

## APPENDIX

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**APPENDIX A:**

**SITE PLAN APPLICATION TRANSMITTAL FORM**

**Bergen County Department of Planning & Engineering**

The following items shall be submitted to the Bergen County Department of Planning & Engineering before an Application can be accepted for filing:

1. \_\_\_\_ Application For Site Plan Approval
2. \_\_\_\_ Application Filing Fee
3. \_\_\_\_ Checklist – Development Review
4. \_\_\_\_ Checklist – Low Impact Development (if applicable)
5. \_\_\_\_ Drawings (four [4] full size sets – except for Cell Tower Applications, then submit one [1] set of 11” x 17” )
6. \_\_\_\_ A Digital Submission of Drawings and Application Documents (See Appendix F)
7. \_\_\_\_ Two (2) copies of Stormwater Management Report (if impacting a county facility)
8. \_\_\_\_ Two (2) copies of Urban Stormwater Mitigation Plan (if impacting a county facility)
9. \_\_\_\_ Two (2) copies of Traffic Impact Report (if required by this Ordinance)
10. \_\_\_\_ Person preparing Application

\_\_\_\_\_  
PRINT NAME

\_\_\_\_\_  
SIGNATURE

\_\_\_\_\_  
DATE

**APPENDIX B:**

**FEE SCHEDULE FOR SITE PLAN APPLICATION**

For site plans requiring County Review as per Section of the Standards for Sustainable Land Development - Site Plan Review Ordinance of Bergen County.

**Fees \***

**COUNTY PLANNING BOARD APPROVAL**

**Initial Filing Fee** \$1,500.00

**COUNTY PLANNING BOARD EXEMPTION**

**Exemption Fee** \$250.00 (One [1] copy of plan and completed County Application)

**ASSESSED FEES TO BE DETERMINED AT TIME OF CONDITIONAL APPROVAL**

**Processing Fee** \$20.00/per stall

**Final Approval Fee** \$250.00

**Inspection Fee** 6% of Performance Guarantee (minimum of \$350)

**Reprocessing Fee** (Revised Joint Report) \$300.00

**Permit** to connect to County Storm Drain \$600.00 (per connection)

**Extension Fee** \$300.00/year (Application must be approved within one (1) calendar year of the filing date. If not, the Applicant will be required to submit a written extension request along with the extension fee)

**Waiver Fee** \$150.00/per waiver applied for

**Violation Fee Initial:** \$125.00 **Additional:** \$100.00/week from the date of written notification until the application receives final approval

**Outdoor Dining Encroachment Fee** \$100 per seat (based upon submitted seating plan)

**Residential Driveway - Road Access Permit Fee** \$500.00 – for review of a proposed driveway on a County road not subject to Site Plan Approval or Exemption

**Cellular Towers – Processing Fee per Antenna** \$250.00 [max. \$750.00] (Ord. 03-48, 12/17/03)

***CHECKS: ALL FEES ARE DUE AND PAYABLE  
TO THE COUNTY OF BERGEN BY CHECK OR MONEY ORDER ONLY  
(SEPARATE CHECKS: FEES CANNOT BE COMBINED)***

\* Resolution Amending the Bergen County Planning Board's Site Plan Review Fee Schedule, Adopted August 19, 2015.

1. Federal, state and county governments are not required to submit any fees.
2. Municipal governments (including schools and libraries) are not required to submit any fees.
3. Houses of Worship, and all 501( c) 3 non-profit charitable organizations are not required to submit any fees, however, where applicable, will be required to post a performance guarantee and related inspection fee.

# SITE PLAN

Application # SP .....

James J. Tedesco, III  
County Executive

Joseph A. Femia, P.E.  
Director/County Engineer



**COUNTY OF BERGEN**  
Department of Planning & Engineering  
One Bergen County Plaza, Hackensack N.J. 07601-7000 (201) 336-6446

## APPLICATION FOR SITE PLAN APPROVAL

The undersigned hereby applies for approval of the accompanying site development plan. Four (4) copies of this Application accompanied by the Initial Filing Fee and four (4) copies of the plan conforming to the minimum details as outlined in Appendix C, Site Plan Details, of the County of Bergen Land Development Standards for Sustainable Development. Permission is hereby given to walk the property for review purposes. We acknowledge that the reporting period set forth in N.J.S.A. 40:27-6.7 shall not begin to run until this application and accompanying plans are COMPLETE IN ALL RESPECTS. We acknowledge and agree that if this application is not completed within one year of the date of filing, it will be subject to administrative dismissal without prejudice. The copies of the plan submitted for review should be FOLDED, not rolled.

- (1) Municipality..... (2) Project Name .....
- (3) Full Project Description.....
- .....
- (4) Location (Street address and nearest intersecting street) .....
- (5) County Facilities Affected .....
- (6) Block(s).....(7 ) Lot(s) .....(8) Plot Area (ACRES).....
- (9) Municipal Zoning.....(10) Existing Use .....(11) Proposed Use.....
- (12) If residential, indicate the number of Dwelling Units .....
- (13) Number of Parking Spaces Existing ..... New ..... Total .....
- (14) Tot. Area of Bldg. (All Floors) Existing ..... Sq. Ft. New ..... Sq. Ft. Total ..... Sq.Ft.
- (15) Impervious Area Existing..... Sq. Ft. New ..... Sq. Ft. Total ..... Sq.Ft.

**(16) This plan has also been filed with the following municipal / regional agencies:**

Planning Bd. (Date) ..... Bd. Of Adjustment (Date) ..... Const. Official (Date) ..... Status.....

NJ Sports & Exposition Authority (Date) ..... Status ..... Highlands Comm. (Date) ..... Status .....

Soil Conservation District (Date) ..... Status .....

**Name, Address, Telephone Number and E-mail address of:**

(17) Applicant .....

- (18) Attorney .....
- (19) Property Owner .....
- (20) Plan Preparer .....
- (21) Contract Purchaser .....

**(22) Certification of Applicant or Agent**

Please check ..... I do hereby apply for site plan review and approval. I hereby submit four (4) copies of the application form, four (4) prints of the signed and sealed drawing(s) and the filing fee. I hereby grant permission to the County of Bergen to enter onto the subject property for site investigation purposes. I understand that the life of this application is one (1) calendar year from the date it is accepted by this office for filing. I further understand that if this application is deemed incomplete due to errors, omissions, missing information, missing reports or incorrect fees then the application may be rejected within two (2) weeks of notification from this department

Please check ..... I do hereby apply for site plan review and exemption. I hereby submit one (1) copy of the application form, one (1) copy of the signed and sealed drawing(s) and the exemption fee. I further understand that if this application is deemed incomplete due to errors, omissions, missing information, missing reports or incorrect fees then the application may be rejected within two (2) weeks of notification from this department.

I certify that the forgoing statements and materials submitted are true and correct. I further certify that I am the individual applicant or applicant's agent and that I am authorized to sign the application.

\_\_\_\_\_

\_\_\_\_\_

Printed Name of Applicant or Agent

Signature of Applicant or Agent

**\*\* ALL FIELDS MUST BE FILLED OUT - INCOMPLETE FORMS WILL BE RETURNED - (MARK SECTIONS N/A if not applicable)**

**PLEASE SEE FEE SCHEDULE FOR FEES**

<b><u>FOR OFFICIAL USE ONLY</u></b>	<b><u>RECEIVED</u></b>
<p>Filing Fee ..... Reproducible Plan ..... Processing Fee ..... Deed .....</p> <p>Performance Guarantee ..... Soil .....Other..... Final Approval Fee.....</p> <p>Approved Plan Received by: ..... Date: .....</p>	
(Please print)	(Signature)

Appendix C:

DEVELOPMENT REVIEW CHECKLIST - SITE PLAN DETAILS

	Required Information	Submitted	Waiver Requested	Comments (i.e. Waiver Justification)
A	Plan Information			
1.	Four (4) sets of plans (minimum scale 1" = 30' and not larger than 1" = 10'). Sheet sizes shall be consistent with NJ Map Filing Act (24" x 36" and 30" x 42").			
2	One (1) set of plans 11" X 17" for Cell Tower Applications			
3.	Name and address of Applicant.			
4.	Name and address of Property Owner.			
5.	Title Block containing the name of the application, municipality, address, block and lot number(s).			
6.	Original plan date, dates of all revisions and reason for revisions.			
7.	Signature block containing the name, address, phone number, signature, license number and embossed seal of the professional preparing the plan.			
8.	Key map showing the subject property and its relationship to the surrounding area. Key map shall be at a scale not less than 1" = 500'.			
9.	Scale (written and graphic) and north arrow with datum (horizontal and vertical).			
10.	Name and addresses of all adjacent property owners with 200 feet of the subject property.			
11.	By notation: Existing impervious area, proposed impervious area and the total <b>net</b> impervious area ( <b>in square feet</b> ).			
12.	By notation: The acreage of the subject property to the nearest tenth of an acre.			
13.	A zoning table containing zone district requirements including setbacks, area, density, lot coverage, height, bulk, FAR, parking and all other zoning requirements.			
14.	Two (2) signed and sealed copies of the property survey. Depict all existing easements and encumbrances.			
15.	Location of existing property lines with dimensions in distance and			

	bearings (degrees, minutes and seconds).			
16.	New Jersey State Plane Coordinates (NAD-1983) are to be provided when a site plan is on a county road and consists of a building addition of more than one thousand (1000) s.f. and/or an addition of five (5) or more parking stalls or when the site plan is located at the intersection of two (2) county roads.			
17.	Municipal setback requirements clearly indicated.			
18.	Location and size of all existing and proposed utility easements or reservations where applicable. If existing, provide book and page number of recorded deed.			
19.	Lateral connections for all existing and / or proposed utility and sanitary sewer lines.			
20.	Location of existing or proposed septic fields.			
21.	Location of all existing structures on the subject property, with an indication of their retention or removal.			
22.	Any contiguous lot(s) owned by the applicant or in which the applicant has a direct or indirect interest.			
23.	County signature block			
<b>B.</b>	<b>Road &amp; Driveway Information</b>			
1.	County road(s) abutting the subject property with existing right-of-way width clearly identified.			
2.	Surveyed centerline of the right-of-way of abutting county road(s) for the full property frontage.			
3.	Dimensions from the surveyed centerline of the right-of-way to the existing edge-of-pavement / curb line, the existing right-of-way line and the proposed right-of-way line or easement line.			
4.	Dimension overall pavement width along the property frontage.			
5.	Square feet and acres of any proposed roadway easement.			
6.	Location of existing or proposed curb along subject property.			
7.	Top and bottom curb line elevations, along the property frontage at fifty (50) foot intervals.			
8.	At proposed curb returns, clearly demarcate between proposed county curb and proposed municipal curb or interior curb.			

9.	Radii of any proposed curb returns.			
10.	All driveways, within one hundred (100) feet of the subject property, on both sides of the county road.			
11.	Width of the existing driveway(s) and curb cut(s) on the county road.			
12.	Width of the proposed driveway(s) and curb cut(s) on the county road.			
13.	Profiles and cross-sections of all proposed county road widening indicating: the type, width and depth of pavement, grading, and the location of curb, sidewalk, right-of-way line and if applicable, road widening easement line.			
14.	Profile of any proposed driveway on a county road.			
15.	Location and design of any off-street parking and loading areas, showing location and dimensions of parking stalls, loading bays, aisles and barriers.			
16.	Location and dimensions of mandatory ADA parking spaces and signage.			
17.	ADA compliant ramps and sidewalks within the public right-of-way along the county road frontage.			
18.	Construction details (i.e. material, width, dimensions, etc.) for proposed curbing, pavement, pavement markings, lane striping, signage, driveway aprons and ADA compliant ramps.			
19.	Pavement repair detail with sawcut limits.			
20.	Location, type and size of all existing and proposed traffic control signs using the Manual on Uniform Control Devices (MUCTD) along the county road frontage.			
21.	Existing and proposed utility poles and equipment along the county road frontage.			
22.	Encroachments within the county right-of-way.			
23.	Traffic Control and Detour Plan and Details in accordance with NJ DOT Standards for Maintenance and Protection of Traffic (MPT).			
24.	Traffic signage and striping plan.			
C.	<u>Physical &amp; Environmental Features</u>			
1.	Existing and proposed contour lines shall be shown at two (2) foot intervals for all slopes of a 10% grade or less, five (5) foot intervals may be used for all slopes greater than a 10% grade. All contour lines shall be referenced to the "New			



	Jersey Geodetic Control Survey Datum, NVD 87”.			
2.	Delineation and location of all floodway and flood hazard areas as delineated in the current “Flood Insurance Rate Map” issued by FEMA or NJ DEP Stream Study Maps, on and within two hundred (200) feet of the subject property. Also indicate all flood elevations, including 25-year.			
3.	Location, size and direction of flow of all existing natural watercourses, streams, shorelines, lakes, ponds, swales, wetlands and water boundaries on site; also NJ DEP Stream Encroachment & Wetlands delineation and buffers.			
D.	Drainage & Stormwater Mgt.			
1.	Pre and post development drainage area maps.			
2.	Drainage calculations as required in this Ordinance.			
3.	When ditches, streams, brooks or other watercourses are to be altered, improved or relocated the method of stabilizing slopes, measures to control erosion and siltation and typical ditch sections and profiles shall be shown on the plan or accompany it.			
4.	If applicable, provide the total acreage in the drainage basin to the nearest downstream drainage structure and the acreage of the site development which drains to the structure.			
5.	Plans and computations for any storm drainage systems including the following: All existing and proposed storm sewer lines showing the size and profile of the lines, direction of flow and the location of each inlet, manhole and other drainage structures. Construction details should include: size, material, class, slope, grate and invert elevations where required.			
6.	Provide location and extent of any existing and / or proposed seepage pits, ground water recharge basins or other water conservation devices.			
7.	Location and details for the Low Impact Development Best Management Practices (LID BMPs) used in the development.			
8.	Locations where vegetation serves as filters for runoff.			

## APPENDIX D:

### SURVEY REQUIREMENTS

All submissions to the County of Bergen, that involve real property and a County facility, including roadways, shall be accompanied by a boundary survey prepared by a New Jersey Licensed Land Surveyor. This survey shall meet all the minimum standard detail requirements of the State Board of Professional Engineers and Land Surveyors.

The survey shall show current site conditions and be prepared in accordance with N.J.A.C. 13:40-5 "Preparation of Land Surveys" and shall include the following:

- Signature and seal of a New Jersey Licensed Land Surveyor
- Date the field work was performed
- Graphic scale
- North arrow identifying the horizontal datum
- Pertinent property information such as Municipality, Block, Lot and address
- Topographic information (if applicable) shall be based on the North American Vertical Datum of 1988 (NAVD88)
- Metes and bounds information for the subject property. References shall include present owner deed book and page, filed map information (when applicable), and any other relevant document or information utilized to determine the boundary lines.
- Physical features within the subject property and within the full width of any adjacent County Right-of-Way shall be shown.
- To insure compliance with the Map of Bergen County Road Right-of-Way Widths, the full Right-of-Way width for any adjacent County roadway shall be determined. All documents and relevant information pertaining to determining the Right-of-Way shall be denoted on the survey. The Bergen County Engineering Department shall be contacted to request any available information they may have in the project area. This information, if any, should be included as a reference on the survey.
- In the event the subject property has frontage on a County Roadway, the original centerline of this roadway shall be determined and depicted on the survey. Dimensions shall be included from the centerline to the Right-of-Way line at the subject property outside boundary lines as well as intermediate locations along the property frontage if the width varies.
- All boundary line and Right-of-Way courses shall be labeled with bearings and distances and any curves shall include the radius, arc length, central angle, chord bearing and chord distance. Non-tangent curves shall be labeled as such.
- Any covenants, restrictions, and/or easements that may affect or benefit the subject property shall be shown and dimensioned. Easements shall include purpose and relevant deed book and page and/or map information. If none exist, a statement confirming this shall be added to the survey.
- Corner markers found and/or set along with any other evidence used to establish the boundary and easement lines.
- Point of beginning used to describe the overall parcel. Any tie courses shall be labeled with bearings and distances and any curves shall include the radius, arc length, central angle, chord bearing and chord distance. Non-tangent curves shall be labeled as such.
- Parcel area shall be reported in square feet and acres

## **APPENDIX E:**

### **EASEMENT PLAN AND WRITTEN DESCRIPTION REQUIREMENTS**

When required, an easement plan and written description shall be prepared by a New Jersey Licensed Land Surveyor. These documents shall be suitable for recording in the County Clerk's Office and should be based on a current boundary survey. The base boundary survey and easement plan shall be prepared in accordance with N.J.A.C. 13:40-5 "Preparation of Land Surveys" and any other applicable state and local regulations.

The Easement Plan shall include the following:

- Signature and seal of a New Jersey Licensed Land Surveyor
- Graphic scale
- North arrow identifying the horizontal datum
- Purpose of easement along with pertinent property information such as Municipality, Block, Lot and address
- References shall include present owner deed book and page, filed map information (when applicable), and any other relevant document or information utilized in establishing the boundary and easement lines.
- Physical features within the easement area
- Corner markers found and/or set along with any other evidence used to establish the boundary and easement lines. When monuments are required, they shall be shown and labeled with a coordinate value based on the New Jersey State Plane Coordinate System NAD83 (2011 – or as updated) and a Bergen County Monument Tie Sheet form shall be completed for all monuments set.
- If the easement runs along a County Right-of-Way, the original centerline and full Right-of-Way width shall be shown. Easement lines and any tie courses shall be labeled with bearings and distances and any curves shall include the radius, arc length, central angle, chord bearing and chord distance. Non-tangent curves shall be labeled as such. Dimensions shall be shown from the centerline to the proposed easement line.
- Plan shall be prepared on a letter or legal size sheet and drawn at a scale sufficient to clearly show the entire easement when possible. Larger size sheets, if required, shall be drawn in accordance with the current map filing law and recorded in the Bergen County Clerk's Office.
- Easement lines shall be accurately established on the ground
- Easement area shall be reported in square feet and acres

Written Description requirements:

- Signature and seal of a New Jersey Licensed Land Surveyor
- Title shall include purpose of easement and pertinent parcel information including Municipality, Block, and Lot
- Metes and bounds for all easement lines and any tie courses shall include bearing and distance information as well. Any curves shall include radius, arc length, central angle, chord bearing and chord distance. Non-tangent curves should be denoted as such
- The description shall be written in such a manner as to define the easement lines and boundary lines unambiguously and sufficient for a surveyor to lay it out on the ground. Any corner markers found and/or set within proximity of the easement shall be included.
- Easement area shall be reported in square feet and acres.
- Reference to easement plan shall be added at the end of the description.

## APPENDIX F:

### DIGITAL SUBMISSION REQUIREMENTS

#### A. Objective

The Bergen County Digital Submission Standards is being implemented to assist the County in receiving, processing, utilizing, maintaining, and making available relevant digital map data contained in site plan submissions. Digital submissions aid the County in many ways, including:

1. Maintaining an accurate parcel dataset.
2. Improving public access to current geographic information.
3. Allowing for electronic transfer of plans with consultants and municipalities, thereby reducing communication times and increasing productivity and the speed of review.
4. Reducing storage of paper submissions.
5. Reducing printing costs.

#### B. Technical Standards

1. Data Format: All digital submissions shall be generated from the industry standard software listed below:

File format	Software Program
Computer Aided Drafting & Design (CADD)	AutoCAD
Geographic Information Systems (GIS)	ESRI ArcGIS
Printed File Format (PDF)	Adobe Acrobat
Text Documents	Microsoft Word
Spreadsheet	Microsoft Excel
Images (TIFF)	Most Image/Photo Software

2. Coordinate system: Digital data shall be positioned in New Jersey State Plane Coordinate System (NAD83 horizontal) and North American Vertical Datum 1988 (NAVD88 vertical).
3. Fonts: Fonts used in the digital files shall be limited to those commonly available in most software packages such as Times New Roman and Arial.
4. Resolution: In cases where digital files cannot be generated from software and can only be scanned from hard copies, minimum resolution for scanned documents shall be in accordance with the New Jersey Division of Archives and Records Management as per N.J.A.C 15:3.4.
5. Security: No security setting shall be applied to PDF documents. PDF documents shall be directly printed/exported from the source software and maintain fonts and vector lines and shapes.
6. Monumentation data shall be submitted such that all elevation points shall be delivered in a single comma-delimited ASCII text file. Each line of the file shall contain values in NJ State Plane Coordinates for a single point as easting, northing, and elevation. Monument order or positional accuracy to the National Geodetic Reference Network must be identified.
7. Accuracy: All digital mapping shall use grid coordinates and have a positional accuracy of 0.3 feet at all boundary corners.

#### C. Data Scope

Each applicant shall provide on separate layers (including features and their descriptive texts), the following data where applicable:

1. Existing and proposed lot lines
2. Existing and proposed block lines
3. Existing and proposed road surveyed centerlines of the right-of-way
4. Proposed building foot prints

5. Right-of-way
6. Easements
7. Utilities, (existing and proposed) each type on an individual layer
8. Monumentation
9. Roadway pavement markings
10. Traffic control devices
11. Topographic data including contours at appropriate elevations
12. Wetlands and Flood Plain delineation limits

All plans shall be submitted in PDF format in black and white or gray scale. The document page size shall be the same as paper copy (such as 24" x26") and in the scale specified in the title block.

#### **D. Delivery Media and Documentation**

All information submitted to the County shall be described in both a digital file and hard copy.

## Appendix G:

### LOW IMPACT DEVELOPMENT/GREEN INFRASTRUCTURE/BEST MANAGEMENT PRACTICES

For Sustainable Stormwater Management

The following list of Low Impact Development (LID) and Green Infrastructure techniques are examples of strategies that can be employed to control stormwater runoff in Bergen County. In practice, these techniques utilize engineered or natural systems to mimic natural processes and predevelopment conditions. Many strategies (such as green roofs, permeable paving, rain gardens, infiltration trenches, etc...) use soils and vegetation to infiltrate, evapo-transpirate and/or recycle runoff. Other strategies focus on site design (i.e., reducing connected impervious surfaces, reducing the number of parking spaces, adding bike lanes or green roofs atop parking decks, etc.) to produce a variety of environmental benefits.





# Green Infrastructure



The suitability of a strategy or combination of strategies for each project will depend on the physical opportunities and constraints of a site, as well as the intended environmental benefits of the strategy. Physical factors to consider include the amount of space available, soil permeability, slopes, distance to water table/bedrock, proximity to building foundations, depth requirements and maintenance needs. The environmental benefits of a strategy vary with respect to runoff rate control, volume reduction, water quality benefits, heat island effect reduction, resource protection, air quality improvement, etc. In all new development and redevelopment projects, the use of green Infrastructure/LID strategies should be considered a priority tool for stormwater management, before resorting to conventional end-of-pipe approaches.

**LOW IMPACT DEVELOPMENT/GREEN INFRASTRUCTURE/BEST MANAGEMENT PRACTICES**  
For Sustainable Stormwater Management

The table below provides general descriptions for some LID/Green BMP Strategies. For each method selected, the Applicant shall provide detailed construction specifications, and shall comply with all the requirements for stormwater management, in accordance with the Bergen County Land Development Standards

Strategy	Type	Description	Implementation	Maintenance
<b>1.Conservation Easements</b>	<i>Site Design</i>	Conservation Easements are voluntary agreements that limit the type of development on all, or just a portion of the property. By agreeing to give up or restrict the development rights for a parcel of land, landowners can guarantee that their property will remain in a prescribed state for perpetuity.	Easements should include: a description of the resource they are designed to protect (e.g. historic, water quality, open space); restrictions on the uses and development; who is responsible (government, land trust) for maintenance; language that is clear and enforceable; maps, descriptions and baseline documentation of the property's characteristics; and explanation of how the use of the land will be monitored	The responsibility for maintenance of property in a conservation easement depends on the individual agreement with a land trust or agency. While many organizations assume the responsibility for managing and monitoring property, some land trusts leave maintenance responsibilities to the landowner and act only to monitor that the terms of the easement are met.
<b>2.Land Compatible Design</b>	<i>Site Design</i>	Natural drainage patterns, native vegetation, and stabilization of soil during construction are important factors in the prevention of flooding and degradation of water quality. Priority shall be placed on site design that maintains natural drainage patterns (NDP) & water courses. Alterations to NDPs shall not create flooding or degradation in water quality for adjacent downstream property. Site design shall minimize loss of vegetation.	Site development should be fitted to the topography and soil so as to create the least potential for vegetation loss and site disturbance; Vegetation removal should be limited to that amount necessary for the development of the site; Vegetation native to the site or plant community should be restored in areas affected by construction activities	New Planting shall be given sufficient water, fertilizer if necessary, and protein to ensure proper growth.
<b>3.Native Landscaping</b>	<i>Site Design</i>	Natural landscaping refers to the use of native vegetation (particularly prairie, wetland & wooded species) on a development or redevelopment site. The preservation and restoration of natural plant communities is important for the protection of natural resources and habitat, prevention of flooding and erosion, and the enhancement of the quality and quantity of water resources, and encourages their protection and enhancement	New development should incorporate plant species native to New Jersey and tolerant to urban environments. Native vegetation should factor in topography, soils, drainage patterns and sun exposure, and should be considered for use for: green roofs, parks, detention basins and drainage features, edges of streams, lakes and wetlands, residential areas and gardens, commercial, industrial and institutional developments, common areas and parking lots.	Native vegetation typically requires less routine maintenance than conventional landscaping
<b>4.Redevloperment</b>	<i>Site Design</i>	Redevloperment is development that occurs on previously developed land. Redevloperment of already impervious surfaces can be a key strategy for reducing net increases in impervious surfaces and associated degradation to receiving waters.	Redevloperment includes adding green roofs, microdetention techniques; alternative pavers and porous pavement, infrastructure upgrades to repair deteriorating pipes contributing to water quality impairments in pipes and small structural devices	N/A



**LOW IMPACT DEVELOPMENT/GREEN INFRASTRUCTURE/BEST MANAGEMENT PRACTICES**  
For Sustainable Stormwater Management

Strategy	Type	Description	Implementation	Maintenance
<b>5.Green Parking</b>	<i>Site Design</i>	Green Parking refers to several techniques that applied together reduce the contribution of parking lots to total impervious cover, and consequently, reduce the amount of stormwater runoff. Green Parking Lot techniques include: minimizing the dimensions of parking lot spaces, utilizing alternative pavers in overflow parking areas; providing "compact vehicle only" parking spaces; providing bicycle parking; using bioretention areas to treat stormwater; encouraging shared parking; and structured parking with green roofs	New parking lots and structures should include a percentage of designated spaces for compact cars, motorcycles and bicycles. Compact car spaces shall be smaller than typical spaces. Motorcycle spaces shall be smaller still, and racks or other facilities shall be provided for bicycles. Shared parking is encouraged where adjacent businesses or other uses can reasonable share parking spaces, such as when business have staggered needs according to peak times. Alternative paving materials are recommended for overflow parking and other low volume parking areas where ground water will not be impacted by such materials. Bio-infiltration, filter strips, and other practices should be included in all off-street parking facilities for 20 or more vehicles. Interior landscaping of parking lots should be maximized.	Limitations to green parking techniques include applicability, cost and maintenance. Shared parking is practical in mixed use areas; structured parking may be limited by the cost of construction; alternate pavers are typically recommended only for overflow parking because of their expensive maintenance costs. Bioretention areas also increase construction costs.
<b>6.Riparian Buffers/Forested Buffers</b>	<i>Site Design</i>	A riparian or forested buffer is an area along a shoreline, wetland, or stream where development is restricted or prohibited to physically protect and separate a stream, lake or wetland from future disturbance or encroachment. If properly designed, a buffer can provide stormwater management, and can act as a right of way during floods, sustaining the integrity of the stream ecosystems and habitats.	The following criteria should be considered when establishing a stream buffer: Minimum total buffer width; mature forest as a vegetative target; conditions where buffer can be crossed; Integrating stormwater and stormwater management within the buffer; buffer education; inspection, and enforcement; Buffer flexibility.	An effective buffer management plan includes establishment, management, and distinctions of allowable and prohibited uses in the buffer zones. Buffer boundaries should be well defined and visible before, during and after construction. Buffers designed to capture urban stormwater runoff will require more maintenance if designated as a bioretention or other engineered depression area.
<b>7.Innovative Street Design</b>	<i>Site Design</i>	Two aspects of street design relate to stormwater and its impacts: the pattern of how the street is constructed (width, materials, etc.). The design of "green streets" for smart growth involves creating a network of well-connected streets that support multiple transportation modes, and which also improve drainage.	Some smart growth approaches to street design may include decreasing street widths, adding bike lanes or bus lanes. Incorporate features such as boulevard islands, rotary islands, parking lot islands, swales, sidewalk tree and ground cover planters designed to capture, filter and infiltrate runoff (as well as traffic calming).Street retrofits can improve the drainage system or add structural and nonstructural BMP's to lessen the flow of stormwater volumes or filter pollutants.	All types of systems should have regular maintenance to ensure they are functioning properly. Typical maintenance considerations for curb and gutter designs include effective street sweeping, catch basin cleaning, clearing blocked sewer and stormwater lines, repairing and replacing failed pipes, and other aspects of maintaining buried, hard infrastructure.

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For Sustainable Stormwater Management

Strategy	Type	Description	Implementation	Maintenance
<b>8. Protection of Natural Features</b>	<i>Site Design</i>	Natural features that provide environmental, aesthetic, and recreational benefits, if preserved and protected from the impacts of construction and development, can include wetlands, riparian areas, flood plains, aquifer recharge areas, mature trees, woodlands and other wildlife habitat. Restricted areas such as flood plains and steep slopes should also be protected from possible impacts from construction activities. Properties that are being redeveloped might have attractive open space, well drained soils, or riparian areas that should be identified and considered for preservation early in the planning process.	Protect mature trees or woodlands, and steep slopes. Check erosion controls on upslope areas that will be cleared and graded and ensure that runoff from these areas is diverted away from, or around the slope. Areas with well-drained soils and those that feed aquifers should be protected from compaction. Maintain existing vegetation wherever possible. Before planting permanent vegetation, aerate the soil to ensure that runoff infiltrates. Establish a buffer around wetlands and along stream corridors in which no construction activity occurs. Avoid stream crossings wherever possible. Contact a local wildlife authority if you find nests, dens, or other animal habitat on the property. Establish perimeter controls in floodplain areas.	Landscaping maintenance can be reduced because natural areas do not require the same level of maintenance as turf grass. Preservation of natural areas also eliminates the need to mow, fertilize, and perform other lawn maintenance activities.
<b>9. Green Roofs</b>	<i>Site Design</i>	Green roofs can be effectively used to reduce stormwater runoff from commercial, industrial, and residential buildings. They absorb, store, and later evapo-transpire initial precipitation, thereby acting as a stormwater management system and reducing overall peak flow discharge to a storm sewer system. They have the potential to reduce discharge of pollutants such as nitrogen and phosphorous due to soil microbial processes and plant uptake. Green roofs offer additional benefits including the reduction of the urban heat island effect, increased thermal insulation and enhanced energy efficiency.	Green roofs can be installed during initial construction or as part of a retrofit. The amount of stormwater that a green roof mitigates is directly proportional to the area it covers, the depth and type of the growing medium, slope, and the type of plants selected. A building must be able to support the loading of green roof materials under fully saturated conditions. These materials include a waterproofing layer, a soil or substrate layer, and a plant layer. Plants selected need to be suited for local climatic conditions and can range from sedums, grasses, and wildflowers on extensive roofs to shrubs and small trees on intensive roofs. It is the responsibility of the applicant to review the latest green roof technology when submitting applications for their use.	Green roofs need to be monitored regularly to ensure the vegetation thrives. During the first season, green roofs may need to be watered periodically if there is not sufficient precipitation. After the first season, extensive green roofs may only need to be inspected and lightly fertilized approximately once per year. The roofs may need occasional weeding and may require some watering during exceptionally dry periods.
<b>10. Urban Forestry (trees and tree boxes)</b>	<i>Site Design</i>	Urban forestry is the presence of trees and forests located in and around the city. Since trees absorb water, patches of forest and the trees that line streets can help provide some of the stormwater management required in an urban setting. Urban forests help break up a landscape of impervious cover, provide small but essential green spaces, and link walkways and trails.	Tree preservation areas should be clearly marked. Delineating lines along a critical root zone (CRZ) rather than a straight line is essential to preserving trees. Trees should be planted in accordance with the applicable Municipal Shade Tree Ordinance.	See the applicable Municipal Shade Tree Ordinance.

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For Sustainable Stormwater Management

<b>Strategy</b>	<b>Type</b>	<b>Description</b>	<b>Implementation</b>	<b>Maintenance</b>
<b>11.Stormwater Wetlands</b>	<i>Detention</i>	Stormwater wetlands (a.k.a. constructed wetlands) are structural practices similar to wet ponds that incorporate wetland plants into the design. As stormwater runoff flows through the wetland, pollutant removal is achieved through settling and biological uptake within the practice. Several design variations of the stormwater wetland exist, each design differing in the relative amounts of shallow and deep water, and dry storage above the wetland.	Wetlands need sufficient drainage area to maintain the permanent pool, typically about 25 acres; Wetlands can be used on sites with an upstream slope of up to about 15 percent and a relatively shallow local slope; Wetlands can be used in almost all soils and geology, with minor design adjustments for regions of karst (i.e. limestone) topography; Design should incorporate pretreatment, treatment, conveyance, maintenance reduction, and landscaping.	Wetlands should be designed with non-clogging features to reduce maintenance. Regular maintenance and inspection practices are needed, including removal of debris and cleaning of inlets and outlet structures; mowing side slopes; removal of invasive vegetation; repairing undercut or eroded areas; and sedimentation control.
<b>12.Bioretention/Rain Gardens</b>	<i>Filtration</i>	Bioretention areas are landscaping features adapted to provide on-site treatment of stormwater runoff. They are commonly located in parking lot islands or within small pockets of residential land uses. Surface runoff is directed into shallow, landscaped depressions designed to incorporate natural pollutant removal mechanisms. During storms, runoff collects above the mulch and soil in the system. Runoff from larger storms is generally diverted past the facility to the storm drain system. The remaining runoff filters through the mulch and prepared soil mix. The filtered runoff can be collected in a perforated underdrain and returned to the storm drain system.	Some considerations for selecting a stormwater management practice are the drainage area the practice will need to treat, the slopes both at the location of the practice and the drainage area, soil and subsurface conditions, and the depth of the seasonably high ground water table. Bioretention facilities are best applied to relatively shallow slopes of five percent (5%) and must be separated somewhat from the ground water to prevent groundwater contamination. The use of native, deep-rooted perennial plantings instead of sod is recommended wherever possible. Bioretention area design features should incorporate five basic categories: pretreatment, treatment, conveyance, maintenance reduction, and landscaping.	Bioretention requires landscaping maintenance including the need to: Water plants daily for 2 weeks (at project completion); re-mulch void areas, treat diseased trees and shrubs, and mow turf areas (as needed); Inspect soil and repair eroded areas and remove litter and debris (monthly); remove and replace dead and diseased vegetation (twice/year); add mulch and replace tree stakes and wires (once/year).
<b>13.Filter Strips</b>	<i>Filtration</i>	Vegetated filter strips (grassed filter strips, filter strips, and grassed filters) are vegetated surfaces that are designed to treat sheet flow from adjacent surfaces. Filter strips function by slowing runoff velocities and filtering out sediment and other pollutants, and by providing some infiltration into underlying soils. One challenge associated with filter strips, however, is that it is difficult to maintain sheet flow.	Filter strips are best suited to treating runoff from roads and highways, roof downspouts, very small parking lots, and pervious surfaces. Typically, filter strips are used to treat very small drainage areas, i.e., one acre of impervious surface per 580-foot length. Filter strips should be designed on slopes between 2 and 6 percent. Filter strips should not be used on soils with a high clay content; Filter strips should be separated from the ground water by between 2 and 4 ft.	Maintenance is very important for filter strips, particularly in terms of ensuring that flow does not short circuit the practice. Typical maintenance includes regular removal of sediment build-up within the bottom; and annual inspection of pea gravel diaphragm for clogging, vegetation for rills and gullies, and to ensure that grass has established (if not, replace with an alternative specie); Seed or sod bare areas.

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Strategy	Type	Description	Implementation	Maintenance
<b>14.Porous Pavements</b>	<i>Infiltration</i>	Porous pavement is a permeable pavement surface, often built with an underlying stone reservoir that temporarily stores surface runoff before it infiltrates into the subsoil. Porous pavement replaces traditional pavement, allowing parking lot stormwater to infiltrate directly and receive water quality treatment. There are various types of porous surfaces, including porous asphalt, pervious concrete, and grass or permeable pavers. Porous pavement should be sited on low to medium traffic areas, such as residential roads, overflow and special event parking, driveways, utility and access roads, emergency access roads, fire lanes and alleys.	While porous pavement can be a highly effective treatment practice, maintenance and proper installation are necessary to ensure its long-term effectiveness. Soil permeability should be at least 0.5 inches per hour. The bottom of the stone reservoir should be flat, so that runoff can infiltrate through the entire surface. Pavement should be sited at least 2 to 5 feet above the seasonally high ground water table. The base of the stone reservoir should be below the frost line. Design characteristics should include: pretreatment, treatment, conveyance, maintenance reduction, and landscaping.	Using contractors skilled in techniques of installation of pervious concrete, permeable pavers, or porous asphalt will increase performance and longevity of the system. Monthly inspection is needed to ensure that paving area is clean of debris, the paving dewaterers between storms, and the area is clean of sediments. As needed (3-4 times/year), it is necessary to mow upland and adjacent areas, seed bare areas, vacuum sweep frequently to keep the surface free of sediment, and inspect the area for deterioration.
<b>15.Infiltration Trenches</b>	<i>Infiltration</i>	An infiltration trench (a.k.a. infiltration galley) is a rock-filled trench with no outlet that receives stormwater runoff. Stormwater runoff passes through some combination of pretreatment measures, such as a swale and detention basin, and into the trench. Runoff is stored in the void space between the stones and infiltrates through the bottom and into the soil matrix. The primary pollutant removal mechanism of this practice is filtering through the soil. .	Use is restricted due to potential ground water contamination, soils, and clogging. They shall not be used where there is potential for infiltrated water to interfere with existing infrastructure, and if the site soils have poor infiltration capacity. Considerations for their applicability are the size of the drainage area, slopes, soil infiltration rates and textural class, and distance from ground water sources and wells. Infiltration trench designs shall include features for pretreatment, treatment, conveyance, maintenance reduction, and landscaping.	Infiltration trenches should have an access path for maintenance activities such as an observation well (PVC pipe) that can enable inspectors to monitor the drawdown rate. Trenches should have a means to drain if it becomes clogged. Standard maintenance includes removal of sediment and oil/grease from pretreatment devices and overflow structures.
<b>16.Grass Swales</b>	<i>Infiltration</i>	Swales (a.k.a. grassed channel, dry swale, wet swale, biofilter, or bioswale) are vegetated, open-channel management practices designed to treat and attenuate stormwater runoff for a specified water quality volume. As stormwater runoff flows along these channels, vegetation slows the water to allow sedimentation, filtering through a subsoil matrix, and/or infiltration into the underlying soils. Variations include the grassed channel, dry swale, and wet swale. The specific design features and methods of treatment differ in each of these designs	Grassed swales are well suited for treating highway or residential road runoff because they are linear practices that require large areas. Grassed swales should generally treat runoff from small drainage areas ( less than 5 acres); should be used on sites with relatively flat slopes of less than 4 percent slope; in areas with larger slopes, check dams can be used to reduce the influence of the slope; the bottom of the swale should be constructed at least 2 ft. above the ground water table to prevent a moist swale bottom or contamination of the ground water.	Maintenance of grassed swales mostly involves litter control and maintaining the grass or wetland plant cover.

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Strategy	Type	Description	Implementation	Maintenance
<p><b>17.On-Lot Treatment (storing runoff)</b></p>	<p><i>Retention/ Detention</i></p>	<p>The primary purpose of most on-lot practices is to manage runoff from rooftops, driveways and sidewalks. Rooftop runoff generally has low pollutant concentrations compared to other urban sources. Practices that store rooftop runoff, such as cisterns and rain barrels, are the simplest of all of the on-lot treatment systems. Cisterns and rain barrels can be particularly valuable where rainfall is infrequent, and reuse for irrigation can save homeowners money. Down spouts can be disconnected from the storm drain system and rainfall can instead be collected and stored on site.</p>	<p>Basic design components include the barrel (typically plastic, min. 60 gallons), a sealed yet removal child resistant top to keep potential pests out, but still allow easy access for cleaning, screens at the barrel entrance to reduce particulate matter and the potential for mosquitoes and connections to the downspout, runoff pipe, and spigot. In order for the practice to be effective, homeowners or businesses need to have a use for the water collected. These practices are best suited to an individual who has some active interest in gardening or landscaping, since the stored water may be used for irrigation. Some sort of pretreatment, such as a mesh filter, is often also found at the top of rain barrels and cisterns. A hose mounted at the bottom of the barrel or cistern is typically used for irrigating gardens or for landscaping. The design must also accommodate overflow and winter freezing conditions.</p>	<p>Rain barrels and cisterns require minimal maintenance, but the homeowner needs to ensure that the hose remains elevated during the winter to prevent freezing and cracking. In addition, the tank needs to be cleaned out about once per year. Rain barrels and cisterns should be checked periodically to ensure that they are properly sealed to prevent mosquito breeding.</p>
<p><b>18.On-Lot Treatment for Residences (infiltration)</b></p>	<p><i>Retention/ Detention</i></p>	<p>The primary purpose of most on-lot practices is to manage runoff from rooftops, driveways and sidewalks. Rooftop runoff generally has low pollutant concentrations compared to other urban sources. The practice most often used to infiltrate rooftop runoff is the drywell. In this design, the storm drain is directed to an underground rock-filled trench that is similar in design to an infiltration trench. French drains can also be used for this purpose.</p>	<p>In these designs, the relatively deep dry well is replaced with a long trench equipped with a perforated pipe buried within the gravel bed to distribute flow throughout the length of the trench. Pretreatment is important to ensure they do not clog with leaf debris. A settling tank or, at a minimum, a debris-trapping grate or filter in the downspout, may precede infiltration practices. An above-ground opening in the downspout can serve as the bypass. The infiltration area should be at least 10 feet away from the house to prevent the undermining of the foundation or basement seepage.</p>	<p>Infiltration practices require regular removal of sediment and debris settled in the pretreatment area, and the media might need to be replaced if it becomes clogged.</p>
<p><b>19.On-Lot Treatment for Residences (run-off diversion)</b></p>	<p><i>Retention/ Detention</i></p>	<p>The primary purpose of most on-lot practices is to manage runoff from rooftops, driveways and sidewalks. Rooftop runoff generally has low pollutant concentrations compared to other urban sources. Runoff can be diverted to a pervious area or a treatment area using site grading, or channels and berms.</p>	<p>Treatment options can include grassed swales, bioretention, or filter strips. The bioretention design can be simplified for an on-lot application by limiting the pre-treatment filter and, in some cases, eliminating the underdrain. Alternatively, rooftop runoff can simply be diverted to pervious lawns, as opposed to flowing directly onto the street and then to the storm drain system.</p>	<p>Bioretention areas, filter strips, and grassed swales require regular maintenance to ensure that the vegetation remains in good condition.</p>

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**Infiltration beds in a parking lot**



**Bioretention swale in a parking area**



**Urban Bioswale**



**Rain Garden in Parking Lot**



**Rain Garden on Residential Property**



**Bioswale along a Residential Street**

**LOW IMPACT DEVELOPMENT/GREEN INFRASTRUCTURE/BEST MANAGEMENT PRACTICES**  
For Sustainable Stormwater Management



**Bioretention swale retro-fit to roadway**



**Street tree stormwater treatment retro-fit**



**Native landscaping**



**Permeable paving options**



**Permeable paver retro-fit for a residential street**



**Permeable parking lot and bioretention for commercial buildings**

**LOW IMPACT DEVELOPMENT/GREEN INFRASTRUCTURE/BEST MANAGEMENT PRACTICES**  
For Sustainable Stormwater Management



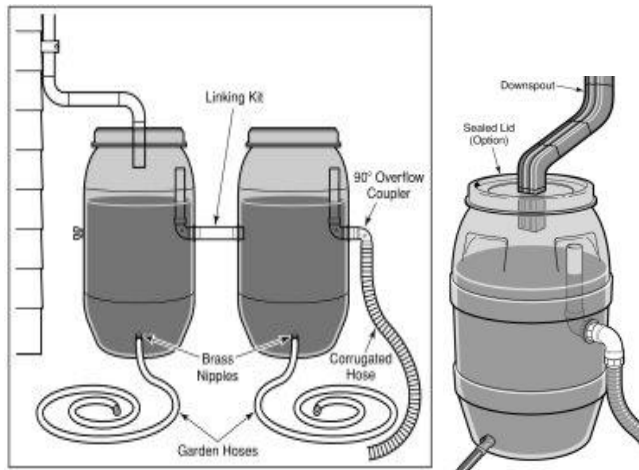
**Green Roof**



**Green Roof in a dense urban setting**



**Rainwater captured in a cistern**



**Typical Manufactured urban rain barrel design**



**Parking stalls for compact vehicles**



**Bicycle parking and shelter**



## APPENDIX H:

### LOW IMPACT DEVELOPMENT (LID) CHECKLIST

Please fill out this checklist for identifying Low Impact Development Activities incorporated into the proposed land development.

#### Part 1 - Vegetation and landscaping

1. Has an inventory of existing site vegetation been performed? \_\_\_\_\_  
If yes, was the inventory a factor in the site's layout and design? \_\_\_\_\_
2. Does the site utilize any of these non-structural LID-BMPs:
  - a. Preservation of natural areas: \_\_\_\_\_ If yes, specify location \_\_\_\_\_ and % of site \_\_\_\_\_
  - b. Use of native ground cover: \_\_\_\_\_ If yes, specify location \_\_\_\_\_ and % of site \_\_\_\_\_
  - c. Use of vegetated buffers: \_\_\_\_\_ If yes, specify location \_\_\_\_\_ and % of site \_\_\_\_\_
3. Specify percentage of total building roof area that will be vegetated: \_\_\_\_\_.
4. How many trees will be planted on site? \_\_\_\_\_ How many deciduous \_\_\_\_\_ coniferous \_\_\_\_\_  
How many trees will be removed? \_\_\_\_\_  
How many *street* trees will be planted? \_\_\_\_\_ What types: \_\_\_\_\_

#### Part 2 – Minimizing site disturbance

5. Have inventories of existing site soils and slopes been performed? \_\_\_\_\_ If yes, were the inventories a factor in the site's layout and design? \_\_\_\_\_. Please explain \_\_\_\_\_.
6. Explain how site disturbance will be minimized during construction phases  
\_\_\_\_\_.
7. Specify the percent of site to be cleared: \_\_\_\_\_. For buildings: \_\_\_\_\_. For driveways \_\_\_\_\_.  
Specify % of site to be re-graded: \_\_\_\_\_.
8. Specify the site's hydrologic soil group (HSG) percentages:  
HSG A: \_\_\_\_\_ HSG B: \_\_\_\_\_ HSG C: \_\_\_\_\_ HSG D: \_\_\_\_\_
9. Specify percentage of each HSG that will be permanently disturbed:  
HSG A: \_\_\_\_\_ HSG B: \_\_\_\_\_ HSG C: \_\_\_\_\_ HSG D: \_\_\_\_\_
10. Explain how site disturbance will be minimized within areas with greater permeable soils (HSG A and B) to maintain groundwater recharge rates and reduce stormwater volume increases.  
\_\_\_\_\_

#### Part 3 – Impervious area management

11. Specify the following with regards to impervious coverage:
  - a. Maximum site impervious coverage (%) permitted by local regulations \_\_\_\_\_
  - b. Existing (%) (pre-project) impervious coverage at the site: \_\_\_\_\_
  - c. Proposed (%) impervious coverage for the site: \_\_\_\_\_
  - d. Is the site designed to achieve minimum impervious coverage? \_\_\_\_\_
12. Specify percentage of parking area that will be porous: \_\_\_\_\_. Please explain which site areas will be porous: \_\_\_\_\_
13. Provide the following with regards to the number of parking spaces:
  - a. The number of parking spaces required by local regulations for the development \_\_\_\_\_
  - b. The number of parking spaces being provided \_\_\_\_\_
  - c. Is the site designed to minimize the number of parking spaces to reduce impervious surface? \_\_\_\_\_
14. Specify the following with regard to the size of parking stalls:
  - a. The size of parking spaces required by local regulations \_\_\_\_\_
  - b. The size of parking stalls being provided \_\_\_\_\_
15. Specify percentage of total parking area that will be:
  - a. Located beneath buildings \_\_\_\_\_
  - b. Within a multi-level parking deck \_\_\_\_\_
  - c. Only for compact cars \_\_\_\_\_
16. Specify the number of parking spaces provided for bicycle parking \_\_\_\_\_

#### Part 4 - Circulation Improvements

17. Explain how the project will impair or improve vehicular traffic flow? \_\_\_\_\_
18. Provide the pre-project Level of Service (LOS) \_\_\_\_\_ Post-project LOS \_\_\_\_\_

19. Explain how roadway safety and the pedestrian environment will be improved for each of the following:

- a. Placement and type of intersection signals \_\_\_\_\_
- b. Pedestrian features \_\_\_\_\_
- c. Sidewalk replacement \_\_\_\_\_
- d. Access control \_\_\_\_\_
- e. Aesthetic treatments \_\_\_\_\_
- f. Improved sight distance \_\_\_\_\_
- g. Street and sidewalk lighting \_\_\_\_\_
- h. Pedestrian- and bicyclist-activated signals \_\_\_\_\_
- i. Landscaped planters \_\_\_\_\_
- j. Bus pullout lanes and transit shelters \_\_\_\_\_

20. Explain how bicycle use will be promoted for the development. Will bicycle accessories (bike racks, secure storage, showers, etc.) be provided? \_\_\_\_\_

21. Explain how public transit will be promoted for the development \_\_\_\_\_

22. Will Transportation Demand Management techniques be provided? Please explain:

\_\_\_\_\_

**Part 5 – Source Control and Pollution Prevention**

23. Specify number of outdoor trash receptacles provided \_\_\_\_\_. Number of recycling receptacles provided \_\_\_\_\_.

24. Is a recycling plan being submitted \_\_\_\_\_?

25. Identify stormwater management measures on the site that prevent discharge of large trash and debris.

**Part 6 – Energy and Environmental Control**

26. Indicate what is being done to reduce the site’s contribution to the urban heat island effect (i.e., light-colored/high albedo pavement surface with a minimum albedo of 0.3; use of porous pavement; substantial increase of tree canopy) \_\_\_\_\_

27. Will outdoor lighting fixtures be installed with energy-efficient fixtures as outlined by the International Dark Sky Association (IDSA) [www.darksy.org](http://www.darksy.org) to preserve and protect the nighttime environment? Please explain.

28. What percentage of the total electricity for the site will be from renewable sources? \_\_\_\_\_. Please explain \_\_\_\_\_

**Part 7 – Construction Materials**

29. Is there a plan for the processing, transportation and disposal of waste? Provide a description of all material being disposed and location of disposal.

\_\_\_\_\_

30. What percentage of non-hazardous construction and demolition debris from the project will be recycled? \_\_\_\_\_ Salvaged back into the site? \_\_\_\_\_

**Part 8 – Community**

31. Explain how meaningful public input was incorporated into the project. Provide evidence of how community values (historic preservation, cultural, neighborhood preservation, environmental) were integrated into the design process.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

32. Explain how the project is consistent with the Bergen County Master Plan

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Part 9 – Narrative

33. In narrative form, provide an overall description of the LID-BMP approach to stormwater management and strategies incorporated into the proposed site design. Attach additional pages as necessary.

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### Part 10 – Compliance with Non-structural Requirements of NJDEP Stormwater Management Rules

N.J.A.C. 7:8-5.3(b)

No.	Nonstructural Strategy	Yes	No
1.	Protect areas that provide water quality benefits or areas particularly susceptible to erosion and sediment loss. <i>Please explain:</i>		
2.	Minimize impervious surfaces and break up or disconnect the flow of runoff over impervious surfaces. <i>Please explain:</i>		
3.	Maximize the protection of natural drainage features and vegetation. <i>Please explain:</i>		
4.	Minimize the decrease in pre-construction time of concentration. <i>Please explain:</i>		
5.	Minimize land disturbance including clearing and grading. <i>Please explain:</i>		
6.	Minimize soil compaction. <i>Please explain:</i>		
7.	Provide low maintenance landscaping that encourages retention and planting of native vegetation and minimizes the use of lawns, fertilizers, and pesticides. <i>Please explain:</i>		
8.	Provide vegetated open-channel conveyance systems that discharge into and through stable vegetated areas. <i>Please explain:</i>		
9.	Provide preventative source controls. <i>Please explain:</i>		

## Appendix I:

### Handicap Ramp Forms

#### Procedures for Design & Construction of ADA Compliant Pedestrian Facilities within County Right-of-Ways, Planning Board Approved Development Applications Design

- 1) Applicant's Design Engineer designs ADA improvements in accordance with:
  - Proposed Guidelines from the U.S. Access Board.
  - MUTCD.
  - NJDOT Standard Specifications for Road & Bridge Construction.
  - Bergen County requirements.
- 2) Applicant's Design Engineer prepares detailed drawings in accordance with the level of detail required by Bergen County.
- 3) Applicant's Design Engineer submits the following to municipal engineer:
  - Signed & sealed drawings of compliant ramps.
  - Signed & sealed Compliant Design Certification (CDC).
- 4) Applicant's Design Engineer shall satisfactorily address any comments from the municipal engineer and resubmit for approval.

#### Municipal Engineer Approval

- 5) Municipal Engineer reviews submission of design drawings and Compliant Design Certification for compliance with:
  - Design related documents in #1 above.
  - Municipal streetscape requirements.
  - Compliant Design Certification form.
- 6) Municipal Engineer shall either:
  - Approve documents as submitted if fully compliant, or
  - Return documents to Applicant's Engineer with comments, and/or
  - Advise Applicant's Engineer that a Technical Infeasibility Waiver is required.

#### Technical Infeasibility Waiver (TIW)

- 7) Applicant's Engineer shall submit a complete Technical Infeasibility Waiver (TIW) application to the Municipal Engineer when fully compliant ADA facilities cannot be designed and constructed.
- 8) Municipal Engineer shall review the TIW and either:
  - Deny the TIW application and require applicant to design compliant ADA facilities, or
  - Approve the TIW application and forward to the County Engineering Division for approval or denial.
- 9) The County Engineering Division shall review the municipally approved TIW and either:
  - Deny the TIW application and require applicant to design compliant ADA facilities, or
  - Approve the TIW application.
- 10) Applicant shall be responsible to redesign and build fully compliant ADA facilities if the TIW application is not approved by the Municipal Engineer and County Engineering Division.

## **Construction**

11) Applicant shall not proceed with the construction of ADA facilities within the County road right-of-way (ROW) until one of the following approvals have been obtained:

Municipal Engineer's approval of design drawings for fully compliant ADA facilities and Compliant Design Certification, or

Municipal Engineer's and County Engineering Division's approval of design drawings, CDC, and a TIW for non-compliant ADA facilities.

12) Applicant shall not deviate from the approved design of ADA facilities unless:

The Municipal Engineer approves a revised submission of design drawings, by the Applicant's Engineer, for fully compliant ADA facilities and new CDC for the revision; or

The Applicant obtains an approved TIW, through the process described above, for the revision.

The Applicant's Design Engineer is required to certify proper construction and should therefore perform site inspections before and during construction, and shall perform a site inspection after construction and prior to executing the Compliant Construction Certification (CCC).

## **Project Close-Out**

13) The Applicant's Design Engineer shall submit the following to the Municipal Engineer:

Signed and sealed as-built drawings.

Signed and sealed Compliant Construction Certification (CCC) form.

14) The Municipal Engineer reviews as-built drawings, ADA facilities constructed at the site, and the CCC for compliance with:

Approved design drawings.

Approved Technical Infeasibility Waiver if applicable.

15) The Municipal Engineer shall:

Approve documents as submitted if fully compliant; or

Return documents to Applicant's Design Engineer with comments.

Sign and seal CCC upon satisfaction of documents and construction.

16) Applicant shall submit the following to the County Engineering Division:

Compliant Construction Certification signed and sealed by the Applicant's Design Engineer and Municipal Engineer.

As-built drawings referenced in the CCC.

## **General Comments**

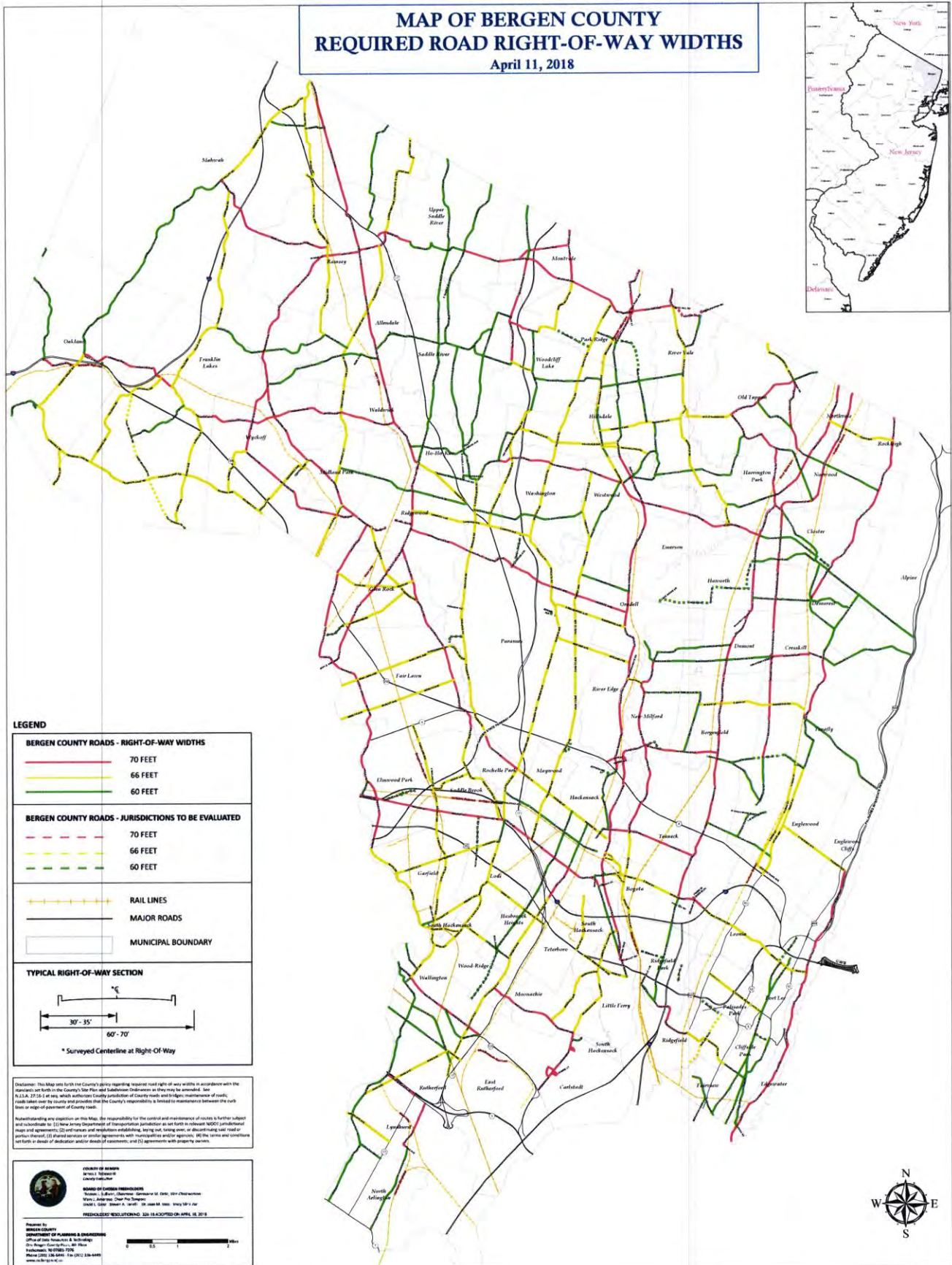
Certificate of Occupancy shall not be granted until the Municipal Engineer has executed the CCC.

The Performance Guarantee release by the County is contingent upon, and subject to the following:

Compliance with all conditions of the County Planning Board approved Joint Report.

Required improvements have been properly constructed.

As-built drawings and properly executed certifications have been received by the County Engineering Division.



## Appendix K:

### REFERENCE DOCUMENTS

1. N.J.S.A. 40:27-1 et seq. as amended (County Planning Act)
2. ITE Trip Generation Manual, 7<sup>th</sup> Edition 2007 as revised
3. Highway Capacity Manual 2010 as revised
4. U.S. Clean Air Act 1990 Amendments, 42 USC 7401
5. Manual on Uniform Traffic Control Devices 2009 Edition as revised
6. A Policy on Geometric Design of Highways and Streets, 6<sup>th</sup> Edition 2011 as revised
7. ADA Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way July 26, 2011 as adopted by the U.S. Access Board as revised
8. NJ DOT Bicycle Compatible Roadways and Bikeways Planning and Design Guidelines
9. AASHTO Guide for the Development of New Bicycle Facilities
10. Soil Erosion and Sediment Control Act, adopted 1975 as revised
11. Standards for Soil Erosion and Sediment Control in New Jersey, New Jersey State Soil Conservation Committee. September, 1999 as revised
12. NJ DOT Roadway Design Manual
13. NJ DOT Standard Specifications for Road and Bridge Construction, 2007
14. NJ DOT Design Standards for Bridges and Culverts
15. Technical Paper Number 40 – Rainfall Frequency Atlas of the United States, U.S. Department of Commerce, Weather Bureau, 1961 as revised
16. Technical Release Number 55 – Urban Hydrology for Small Watersheds, U.S. Department of Agriculture, Natural Resources Conservation Service, as revised
17. Open Channel Hydraulics, VenTe Chow, McGraw-Hill, 1959 as revised
18. Handbook of Applied Hydrology, VenTe Chow, Editor, McGraw- Hill, 1964 as revised
19. National Engineering Handbook – Section 4 – Hydrology, U.S. Department of Agriculture, Soil Conservation Service, August 1972
20. N.J.A.C. 7:13 as amended (Flood Hazard Area Control Act Rules)
21. N.J.A.C. 16:47-4.3 as amended (State Highway Access Management Code)
22. New Jersey Stormwater Quantity / Quality Management Manual, New Jersey Department of Environmental Protection, February 1981 as revised
23. NJ DEP Stormwater Best Management Practices Manual, April 2004, revised September 2009
24. Hackensack Meadowlands Transportation Act, June 2005 as revised
25. Site Improvement Act (N.J.S.A. 40:55D-40.1 et seq).
26. N.J.A.C. 7:8-1.1 et seq Stormwater Management – General Provisions – Scope and Purpose