



**TOWN OF JUPITER**  
**ENGINEERING DIVISION**  
**DESIGN AND CONSTRUCTION**  
**STANDARDS & PROCEDURES MANUAL**

**REVISION 1 --- APRIL 2006**

# ENGINEERING DIVISION

## DESIGN AND CONSTRUCTION

### STANDARDS & PROCEDURES MANUAL

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## **SECTION A – PURPOSE OF STANDARDS & PROCEDURES MANUAL**

This manual is intended to provide a consolidated set of Engineering Division standards, procedures, processes, requirements, and guidelines, associated with land subdivision (Platting) and site development engineering utility plan preparation, as well as associated documentation submittal requirements and construction inspection requirements. Accordingly this manual provides the users:

1. General description of the Town Of Jupiter development approval, permitting and construction process, including process flow diagrams for:
  - \* Overall Site Development Review, Approval, and Permitting Flow Diagram
  - \* Planning & Zoning Division Application Review Process Flow Chart
  - \* Engineering Division Engineering Utilities Plan Review Flow Diagram
  - \* Engineering Division Plat Review Flow Diagram
2. Requirements for submittal of site development Paving, Grading, Drainage and Utility Engineering Plans.
3. Requirements for submittal of land subdivision Plats or Replats, including review and recording fees schedule.
4. Fee schedule for engineering plan reviews, Plat reviews, document recordation, and research.
5. Standard pre-approved language for subdivision or right-of-way surety.
6. Engineering Utility Permit inspection requirements and methods of scheduling or coordinating.
7. Minimum standard requirements (notes) for Engineering Plan applications.
8. Engineering Division Standard Construction Details

**NOTE: This manual will be updated periodically to amend current elements or to incorporate additional elements into the manual.**

## **SECTION B - DEVELOPMENT REVIEW & APPROVAL PROCESS SUMMARY**

Large scale or smaller scale Use by Right land development or land redevelopment projects typically follow a standard process flow that is generally outlined below, and as graphically depicted in a series of process flow diagrams on the following pages.

**Phase I** – A Site Plan Application is submitted to the Planning & Zoning Division, and then is processed thru various levels of reviews and approvals that includes the Development Review Committee (Town Departments/Divisions, PBC Traffic Division, Fire Rescue, etc.), the Planning & Zoning Commission, and the Town Council. Certain application types such as Use By Right, may not require Planning & Zoning Commission and/or Town Council approvals, as noted on the detailed Planning & Zoning Division Review Process Flow Diagram that follows. Upon completing the Site Plan Application & Review process, the applicant may begin the Engineering Plan and Plat Application and Review Process.

**Phase IIA** – A site development paving, grading, drainage and utility engineering plan application is submitted to the Engineering Division, and is then processed thru a review and approval process that includes other departments-divisions within the Town. A separate storm water system application is processed thru Stormwater Division concurrent with but independent of the application to the Engineering Division. Upon reaching sufficiency approval thru this review process, the plans are stamped with the Engineering Division approval stamp and applicant may apply for an Engineering Utilities Permit at the Town Building Division. Similarly, a potable water system application is submitted to Water Utilities and a sewer system application is submitted to ENCON, both independent of the Stormwater Division application and the Engineering Division application. The submittal requirements for Stormwater and Water are defined in the *“Town of Jupiter - Utilities Guide for Development – Design and Construction Standards - Water and Stormwater”*. The submittal requirements for Engineering Division application is defined in Section C of this manual.

**Phase IIB** - A Plat/Replat application is submitted to the Engineering Division, and is then processed thru a review and approval process that includes other Town departments/divisions, as well as a consultant surveyor. Upon reaching sufficiency approval thru this review process, the Plat is forwarded to Town Council for approval. Upon Council approval the Plat is then executed and recorded at the Palm Beach County Courthouse.

**Phase III** - Upon receiving engineering plan sufficiency, and upon completing any applicant actions that are defined as part of the sufficiency approval, applicant may apply for and Engineering Utilities Permit at the Town Building Division. The Building Division administrates the permit application process. The permit process is administrative in nature as the plans have been approved by pertinent divisions prior to receiving the sufficiency notice. The permit process requires various Town Divisions to sign off on the permit application prior to the permit being issued to the applicant.

**Phase IV** - Upon issuance of an Engineering Utilities permit, site infrastructure construction can commence. The Engineering Division, Stormwater Division and Water Utilities Division will perform applicable inspections during this phase. Section xx of this manual provides additional information regarding construction inspections.

## **SECTION C - ENGINEERING PLAN SUBMITTAL REQUIREMENTS**

Prior to application for an Engineering Utilities Permit at the Town Building Division, engineering plans for a project's site infrastructure shall be submitted to Engineering Division for distribution and review by Town staff (Engineering Division, Planning & Zoning, Neighborhood Enhancement, Natural Resources, and others as required). Engineering Division approval of plan submittal is required prior to application for an Engineering Utilities Building Permit.

**NOTE: Water & Stormwater Utilities review is required for all Engineering plans involving water and/or storm water design elements or impacts, and said review is performed by those respective Town Divisions based on separate applications made directly to those divisions. The Engineering Division approval of the engineering utilities plans will require both division's approval prior to the Town stamping the plans for the Engineering Utilities Permit.**

### **ENGINEERING PLAN SUBMITTAL REQUIREMENTS**

The submittal requirements for engineering plan review applications to the Engineering Division are listed below. This listing is developed relative to a new site development or redevelopment project for a new or redeveloped commercial, retail, or light industrial project or residential subdivision project. It is noted that certain smaller scope projects may not require certain of the submittals listed below. It is recommended that if in doubt, that a prospective applicant should contact the Engineering Division to obtain guidance as to the submittal requirements for their respective project.

1. Engineering Plans - Four (4) sets of signed & sealed engineering plans (24" x 36") shall be submitted. Drawing set shall include paving, grading, striping, signage, sanitary sewer, storm water, water main utilities, etc. Transmittal letter shall be included identifying all documents submitted.
2. Final Site & Landscaping Plans – Two (2) sets shall be submitted. Plans shall be updated to incorporate all site plan conditions of approval as defined by the Planning & Zoning Division's site plan approval letter and accompanying Resolution or Ordinance, as applicable.
3. Detailed boundary and topographic survey - Four (4) copies shall be submitted. Survey shall include all existing easements, buffers, and other recordings, etc., such that all encumbrances on property are defined. Survey shall also include existing topographic data both on-site and the perimeter off-site areas, extending at least 20 feet outside of property lines and to roadway, parking, driveways, etc. on adjoining right-of-way or property.
4. Site drainage calculations – One (1) signed & sealed set shall be submitted.
5. Engineering plan review fees per Town of Jupiter Town Code 27-114 (see Fee Chart excerpt in separate Manual section below).
6. Water Management Permit - Two (2) copies of South Florida Water Management District (SFWMD) Permit and other applicable water management agency permits shall be submitted.
7. Palm Beach County (PBC) or Florida Department of Transportation (FDOT) Permit – Two (2) copies of any applicable permits that are required for connection or modification to PBC or FDOT Right-of-Way.

8. Plat – If property requires a new Plat or Replat, then said Plat review submittal shall be made concurrent with but independent of, the Engineering Plan submittal. (See Plat Submittals requirements below)
  
9. Engineer’s Estimate - Signed & Sealed Engineer's material quantity, unit price, and total cost estimate for all infrastructure, broken down such that subtotals for each of the following categories are provided:
 

a.	Stormwater	b.	Water Utilities
c.	Sanitary Sewer	d.	Landscaping & Irrigation
e.	Paving & Grading	f.	Curbing
g.	Striping & Signage	h.	Earthwork, Fill, Excavation & grading
i.	Gates, Walls, Fences	j.	Off-site improvements in public R/W
  
10. Public R/W Infrastructure Surety - For any proposed improvements within existing off-site public right of way, bonding or acceptable form of surety for 110% of certified engineer's cost estimate shall be submitted.
  
11. Subdivision Infrastructure Surety - For any proposed subdivision of property, the following is required prior to the plans receiving sufficiency - approval at conclusion of staff review:
  - a. Bonding or acceptable form of surety for 110% of certified engineer's infrastructure cost estimate.
  - b. If developer chooses to perform infrastructure work without bonding or surety (construction at risk), such a choice precludes approval and recording of the Plat until infrastructure is completed and accepted by the Town of Jupiter. Subdivision construction performed in this manner requires the developer to issue a letter acknowledging the following:
    - 1) Definition of developer's intent to construct the infrastructure "At Risk".
    - 2) Acknowledgment of developer's acceptance that the Plat will not be approved until the infrastructure is completed and accepted by the Town of Jupiter.
  
12. Engineering Plan & Engineering Utilities Permit Closeout - An Engineering Utilities closeout package is required upon the contractor/applicant/developer’s completion of the construction of a project and prior to obtaining a final Certificate of Occupancy for the project, a closeout package is required. The following page defines the required closeout and/or turnover documents. At a minimum, a successful final engineering inspection of the improvements, as well as submittal of record documents (as-builts) and a certification from the Engineer of Record is required.

**ENGINEERING DIVISION REQUIREMENTS FOR FINAL ENGINEERING  
UTILITY PERMIT CLOSE-OUT AND TURNOVER PACKAGES FOR LAND  
DEVELOPMENT PROJECTS PERMITTED BY TOWN**

The following documentation shall be issued directly to the Engineering Division. Copy of transmittal letter shall be forwarded to the Stormwater Division.

1. **One (1) COMPLETE set of BLACKLINE prints (bluelines are not acceptable) of the record drawings.** Requirements for the record drawings include:
  - a. Drawings shall be rolled, not folded.
  - b. Drawings shall be 24" x 36" size.
  - c. All drawings shall be signed, sealed and dated by the Engineer of Record, and by Surveyor of Record, as appropriate.
  - d. Set shall include all development engineering drawings, including, paving, drainage, striping, sanitary sewer, water main, storm water, etc., drawings. (i.e., the complete set of design and permit drawings and any additional plans developed for record document purposes.).
  - e. Record drawings shall include all applicable record drawing information, including denotation of any significant changes from the permit plans regarding horizontal/vertical control, details, or scope of development/improvements.
  - f. All areas of drawings shall be verified for legibility prior to transmittal, to ensure adequacy for Town's document imaging program. Note: Documents will be returned if not completely legible.
  - g. Plan set shall include complete as-built horizontal control for project, including all curb or pavement radii, offsets of improvements from property lines/right of way lines, as well as as-built signage and striping.
  
2. **Signed and sealed Engineer's Certification that the infrastructure defined on plan set (per Item 1 above), have been constructed in substantial accordance with the plans and specifications (see Town Code, Section 25-35).**

3. **Other Documents, as applicable to the Project.**

- a. Bill of Sale, Warranty Deed, etc., for any Right-of-Way to be transferred to the Town.
- b. Bill of Sale/Transfer Agreement for road Right-of-Way improvements to be transferred to the Town.
- c. Easements for sidewalk, storm drainage, shared access, etc., or similar purposes.
- d. Maintenance agreements between Town and Developer/Development regarding landscaping, irrigation, paver blocks or other similar specialty improvements (exclusive of standard roadway paving, sidewalk, sod, etc) located within public right-of-way.
- e. Street lighting agreement for Town to agree to reimbursement for maintenance and energy cost for street light located within public right-of-way.

**Note: Please contact the Town Water Utilities Department and ENCON, for definition of the required water, sewer, and storm water system record documents to be delivered directly to those respective divisions and entities, in accordance with their standards and procedures.**

## **SECTION D - PLATTING & PLAT SUBMITTAL REQUIREMENTS**

The Town's Platting Ordinance is provided in Section 25 of the Town Code. Section 25-103 defines specific requirements for the submission of record Plat. In addition to the Town Code requirements, all Plats shall be prepared in accordance with FS 177. Section 25-3 of the Town Code states: "*All division of land into three or more parcels of 5 acres or less or transfer of ownership by sale or other means of a portion or a larger tract shall be considered a subdivision and shall meet the requirements for Platting as herein set.*" It is the Town's interpretation that any subdivision of a parcel, tract, lot or similarly established land boundary that said subdivision shall be performed by Plat or Replat.

When new development or land redevelopment projects involve land subdivision, then the Plat providing for the subdivision shall be prepared and submitted concurrent with the site development engineering plan submittal application, as applicable.

The minimum submittal requirements for Plat review applications are listed below:

1. **Plat - Seven (7) copies** of complete Plat (24" x 36") of affected property shall be submitted for distribution and review.
2. **Plat review fee, escrow fee, recording fee, and administrative fee** per Town Code 27-114 (see Fee Chart excerpt in separate Manual section below).
3. **Pre-existing Plat** – If application is a Re-plat of previously Platted property, then seven (7) copies of the original Plat (minimum - cover sheet , dedication sheets and applicable detailed Plat sheets) shall be submitted with new Plat.
4. **Boundary Survey** – **Seven (7)** copies of boundary survey (24" x 36" shall be submitted.
5. **Engineering Plans** - If Plat-Re-plat is associated with site development involving engineering utility plans said Plat review submittal shall be made concurrent with but independent of, the Engineering Plan submittal.
6. **Pre-Construction PRM Check** - Prior to forwarding the Plat to Town Council for approval PRM's shall be set by a licensed surveyor in accordance with the requirements of Florida Statute 177.091. In addition, Town of Jupiter Engineering Division requires that the PRM's be verified prior to the Council approval of the Plat. NOTE: If project is constructed "At Risk", the Plat will not go to Council for approval, however, the PRMs shall still be set and verified prior to issuance of first building permit for the project. In support of this verification, the project surveyor or developer shall notify the Town Engineering Division in writing when the PRM's have been set. All PRM's shall be well marked and protected to the extent practical. The project surveyor shall assist the Town in a field verification of the PRM's, to ensure that the PRM's have been set.

7. **Subdivision Infrastructure Surety** - For any proposed subdivision of property, the following is required prior to the Plat being forwarded to the Town Council for approval at conclusion of staff review. An example “form” of the desired language for the surety is provided in Section F of this manual:
  - a. Bonding or acceptable form of surety for 110% of engineer's infrastructure cost estimate.
  - b. If developer chooses to perform infrastructure work without bonding or surety (construction at risk), such a choice precludes approval and recording of the Plat until infrastructure is completed and accepted by the Town of Jupiter. Subdivision construction performed in this manner requires the developer to issue a letter acknowledging the following:
    - 1) Definition of developer's intent to construct the infrastructure "At Risk".
    - 2) Acknowledgment of developer's acceptance that the Plat will not be approved until the infrastructure is completed and accepted by the Town of Jupiter.
8. **Post-Construction PRM & PCP Check** – At conclusion of the project construction, all PRM's and PCP's shall be set/reset by a licensed surveyor in accordance with the requirements of Florida Statute 177.091. Town of Jupiter Engineering Division requires that the PRM's and PCP's be verified prior to the final Certificate of Occupancy and prior to performance of the final engineering inspection (permit) be set prior to forwarding the Plat to Town Council for approval. In support of this verification, the project surveyor or developer shall notify the Town Engineering Division in writing when the PRM's and PCP's have been set. All PRM's and PCP's shall be well marked and protected to the extent practical. The project surveyor shall assist the Town in a field verification of the PRM's and PCP's, to ensure that the PRM's & PCP's have been set.

**SECTION E - ENGINEERING DIVISION FEE SCHEDULE**

**NOTE: THE FOLLOWING REVIEW, RECORDING AND RESEARCH FEES ARE EXCERPTED FROM SECTION 27-114 OF THE TOWN CODE**

APPLICATION	REVIEW FEE	ESCROW ACCT FEE	NOTES
ENGINEERING PLAN REVIEW FEES			
(a) Commercial & industrial - per acre (minimum fee \$175.00)	\$175.00	N/A	(1)
(b) Residential - per unit	\$15.00	N/A	(1)
(c) Golf course - per acre	\$50.00	N/A	(1)
Plat Review Fee	\$175.00	\$175.00	(1)
Document Recording Fee - Fees charged by the Clerk of Circuit Court	\$75.00	N/A	
Town of Jupiter administrative fee	\$50.00	N/A	(1)
Research Fees - \$20 per hour or portion thereof in excess of 20 minutes	\$20.00	N/A	

**Notes**

(1) Additional costs may be incurred by the applicant, including, but not limited to the following:

- a. Consultant fees paid by the Town, to review such professional documentation as a property appraisal, traffic impact analysis, vegetation, and environment assessments, archeological or historic assessments, market studies, engineering studies or reports, legal fees, etc.
- b. Costs associated with advertising for public hearings and other public notice requirements.
- c. Recordation fees or costs beyond the \$50 standard fee.

**Costs:** In these cases, the applicant shall be required to provide a deposit that will be placed in an escrow account with the Town. Upon completion of the review of the development applications, the applicant will be either refunded any unused amount of the escrow account fee or charged for any additional costs incurred by the Town in excess of the deposit.

**SECTION F - SURETY FOR CONSTRUCTION IN PUBLIC RIGHT OF WAY & LAND  
SUBDIVISION DEVELOPMENT PROJECTS**

For any proposed new construction, or modifications within existing or new public right of way, a Letter of Credit or acceptable form of Surety valued at 110% of certified engineer's cost estimate of the construction work shall be submitted to the Town of Jupiter Engineering Division. (Refer to Sections C & D above)

For any proposed subdivision of property, a Letter of Credit or acceptable form of Surety valued at 110% of certified engineer's cost estimate of the construction work shall be submitted to the Town of Jupiter Engineering Division (Refer to Sections C & D above). The surety requirement can be waived if the developer chooses to perform the subdivision infrastructure work without bonding or surety (construction at risk), such a choice precludes approval and recording of the subdivision Plat until the infrastructure work is completed and accepted by the Town of Jupiter. Subdivision construction performed in this manner requires the developer to issue a letter acknowledging the following:

1. Definition of developer's intent to construct the infrastructure "At Risk".
2. Acknowledgment of developer's acceptance that the Plat will not be approved until the infrastructure is completed and accepted by the Town of Jupiter.

The value of the surety can be reduced during the course of construction thru the following process:

3. Engineer prepares and submits to the Town Engineer, a signed and sealed cost estimate that defines a detailed breakdown of all of the original surety value quantities, the quantities completed to date, and the quantities to-go, as well as the unit prices and total line item costs of the "work to go". The reduced value of the surety would be 110% of the total of this "work to go".
4. Engineering Division staff reviews field conditions to verify Engineer's progress assessment, and to verify that completed work is satisfactory.
5. Reductions in surety value may be allowed until a minimum value of 10% of the original value of the surety is reached.
6. Upon completion of the construction, a 1 year warranty bond/surety is required. The value of the warranty surety is established by the Town Engineer and is typically no less than 10% of the initial total project surety value. The original surety (reduced) can be used as warranty surety based on the Town Engineer's approval.
7. NOTE: All reductions of the surety value shall be approved by the Town Engineer, prior to the financial institutions actual reduction of the surety value.

The following pages of this manual provide standard language for the Surety that has been pre-approved by the Engineering Division and the Town Attorney. Substantial deviations from this language may result in a lengthy and iterative review and approval process. The format of this example is for a Letter of Credit; however, language herein shall be applicable to Bonds as well.



DESCRIPTION OF WORK COVERED BY THIS LETTER OF CREDIT:

(EXAMPLE) Water system, sewer system, earthwork, paving, sidewalks, curbing, drainage, landscaping, irrigation, lighting and other related infrastructure system improvements for ..... (Name of Project/Subdivision) designed by the firm(s) of .....(Names of Firms).

The demand on the Letter of Credit must include the clause “Drawn upon Letter of Credit No....., dated....., 2006, by .....(Name of Bank or trust Co.).

This Irrevocable Letter of Credit shall initially expire one year from the date of execution by..... (Name of Bank or Trust Co.) upon proper prior written notification of the Town.

This Irrevocable Letter of Credit shall be automatically extended for additional periods of one year from each present or future expiration date unless..... (Name of Bank or Trust Co.) notifies the Town, in writing, not less than 60 days before such date, that.....(Name of Bank or Trust Co.) elects not to renew this Letter of Credit. In no event shall this Letter of Credit or the obligations contained herein expire except upon said prior written notice, it being expressly agreed by the undersigned that the above expiration date shall be extended as shall be required to comply with this 60 day notice provision. .... (Name of Bank or Trust Co.) notice of such election shall be sent by certified mail to the above address, attention: Town Manager, Town of Jupiter, with copy of notice to Town Engineer, Town of Jupiter.

Notwithstanding anything herein to the contrary, upon .....(Name of Bank or Trust Co.) receipt of written notification by the Town Engineer that the Project has been completed and that the Town has received and accepted an Irrevocable Letter of Credit or Bond from ..... (Name of Applicant) for the one-year warranty period following completion of the “Project” or that the one-year warranty period has expired, this Letter of Credit shall immediately terminate.

.....(Name of Bank or Trust Co.) hereby agrees with the drawers, endorsers, and bona fide holders of all drafts drawn under and in compliance with the terms of the credit, that such drafts will be duly honored upon presentation to.....(Name of Bank or Trust Co.) in accordance with the terms hereof. If this draft is not honored upon presentation, .....(Name of Bank or Trust Co.) agrees to pay all costs incurred by the Town of Jupiter in enforcing this Irrevocable Letter of Credit, including attorneys’ fees.

This Letter of Credit sets forth in full the terms of our understanding and such undertaking shall not in any way be modified, amended or amplified by reference to any documents, instruments or agreements referred to herein or in which this Letter of Credit is referred to or this Letter of

Credit relates, and any such references shall not be deemed to incorporate herein by reference any documents, instruments or agreements.

This Letter of Credit is subject to the “Uniform Customs and Practice for Documentary Credits” (1993 revision) International Chamber of Commerce Publication No. 500, and to the provisions of Florida law. If a conflict between the Uniform Customs and Practice for Documentary Credits and Florida law should arise, Florida law shall prevail.

Name of Bank or Trust Co.: \_\_\_\_\_

Signature\*\* of Bank or Trust Officer: \_\_\_\_\_

Date: \_\_\_\_\_

Printed Name of Bank or Trust Officer: \_\_\_\_\_

Title of Bank or Trust Officer: \_\_\_\_\_

**\*\* Attach documentation indicating that the above named Bank or Trust Officer is authorized to make this Letter of Credit commitment for the Bank or Trust Company.**

## **SECTION G - ENGINEERING UTILITIES PERMIT INSPECTIONS**

The review and approval process of Engineering Plan applications concludes with issuance of a sufficiency letter (for site development or redevelopment projects) and the application of the Engineering Division approval stamp on the engineering plans. The approval stamp is required on all plans or sketches (for simple modifications such as driveway improvements) in order to apply for an Engineering Utilities Permit at the Town Building Division. Upon issuance of the Engineering Utilities Permit, and completion of other applicable actions such as conduct of a pre-construction meeting (as warranted), construction may begin and the applicant will be responsible for coordination and scheduling of all Engineering Division inspections that are required for the project. The Engineering Utilities Permit will include a checklist that is intended to define the required inspections, based on the scope of work under the permit. **A copy of the checklist is provided at the end of this manual.**

**Engineering Division inspections shall be scheduled through the automated inspection call-in system using assigned permit numbers and codes provided to the applicant as part of the permit. In certain circumstances, particularly for longer term and large scale projects requiring similar routine daily inspections, a separate inspection process such as daily inspections set at agreed upon specific times each day, or use of a faxed inspection request can be considered on a case by case basis.**

## **SECTION H - MINIMUM STANDARDS & REQUIREMENTS FOR ENGINEERING PLANS**

The following standard notes shall be included on Engineering Plan applications submitted for review and approval:

1. FDOT Roadway and Traffic Design Standards, latest edition, shall apply to the design and construction of facilities on this set of engineering plans, unless specifically noted or detailed otherwise.
2. FDOT Standard Specifications for Road and Bridge Construction, latest edition, shall apply to the design and construction of facilities on this set of engineering plans, unless specifically noted or detailed otherwise.
3. The FHA Manual of Uniform Traffic Control Devices (MUTCD), latest edition, and the Palm Beach County Typical T-P-99-001 shall apply to the design and construction of pavement markings, signing, PRM's, and geometrics on this set of engineering plans, unless specifically noted or detailed otherwise.
4. Traffic control devices (signs, signals, markings, etc.) shall be in accordance with FHA Manual of Uniform Traffic Control Devices (MUTCD), latest edition, unless specifically noted or detailed otherwise.
5. All cleared materials including mulched materials, shall be removed from site prior to the performance of any excavation, fill or grading earthwork on site. Under no circumstances shall any such materials be buried on site. Should applicant desire to utilize certain cleared and mulched materials as admixture to soils to create landscape berm areas, the applicant shall seek and secure the express consent of the Town Engineer and the Natural Resources Program Supervisor for such allowance. With limited exceptions for documented extenuating circumstances, the adding or mixing of organic content of soils shall not exceed 10%, as determined by ASTM D2974. The permittee, at its sole expense, may be requested by the Town to perform this test, at any time during the clearing operation, to ascertain the organic content of the soils remaining. Any mixing of organic materials into soils shall be performed so as to establish a uniformly mixed final soil condition.
6. Except for those locations to be preserved, and pursuant to all other conditions designated and/or imposed by Natural Resources, the site shall be fully and completely cleared of all deleterious and/or organic materials, which may include the necessity for root raking and/or excavation of a layer(s) of earth, to a sufficient depth, so as to remove all such materials. All such materials shall be legally disposed of off site, with said disposal being performed promptly. Longer term storage of these materials will require containers to be used in accordance with Town Code requirements. Upon completion and prior to commencement of any other permitted site development work, inspection(s) shall be requested by the permittee for sufficiency of this organic material removal work. Said inspections shall be requested performed by Town Staff including representatives of the Building Division for structure areas, and the Engineering Division and Natural Resources Coordinator for other site areas. Permittee shall request these inspections by

the Town's representative(s) immediately upon completing the site clearing work. For large projects, said clearing can be performed in explicitly designated and field located phased areas proposed by applicant and as accepted by the Town's representatives.

7. Muck & Peat – If muck and peat are identified within rights of way, easements, or other areas that will be developed with roads, alleys, parking sidewalks, or similar “horizontal” improvements, said material shall be removed (to 10 feet outside of the developed areas) and said material shall be disposed of off-site, and clean granular compacted backfill used to replace the removed material.
8. If hardpan layer material is encountered in a location with a proposed swale or detention-retention areas, the hardpan material shall be removed and replaced with clean granular compacted backfill.
9. Minimum backfill, subgrade, and base rock compaction (density) requirements are defined below.
  - a. Backfill within street or alley right of way shall be shall be compacted to 98% of maximum density as determined by AASHTO T-180.
  - b. Backfill within areas that will not be improved with streets, alleys, parking areas, sidewalks, structures, etc., shall be compacted to a minimum of 93% of maximum density as determined by AASHTO T-180. Landscape berm and retention-detention area fill shall be compacted to a minimum of 91% of maximum density as determined by AASHTO T-180.
  - c. Utility trench backfill shall be compacted to 98% of maximum density as determined by AASHTO T-180.
  - d. Subgrade material (minimum of 12 inches) for sidewalks, asphalt paths, roads, alleys, etc., shall be compacted to 98% of maximum density as determined by AASHTO T-180.
  - e. Base material for roads, asphalt paths, alleys, etc., shall be compacted to 98% of maximum density as determined by AASHTO T-180.
10. Town of Jupiter Engineering Division Standards for Asphalt & Backfill Placement, Density & Thickness Testing and soil Stabilization Requirements:
  - a. Typical backfill lifts shall not exceed 12 inches. Thicker lifts are acceptable provided:
    - 1) An alternative placement and compaction methodology is prepared and submitted for review by Town Engineering and Stormwater Department Staff. Methodology shall define maximum lift thickness, equipment to be

used for compaction, rolling pattern and number of passes, and other applicable information.

- 2) Alternative method is performed on a test strip/area and densities are verified for full depth of lift via dig down and nuclear density testing for each 12 inches.
- b. Vertical distribution of density testing - Nuclear density compaction tests are to be taken on every lift placed (12" maximum thickness), starting with the soil at the springline of utility or at base of any structure, and proceeding upward to grade, at the locations defined in Item 3 below. If thicker lifts are approved and implemented, density testing shall be performed via "dig downs" to sufficient depth to test each 12 inches for the full thickness of lift.
  - c. Soil stabilization - The soils in the Jupiter area require proper soil stabilization mix designs and stringent quality control of field mixing application of the design mix in order to obtain an effective stabilized soil, particularly if lime sludge material is used. Construction specifications should require that the soil be sampled and mix design(s) prepared and tested by a testing lab. The mix design should be specified or otherwise administered closely during field installations or construction, including performance of frequent LBR tests. Stabilized subgrade shall, at a minimum, be tested to meet a minimum of LBR 40 value, in addition to FBV 75.
  - d. Horizontal distribution of density testing - Density testing shall be performed at the following minimum locations/horizontal spacing per the vertical distribution noted in Item 2 above:
    - 1) Pipe trenches - Tests shall be performed at randomly selected locations within each 300 foot interval (maximum) along the length of a pipe installation, and between each set of structures separated by less than 300 feet. At least one test shall be performed for every 12 inches, starting with the first test performed at springline (covering the 12" layer below springline elevation).
    - 2) Structures - Tests shall be performed at each manhole or drainage structure. At least one test shall be performed for every 12 inches, starting with the first test performed at base of structure (covering the 12" layer below base elevation). Tests should alternate from corner to corner or side to side around structure with each 12 inch increment.
    - 3) Subgrade - Tests shall be performed at randomly selected locations within each 300 foot interval (maximum) along the length of roadway, sidewalk or pathway, and every 6000 square feet of parking area.

- 4) Base Rock - Tests shall be performed at randomly selected locations within each 300 foot interval (maximum) along the length of roadway, sidewalk or pathway, and every 6000 square feet of parking area.
  - 5) Road Crossings - Tests shall be performed for each 12 inch lift within any open cut road crossing location.
- e. Asphalt - Roadway and parking area asphalt shall be tested to meet a minimum of 94% of the maximum laboratory density for the asphalt mix design. Testing may be done by core sampling or nuclear gauge density testing. For roadway asphalt, testing shall be at maximum 300 linear foot and 6000 square foot intervals. For parking areas, density testing shall be based on maximum 6000 square foot intervals. Should density testing indicate failure to meet the 94% minimum density, then additional localized testing will be required around the failure location to determine the extent of deficient asphalt density or to determine that the failure was a localized specific condition only. The Town reserves the right to request additional testing based on physical observation of the asphalt installation or surface conditions. Core samples will be required to substantiate the specified compacted asphalt thickness has been constructed. For roadways, the Town reserves the right to request rolling straightedge testing on the travel lanes, in accordance with FDOT Specifications.

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