. Check one of the following: The deed is

(A) _____ subject to the deed recording fee as a transfer for consideration paid or to be paid in money or money's worth.
(B) _____ subject to the deed recording fee as a transfer between a corporation, a partnership, or other entity and a stockholder, partner, or owner of the entity, or is a transfer to a trust or as distribution to a trust beneficiary.
(C) ☑ exempt from the deed recording fee because (See Information section of affidavit): _____ #2 __________________________ (explanation required)
(If exempt, please skip items 4-7, and go to item 8 of this affidavit.)

If exempt under exemption #14 as described in the Information section of this affidavit, did the agent and principal relationship exist at the time of the original sale and was the purpose of this relationship to purchase the realty?
Check Yes _____ or No _____

4. Check one of the following if either item 3(a) or item 3(b) above has been checked. (See Information section of this affidavit):

(A) _____ The fee is computed on the consideration paid or to be paid in money or money's worth in the amount of ____________________________
(B) _____ The fee is computed on the fair market value of the realty which is ____________________________.
(C) _____ The fee is computed on the fair market value of the realty as established for property tax purposes which is ____________________________.

5. Check YES ____ or NO ____ to the following: A lien or encumbrance existed on the land, tenement, or realty before the transfer and remained on the land, tenement, or realty after the transfer. If "YES," the amount of the outstanding balance of this lien or encumbrance is ____________________________.

6. The deed recording fee is computed as follows:

(A) Place the amount listed in item 4 above here: ____________________________
(B) Place the amount listed in item 5 above here: ____________________________
(If no amount is listed, place zero here.)
(C) Subtract Line 6(b) from Line 6(a) and place the result here: ____________________________

ATET4-2013
7. The deed recording fee is based on the amount listed on Line 6(c) above and the deed recording fee due is ____________________________.

8. As required by Code Section '12-24-70, I state that I am a responsible person who was connected with the transaction as Grantor ____________________________.

9. I understand that a person required to furnish this affidavit who willfully furnishes a false or fraudulent affidavit is guilty of a misdemeanor and, upon conviction, must be fined not more than one thousand dollars or imprisoned not more than one year, or both.

______________________________
Responsible Person Connected with the Transaction

______________________________
Authorized Agent

______________________________
Print or Type Name Here

Sworn this 1st day of May 2018

______________________________
Notary Public for South Carolina

My Commission Expires: July 15, 2019

ATET4-2013
STATE OF SOUTH CAROLINA ) EXCLUSIVE STORM
) WATER DRAINAGE
) EASEMENTS
COUNTY OF CHARLESTON ) CITY OF CHARLESTON

This Agreement is made and entered into this _____ day of __________ 20__, by and between the City of Charleston, a Municipal Corporation organized and existing pursuant to the laws of the State of South Carolina (herein the “City”), and __SM CHARLESTON, LLC________________________ (herein the “Owner”).

WHEREAS, THE CITY OF CHARLESTON, is desirous of maintaining storm water drainage ditches and appurtenances (“Storm Water System”) across a tract of _____ property identified by and designated as Charleston County tax map number 310-06-00-106_____ and to accomplish this objective, the City must obtain certain easements from the Owner permitting the maintenance of the Storm Water System through the referenced tract of ______ the Owner’s property as hereinafter described; and

WHEREAS, the undersigned Owner of the property is desirous of cooperating with the City and is minded to grant unto it certain permanent and exclusive storm water drainage easements in and to the property necessary therefor.

NOW, THEREFORE, in consideration of the foregoing and the benefits to be derived by the drainage improvements to the property, the Owner has granted, bargained, sold, released and conveyed by these present and does grant, bargain, sell, release and convey unto the City of Charleston all of those certain New City of Charleston Drainage Easements (or D.E.) as such are identified on the above referenced tract of ______ property and which are more fully shown on that certain plat entitled;

" FINAL PLAT SHOWING THE SUBDIVISION OF TMS NO. 310-06-00-106 CONTAINING 5.220 ACRES INTO ASHLEY PRESERVE (FORMERLY KNOWN AS GREENWAY PRESERVE) CONTAINING LOTS 1 THROUGH 18 (2.766 ACRES), RIGHT-OF-WAY (0.584 ACRES) AND HOMEOWNERS ASSOCIATION AREAS (1.870 ACRES) PROPERTY OF SM CHARLESTON, LLC"

Prepared and executed by _HLA, INC._ _______________ dated January 29, 2019__.

revised on __________________________, and recorded on __________________________ in Plat

Book ____ at Page ______ in the ROD__ Office for Charleston________. South Carolina (herein the “Plat”).

A copy of said plat is attached heretofore as “Exhibit A” and incorporated herein.

SAID EXCLUSIVE STORM WATER DRAINAGE EASEMENTS having such size, shape, location, and butting and bounding as shown on said Plat, reference to which is hereby made for a more complete description.

The City shall at all times have the right of ingress and egress to the land affected by the said Exclusive and Permanent Storm Water Drainage Easements for purposes of periodic inspection, maintenance, repair and replacement of the Storm Water System. These Exclusive and Permanent Storm Water Drainage Easements shall be commercial in nature and shall run with the land.

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TO HAVE AND TO HOLD, all and singular, the said before mentioned unto the said CITY OF CHARLESTON, its successors and assigns, against Owner and its heirs and assigns, and all persons whomsoever lawfully claiming or to claim the same or any part thereof.
IN WITNESS WHEREOF, the parties have set the Hands and Seals the day and year above written.

WITNESSES:  

Witness #1  
Witness #2  

CITY OF CHARLESTON  

By: Laura Cabiness  
Its: Public Service Director  

STATE OF SOUTH CAROLINA  )  
COUNTY OF CHARLESTON  )  

ACKNOWLEDGEMENT  

The foregoing instrument was acknowledged before me (the undersigned notary) by  

of the City of Charleston, a Municipal Corporation organized and existing pursuant to the laws of the State of South Carolina, on _____________.  

Signature:  

Print Name of Notary:  
Notary Public for  
My Commission Expires:  

SEAL OF NOTARY

WITNESSES:  

Witness #1  
Witness #2  

OWNER:  
Name: Mark Lipsmeyer  
Authorized Agent  

STATE OF  
COUNTY OF  

ACKNOWLEDGEMENT  

The foregoing instrument was acknowledged before me (the undersigned notary) by  

of ____________, the ____________, on behalf of the Owner on _______________.  

Signature:  

Print Name of Notary:  
Notary Public for  
My Commission Expires:  

SEAL OF NOTARY
SITE DEVELOPMENT REGULATIONS

RIVER RUN

THE CITY OF CHARLESTON
SOUTH CAROLINA

A PLANNED UNIT DEVELOPMENT

City Project ID # TBD

OWNER & DEVELOPER
AMERICAN STAR

synchronicity
LAND + ARCHITECTURE

JULY 16, 2019
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VI. **APPENDIX**
RELATIONSHIP TO THE CITY OF CHARLESTON ZONING ORDINANCE

The Development Guidelines and Land Use Plan for the River Run Planned Unit Development (PUD), attached hereto and made part hereof, are part of the PUD conditional use Master Plan application submitted in accordance with the Zoning Ordinance of the City of Charleston, Article 2, Part 7 Sections 54-250, et seq. The Zoning Ordinance of the City of Charleston is incorporated herein by reference, except as amended herein.

No person shall erect or alter any building, structures or sign on any tract of land or use any tract of land within the River Run PUD except in conformance with these guidelines and regulations. Unless modified herein, definitions of terms used in the River Run PUD Development Guidelines shall follow definitions listed in the Zoning Ordinance of the City of Charleston, as amended from time to time. Administration and enforcement of the adopted River Run PUD Master Plan shall follow Article 9 of the Zoning Ordinance of the City of Charleston.

The River Run PUD Master Plan was approved by the Charleston City Council on __________, Ordinance Number ________________.
EXECUTIVE SUMMARY

River Run is a Planned Unit Development located in the City of Charleston, on Johns Island, South Carolina. The development’s access is on the east side of River Road, approximately 2.4 miles south of the Maybank/River Road intersection. The property borders the Stono River to the East and River Road to the West. The project is an aggregated parcel totaling 126.95 acres. The street addressing for the parcel is 2495 River Road, 0 & 2493 Summerland Drive, 0 & 2689 Oakville Plantation Road. The Charleston County TMS #s are 317-00-00-007, 011, 012, 075, 076 & 089.

The current zoning classifications of the existing parcels are LI (Light Industrial) within the City of Charleston at a density of 19.4 units per acre and R-4 (Residential) within Charleston County at a density of 4.0 units per acre. Historically, the site has been a combination of existing residential homes, green spaces, partial farmlands, forested woodlands and wetlands.

The proposed use will be a low-density planned unit development combining small commercial parcels along the River Road corridor and detached fee-simple single family residential homes with preserved open spaces & grand trees. The neighborhood will have access to a central amenity center with a mail kiosk. Numerous parks and green spaces will be accessed via a neighborhood-wide multi-use trail. Future successful coordination with State and Federal agencies will provide boardwalks among preserved wetlands and forested spaces to a crabbing dock accessing a creek along the Stono River.

The project intends to preserve, to the best of its ability, the natural conditions of the subject property in order to maintain the charming characteristics of Charleston, Johns Island, and the Stono River area. Each home will be carefully situated in order to protect trees, wetlands, and other natural resources.
COMPREHENSIVE PLAN ALIGNMENT

The River Run Planned Unit Development is aligned with the City of Charleston’s vision for future land use utilizing innovative cluster planning methods and low impact development practices within the Urban Growth Boundary. As stated in the City of Charleston’s PUD Zoning Ordinance, the intent is as follows...

“A planned unit development (PUD) is intended to provide flexibility in the design of developments; to encourage comprehensive planning of developments; to permit innovation in neighborhood design that includes incorporation of open space, preservation of natural features and other amenities; to provide opportunity for a mixture of uses within a development and to insure compatibility of developments with surrounding areas”

Per the Century V Plan Update...

Goals:
1. Preserve the physical qualities and way of life in rural areas of the City.
2. Protect and improve our natural resources and maintain a lush, green environment in urban and suburban areas of the City.
3. Ensure a high quality of life throughout the City by maintaining existing and building new quality neighborhoods, encouraging infill and redevelopment and providing new gathering places throughout the City.
4. Ensure all citizens of Charleston have a choice of transportation options for moving within neighborhoods, between neighborhoods and across the City and region.
5. Continue building a community capable of sustaining itself economically by providing a suitable environment for a wide range of businesses and ensuring economic growth expands opportunities and resources for Charleston citizens.
6. Ensure the highest quality public services and facilities to City residents by targeting municipal growth to urban and suburban areas and planning for capital improvements to support City growth.

New Planning Trends: The continued growth of concern for the protection of our environment, the increased emphasis in the Charleston region on the concept of an Urban Growth Boundary (UGB), the increased public desire for more inviting living, working and playing environments, the need to further diversify our means of mobility.
Through contextually sensitive design, innovative open space planning and a responsive Lowcountry architectural vernacular, the goal of the River Run Planned Unit Development is to most appropriately comply with the City of Charleston’s Comprehensive Plan Goals & Recommendations as follows...

POPULATION & HOUSING

"...Housing has always remained a basic human need and to which a modern society must ensure everyone has access."

Goals
1. Accommodate future population growth through land-use policies that encourage vibrant, safe, and diverse neighborhoods in areas that allow efficient use of space and transportation.
2. Ensure the Charleston population has access to housing opportunities that provide diversity in building types, availability for all income levels, proximity to transit and accessibility to job centers.

Recommendations
- Maintain land use policies that allow for and encourage diversity in housing opportunities in a variety of neighborhood contexts.
- Support sustainable housing development through incentives for efficient construction practices and energy efficient buildings.

ECONOMIC DEVELOPMENT

Goal
Develop and implement a multi-tiered economic development strategy for attraction and retention.

Recommendations
- Work to promote and improve local and regional infrastructure.
- Provide business services and allocate resources to supporting and promoting small and local business development.
- Implement targeted job/work centers.
NATURAL RESOURCES

Surrounding the City with Green
Delineating the rural/sub-urban edge with tools such as the Urban Growth Boundary (UGB) has been an important step in preventing new sprawl and promoting conservation in Charleston.

Goals
Protect and preserve our natural resources to the greatest extent practical.

Recommendations
- Ensure land development regulations adequately protect the city’s farms, prime soils for farming, natural resources and rural areas.
- Continue to support the use of an Urban Growth Boundary
- Continue to provide and expand the parks system to include large and small parks, as well as increased connectivity between greenspaces and public access to waterways.
- Continue to implement appropriate building standards for elevation, wind resistance and stormwater management and sustainability practices to plan and adapt to climatic events such as flooding and hurricanes.
- Adopt stormwater management practices and standards that are ‘light on the land’, encourage innovative BMP’s and ‘green’ methods, i.e., bio-swales, porous pavements, rain gardens, etc., for treating storm water and vegetative buffer requirements to improve the water quality of Charleston.

LAND USE

Land Use Goal
Foster the sustainable growth of the City through encouraging infill, redevelopment, diverse, walkable neighborhoods and park spaces, well located mixed-use centers, and protection for our surrounding natural and rural areas.

Urban Growth Goals
- Develop and maintain a sufficient open space/parks system so that the City is diverse in uses and opportunities and includes natural spaces and wildlife habitat, as well as passive and active recreation with an equitable distribution of parks, trees and pathways throughout the community.
- Implement land use and transportation planning and policies to create compact, mixed-use projects, forming gathering places and sites designed to maximize affordable housing and encourage walking, bicycling and the use of existing and future public transit systems.
Urban Growth Recommendations

- Support Charleston County's Comprehensive Plan and its designation of an Urban Growth Boundary (UGB) protecting rural areas surrounding the City of Charleston and other urban areas of Charleston County.
- Ensure City land development regulations encourage compact development patterns that minimize consumption of land.
- Ensure land development regulations adequately protect natural resources in urban and suburban areas of the City.

Primary Land Use Designations

Suburban Edge: The lowest densities found inside the urban growth boundary, ranging from one to four dwelling units per acre (1 du/ac to 4 du/ac). Uses are almost exclusively residential.
MOBILITY

Mobility Goal:
Seek to offer as many choices for mobility in the City as possible, from modes to routes.

Existing Traffic Patterns Recommendations
- Seek to enhance the City’s network with road improvements. Coordinate road improvements with SCDOT, CHATS, and Charleston and Berkeley Counties.
- Monitor streets with decreasing traffic load for potential “road diets” and conversion of vehicle space to pedestrian, bicycle, and/or transit space.
- Monitor routes with increasing traffic load for enhanced transit routes and possibly physical improvements to handle traffic loads.

Street Recommendations
- Design new streets and improve existing streets to accommodate walking, bicycling, and vehicle travel.
- Adopt the new draft Street Standards as the City’s policy for future street design and retrofit.
- Target transportation investments to enhance the existing transportation network. Coordinate these improvements with SCDOT, CHATS, and Charleston and Berkeley Counties.
- Prioritize improvements to existing thoroughfares and bottlenecks at major intersections and bridge locations.

MUNICIPAL SERVICES

Charleston Water System Water and sewer service is provided by the Charleston Water System (CWS) in most areas including West Ashley, Daniel Island, James Island and parts of Johns Island and Cainhoy. CWS strives to maintain a reliable water and wastewater service that can support existing and future needs through careful planning and investment in the expanding infrastructure.

Municipal Services Recommendations
- Establish adequate public facility standards consistent with the service standards throughout the City.
- Continue to focus the City’s annexation efforts on urban and sub-urban areas within the Urban Growth Boundary.
- Manage the provision of municipal services and facilities in rural, suburban and urban areas.
DEVELOPMENT PLAN

Property Address: 2495 River Road, 0 & 2493 Summerland Drive, 0 & 2689 Oakville Plantation Road
Johns Island, Charleston, South Carolina, 29455
TMS# 317-00-00-007, 011, 012, 075, 076 & 089

Site Area: 126.95 AC +/-

Existing Zoning: City of Charleston: LI – Light Industrial; 19.4 DU/AC
Charleston County: R-4 – Residential; 4.0 DU/AC

Existing Conditions: A combination of existing residential homes, green spaces, forested woodlands & wetlands.

Proposed Use: A low-density planned unit development combining commercial parcels and detached fee-simple single family residential homes with preserved open spaces & grand trees.

Proposed Density: 2.37 DU/AC

Site Development: Maximum Residential Units: 240

Property Setbacks:

<table>
<thead>
<tr>
<th>ALLEY</th>
<th>STREET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front House Mass:  10 feet</td>
<td>Front House Mass:  10 feet</td>
</tr>
<tr>
<td>Front Porch: 5 feet</td>
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</tr>
<tr>
<td>Side Min/Total: 5/10 feet</td>
<td>Side Min/Total: 5/10 feet</td>
</tr>
<tr>
<td>Rear: 5 feet</td>
<td>Rear: 5 feet</td>
</tr>
<tr>
<td>Rear Garage Mass: 10 feet</td>
<td>Front Garage Mass: 20 feet</td>
</tr>
</tbody>
</table>

Minimum Lot Size: 4,800 SF

Maximum Lot Occupancy: 50%

Max. Structure Height: Structure heights are permitted to a maximum forty feet (45') measured from the average adjacent R.O.W./Front Property Line back-of-curb elevation to the top of roof and three and one half (3 1/2) stories. Heights will be distributed appropriately according to adjacent land uses and contextually appropriate massing.

Open Space: A minimum 20% (25.39 AC) of the property is provided as Open Space. Per the current Concept Plan, 42.85% (54.44 AC +/-) of the property is scheduled to be preserved as Open Space.

Parking: Residential: Two parking spaces per residential unit.
Commercial: Compliant with current City Standards (Sec. 54-318).
DRAINAGE ANALYSIS

The River Run project is a 126.95-acre site composed of six existing undeveloped parcels. The current development plan is a master planned community of approximately 240 single family residential homes, approximately 3.3 acres of commercial areas, and amenity areas. The project site lies east of River Road and south of Burden Creek Road and is within the City of Charleston, South Carolina. The project borders property of the Charleston Executive Airport to the south, existing residential development on to the west and north, and the marshes of the Stono River to the east. Access to the site will be from River Road Burden Creek Road provides access to the site. The access road will cross a critical wetland area that is a tributary to Burden Creek.

The site is generally undeveloped and consist of woods. Under existing conditions, the portion of the site east of the wetland area (tributary of Burden Creek) drains west to east towards the Stono River. The project site area west of the wetland area drains south and east towards the wetland area, which drains north under Burden Creek Road and into Burden Creek.

A preliminary grading plan has been developed for the site and an internal drainage system has been developed. These systems will direct post-development drainage to one of the seven (7) wet detention ponds. Post-development sub-basins have been developed based on the preliminary grading plan and the internal drainage system. Currently, the design calls for three (3) detention ponds on the west that collect stormwater runoff and outfall into the wetland area which drains into Burden Creek and ultimately to the Stono River. There are four (4) detention ponds called for on the east that collect stormwater runoff and outfall via a ditch into the Stono River.

In the design and layout of the River Run project, careful consideration was taken in maintaining site resources and natural undisturbed areas. All natural drainageways have been maintained and a vegetative buffer has been maintained or put in place along the waterways. All floodplains were considered in the design and have been maintained and not increased by the proposed conceptual site development. Buffers have been included in the layout to ensure that wetland boundaries are maintained.

The proposed site has been designed to follow the natural contours of the area to minimize the amount of clearing and grading to preserve natural drainage ways and patterns. Construction activities, as well as development and re-development areas will be placed on the least sensitive areas (uplands) of the site with no steep sloped areas. The building footprints will be reduced by constructing some of the buildings as multi-story or raised. The commercial areas will have reduced parking lot areas to limit the amount of impervious area. The parking areas will try and include vegetative areas where available to be utilized for stormwater management practices. The proposed site will not allow for rear-lot drainage and roof-top runoff in the inland areas to flow offsite, instead, vegetative swales and grata inlets will direct the water to the stormwater ponds for detention. In the areas where the rear-lot drains into the water way, the site will have a critical area buffer.

Preliminary stormwater and floodplain modeling has been conducted for the project. This modeling included a one-dimensional (1-D) model of the entire Burden Creek watershed for pre- and post-development conditions. In addition to the 1-D modeling of the entire Burden Creek watershed, a two-dimensional (2-D) model of the project site and surrounding areas was completed to understand all drainage patterns in and around the site. The 2-D model was also executed for pre- and post-development conditions to ensure that the proposed project does not negatively affect drainage or flooding on adjacent properties. The project's design was modified based on the findings of the 2-D modeling to mitigate drainage effects on neighboring sites (up to and including the 100-yr rainfall event).
GENERAL GUIDELINES

A. Parking

Due to River Run’s unique project composition, parking is being proposed as:
Two (2) parking spaces per residential lot. Parking for the Amenity Center will be via on-street parallel parking spaces situated along the perimeter of the amenity island; located within expanded 58’ Rights-of-Way. Commercial parking spaces will be located throughout the pertinent parcels’ surface lots and garage spaces; compliant per particular use, current City Standards (Sec. 54-318).
- Standard parking space: 9’ x 18’6” or 9’ x 17’ with provided vehicle overhang
- Aisle widths will be a minimum 13’6” for 45° parking with one-way flow
- Garage space: 8’6” x 18’6”; 7’6” wide for compact spaces (40% max. total parking)
- Parallel space: 8’ x 22’

B. Residential Units

Single-family detached fee-simple residential dwelling units will exist throughout the development; comprising the majority of building space use.

Property Setbacks:

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</tr>
<tr>
<td>Rear Garage Mass: 10 feet</td>
<td>Front Garage Mass: 20 feet</td>
</tr>
<tr>
<td>Minimum Lot Size: 4,800 SF</td>
<td>Minimum Lot Size: 4,800 SF</td>
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</tbody>
</table>

Accessory Buildings: Accessory buildings shall have requirements such that they must be setback five (5) feet from the front property line, five (5) feet from each side property line, and five (5) feet from the back property line. Accessory buildings shall have a maximum height of twenty-five (25) feet and a maximum area of eight hundred (800) square feet of conditioned living space. Accessory buildings can include heated living or office space and must maintain a similar exterior finish and architectural appearance to that of the primary residence.

Parking and Boat Storage: Parking shall be accommodated with driveways and off-street parking. Boat storage and access shall be allowed in designated areas to be determined by the Homeowners Association.

For all other permitted uses, please refer to the City of Charleston Zoning Ordinance.
C. Commercial Parcels
Two commercial parcels, each ~1.5 acres, will be located at the entry of the project along the River Road corridor.

D. Building Heights & Massing
Structure heights are permitted to a maximum forty feet (45') measured from the average adjacent R.O.W./Front Property Line back-of-curb elevation to the top of roof and three and one half (3 ½) stories. Heights will be distributed appropriately according to adjacent land uses and contextually appropriate massing.

E. Flood Zone
The site is located within Flood Zones AE-12, AE-13, AE-14, VE-14 and VE-15; FIRM Map # 45019C0678J, panel 660 of 855.

F. Home Owners Association
The Developer will establish a Home Owners Association (HOA) for the development. The HOA will be managed by the Developer (or their appointed representative) until all units are sold and duties will be transferred to the HOA.

G. Utilities
**Potable Water:** Potable water is to be provided by St. Johns Water System. Phases of the water system will be designed in accordance with St. Johns Water Company standards and permitted through the South Carolina Department of Health and Environmental Control. All resources shall be utilized so that adequate fire flow will be provided to meet the City fire protection standards. Fire protection design requirements have been provided by the City of Charleston Fire Department. The water distribution system will be designed to meet these requirements.

**Wastewater:** Wastewater service will be provided by Charleston Water System. A regional wastewater pump station shall be owned by CWS to serve the growing area near Stonoview. This regional facility will be permitted for operation by SCDHEC. This system is connected to other existing CWS wastewater infrastructure on John’s Island. Wastewater system extensions to serve future phases will be designed in accordance with CWS Standards and permitted through SCDHEC for construction and operation. All supplementary material, including public utility letters confirming availability, shall be provided to the City of Charleston when they become available.

**Garbage:** Garbage collection will be provided by City of Charleston Garbage & Recycling services.

H. Signage
A Master Signage Plan will be developed for the entire site. Entry Monuments, Signage, Landscape and supporting infrastructure (such as landscape lighting & irrigation) shall be exempt from the City Buffer ordinance & encroachment requirements for River Road (Sec. 54-349). Monument descriptions for the development are as follows:
**Entry Monuments:** Two sets of entry monuments will be placed at the neighborhood’s primary entrances along River Road. These signs will conform to size and height requirements per Section 54-415 of the City of Charleston’s Zoning Ordinance.

**Street Monuments:** Street monuments will be placed at each intersection within the development. Approximate quantities will be determined per intersection. These street monuments will be custom designed, and will replace the use of standard City and State DOT signage. Street monument locations will occur inside the public Rights-of-Way, being constructed of breakaway materials. Repair and maintenance of Street Monuments will be the responsibility of the Homeowner’s Association (HOA). Signage construction details will be coordinated with the City of Charleston’s Department of Traffic & Transportation.

**Address Monuments:** One address monument sign will be placed near the intersecting access sidewalk or driveway for each home site. Address monument locations to occur adjacent to and outside of the public Rights-Of-Way.

I. **Landscape**

Decorative and supplemental landscaping may be provided throughout the development and adjacent to the River Road and internal project Rights-of-Way. Supporting irrigation may be provided as well.

J. **Lighting**

The Developer will prepare a lighting plan for street lights (in conjunction with the service provider) and may also provide decorative building, landscape, site & tree lighting throughout the development and adjacent to the River Road and internal project Rights-of-Way. Buildings and entry signage may be illuminated for the purposes of safety and wayfinding.

K. **Right-of-Way**

All Rights-of-Way (ROWs) shall be public and built to the City of Charleston’s standards. Public street ROWs will be a minimum of fifty (50) feet throughout the subdivision except in the area of the entrance & wetland crossing, where the ROW shall have the ability to be a minimum of seventy (70) feet, and certain twenty (20) foot alley ways. For Rights-of-Way greater than fifty (50) feet, the paved section shall meet the City Zoning Criteria for twenty (20) feet (excluding curb and gutter). Any proposal for pavement reduction shall be negotiated, reviewed, and approved by the City of Charleston Technical Review Committee staff. Modified (“rollback”) curb and gutter is proposed with a standard five (5) foot sidewalk, reducing down to four (4) foot where adjacent to tree critical root zone and/or wetland areas of sensitivity; sidewalk on one side of the street. In areas where grand trees are to be preserved, vertical curb may be considered. Rights-of-way throughout the project including cul-de-sacs will be designed to accommodate emergency vehicles and public service vehicles.

Lighting and signage shall not obstruct traffic and will be placed in the Right-of-Way (to include the verge) in accordance with City of Charleston regulations.
Street Trees shall be provided throughout the development. Street tree layout shall be in accordance with the City of Charleston Street Tree Manual and approved by the Technical Review Committee (TRC).

Sight distance visibility at all exits and/or intersections will be maintained in accordance with SCDOT Access and Roadside Management Standards (ARMS) Manual.

All public Rights-of-Way and all public Amenities will be ADA & Fair Housing compliant.

L. Trees
The River Run development is devoted to preserving grand trees. Every effort will be made to protect the grand trees (24” or larger diameter). A tree survey has been completed and it shall be coordinated with City staff to assure tree protection standards pursuant to the City of Charleston Zoning Ordinance. Grand trees shall not be removed from the property, lot, or road right-of-ways unless a tree removal variance is acquired from the City of Charleston. In cases where critical root zone impact is necessary (such as home, driveway & hardscape location), tactics for minimal impact via materials, installation & treatment will be upon the recommendation of a Certified Arborist.

M. Buffers
Critical Line Buffers: The critical line will be determined, reviewed and administered by the Department of Health & Environmental Control (DHEC) and the Office of Coastal Resource Management (OCRM) as well as the U.S. Army Corps of Engineers (USACE). The critical line buffers will be established and enforced by the City of Charleston.

Freshwater Wetland Buffers: Freshwater wetland buffers will be determined, reviewed and administered by the Department of Health & Environmental Control (DHEC) and the Office of Coastal Resource Management (OCRM) as well as the U.S. Army Corps of Engineers (USACE); to include buffer minimums, delineations and averaging. Exceptions shall be considered in areas where tree preservation prevails. Walking paths and trails shall be permitted in these buffers if permitted by the U.S. Army Corps of Engineers (USACE). If necessary, utility easements may occupy the wetland buffers.

Ownership and Maintenance: Buffers located in areas belonging to the Homeowner’s Association (HOA) shall be maintained by the HOA. These include walking trails, parks, detention ponds, and all buffers not directly located within individual lot boundaries. Buffers that are directly adjacent to or within lot boundaries shall be maintained by that lot owner. These buffers include critical line buffers located between individual lots and the critical line.

N. Public Benefit
River Run will set the example as a signature neighborhood; implementing innovative cluster and low impact development practices to preserve and maintain beautiful natural resources into a charming community, creating new living opportunities for Charleston’s working class citizens.
Executive Summary

Climate change is intensifying the negative impacts of standard development practices and putting people and communities at risk. We need a new paradigm for building and enhancing communities that works in tandem with natural systems and considers the needs of all. To meet that goal, ASLA’s interdisciplinarian Blue Ribbon Panel on Climate Change and Resilience identified the following core principles, key planning and design strategies, and public policies that will promote healthy, climate-smart, and resilient communities.

Core Principles

- Policies should be incentive-based wherever feasible.
- Policies should promote holistic planning and provide multiple benefits.
- Policies should address environmental justice and racial and social equity issues.
- Policies should reflect meaningful community engagement.
- Policies should be regularly evaluated against performance measures and reviewed for unintended consequences.
- Policies should address broader regional goals and issues as well as local and site-specific concerns.

“Climate change is intensifying the negative impacts of standard development practices and putting people and communities at risk.”

Natural Systems

Designing and planning in concert with natural systems promotes resilience, capitalizes on the multiple benefits provided by natural systems, and provides greater long-term return on investment than the conventional development. Design and planning solutions must also address habitat loss to ensure plant and animal communities remain resilient in the face of climate impacts.

Solutions and Recommendations Summary

- Provide dedicated funding for green stormwater infrastructure.
- Require new development to retain stormwater on site.
- Incentivize planting of locally/regionally appropriate and biodiversity-supporting vegetation; require planting of pollinator-friendly vegetation on public lands.
- Protect and enhance natural vegetative buffers, including wetlands and water’s edge plantings, along coastlines and inland waterways.
- Prioritize retention and expansion of green space; address inequities in access to open space and recreation.
- Adopt a national urban and suburban tree planting strategy to preserve and expand tree canopy.
- Promote or require water conservation and water reuse technologies.
- Adopt a national water strategy to protect critical water sources.
- Incentivize healthy soil management practices.
- Preserve wildlifes.
- Assess climate change risks to biodiversity and promote greenways and biocorridors for plant and animal migration.

Community Development

Compact, walkable, transit-oriented development reduces energy use. When designed in concert with natural systems, these “smart growth” communities are resilient and climate smart.

Solutions and Recommendations Summary

- Require transit-oriented development using green infrastructure and complete streets principles and integrating clean energy and energy efficiency.
- Reuse/redevelop brownfields and grayfields, including for open space.
- Require environmental justice analysis and view transit policy through an equity lens.
- Develop municipal and regional climate resilience plans and require climate change analysis of existing laws and regulations.
- Restructure insurance programs to encourage resilient rebuilding.
- Create community investment trusts to fund green infrastructure and resilience projects, including clean energy projects.
- Assess and address public health impacts of climate change.
- Require walkable open space within a quarter mile radius of all residential development.

Transportation

Transportation must be considered through multiple lenses: as critical connectivity from homes to jobs, amenities, and essential services; as a major source of greenhouse gas emissions; and as a contributor to or detractor from a community’s appearance and function. Planned and designed thoughtfully, transportation systems can promote resilience.

Solutions and Recommendations Summary

- Require transit-oriented development, including affordable housing, with multimodal green and Complete Streets.
- Provide equitable access to transportation options, including safe, connected pedestrian, bicycle, and transit routes.
- Anticipate, plan, and provide infrastructure to support electric vehicles and new transportation methods and technologies.
- Apply technologies and design strategies to achieve net-zero-carbon streets.
- Promote regional transportation planning and development.
Natural Systems

Natural systems—or ecosystems—are critical for humans and all forms of life on the planet. Many of the problems we currently face—flooding, urban heat island effect, air and water pollution, coastal erosion, groundwater-related subsidence—are the direct result of either ignoring or trying to engineer our way around natural systems. On the other hand, designing and planning in concert with natural systems promotes resilience, capitalizes on the multiple benefits provided by natural systems, and provides greater long-term return on investment. This natural systems approach should be incorporated in site, community, and regional planning and design, and applied to retrofit and rebuild projects and new development.

Design and planning solutions should also address plant and animal habitat to ensure these living communities remain resilient and productive in the face of climate impacts. When climate and habitat changes are slow and gradual, plants and animals can relocate through their natural life cycles, e.g., plant seeds spreading naturally and animals moving with food and water sources. However, in the face of rapid climate change and human disturbance, catastrophic loss of species is possible—such as the widespread die-off of temperate tree species in the western states. Design and planning strategies must anticipate an seek to mitigate loss of species through active support.

The following are key design and planning strategies, followed by policy recommendations, that benefit from and support natural systems.

Design and Planning Solutions

- Incorporate green infrastructure into all new and existing urban and suburban development.
  The term “green infrastructure”—also called the “sponge city” approach—refers to the use of trees and vegetation in addition to permeable hard surfaces to capture, infiltrate, and clean stormwater. Beyond stormwater management, green infrastructure also provides significant additional benefits including air cooling and cleaning, reduced building energy use through shading, air cooling through evapotranspiration, enhanced aesthetics, and public health benefits. Key design and planning elements of this nature-based approach should include the following:
  - At street level, reduce paved areas and maximize incorporation of trees and vegetation supported by healthy soils, including bioswales and rain gardens.
  - Prioritize preservation and enhancement of tree canopy. Tree canopy cover directly correlates to reduced urban heat island effects, reducing the effect of heatwaves and reducing emissions from cooling loads. Tree cover is also correlated with air quality improvements that improve public health outcomes.
  - For all trees and vegetation, follow best practices for planting and maintenance.
  - Protect, expand, and/or restore natural systems, including wetlands and adjacent upland areas, that provide buffers along coastlines and inland waterways. Maintain setbacks from streams to protect watershed function and quality.
  - Select biohabitat-supporting and pollinator-friendly native or adapted plant species appropriate to the site/region and changing climate conditions. Prioritize vegetation species that are more likely to withstand potential climate changes, including drought. In some cases, this may involve introduction of species not currently present.
  - Preserve wildlands, i.e., intact green spaces that have never been developed, to support healthy and diverse plant and animal communities.

“Many of the problems we currently face—flooding, urban heat island effect, air and water pollution, coastal erosion, groundwater-related subsidence—are the direct result of either ignoring or trying to engineer our way around natural systems.”
Community Development

The "smart growth" approach to community planning and design emphasizes compact, walkable, transit-oriented (including active and nonmotorized transportation) development. Smart growth communities are more energy and resource efficient than their urban/suburban sprawl counterparts and provide more opportunities for use of clean energy and distributed generation. When designed in conjunction with natural systems, these communities are also inherently more resilient and climate smart. Smart growth concepts apply at all scales—from individual sites to local communities to broader regional planning.

Design and Planning Solutions

- **Plan and design using smart growth approaches** to decrease energy use and promote resilience. Walkable, livable, compact development significantly reduces emissions and energy use.

- **Incorporate clean energy and energy efficiency solutions in local and regional planning.** Renewable energy and distributed generation is increasingly cost-competitive with other generation sources and available in simple “off the shelf” modular products, primarily rooftop solar and community solar gardens (i.e., larger solar installations). Integrated backup battery storage prices are also falling rapidly, allowing for practical installation in single-family homes and residential and commercial buildings.

“Smart growth communities are more energy and resource efficient than their urban/suburban sprawl counterparts and provide more opportunities for use of clean energy and distributed generation.”
Transportation

Transportation accounts for as much as 30 percent of greenhouse gas emissions. Therefore, smart growth solutions that promote walkability and reduce vehicle use or incentivize nonmotorized and low/zero emission vehicles can have a very significant climate benefit. The Complete Streets approach seeks to equitably include active and nonmotorized transportation choices on all rights-of-way, thereby encouraging people to get out of their cars to the greatest extent possible. By removing vehicle travel lanes, "road diets" improve vehicle and pedestrian safety and, at the same time, enable transportation corridors to become multimodal, improving mobility and access. Vehicle use can be further reduced through disincentives for various land uses. Rail, multimodal, and transit-oriented development is needed both in downtown areas and outside downtown areas. As with Complete Streets, a key consideration is ensuring convenience and connectivity that encourages people to consider alternatives to conventional automobile travel.

Design and Planning Solutions

- **Stress equity and connectivity** in transportation planning, including equitable access to rail, transit, and dedicated bicycle commuting options.

- **Use complete streets principles** to provide safe, connected, and convenient pedestrian and bicycle routes, including routes that connect to rail and bus routes.

- **Incorporate green infrastructure in all transportation projects.**

- **Use "road diets"** to improve safety and reconfigure recaptured roadway areas for pedestrian and bicycle use.

- **Plan and design charging stations** to support increased use of electric vehicles as well as designing for other technologies that support connected and autonomous vehicles.

- **Promote transit-oriented development.**

"Transportation accounts for as much as 30 percent of greenhouse gas emissions."
Low Impact Development
in Coastal South Carolina:
A Planning and Design Guide
Low Impact Development in South Carolina: A Planning and Design Guide

Chapter 1

Low Impact Development (LID) is an integrated, comprehensive approach to land development or redevelopment that works with nature to manage stormwater as close to its source as possible (US EPA, 2014). To achieve stormwater management, LID practices mimic the natural hydrologic regime through strategically integrated stormwater controls distributed throughout the landscape. The primary goal of LID is to recreate the predevelopment site hydrology through site design techniques that promote storage, infiltration, evaporation, and treatment of runoff. LID employs principles to create functional and appealing site drainage, such as preserving and recreating natural landscape features, that minimizes imperviousness and treats stormwater as a resource rather than a waste product (US EPA, 2014). These methods help reduce runoff and contribute to groundwater recharge and increase base flow.

The South Carolina Department of Health and Environmental Control’s Bureau of Water (SCDHEC-BOW) states that “LID is designed to mimic, as close as possible, the naturally occurring hydrologic conditions of a site thereby reducing the adverse impacts created by increased runoff that is typically associated with traditional development laden with impervious areas. The fundamental principle behind Low Impact Development is to both reduce the volume of runoff and to divert stormwater flows away from a common collection point. There are various practices that can be used in conjunction with one another to accomplish this goal. Some examples of these practices include open space preservation, infiltration basins/trenches, rain gardens, rain barrels/cisterns, eliminating curbs/gutters, bioretention, vegetated swales and converting turf areas to trees and shrubs.”

A related, but not interchangeable, term is green infrastructure (GI). The United States Environmental Protection Agency (US EPA) notes that green infrastructure is a relatively new and flexible term that has been used differently in different contexts. It defines the term green infrastructure as, “systems or practices that use or mimic natural processes to infiltrate, evaporate, or reuse stormwater or runoff on the site where it is generated (US EPA, 2014). Green infrastructure can be used at a wide range of landscape scales in place of, or in addition to, more traditional stormwater control elements to support the principles of LID.” In this manual, green infrastructure will refer to individual stormwater control elements that can be used to achieve low impact development goals.

1.2 Benefits of LID

The benefits of LID can reach a wide spectrum of stakeholders, as summarized below (NCCE, 2009; US EPA, 2013):

— Developers

• Reduces land clearing and grading costs
• Reduces infrastructure costs (streets, curbs, gutters, sidewalks)
• Reduces stormwater management costs
• Increases lot yields and reduces impact fees
• Increases lot and community marketability

--- Municipalities

• Protects native flora and fauna
• Balances growth needs with environmental protection
• Reduces municipal infrastructure (streets, curbs, gutters, sidewalks, storm sewers)
• Reduces system-wide operations and maintenance costs of infrastructure
• Reduces costs of combined sewer overflows (CSOs)
• Increases groundwater recharge
• Fosters public/private partnerships

--- Home Buyers and Residents

• Preserves and protects amenities that can translate into more salable homes and increased property values
• Provides shading for homes, which decreases monthly energy bills for cooling
• Reduces flooding
• Saves money through water conservation

--- Environment

• Preserves integrity of ecological and biological systems
• Reduces demands on water supply and encourages natural groundwater recharge
• Protects site and regional water quality by reducing sediment, nutrient, and toxic loads to water bodies
• Reduces impact on local terrestrial and aquatic plants and animals
• Preserves trees and natural vegetation
• Improves air quality through the addition of vegetation
• Reduces urban heat stress
• Lessens sewer overflows

--- Social

• Enhances aesthetics
• Stimulates economic development
- Creates green jobs
- Encourages more urban greenways
- Educates the public on their role in stormwater management
- Reduces flooding

**Environmental Benefits of LID**

The natural resources in South Carolina contribute roughly $30 billion and 230,000 jobs to the state’s economy according to a 2009 study conducted by the University of South Carolina’s Moore School of Business Division of Research.

In South Carolina, sediment and bacterial water pollution of tidal creeks has been correlated to urbanization of coastal uplands at large spatial scales (Van Dolah et al., 2008). In addition, the sediment contaminant classes considered in the study (PAHs, PCBs, pesticides, metals) increased significantly in concentration with increasing urban land cover. Findings indicate that upland urbanization can result in an increased risk of biological degradation, as well as reduction in safety of human contact with South Carolina’s coastal resources (Holland & Sanger, 2008; Van Dolah et al., 2008).

LID practices are promoted as a reasonable alternative to ponds and researchers (Vandiver and Hernandez, 2009 and Drescher et al., 2007) note that although the use of LID practices in the South Carolina coastal region is currently limited, with increased awareness, guidance, and training, increased LID implementation can be expected. Various studies have shown the benefits of different types of LID practices. Some, like green roofs, have well documented reduction in runoff. Bioretention, on the other hand, has documented reduction in both nutrients and metals (Ahiablane et al., 2012). In comparing traditional development methods to LID techniques, low impact developments retain significantly more stormwater on-site and have fewer pollutants exported from the site (Bedan and Clausen 2009). Traditional development practices like curb and gutter frequently produce stormwater discharge from the site, where low impact development techniques can produce little to no discharge for small rainfall events (Selbig and Bannerman, 2008). Compared to traditional development, LID reduces runoff depths and peak discharges, and produces a longer lag time to peak discharge. LID practices better mimic pre-development hydrology to help reduce stormwater pollution (Hood et al., 2007).
<table>
<thead>
<tr>
<th>BMP</th>
<th>Coastal Zone Requirements&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Shellfish Bed Requirements&lt;sup&gt;1&lt;/sup&gt;</th>
<th>SMS4 Standard&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Water Quality Treatment&lt;sup&gt;2&lt;/sup&gt;</th>
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<td>No</td>
<td>No</td>
<td>Pond with Permanent Pool</td>
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</tbody>
</table>

<sup>1</sup> "Yes" means that a given BMP could feasibly be designed to meet a given requirement. It does not mean that all variations and sizes of the BMP will automatically meet the requirement.

<sup>2</sup> This column indicates which of the Water Quality Treatment standards is likely to apply to each BMP. Since the water quality treatment regulations only indicate "ponds with a permanent pool," "ponds without a permanent pool," and "infiltration practices," as the available options, classification of the other BMPs is somewhat difficult. For the sake of presenting complete LID guidance and a unified calculation method, this chapter assumes that the runoff reduction volume provided by certain BMPs can be counted toward meeting the infiltration practice requirement. However, actual treatment capability of a BMP depends greatly upon design of the BMP relative to individual site circumstances.

Low impact development contributes to ecosystem services by reducing flooding, improving water quality, reducing ambient air temperatures, and improving air quality (ECOnorthwest, 2007).

**Economic Benefits of LID**
The US EPA found that developers, property owners, and communities save money and protect and restore water quality when well-chosen LID practices are implemented (US EPA, 2007). The following resources include case studies, research, recommendations, and site specific LID costs:


“The Economics of Low-Impact Development: A Literature Review (ECONorthwest, 2007);

“Low Impact Development Versus Conventional Development” (Shaver, 2009)


Coastal LID Case Studies include site specific information and cost information when available. These are online at [http://www.cwp.org/case-studies-from-the-coastal-plain](http://www.cwp.org/case-studies-from-the-coastal-plain)

While the initial costs of adopting and designing newer technologies may be higher, there is ample evidence which demonstrates the use of LID development strategies can be cost effective in the long term. Land conservation, another key aspect of LID, can also have economic benefits. Conservation subdivisions have been shown to provide higher profits to developers because lots in conservation subdivisions carry a price premium, are less expensive to build, and sell more quickly than lots in conventional subdivisions (Rayman, 2006).

1.3 Coastal Features and LID
LID can be applied effectively in the Coastal Plain with careful planning and design. Improper application of LID design, with little consideration for physical constraints, will reduce LID performance and efficiency. Physical factors in the Coastal Plain include flat terrain, high water table, altered drainage areas, extensive groundwater interactions, poorly-drained soils, and extensive wetland systems. The most notable feature of the Coastal Plain is its flat terrain, which in combination with its generally high and often tidally-influenced groundwater table, allows greater opportunity for non-point source (NPS) pollution to enter a coastal system when compared to inland systems. South Carolina's Coastal Plain has the highest average annual rainfall in the United States (see Figure 1.3-1), with the exception of the Pacific Northwest. The Coastal Plain in South Carolina averages 50 to 52 inches per year (SC State Climatology Office, accessed 2013). In addition, the region is subject to intense tropical storms and hurricanes, and generally has higher rainfall intensities than further inland.

Chapter 3:
Conservation Principles and Neighborhood Site Design for Low Impact Development

3.1. Introduction to Conservation Principles and Neighborhood Site Design

- Minimize impervious cover, conserve more natural areas, and use pervious areas more effectively to treat stormwater runoff.
- Minimize paving, ROW, culdesacs, parking ratios, clearing/grading, rooftop runoff, sidewalks, setbacks, and structured parking. Increase vegetated open channels, open space, buffer systems, and tree conservation.

3.2 Conservation of Natural Areas

- Benefits of promoting conservation: Global and local climate regulation, air and water cleansing, water supply and regulation, erosion and sediment control, hazard mitigation, pollination, habitat functions, waste decomposition and treatment, human health and well-being benefits, food and renewable non-food products, cultural benefits
- Wetland functions -> Replacement options
  1) Flood protection -> Stormwater treatment practices, dikes/levees, advanced floodplain design
  2) Recreation -> Wetland restoration, species stocking
  3) Drinking water quality -> Water filtration plants, develop new water source
  4) Shoreline property protection -> Revetments, stream bank stabilization, stormwater treatment for channel protection
  5) Maintain baseflow in streams -> Deeper wells, alternative water source
  6) Wildlife habitat and biodiversity -> Wetland restoration, species stocking
  7) Commercial products from wetlands -> Wetlands restoration
  8) Reduce pollutants in streams and stormwater -> Stormwater facilities with water quality criteria
- Preserving ecologically important land, such as wetlands, buffer zones, riparian corridors, and floodplains, is critical for regional water quality.
- Compared to traditional development, open space development can reduce the annual runoff volume from a site by 40-60%, nitrogen loads by 42-81%, and phosphorus loads by 42-69% (CWP, 1998).
- Nutrient removal by buffers has been directly correlated with buffer width. The data indicate that approximately 80% nitrogen removal is achieved by stream buffers of approximately 80-90 feet, where incremental increases in removal efficiency (2% per additional foot of buffer width) are gained beyond this width.
- On average, forested buffers remove 36% more nitrogen than grass buffers (Bason, 2008). Where forested buffers are required but do not exist, native vegetation should be restored.
- Annual average benefits for different types of trees are summarized here:
  - Large: $107 to $127
  - Medium: $31 to $40
  - Small: $14 to $19
- Conifer: $40 to $62

- Limit Impervious Cover at the site level through better layout of the development or by incorporating low impact development (LID), such as pervious pavement.

- Preserve ecologically important land by performing a natural resources inventory and directing new development away from these areas.

3.3 Neighborhood Site Design Considerations

- Implement: Pervious islands, alternative turnarounds (T shaped), sidewalks on one side of street, smart driveway design (shared).

- Curbs should be eliminated wherever possible in favor of road drainage into open channel systems or other stormwater management practices.

- Vegetated stormwater practices throughout a neighborhood are less expensive than an extensive catch basin/manhole/pipe system that discharges to a larger stormwater management practice.

- Use alternative parking surfaces.

<table>
<thead>
<tr>
<th>Material</th>
<th>Initial Cost</th>
<th>Maintenance Cost</th>
<th>Water Quality Effectiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conventional</td>
<td>Medium</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Asphalt/Concrete</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Pervious Concrete</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Porous Asphalt</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Turf Block</td>
<td>Medium</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Brick</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Natural Stone</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Permeable Pavers</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Gravel</td>
<td>Low</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Wood Mulch</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Cobble</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>
- Use vegetative swales to direct stormwater into shallow bioretention areas that temporarily detain the water and allow for partial infiltration while pre-treating the remaining stormwater before it is discharged into waterways.

**Figure 3.3-7. Conventional Parking Lot Layout (RI DEM, 2011)**

Conventional parking designs clear the entire site, that later needs to be revegetated, and creates one massive area for parking.

**Figure 3.3-8. Parking Lot Layout Using LID Techniques (RI DEM, 2011)**

The LID design leaves undisturbed buffers of native vegetation, incorporates landscaped islands that treat stormwater, and disperses the parking into smaller areas.
It is important to distinguish between “typical” landscaping, such as vegetation in the medians in a parking lot, and LID landscaping, such as vegetation in bioretention used to treat stormwater in a parking lot. First, the landscape and maintenance crews should determine if the area is used for stormwater management.

Table 3.3-10. Summary of Sustainable Landscaping Practices

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Suggested landscaping practices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Site Selection</strong></td>
<td>Protect floodplain functions</td>
</tr>
<tr>
<td></td>
<td>Preserve wetlands</td>
</tr>
<tr>
<td></td>
<td>Preserve threatened or endangered species and their habitats</td>
</tr>
<tr>
<td></td>
<td>Select brownfields or grayfields for redevelopment</td>
</tr>
<tr>
<td></td>
<td>Select sites within existing communities</td>
</tr>
<tr>
<td></td>
<td>Maintain natural, undisturbed areas</td>
</tr>
<tr>
<td><strong>Site Design – Water</strong></td>
<td>Reduce potable water used for landscape irrigation</td>
</tr>
<tr>
<td></td>
<td>Protect and restore riparian, wetland, and shoreline buffers</td>
</tr>
<tr>
<td></td>
<td>Maintain water features to conserve water and other resources</td>
</tr>
<tr>
<td></td>
<td>Minimize stormwater runoff</td>
</tr>
<tr>
<td></td>
<td>Use alternative paving materials that promote infiltration of precipitation and maximize solar reflectance (albedo)</td>
</tr>
<tr>
<td><strong>Site Design – Soil and Vegetation</strong></td>
<td>Control and manage known invasive plants found on site</td>
</tr>
<tr>
<td></td>
<td>Use appropriate, non-invasive plants and native plants</td>
</tr>
<tr>
<td></td>
<td>Create a soil management plan</td>
</tr>
<tr>
<td></td>
<td>Minimize soil disturbance in design and construction</td>
</tr>
<tr>
<td></td>
<td>Preserve or restore appropriate plant biomass on site</td>
</tr>
<tr>
<td></td>
<td>Preserve or restore appropriate plant communities native to the ecoregion</td>
</tr>
<tr>
<td></td>
<td>Use vegetation to minimize building heating and cooling requirements</td>
</tr>
<tr>
<td></td>
<td>Reduce urban heat island effects</td>
</tr>
<tr>
<td></td>
<td>Reduce the risk of catastrophic wildfire</td>
</tr>
<tr>
<td><strong>Site Design – Materials Selection</strong></td>
<td>Reuse salvaged materials and plants</td>
</tr>
<tr>
<td></td>
<td>Use recycled content materials</td>
</tr>
<tr>
<td></td>
<td>Use regional materials</td>
</tr>
<tr>
<td></td>
<td>Support sustainable practices in plant production and materials manufacturing</td>
</tr>
</tbody>
</table>
Site Design – Human Health and Well-Being

Protect and maintain unique natural, cultural and historical places such as shell rings, Carolina Bays, tabby structures, and cemeteries.

Provide views of vegetation and outdoor spaces for mental restoration.

Construction

Restore soils damaged by previous development.

Reuse or recycle vegetation, rocks, and soil generated during construction.

Operations and Maintenance

Compost organic matter generated during site operations and maintenance.

- Mulches for stormwater management areas should be well-aged (6 months) hardwood mulch also known as “triple shredded mulch” (NCDENR, 2009) and applied to maintain a depth of 2 to 3 inches. Hardwood mulches tend to stay in place, whereas softwood mulches are more likely to float away during storm events.

- Turf areas produce considerably more runoff due to compaction and more pollutant contribution, due to the frequently-occurring overuse of fertilizers and pesticides, as well as excessive irrigation. For example, lawn area in residential development shall be limited to 20% of the overall lot size or 5,000 square feet, whichever is less (RIDEM 2011).

- Green roofs and walls significantly insulate and cut down on heating and cooling costs.

- Forego curbing to direct runoff flow directly into vegetated stormwater treatment facilities on site. Bio-swales, rain gardens, ponds.

- Use shredded hardwood mulch (not pine nuggets or pine straw) to prevent mulch floatation and clogging of outlet structures.

- Constructed wetlands can be cheaper than pipe and pond while being more effective. Also provides local vegetative diversity and excellent wildlife habitat.

- Remove invasive species early on so that planted species have a greater chance for survival.

- Soil restoration is a practice applied after construction, to deeply till compacted soils and restore their porosity by amending them with compost. These soil amendments can reduce runoff from compacted urban landscapes and also may be used to enhance the runoff reduction performance of areas that receive runoff, such as downspout disconnections, grass channels, and filter strips.
- Stormwater Strategies to Adapt to Climate Change
  - Enhance storage and treatment in natural areas
  - Use small-scale storage and treatment
  - Provide conveyances that allow for a margin of safety for flood conveyance and water quality treatment.
Chapter 4

The Runoff Reduction Approach

Runoff reduction is defined as “the total annual runoff volume reduced through canopy interception, soil infiltration, evaporation, transpiration, rainfall harvesting, engineered infiltration, or extended filtration.” Many of the BMPs in this manual utilize these mechanisms to either permanently or over a very long period (in the case of extended filtration), reduce the volume of runoff from a site.

Not all BMPs achieve runoff reduction equally. The level to which a BMP provides runoff reduction is indicated in Table 4.1-1. The rates are expressed as a percentage of the storage volume provided by the BMP. Calculations for determining storage volume are included in each BMP’s specifications. The runoff reduction rates in the table are derived from compiled research on the various BMPs’ annual runoff reduction capabilities (Hirschman et al., 2008), as well as an analysis of each BMP’s operation in a single storm event. (page 1)

<table>
<thead>
<tr>
<th>BMP</th>
<th>Runoff Reduction Rate (% of Storage Volume)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioretention - Enhanced</td>
<td>100%</td>
</tr>
<tr>
<td>Bioretention - Standard</td>
<td>60%</td>
</tr>
<tr>
<td>Permeable Pavement - Infiltration</td>
<td>100%</td>
</tr>
<tr>
<td>Permeable Pavement - Standard</td>
<td>50%</td>
</tr>
<tr>
<td>Infiltration</td>
<td>100%</td>
</tr>
<tr>
<td>Green Roof</td>
<td>100%</td>
</tr>
<tr>
<td>Rainwater Harvesting</td>
<td>100%</td>
</tr>
<tr>
<td>Disconnection to A/B or Amended Soils</td>
<td>50%</td>
</tr>
<tr>
<td>Disconnection to C/D Soils</td>
<td>25%</td>
</tr>
<tr>
<td>Disconnection to Forest Cover/Open Space</td>
<td>75%</td>
</tr>
<tr>
<td>Grass Channel in A/B or Amended Soils</td>
<td>20%</td>
</tr>
<tr>
<td>Grass Channel in C/D Soils</td>
<td>10%</td>
</tr>
<tr>
<td>Dry Swale</td>
<td>60%</td>
</tr>
</tbody>
</table>
Site Conditions, Stormwater Treatment Requirements, Physical Feasibility, and Site Applicability are all important information that should be considered when deciding what stormwater management practices can be used on a development site.

**Stormwater Treatment Requirements:**

Stormwater management requirements for a given site vary based on the site's location. The various rules that may apply are summarized below, and outlined in Figure 4.1-1. Please note that the summaries below are merely a guide, and not intended as a substitute for the actual rule or regulation. It is important to note that this manual, and the associated compliance calculators, make a distinction between treatment and runoff reduction. In particular, runoff reduction is required in the coastal zone when infiltration practices are used, and on sites regulated by the MS4 permit. While all practices included in this manual are assumed to provide treatment for their entire design volume, the runoff reduction percentage depends on the practice design (See Table 4.1-1).

**Coastal Zone Requirements:** All projects, regardless of size, that are located within ½ mile of a coastal receiving water, as defined in the SC Coastal Zone Management Program Refinements, must catch and store onsite the first ½ inch of runoff from the site’s disturbed area, or the first 1 inch of runoff from the site’s built-upon portion, whichever is greater. Storage may be accomplished through retention, detention, or infiltration practices. Storage designs are selected as appropriate for the specific site.

**Shellfish Bed Requirements:** For projects located within 1,000 feet of shellfish beds, the first 1½ inches of runoff from the built-upon portion of the property must be retained onsite.

**Small Municipal Separate Storm Sewer Systems (SMS4):** Communities subject to the SMS4 Permit are required to develop new development and redevelopment standards for sites greater than 1 acre that “demonstrate the runoff reduction and pollutant removal necessary to approximate pre-development conditions to the MEP [Maximum Extent Practicable] and to protect water quality.” Infiltration, evapotranspiration, rain harvesting, and stormwater reuse and recharge are all suggested as means to achieve this requirement.

**Water Quality Treatment and Water Quantity Control Requirements Statewide:** For projects that are not subject to an SMS4’s rules and are greater than 5 acres:

- Ponds with a permanent pool must store and release over 24 hours the first ½ inch of runoff from the site based upon respective drainage area(s).
- Ponds without a permanent pool must store and release over 24 hours the first 1 inch of runoff from the site based upon the respective drainage area(s).
- Infiltration practices must accept the first 1 inch of runoff from impervious surfaces.
For Water Quantity Control, post-development discharge rates cannot exceed the pre-development rates for the 2- and 10-year, 24 hour storm event for all sites regulated by the Statewide Stormwater Regulations (this requirement also exists in most SMS4 communities). All BMPs address water quantity to some extent, but many BMPs whose main purpose is water quality treatment typically do not have enough volume to manage larger storm events.

Site Applicability:

Not all BMPs are appropriate for all situations. Table 4.1-4 describes the site applicability for each BMP for the following factors:

Rural Use: This column indicates whether or not the stormwater management practice is typically suited for use in rural areas and on low-density development sites.

Suburban Use: This column indicates whether or not the stormwater management practice is typically suited for use in suburban areas and on medium-density development sites.

Urban Use: This column identifies the stormwater management practices that are typically suited for use in urban and ultra-urban areas where space is at a premium.

Construction Cost: This column assesses the relative construction cost of each of the stormwater management practices.

Maintenance: This column assesses the relative maintenance burden associated with each stormwater management practice. It is important to note that all stormwater management practices require some kind of routine inspection and maintenance.
<table>
<thead>
<tr>
<th>BMP</th>
<th>Rural Use</th>
<th>Suburban Use</th>
<th>Urban Use</th>
<th>Construction Cost</th>
<th>Maintenance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioretention</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Permeable Pavement</td>
<td>Maybe</td>
<td>Yes</td>
<td>Yes</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Infiltration</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Green Roof</td>
<td>Maybe</td>
<td>Yes</td>
<td>Yes</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Rainwater Harvesting</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Disconnection</td>
<td>Yes</td>
<td>Yes</td>
<td>Maybe</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Open Channels</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Low-Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Filtration</td>
<td>Maybe</td>
<td>Yes</td>
<td>Yes</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Dry Ponds</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Wet Ponds</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td>Stormwater Wetlands</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Low</td>
<td>Medium</td>
</tr>
</tbody>
</table>
4.2 Bioretention

Introduction

Bioretention areas, shallow depressional areas that are filled with an engineered soil media and are planted with trees, shrubs, and other herbaceous vegetation, are one of the most effective stormwater management practices that can be used in coastal South Carolina to reduce post-construction stormwater runoff rates, volumes, and pollutant loads. They also provide a number of other benefits, including improved aesthetics, wildlife habitat, urban heat island mitigation, and improved air quality.
KEY CONSIDERATIONS: BIORETENTION

DESIGN CRITERIA:
- Bioretention areas should be designed to completely drain within 72 hours of the end of a rainfall event.
- A maximum ponding depth of 18 inches is recommended within bioretention areas to help prevent the formation of nuisance ponding conditions.
- Unless a shallow water table is found on the development site, bioretention area planting beds should be between 18 – 36 inches deep.
- The distance from the bottom of the practice to the top of the seasonal high water table should not be less than 0.5 feet.
- The infiltration rate of native soil needs to be included in most cases where no under drains are specified.

BENEFITS:
- Helps restore pre-development hydrology on development sites and reduces post-construction stormwater runoff rates, volumes, and pollutant loads.
- Can be integrated into development plans as attractive landscaping features.

LIMITATIONS:
- Can only be used to manage runoff from relatively small drainage areas of up to 5 acres in size.

SITE APPLICABILITY:
- Rural Use
- Suburban Use
- Urban Use
- Construction
  - Cost: Medium
  - Maintenance: Medium
  - Area Required: Low

STORMWATER MANAGEMENT PRACTICE PERFORMANCE:

Runoff Reduction Credit Approach
(applies to Shellfish Bed, SMS4, and infiltration credit approaches)
- X 100% credit for storage volume of infiltration or enhanced design.
- X 60% credit for storage volume of standard design.

Coastal Zone Credit Approach
- X 100% credit for storage volume of practice.

Statewide Water Quality Requirement Credit Approach
- X Runoff Reduction credit applies to infiltration requirement.

Pollutant Removal\(^1\)
- 80-90% - Total Suspended Solids
- 55-90% - Total Phosphorus
- 65-90% - Total Nitrogen
- N/A - Metals
- 55-90% - Pathogens

\(^1\) expected annual pollutant load removal
4.3 Permeable Pavement Systems

Permeable pavement systems represent alternative paving surfaces that capture and temporarily store the design volume by filtering runoff through voids in the pavement surface into an underlying stone reservoir. Filtered runoff may be collected and returned to the conveyance system, or allowed to partially infiltrate into the soil. This allows permeable pavement systems to provide measurable reductions in post-construction stormwater runoff rates, volumes, and pollutant loads.

<table>
<thead>
<tr>
<th>KEY CONSIDERATIONS: PERMEABLE PAVEMENT SYSTEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN CRITERIA:</strong></td>
</tr>
<tr>
<td>♦ Permeable pavement systems should be designed to completely drain within 48 hours.</td>
</tr>
<tr>
<td>♦ If the infiltration rate of the native soils located beneath a permeable pavement system do not meet or exceed 0.3 in/hr, an underdrain should be included in the design.</td>
</tr>
<tr>
<td>♦ The distance from the bottom of the practice to the top of the seasonal high water table should not be less than 0.5 feet.</td>
</tr>
<tr>
<td><strong>BENEFITS:</strong></td>
</tr>
<tr>
<td>♦ Helps reduce post-construction stormwater runoff rates, volumes and pollutant loads without consuming valuable land.</td>
</tr>
<tr>
<td>♦ Particularly well suited for use on urban development sites and in low traffic areas, such as overflow parking lots.</td>
</tr>
<tr>
<td><strong>LIMITATIONS:</strong></td>
</tr>
<tr>
<td>♦ Relatively high construction costs, which are typically offset by savings on stormwater infrastructure (e.g., storm drain system).</td>
</tr>
<tr>
<td>♦ Permeable pavement systems should be installed only by experienced personnel.</td>
</tr>
</tbody>
</table>

| SITE APPLICABILITY:                         |
| ♦ Rural Use                                 |
| ♦ Suburban Use                              |
| ♦ Urban Use                                 |
| ♦ Construction Cost:                         |
| ♦ High                                     |
| ♦ Maintenance: High                         |
| ♦ Area Required: Low                        |

| STORMWATER MANAGEMENT PRACTICE PERFORMANCE: |

Runoff Reduction Credit Approach (applies to Shellfish Bed, SMS4, and infiltration credit approaches)
- X 100% credit for storage volume of infiltration design.
- X 50% credit for storage volume of standard design.

Coastal Zone Credit Approach
- X 100% credit for storage volume of practice

Statewide Water Quality Requirement Credit Approach
- X Runoff Reduction credit applies to infiltration requirement.

Pollutant Removal¹
- 80% - Total Suspended Solids
- 60-80% - Total Phosphorus
- 60-80% - Total Nitrogen
- N/A - Metals
- 45-75% - Pathogens

¹ expected annual pollutant load removal
4.4 Stormwater Infiltration

Introduction

Infiltration practices are shallow excavations, typically filled with stone or an engineered soil mix, that are designed to intercept and temporarily store post-construction stormwater runoff until it infiltrates into the underlying and surrounding soils over a two day period. Runoff first passes through multiple pretreatment mechanisms to trap sediment and organic matter before it reaches the practice. As the stormwater penetrates the underlying soil, chemical and physical adsorption processes remove pollutants.

Infiltration practices are suitable for use in residential and other urban areas where field measured soil infiltration rates are sufficient. To prevent possible groundwater contamination, infiltration must not be utilized at sites designated as stormwater hotspots. If properly designed, they can provide significant reductions in post-construction stormwater runoff rates, volumes, and pollutant loads on development sites.

There are two major variations of infiltration practices, namely infiltration trenches and infiltration basins. A brief description of each of these design variants is provided below:

Infiltration Trenches: Infiltration trenches are excavated trenches filled with stone. Stormwater runoff is captured and temporarily stored in the stone reservoir, where it is allowed to infiltrate into the surrounding and underlying native soils. Infiltration trenches can be used to “receive” stormwater runoff from contributing drainage areas of up to 2 acres in size and should only be used on development sites where sediment loads can be kept relatively low.

Infiltration Basins: Infiltration basins are shallow, landscaped excavations filled with an engineered soil mix. They are designed to capture and temporarily store stormwater runoff in the engineered soil mix, where it is subjected to the hydrologic processes of evaporation and transpiration, before being allowed to infiltrate into the surrounding soils. They are essentially non-underdrained bioretention areas and should also only be used on drainage areas up to 5 acres where sediment loads can be kept relatively low.

![Figure 4.4-9. Typical Detail for Pretreatment at Pavement Edge (Source: CWP)](image-url)
### Key Considerations: Stormwater Infiltration

**Design Criteria:**
- Pretreatment must be provided upstream of all infiltration practices.
- Infiltration practices must be designed to completely drain within 72 hours.
- Underlying native soils must have an infiltration rate of 0.3 in/hr or more.
- The distance from the bottom of an infiltration practice to the top of the seasonal high water table must be 0.5 feet or more.

**Benefits:**
- Helps restore pre-development hydrology on development sites and reduces post-construction stormwater runoff rates, volumes, and pollutant loads.
- Can be integrated into development plans as attractive landscaping features.

**Limitations:**
- Can only be used to “receive” runoff from relatively small drainage areas of up to 5 acres in size.
- Should not be used to “receive” stormwater runoff that contains high sediment loads.

**Site Applicability:**
- Rural Use
- Suburban Use
- Urban Use
- Construction Cost: Medium
- Maintenance: Medium
- Area Required: Low

**Stormwater Management Practice Performance:**

**Runoff Reduction Credit Approach** (applies to Shellfish Bed, SMS4, and infiltration credit approaches)
- X 100% credit for storage volume of practice

**Coastal Zone Credit**
- X 100% credit for storage volume of practice

**Statewide Water Quality Requirement Credit Approach**
- X Runoff Reduction credit applies to infiltration requirement.

**Pollutant Removal**
- 80-95% - Total Suspended Solids
- 65-95% - Total Phosphorus
- 55-90% - Total Nitrogen
- N/A - Metals
- 65-95% - Pathogens

\(^1\) expected annual pollutant load removal
4.6 Rainwater Harvesting

Introduction

Rainwater harvesting systems store rainfall for future use. Rainwater that falls on rooftops is collected and conveyed into an above- or below-ground storage tank (also referred to as a cistern), where it can be used for non-potable water uses and on-site stormwater disposal/infiltration. Non-potable uses may include landscape irrigation, exterior washing (e.g. car washes, building facades, sidewalks, street sweepers, fire trucks, etc.), flushing of toilets and urinals, fire suppression (sprinkler systems), supply for cooling towers, evaporative coolers, fluid coolers and chillers, supplement water for closed loop systems, steam boilers, replenishment of water features and water fountains, distribution to a green wall or living wall system, laundry, and even delayed discharge to the combined sewer system.

<table>
<thead>
<tr>
<th>KEY CONSIDERATIONS: RAINWATER HARVESTING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DESIGN CRITERIA:</strong></td>
</tr>
<tr>
<td>† Rainwater harvesting systems should be sized based on the contributing area, local rainfall patterns and projected demand for the harvested rainwater.</td>
</tr>
<tr>
<td>† Pretreatment should be provided upstream of all storage tanks to prevent leaves and other debris from clogging the system.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>BENEFITS:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>† Helps restore pre-development hydrology on development sites and reduces post-construction stormwater runoff rates, volumes and pollutant loads.</td>
</tr>
<tr>
<td>† Can be used on nearly any development site.</td>
</tr>
<tr>
<td>† Reduces demand on public water supplies, which helps to protect groundwater aquifers from drawdown and salt water intrusion.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>LIMITATIONS:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>† Stored rainwater should be used on a regular basis to maintain system storage capacity.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SITE APPLICABILITY:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>† Rural Use</td>
</tr>
<tr>
<td>† Suburban Use</td>
</tr>
<tr>
<td>† Urban Use</td>
</tr>
<tr>
<td>† Construction Cost: Medium</td>
</tr>
<tr>
<td>† Maintenance: Medium</td>
</tr>
<tr>
<td>† Area Required: Low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>STORMWATER MANAGEMENT PRACTICE PERFORMANCE:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Runoff Reduction Credit Approach (applies to Shellfish Bed, SMS4, and infiltration credit approaches)</td>
</tr>
<tr>
<td>† Varies¹</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Coastal Zone Credit Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>† Equal to runoff reduction credit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Statewide Water Quality Requirement Credit Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>† Runoff Reduction credit applies to infiltration requirement.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pollutant Removal¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varies¹ - Total Suspended Solids</td>
</tr>
<tr>
<td>Varies¹ - Total Phosphorus</td>
</tr>
<tr>
<td>Varies¹ - Total Nitrogen</td>
</tr>
<tr>
<td>Varies¹ - Metals</td>
</tr>
<tr>
<td>N/A - Pathogens</td>
</tr>
</tbody>
</table>

¹ = varies according to storage capacity of the rainwater harvesting system and demand for the harvested water.
4.7 Impervious Surface Disconnection

Introduction

In this practice, runoff from a rooftop or other small impervious surface is directed to a pervious surface or small practice to provide infiltration, filtering, or reuse (Figure 4.7-1 and Figure 4.7-2). Disconnection practices can be used to reduce the volume of runoff created by impervious surfaces. Applicable practices include:

Simple disconnection to managed turf areas
Simple disconnection to forest cover or preserved open space
Simple disconnection to a soil compost amended filter path

Disconnection to alternative practices, such as infiltration (dry wells) or bioretention (rain gardens) are covered in other specifications in this manual. Disconnection practices reduce a portion of the water quality volume. In order to meet requirements for larger storm events, disconnection practices must be combined with additional practices.
### Key Considerations: Impervious Surface Disconnection

#### Design Criteria:
- Disconnection area should be at least 15 feet long and 10 feet wide.
- Disconnections should convey stormwater away from buildings to prevent damage to foundations.

#### Benefits:
- Helps restore pre-development hydrology on development sites and reduces post-construction stormwater runoff rates, volumes and pollutant loads.
- Practices have relatively low construction cost and long-term maintenance burden.

#### Limitations:
- Only applicable to very small drainage areas.
- Simple disconnections provide greater stormwater management benefits on A and B soils.
- This practice is difficult to use in series with other practices (treatment train) as the runoff gets dispersed over a wide area.

#### Stormwater Management Practice Performance

**Runoff Reduction Credit Approach**
(applies to Shellfish Bed, SMS4, and infiltration credit approaches)
- **X** 25% - 50% credit for disconnected impervious areas.

**Coastal Zone Credit Approach**
- **X** 25% - 50% credit for disconnected impervious areas.

**Statewide Water Quality Requirement Credit Approach**
- **X** Runoff Reduction credit applies to infiltration requirement.

**Pollutant Removal**
- 80% - Total Suspended Solids
- 25% - 50% - Total Phosphorus
- 25% - 50% - Total Nitrogen
- 25% - 50% - Metals
- N/A - Pathogens

---

### Site Applicability:

<table>
<thead>
<tr>
<th>Rural use</th>
<th>Suburban use</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Cost:</strong> Low</td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance:</strong> Low</td>
<td></td>
</tr>
<tr>
<td><strong>Area Required:</strong> Low</td>
<td></td>
</tr>
</tbody>
</table>

---

1. *expected annual pollutant load removal*
4.8 Open Channel Systems

Introduction
Vegetated open channels are designed to capture and treat the water quality design storm, and safely convey larger storm events. Examples of vegetated open channels include:

Grass channel
Dry swale
Wet swale
Two-stage ditch (may be used to provide detention for larger storm events)
Regenerative stormwater conveyance

Open channel systems shall not be designed to provide stormwater detention except under extremely unusual conditions. Generally, open channel systems must be combined with a separate facility to meet these requirements.

Figure 4.8-2. Grass Channel Typical Plan and Section
# Key Considerations: Open Channel Systems

## Design Criteria:
- Depending on the design option, can treat the design water quality storm by detaining this volume with check dams, or by conveying at low velocities and depth to promote filtering and infiltration.
- Design to convey larger storm events safely, and at non-erosive velocities.

## Benefits:
- Helps restore pre-development hydrology on development sites and reduces post-construction stormwater runoff rates, volumes and pollutant loads.
- Ideally suited to the coastal environment, where stormwater is conveyed primarily in open channels.

## Limitations:
- Difficult to apply in densely developed areas.
- With the exception of Regenerative Stormwater Conveyance Systems, cannot be used on steep slopes.

## Site Applicability:
- Rural Use
- Suburban Use

<table>
<thead>
<tr>
<th>Construction Cost:</th>
<th>Maintenance:</th>
<th>Area Required:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Medium</td>
<td>Medium</td>
<td>Medium</td>
</tr>
</tbody>
</table>

## Stormwater Management Practice Performance:

### Runoff Reduction Credit Approach
( applies to Shellfish Bed, SMS4, and infiltration credit approaches)
- Grass Channel: 10% - 20% credit for design volume
- Dry Swale: 60% credit for storage volume
- Wet Swale: 0% credit
- RSC: 100% credit for storage volume

### Coastal Zone Credit
- Grass Channel: 10% - 20% credit for design volume
- Dry Swale, Wet Swale, and RSC: 100% credit for storage volume of practice

### Statewide Water Quality Requirement Credit Approach
- Grass Channel, Dry Swale, and RSC: Runoff Reduction credit applies to infiltration requirement.
- Wet Swale: At least ½" of runoff must be stored and released over 24 hours

### Annual Pollutant Removal
- 40% - Total Suspended Solids
- 40%-45% - Total Phosphorus
- 20%-35% - Total Nitrogen
- 30% - Metals
- N/A – Pathogens

1 expected annual pollutant load removal
2 range, with best removal for the wet or dry swales
3 range with best removal for grassed channels
4 No data available, but expected poor pollutant removal.
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Indicator¹</th>
<th>Inundation</th>
<th>Salt Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Aletris farinosa</em></td>
<td>White Colicroot</td>
<td>FAC</td>
<td>Moist soil</td>
<td>None</td>
</tr>
<tr>
<td><em>Andropogon gerardii</em></td>
<td>Big Bluestem</td>
<td>FAC</td>
<td>No</td>
<td>Moderate</td>
</tr>
<tr>
<td><em>Aquilegia canadensis</em></td>
<td>Wild Columbine</td>
<td>FACU</td>
<td>No</td>
<td>None</td>
</tr>
<tr>
<td><em>Asclepias incarnata</em></td>
<td>Swamp Milkweed</td>
<td>OBL</td>
<td>Saturated</td>
<td>None</td>
</tr>
<tr>
<td><em>Asclepias lanceolata</em></td>
<td>Red Milkweed</td>
<td>OBL</td>
<td>Wet soils</td>
<td>Moderate/brackish</td>
</tr>
<tr>
<td><em>Aster novae-angliae</em></td>
<td>New England Aster</td>
<td>FACW</td>
<td>Moist soils, yes</td>
<td>Yes</td>
</tr>
<tr>
<td><em>Athyrium filix-femina</em></td>
<td>Lady Fern</td>
<td>FAC</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Canna glauca</em></td>
<td>Water Canna</td>
<td>OBL</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Canna flaccida</em></td>
<td>Golden Canna</td>
<td>OBL</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Carex stricta</em></td>
<td>Tussock Sedge</td>
<td>OBL</td>
<td>Saturated, 0-6”</td>
<td>None</td>
</tr>
<tr>
<td><em>Chasmanthium latifolium</em></td>
<td>River Oats</td>
<td>FAC</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Chelone glabra</em></td>
<td>White Turtlehead</td>
<td>OBL</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Conoclinium coelestinum</em></td>
<td>Blue Mistflower</td>
<td>FAC</td>
<td>Moist to Wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Crinum americanum</em></td>
<td>Southern Swamp Lily</td>
<td>OBL</td>
<td>Saturated</td>
<td></td>
</tr>
<tr>
<td><em>Dulichium arundinaceum</em></td>
<td>Threeway Sedge</td>
<td>OBL</td>
<td>Saturated, shallow</td>
<td>None</td>
</tr>
<tr>
<td><em>Echinodorus cordifolius</em></td>
<td>Creeping Burhead</td>
<td>OBL</td>
<td>Saturated, shallow</td>
<td>None</td>
</tr>
<tr>
<td><em>Equisetum hyemale</em></td>
<td>Scouring Rush</td>
<td>FACW</td>
<td>Saturated, shallow</td>
<td>None</td>
</tr>
<tr>
<td><em>Eupatorium fistulosum</em></td>
<td>Joe Pye Weed</td>
<td>FACW</td>
<td>Moist to Wet Soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Geranium maculatum</em></td>
<td>Spotted Geranium</td>
<td>FACU</td>
<td>Moist Soils</td>
<td></td>
</tr>
<tr>
<td><em>Helianthus angustifolius</em></td>
<td>Swamp Sunflower</td>
<td>FACW</td>
<td>Wet Soils</td>
<td></td>
</tr>
<tr>
<td><em>Hibiscus coccineus</em></td>
<td>Scarlet Swamp Hibiscus</td>
<td>OBL</td>
<td>Saturated, shallow</td>
<td></td>
</tr>
<tr>
<td><em>Hibiscus moscheutos</em></td>
<td>Rose Mallow Hibiscus</td>
<td>OBL</td>
<td>Saturated, shallow</td>
<td>Low</td>
</tr>
<tr>
<td><em>Hymenocallis caoliniana</em></td>
<td>Spider Lily</td>
<td>OBL</td>
<td>Saturated, shallow</td>
<td>None</td>
</tr>
<tr>
<td><em>Iris versicolor</em></td>
<td>Virginia Iris</td>
<td>OBL</td>
<td>Shallow</td>
<td>None</td>
</tr>
<tr>
<td><em>Juncus effuses</em></td>
<td>Common Rush</td>
<td>OBL</td>
<td>Shallow &lt;6”</td>
<td>Low</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Indicator¹</td>
<td>Inundation</td>
<td>Salt Tolerance</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------</td>
<td>------------</td>
<td>------------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Liatris spicata</td>
<td>Gayfeather</td>
<td>FAC</td>
<td>Moist Soils</td>
<td>Low</td>
</tr>
<tr>
<td>Lobelia cardinalis</td>
<td>Cardinal Flower</td>
<td>FACW</td>
<td>Moist to Wet Soils</td>
<td>None</td>
</tr>
<tr>
<td>Lobelia siphilitica</td>
<td>Blue Lobelia</td>
<td>OBL</td>
<td>Moist to wet soils</td>
<td></td>
</tr>
<tr>
<td>Lysimachia ciliata</td>
<td>Fringed Loosestrife</td>
<td>FACW</td>
<td>Moist to wet soils, seasonal flooding</td>
<td></td>
</tr>
<tr>
<td>Mimulus ringens</td>
<td>Allegheny monkeyflower</td>
<td>OBL</td>
<td>Saturated, shallow</td>
<td></td>
</tr>
<tr>
<td>Onoclea sensibilis</td>
<td>Sensitive Fern</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td></td>
</tr>
<tr>
<td>Osmunda cinnamomea</td>
<td>Cinnamon Fern</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>Low</td>
</tr>
<tr>
<td>Osmunda spectabilis</td>
<td>Royal Fern</td>
<td>OBL</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td>Orontium aquaticum</td>
<td>Golden Club</td>
<td>OBL</td>
<td>Up to 10&quot;</td>
<td></td>
</tr>
<tr>
<td>Panicum virgatum</td>
<td>Switch Grass</td>
<td>FAC</td>
<td>Moist soil</td>
<td>Moderate</td>
</tr>
<tr>
<td>Peltandra virginica</td>
<td>Green Arrow Arum</td>
<td>OBL</td>
<td>Shallow &lt; 1'</td>
<td>Low (&lt; 2 ppt)</td>
</tr>
<tr>
<td>Pontederia cordata</td>
<td>Pickerelweed</td>
<td>OBL</td>
<td>Shallow &lt; 1'</td>
<td>Low (&lt; 3 ppt)</td>
</tr>
<tr>
<td>Physostegia virginiana</td>
<td>Obedient Plant</td>
<td>FACW</td>
<td>Moist soil</td>
<td></td>
</tr>
<tr>
<td>Polygonatum biflorum</td>
<td>Great Solomon's Seal</td>
<td>FACU</td>
<td>Moist soil</td>
<td></td>
</tr>
<tr>
<td>Rhynchospora colorata</td>
<td>Starrush Whitetop</td>
<td>FACW</td>
<td>Saturated</td>
<td></td>
</tr>
<tr>
<td>Rudbeckia laciniata</td>
<td>Cutleaf Coneflower</td>
<td>FACW</td>
<td>Moist soil</td>
<td>None</td>
</tr>
<tr>
<td>Sagittaria latifolia</td>
<td>Common Arrowhead, Duck Potato</td>
<td>OBL</td>
<td>Up to 2.0&quot;</td>
<td>None</td>
</tr>
<tr>
<td>Saururus cernuus</td>
<td>Lizard's Tail</td>
<td>OBL</td>
<td>Shallow &lt; 4&quot;</td>
<td>None</td>
</tr>
<tr>
<td>Schizachyrium scoparium</td>
<td>Little Bluestem</td>
<td>FACU</td>
<td>Moist soil</td>
<td>None</td>
</tr>
<tr>
<td>Schoenoplectus tabernaemontani</td>
<td>Softstem Bulrush</td>
<td>OBL</td>
<td>Wet soil to standing water</td>
<td>Fresh or Brackish</td>
</tr>
<tr>
<td>Solidago sempervirens</td>
<td>Seaside Goldenrod</td>
<td>FACW</td>
<td>Yes</td>
<td>High</td>
</tr>
<tr>
<td>Sorghastrum nutans</td>
<td>Indiangrass</td>
<td>FACU</td>
<td>Moist soil</td>
<td>Moderate</td>
</tr>
<tr>
<td>Spartina alterniflora</td>
<td>Saltmarsh Cordgrass</td>
<td>OBL</td>
<td>Yes</td>
<td>High</td>
</tr>
</tbody>
</table>
Table 4.2-4 Perennials and Grasses Appropriate for Bioretention

<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Indicator(^1)</th>
<th>Inundation</th>
<th>Salt Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Spartina bakeri</em></td>
<td>Sand cordgrass</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>Fresh - Saline</td>
</tr>
<tr>
<td><em>Spartina patens</em></td>
<td>Saltmeadow Cordgrass</td>
<td>FACW</td>
<td>Wet soils</td>
<td>High</td>
</tr>
<tr>
<td><em>Thalia dealbata</em></td>
<td>Powdery Alligator-flag</td>
<td>OBL</td>
<td>up to 1.5(^*)</td>
<td>Yes</td>
</tr>
<tr>
<td><em>Tradescantia virginiana</em></td>
<td>Virginia Spiderwort</td>
<td>FAC</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Vernonia noveboracensis</em></td>
<td>Ironweed</td>
<td>FACW</td>
<td>Moist soils</td>
<td>None</td>
</tr>
</tbody>
</table>

\(^1\) Wetland Indicator Status (USACE, 2010):
- OBL (Obligate) almost always is a hydrophyte, rarely found in uplands (occurs in wetlands >99% of the time)
- FACW (Facultative Wetland) usually a hydrophyte, but occasionally found in uplands (occurs in wetlands 67-99% of the time)
- FAC (Facultative) commonly occurs either as a hydrophyte or a non-hydrophyte (occurs in wetlands 33-67% of the time)
- FACU (Facultative Upland) occasionally is a hydrophyte, but usually occurs in uplands (occurs in wetlands 1-33% of the time)
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Indicator</th>
<th>Inundation</th>
<th>Salt Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baccharis halimifolia</td>
<td>Groundsel Tree Salt Myrtle</td>
<td>FAC</td>
<td>Wet soils</td>
<td>High</td>
</tr>
<tr>
<td>Callicarpa americana</td>
<td>Beautyberry</td>
<td>FACU</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td>Cephalanthus occidentalis</td>
<td>Button Bush</td>
<td>OBL</td>
<td>Up to 3 ft</td>
<td>Low</td>
</tr>
<tr>
<td>Clethra alnifolia</td>
<td>Summersweet Sweet Pepperbush</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td>Cyrilla racemiflora</td>
<td>Swamp Titi</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>Low</td>
</tr>
<tr>
<td>Hamamelis virginiana</td>
<td>Witch Hazel</td>
<td>FACU</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td>Hypericum prolificum</td>
<td>Shrubby St. John’s Wort</td>
<td>FAC</td>
<td>Moist soils, flood tolerant</td>
<td>None</td>
</tr>
<tr>
<td>Ilex glabra</td>
<td>Inkberry</td>
<td>FACW</td>
<td>Wet soils, flood tolerant</td>
<td>Moderate</td>
</tr>
<tr>
<td>Ilex verticillata</td>
<td>Winterberry Holly</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td>Ilex vomitoria</td>
<td>Yaupon Holly</td>
<td>FAC</td>
<td>Moist soils</td>
<td>Moderate</td>
</tr>
<tr>
<td>Itea virginica</td>
<td>Virginia Sweetspire</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td>Kosteletzkya virginica</td>
<td>Seashore Mallow</td>
<td>OBL</td>
<td>Moist to wet soils</td>
<td>Moderate</td>
</tr>
<tr>
<td>Lindera benzoin</td>
<td>Spicebush</td>
<td>FACW</td>
<td>Seasonal inundation</td>
<td>None</td>
</tr>
<tr>
<td>Myrica cerifera</td>
<td>Wax Myrtle</td>
<td>FAC</td>
<td>Moist to wet soils</td>
<td>Moderate</td>
</tr>
<tr>
<td>Photinia pyrifolia</td>
<td>Red Chokeberry</td>
<td>FACW</td>
<td>Moist soils</td>
<td>Low</td>
</tr>
<tr>
<td>Rhododendron canescens</td>
<td>Dwarf Azalea</td>
<td>FACW</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td>Rhododendron viscosum</td>
<td>Swamp Azalea</td>
<td>OBL</td>
<td>Wet soil</td>
<td>None</td>
</tr>
<tr>
<td>Rosa carolina</td>
<td>Carolina Rose</td>
<td>FACU</td>
<td>Moist to wet soils</td>
<td>Moderate</td>
</tr>
<tr>
<td>Sabal minor</td>
<td>Dwarf Palmetto</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Indicator</td>
<td>Inundation</td>
<td>Salt Tolerance</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------</td>
<td>-----------</td>
<td>---------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><em>Sambucus canadensis</em></td>
<td>Elderberry</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Serenoa repens</em></td>
<td>Saw Palmetto</td>
<td>FACU</td>
<td>Occasionally wet</td>
<td>None</td>
</tr>
<tr>
<td><em>Vaccinium corymbosum</em></td>
<td>Highbush Blueberry</td>
<td>FACW</td>
<td>Wet soil</td>
<td>High</td>
</tr>
<tr>
<td><em>Viburnum dentatum</em></td>
<td>Arrowwood</td>
<td>FAC</td>
<td>Moist to wet</td>
<td>None</td>
</tr>
</tbody>
</table>

\(^1\) Wetland Indicator Status (USACE, 2010):

- **OBL (Obligate)** almost always is a hydrophyte, rarely found in uplands (occurs in wetlands >99% of the time)
- **FACW (Facultative Wetland)** usually a hydrophyte, but occasionally found in uplands (occurs in wetlands 67-99% of the time)
- **FAC (Facultative)** commonly occurs either as a hydrophyte or a non-hydrophyte (occurs in wetlands 33-67% of the time)
- **FACU (Facultative Upland)** occasionally is a hydrophyte, but usually occurs in uplands (occurs in wetlands 1-33% of the time)
<table>
<thead>
<tr>
<th>Scientific Name</th>
<th>Common Name</th>
<th>Indicator&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Inundation</th>
<th>Salt Tolerance</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acer rubrum</em></td>
<td>Red Maple</td>
<td>FAC</td>
<td>Seasonal inundation</td>
<td>None</td>
</tr>
<tr>
<td><em>Amelanchier canadensis</em></td>
<td>Serviceberry</td>
<td>FAC</td>
<td>Moist to wet soils</td>
<td>Moderate</td>
</tr>
<tr>
<td><em>Betula nigra</em></td>
<td>River Birch</td>
<td>FACW</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Carpinus caroliniana</em></td>
<td>American Hornbeam</td>
<td>FAC</td>
<td>Periodic flooding</td>
<td>None</td>
</tr>
<tr>
<td><em>Celtis occidentalis</em></td>
<td>Hackberry</td>
<td>FACU</td>
<td>Moist soils</td>
<td>Low</td>
</tr>
<tr>
<td><em>Chamaecyparis thyoides</em></td>
<td>Atlantic White Cedar</td>
<td>OBL</td>
<td>Wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Chionanthus virginicus</em></td>
<td>Fringetree</td>
<td>FACU</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Cornus florida</em></td>
<td>Flowering Dogwood</td>
<td>FACU</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Crataegus aestivalis</em></td>
<td>Mayhaw May Hawthorn</td>
<td>OBL</td>
<td>Wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Diospyros virginiana</em></td>
<td>Persimmon</td>
<td>FAC</td>
<td>Variable moisture</td>
<td>Low</td>
</tr>
<tr>
<td><em>Gordonia lasianthus</em></td>
<td>Loblolly Bay</td>
<td>FACW</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Ilex cassine</em></td>
<td>Dahoon Holly</td>
<td>FACW</td>
<td>Moist soils</td>
<td>Low</td>
</tr>
<tr>
<td><em>Ilex opaca</em></td>
<td>American Holly</td>
<td>FAC</td>
<td>Wet soils</td>
<td>Moderate</td>
</tr>
<tr>
<td><em>Juniperus virginiana</em></td>
<td>Eastern Red Cedar</td>
<td>FACU</td>
<td>Moist soils</td>
<td>Low</td>
</tr>
<tr>
<td><em>Liquidambar styracillua</em></td>
<td>Sweetgum</td>
<td>FAC</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Liriodendron tulipifera</em></td>
<td>Tulip Tree</td>
<td>FAC</td>
<td>Moist soils</td>
<td>Low</td>
</tr>
<tr>
<td><em>Magnolia virginiana</em></td>
<td>Sweetbay Magnolia</td>
<td>FACW</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Nyssa aquatica</em></td>
<td>Water Tupelo</td>
<td>OBL</td>
<td>Wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Nyssa biflora</em></td>
<td>Ogeechee Tupelo</td>
<td>OBL</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Nyssa sylvatica</em></td>
<td>Black Gum, Black Tupelo</td>
<td>FAC</td>
<td>Moist soils; seasonal flooding</td>
<td>Moderate</td>
</tr>
<tr>
<td><em>Ostrya virginiana</em></td>
<td>Hop Hornbeam, Ironwood</td>
<td>FACU</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td>Scientific Name</td>
<td>Common Name</td>
<td>Indicator$^2$</td>
<td>Inundation</td>
<td>Salt Tolerance</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------</td>
<td>---------------</td>
<td>-------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><em>Platanus occidentalis</em></td>
<td>American Sycamore</td>
<td>FACW</td>
<td>Saturated soils; seasonal flooding</td>
<td>None</td>
</tr>
<tr>
<td><em>Quercus bicolor</em></td>
<td>Swamp White Oak</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Quercus lyrata</em></td>
<td>Overcup Oak</td>
<td>OBL</td>
<td>Yes</td>
<td>None</td>
</tr>
<tr>
<td><em>Quercus michauxii</em></td>
<td>Swamp Chestnut Oak</td>
<td>FACW</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Quercus nuttallii</em></td>
<td>Nuttall Oak</td>
<td>FACW</td>
<td>Extended flooding</td>
<td>None</td>
</tr>
<tr>
<td><em>Quercus pagoda</em></td>
<td>Cherrybark Oak</td>
<td>FACW</td>
<td></td>
<td>None</td>
</tr>
<tr>
<td><em>Quercus palustris</em></td>
<td>Pin Oak</td>
<td>FACW</td>
<td>Moist to wet soils</td>
<td>Low</td>
</tr>
<tr>
<td><em>Quercus phellos</em></td>
<td>Willow Oak</td>
<td>FACW</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Quercus shumardii</em></td>
<td>Shumard Oak</td>
<td>FAC</td>
<td>Short-term flooding</td>
<td>None</td>
</tr>
<tr>
<td><em>Sassafras albicum</em></td>
<td>Sassafrass</td>
<td>FACU</td>
<td>Moist soils</td>
<td>None</td>
</tr>
<tr>
<td><em>Taxodium ascendens</em></td>
<td>Pond Cypress</td>
<td>OBL</td>
<td>Moist soils</td>
<td>High</td>
</tr>
<tr>
<td><em>Taxodium distichum</em></td>
<td>Bald Cypress</td>
<td>OBL</td>
<td>Wet soils; standing water</td>
<td>High</td>
</tr>
<tr>
<td><em>Ulmus americana</em></td>
<td>American Elm</td>
<td>FAC</td>
<td>Moist soils</td>
<td>Low</td>
</tr>
</tbody>
</table>

$^1$ Consider characteristics of trees – such as mature height & spread, aggressive root structures, knee development, etc. – in order to select the species most appropriate for the site. All these species will tolerate some degree of flooding; however, make sure that other site constraints (outfall structures, berms, utilities, hardscapes, etc.) will not be negatively impacted as a specimen grows and matures.

$^2$ Wetland Indicator Status (USACE, 2010):
- OBL (Obligate) almost always is a hydrophyte, rarely found in uplands (occurs in wetlands >99% of the time)
- FACW (Facultative Wetland) usually a hydrophyte, but occasionally found in uplands (occurs in wetlands 67-99% of the time)
- FAC (Facultative) commonly occurs either as a hydrophyte or a non-hydrophyte (occurs in wetlands 33-67% of the time)
- FACU (Facultative Upland) occasionally is a hydrophyte, but usually occurs in uplands (occurs in wetlands 1-33% of the time)
Chapter 5

Local Case Studies

- Fox Hollow
  - Narrowed driveways and streets to reduce impervious cover.
  - Bioswale system conveys stormwater instead of pipes.
  - Bioretention cells replace stormwater ponds.

- Moore Farms Botanical Garden Green Roof & Rainwater Harvesting
  - Multiple green features including green roof & cistern, 400 foot greenwall, and south facing windows.
  - Highly insulated from green roof and walls reduces much of the cooling and heating costs.
  - Stays about 10 degrees cooler than ambient temperature.
  - Rainwater captured to water vegetation.

- Goodwill Store Bioretention and Pervious Paving
  - Uses pervious concrete parking, bioretention ponds, bio-swales and rain gardens.
  - No curbing allows free flow of stormwater into these bioretention systems.
  - Use of shredded hardwood mulch prevents mulch floatation and clogging of outlet structures.

- Jarvis Creek Park Stormwater Pond & Wetland Project
  - Changed from 100 foot wide canal to stormwater retention lake with wetland filter.
  - More cost effective than original canal design
  - Improves water quality before flowing into Jarvis Creek.

- Moss Park Constructed Wetlands
  - Constructed wetlands are often less expensive and require less maintenance than traditional pipe-and-pond systems.
  - Reduces bacteria and oxygen demanding substances from stormwater runoff.
  - Maintenance costs reduced
  - Provides wetland wildlife habitat
Appendix

- Soil restoration is a practice applied after construction, to deeply till compacted soils and restore their porosity by amending them with compost. These soil amendments can reduce runoff from compacted urban landscapes and also may be used to enhance the runoff reduction performance of areas that receive runoff, such as downsput disconnections, grass channels, and filter strips.
- Soil restoration is recommended for sites that will experience mass grading: the removal and stockpiling of existing topsoil and replacing over top of the newly graded landscape.
- The use of small-scale, distributed (low impact development) practices that treat runoff closer to its source. Many of these practices rely on the underlying soil to infiltrate at least part of the runoff.
- Some measures that can help Coastal South Carolina effectively adapt to climate change include:
  1. implementing LID practices at the site scale
  2. modifying practices to prevent bypass during intense storm events
  3. periodically revisiting design storms and mapped floodplains
  4. creating adaptable planting plans
  5. using stormwater as a resource
- Designers should rely on approaches that:
  - enhance storage and treatment in natural areas
  - use small-scale storage and treatment
  - provide conveyances that allow for a margin of safety for flood conveyance and water quality treatment
- Create adaptable planting plans – Changes in temperature and rainfall patterns will likely combine to change plant communities. Planting plans should adapt over time so that replacement plants are able to survive in a changing climate.
- Use stormwater as a resource – By concentrating ornamental vegetation in stormwater practices such as bioretention, the irrigation demand is far less than it would be in traditional landscape islands since stormwater directed to these practices provides frequent inundation.