

ADDENDUM

Addendum No. 2 (April 20, 2017)

To

Bid Documents

TOWN OF DAVIE

Bamford Park Artificial Turf Installation

Town Bid No. B-17-99

CGA Project No. 96-1630.112

To All Bidders:

Bidders for the above-referenced project shall take note of the following changes, additions, deletions, clarifications, etc. to the Plans and Specifications, which in accordance with the Contract Documents shall become a part of and have precedence over anything shown or described otherwise.

IN THE CONTRACT DOCUMENTS:

1. Document 02863, “Synthetic Turf Grass System” is **to be replaced** in its entirety.
2. Document 02863 - Questionnaire, Synthetic Turf Grass System – Questionnaire” is **to be added** to the specifications. All turf manufacturers not listed in Document 02863 need to complete the Questionnaire and submit to the Owner/Engineer by close of business Monday 4/24/17 to be considered “approved equal”.
3. Table of Contents is **to be replaced** in its entirety to include Document 02863 – Questionnaire Document.
4. Document 00100, Instructions to Bidders, section 28.1 states construction working hours in the Town of Davie are Monday through Friday 7am to 7pm. It was stated in the pre-bid meeting the hours were Monday through Friday 8am to 5pm. However, the hours stated in Document 00100 is correct.

IN THE CONTRACT DRAWINGS:

1. Attached plans sheet C1 and PD4 are **to be replaced**.

All other documents, specifications, drawings, terms and conditions remain the same. Bidders must acknowledge receipt of Addendum on Page 00300-8

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SECTION 02863

SYNTHETIC TURF GRASS SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Furnish all labor, materials, tools and equipment necessary to install the synthetic turf grass system as depicted in the Drawings and specified herein.
- B. The installation of all synthetic turf grass shall be performed in strict accordance with the manufacturer's installation instructions.
- C. The synthetic turf grass and the infill shall be provided by the synthetic turf grass manufacturer.

1.02 RELATED SECTIONS

- A. Section 01050 – Field Engineering and Surveying
- B. Section 01340 – Shop Drawings, Working Drawings and Samples
- C. Section 01410 – Materials and Installation Testing
- D. Section 02210 – Finish Grading
- E. Section 02632 – Synthetic Turf Grass Drainage System
- F. Other Sections as Applicable

1.03 REFERENCES

At a minimum, and in addition to other industry reference standards, the following reference standards must be met:

- A. ASTM Standard Test Methods
 - 1. D1335 Standard Test Method for Tuft Bind of Pile Yarn Floor Coverings.
 - 2. D 1577 Standard Test Method for Linear Density of Textile Fibers.
 - 3. D 2859 Standard Test Method for Ignition Characteristics of Finished Textile Floor Covering Materials.
 - 4. D 4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
 - 5. D 5034 Standard Test Method of Breaking Strength and Elongation of Textile Fabrics (Grab Test).
 - 6. D 5848 Standard Test Method for Mass per Unit Area of Pile Yarn Floor Coverings.
 - 7. F 355-A Standard Test Method for Impact Attenuation of Playing Surface Systems and Materials.
 - 8. F 1015 Standard Test Method for Relative Abrasiveness of Synthetic Turf Playing Surfaces.

9. F 1551 Standard Test Methods for Comprehensive Characterization of Synthetic Turf Playing Surfaces and Materials.
 10. F 1936 Standard Specification for Impact Attenuation of Turf Playing Systems as Measured in the Field.
 11. F 2898 Standard Test Method for Permeability of Synthetic Turf Sports Field Base Stone and Surface System by Non-Confined Area Flood Test Method.
- B. The Fédération Internationale de Football Association (FIFA)
 - C. 2001 NCAA and/or National Federation Football Rules and Interpretations; FIFA Rules of the Game. Where discrepancies are noted, the rules of the NCAA shall apply.
 - D. International Artificial Turf Standards and test methods.
 - E. FDOT Standard Specifications for Road and Bridge Construction.

1.04 SUBMITTALS

- A. Prior to construction, Contractor shall submit the following:
 1. Shop Drawings in accordance with Section 01340 – Shop Drawings, Working Drawings and Samples, including, at a minimum the following:
 - a. Field Layout
 - b. Field Marking Plans (colorized) and details as noted on the construction plans.
 - c. Roll/Seaming Layout
 - d. Methods of attachment, field openings and perimeter conditions.
 2. Quarry certifications demonstrating compliance with the material specifications for the drainage base stone and finishing stone.
 3. Synthetic Turf Grass
 - a. Submit two samples, minimum of 6x6 inch in size, illustrating details of finished product.
 - b. A letter and specification sheet certifying that the products of this section meet or exceed specified requirements.
 4. Infill Material
 - a. Submit a detail indicating the number and thickness of the layers of the infill materials and the type and percentage of materials used.
 - b. Heat reducing composite mix – provide a list of the type and source of the composite infill material included, and the thickness and percentages of the material in the top layer of the infill system, along with the types of materials and thickness of the layers under the top layer, as well as the certification of the grade and quality of all the infill materials used.
 - c. Documentation shall be provided for the proposed heat reducing composite infill which demonstrate heat reducing properties with testing results.

PART 2 - PRODUCTS

2.01 SYNTHETIC TURF GRASS

- A. Synthetic turf grass shall consist of a carpet made of slit-film, UV resistant, polyethylene fibers tufted into a fibrous, porous backing.
- B. The installed Synthetic turf grass system shall meet the International Artificial Turf Standards and have the following properties:

Standard	Property	Specification
ASTM D D5823	Pile Height	2-1/4" nominal, minimum*
ASTM D 1577	Fiber Denier	9000 <u>minimum</u>
ASTM D 5848	Pile Weight	40 oz./sq. yd. <u>minimum</u>
ASTM D 1335	Tuft Bind	8 lbs. (with infill)
ASTM D 5034	Grab Tear (width)	>200 lbs./force
ASTM D 5034	Grab Tear (length)	>200 lbs./force
ASTM F 1015	Relative Abrasiveness Index	<25
ASTM D 4491	Carpet Permeability	>40 inches /hour
ASTM F 355 & F 1936	Impact Attenuation, G-Max	100 Minimum 200 Maximum Less than 125 at Acceptance

*Pile height may be greater as determined by synthetic turf grass manufacturer if need to achieve required G-Max values given the infill system, with the approval of the Owner and Engineer.

- C. The carpet shall consist of fibers tufted into a primary backing with a secondary backing.
 - 1. The carpet's primary backing shall be a double-layered polypropylene fabric treated with UV inhibitors or per listed approved vendor's specifications.
 - 2. The secondary coating shall consist of an application of porous, heat-activated urethane to permanently lock the fiber tufts in place. Perforated (i.e. with punched or burned holes) backed carpet shall be acceptable as an alternate, per manufacturer's recommendations.
- D. The carpet shall be furnished in 15' wide rolls or the metric equivalent. Rolls shall be long enough to go from sideline to sideline without splicing. The perimeter white line shall be tufted into the individual sideline rolls. Head seams, other than at sidelines, will not be acceptable.
- E. Non-tufted or inlaid lines and markings shall be painted with paint approved by the Synthetic Turf Grass Manufacturer.

- F. Thread for sewing seams of turf shall be UV resistant and as recommended by the Synthetic Turf Grass Manufacturer.
- G. Glue and seaming fabric for inlaying lines and markings shall be as recommended by the Synthetic Turf Grass Manufacturer.
- H. In accordance with the Contract Documents, the following shall be provided at the time of Bid:
 - 1. Manufacturer Qualifications Statement:
 - a. The synthetic turf manufacturer's name, type of turf grass, and composition of fiber.
 - b. The synthetic turf grass manufacturer must have installed a minimum of either 5 fields in the State of Florida, or 50 fields in the United States of 40,000 square feet or more in service for a minimum of eight (8) years with the same products being proposed for this field.
 - c. Provide contact names, email addresses and phone numbers.
 - 2. A certified copy of the synthetic turf grass manufacturer's ISO 9000 certification.
 - 3. A statement from the synthetic turf grass manufacturer which states that their turf system does not violate any other manufacturer's patents, patents allowed, or patents pending.
 - 4. Certified copies of independent (third-party) laboratory reports for Reference Standards listed in paragraph 1.03, above.
- I. The synthetic turf grass shall be provided by one of the following manufacturers:
 - 1. Field Turf
 - 2. Astro Turf
 - 3. A Turf
 - 4. UBU Sports
 - 5. Shaw Sports Turf
 - 6. Limonta Sport
- J. Pre-bid Submittal Requirements: Manufacturers not listed above, shall submit the information as outlined and required in this section (Section 02863) in addition to completing the questionnaire titled 02863 Questionnaire included in the Bid documents. Bidders are required to bid only those synthetic turf, heat reducing infill manufacturers that have been approved by this specification or addendums. Bids that do not utilize an approved manufacturer will be rejected.

- K. If proposing “approved equal” synthetic turf grass, the Contractor shall submit the following items by Monday, 4/24/17 close of business to be considered in the addendums:
- a. A certified copy of the synthetic turf grass manufacturer’s ISO 9000 certification.
 - b. Two samples, 6x6 inch in size, illustrating details of finished product.
 - c. A completed Synthetic Turf Grass System Questionnaire (included at the end of this specification section).
 - d. To be considered equal, the alternative manufacture must be approved by Bid Addendums, and all pre-bid submittal requirements shall be submitted to the Owner/Engineer by Monday, 4/24/17 close of business.
 - e. A statement from the synthetic turf manufacturer’s name, type of fiber and composition of fiber.
 - f. A statement from the synthetic turf grass manufacturer which states that their turf system does not violate any other manufacturers’ patents, patents allowed or patents pending.
 - g. Certified copies of independent (third-party) laboratory reports for Reference Standards listed in paragraph 1.03, above.
 - h. Two representative samples (1 in each) of heat reducing composite infill.
 - i. A technical specification sheet and letter certifying that the product of this section meet or exceed specified requirements in this specification.

2.02 HEAT REDUCING COMPOSITE INFILL

- A. The infill system shall consist of resilient layered granular system, comprising of selected and graded sand, or a mixture of sand and S.B.R. crumb rubber or similar material, and a top layer of composite material with heat reducing properties.
 1. Documentation shall be provided for the proposed heat reducing composite infill which demonstrate heat reducing properties with testing results.
- B. The combination of infill materials shall be installed in the ratio and combined weight as determined by the Synthetic Turf Grass manufacturer which yields the required G-Max values.
 1. The addition of a mat is at the discretion of the synthetic turf grass manufacturer and shall not contribute to the combined weight or G-Max value.
 2. The addition of a mat must be approved by the Owner and Engineer.
- C. The infill materials shall be approved and supplied by the synthetic turf manufacturer.
- D. The composite material shall be comprised of an exclusive cork composite, or an approved equal composite infill material proven in the synthetic turf industry.

- E. System Qualifications:
 - 1. The infill system must meet the standards and testing criteria for synthetic turf fields and applied as such with at least 15 fields installed in the United States.
 - 2. The infill system must prove reliable by having been installed in synthetic turf fields for commercial use for a minimum of a complete 8-year life cycle.
 - 3. The use of the infill system must be proven by having been utilized in a minimum of 50 full sized synthetic turf fields worldwide with no incidence of failure or replacement.

2.03 FIELD GROOMER

- A. Provide one field grooming (sweeping) device for the maintenance of the synthetic turf grass system.
- B. Field groomer shall have adjustable tine rake & brush, consisting of four rows of spring tines ahead of a six-foot-wide stiff brush. Tines and brush are height adjustable to be utilized independently or in tandem.
- C. The field groomer shall include a towing mechanism compatible with a field utility vehicle, i.e. Taro Sand Pro, John Deere Gator, Club Car.
- D. The field groomer shall be approved by the synthetic turf grass manufacturer.
- E. The Synthetic Turf grass manufacturer shall train the Town's maintenance staff in the use of the field groomer.

2.04 SYNTHETIC TURF PERIMETER EDGE ATTACHMENT

- A. As required by the Synthetic Turf Grass manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that area is ready to receive work, and excavation, dimensions, and elevations are as indicated on Construction plans.
- B. Beginning of installation means acceptance of existing conditions.
- C. It is the responsibility of the Contractor to verify the accuracy of all survey information provided by the Town prior to commencing excavations or filling operations. Commencement of these operations constitutes acceptance of the survey information as appropriate to meet the intent of the Contract.

3.02 PROTECTION OF WORK

- A. Make provisions for, and take the necessary precautions to protect existing and new work from damage during the entire life of the project.
- B. It is the responsibility of the Contractor to protect all work in progress from damage due to extremes of cold, moisture, or drying, or mechanical damage from equipment traffic or foot traffic and to alert the Town to the presence or likelihood of conditions that may adversely affect the quality of the work, the physical structure of soils, or transport of site soils off-site.

- C. Protect soils from excessive moisture. During periods of prolonged precipitation, take aggressive steps to avoid over-saturation, erosion, or homogenization of soils by covering with protective plastic sheeting, collection and controlled dewatering, detention for sediment removal, and allowing excessively wetted soils to remain fallow until approved by the Town as appropriate for continued work.
 - D. Apply supplemental moisture to overly dry soils.
 - E. Do not operate heavy equipment near excavations where pipe, trench wall or cut-slope failure may result.
- 3.03 QUALITY ASSURANCE
- A. Laser fine grading is mandatory.
 - B. The Contractor is responsible for verifying the quality of the work and shall perform compaction and density tests on request of the Town to check compliance with these specifications. A copy of the test reports shall be furnished to the Town.
- 3.04 PROJECT/SITE CONDITIONS
- A. Work of this section shall not be executed when site conditions are detrimental to quality of work as determined by the Town.
- 3.05 PREPARATION OF SUB-GRADE
- A. The general extent of the drainage and sub-grade construction work is shown on the Drawings and includes, but is not limited to, the following:
 1. The sub-grade must have a minimum slope of 0.5% from the longitudinal center of the field towards the sidelines.
 2. The sub-grade must be compacted in both directions to attain the specified compaction rate.
 3. The soil bed or sub-grade must be prepared to tolerances of not more than ½" from design grade to allow for even drainage.
 4. Laser fine grading is mandatory.
 - B. Using laser operation survey instruments, the Contractor shall verify that subgrade has been prepared according to specification with regard to compaction, grade tolerances and is free of debris to beginning work.
 - C. The field sub-grade shall be final graded to form a smooth, clean basin free of any debris and/or loose soil to the tolerances. The stone drainage base shall not be installed until all sub-grading and drainage are completed in order to avoid the mixing of other soil and materials with the drainage materials. Laser fine grading is mandatory.
- 3.06 SUB-GRADE VERIFICATION
- A. Upon installation of the sub-drainage system, the Contractor shall submit to the Town for review, a sub-grade conformance survey, performed by a licensed surveyor, before any placement of the drainage stone.
 1. Elevations shall be taken on a 25-foot grid over the sub-grade of the entire playing field.

2. Tolerance for Sub-Grade: Sub-grade shall be verified using laser-operation survey instruments. Laser fine grading is mandatory. Finish Grade must be within ½" of an inch plus or minus from the elevations shown on the construction plans. In addition, the sub-grade shall be measured so that no point within the 25-foot grid deviating more than .05 % from any other point within the 25-foot grid.
- B. After review, the conformance survey will be returned to Contractor with areas out of tolerance noted for connection. Contractor will be required to correct areas out of tolerance and certify that connections have been made prior to base drainage stone installation.

3.07 SUB-GRADE CERTIFICATION

- A. Prior to installation of collection pipes or field aggregate, the Contractor shall provide a certification from the Synthetic turf grass manufacturer that the sub-grade meets the compaction, planarity and permeability requirements.

3.08 INSTALLATION OF SYNTHETIC TURF PERIMETER EDGE

- A. Install synthetic turf perimeter edge attachment system in accordance with manufacturer's instructions and as approved by the Town.

3.09 PREPARATION OF FIELD BASE AGGREGATE (FINISH AND BASE DRAINAGE STONE)

- A. Prior to commencing the base aggregate, install the horizontal multifold pipes and geotextile to the satisfaction of the Town and the Engineer.
 1. Care should be taken to keep machinery on the base stone without damaging the drainage pipe or fabric avoid twisting and turning on the stone base.
 2. Do not operate machinery directly on approved geotextile.
- B. The stone shall be washed at the quarry and damp when transported to site and shall be kept damp during installation, to minimize segregation of the materials.
- C. Base drainage stone throughout the field shall be carefully smoothed and compacted. The entire playing field surface shall then be checked for irregularities and adjusted to a uniform grade per the grading plans detailed on the construction plans, as follows:
 1. Place approved Base Drainage Stone in a manner that will minimize disturbance to the subgrade geotextile installation. Use only approved transport methods for placement of materials.
 2. Thoroughly cover subgrade geotextile with sufficient Base Drainage Stone to evenly distribute compressive forces of placement operation in 6" maximum lifts.
 3. Grade the base stone base with a laser equipped grading rubber tire tractor with non-ag tires.
 4. Roll the base stone with a double drum non-vibratory roller to the satisfaction of the Engineer. The base stone must be laid and compacted without damaging or disturbing the sub-grade, geotextile or multi flow drains.

5. Once the finishing stone is on grade utilize a water truck or large hoses to water the entire base very thoroughly to settle the base drainage interface.
 6. Then laser grade the finishing stone again and roll with Steel Double Drum Roller thoroughly in two directions.
- D. Place approved Finishing Stone in a manner that will minimize disturbance to the approved Base Drainage Stone installation. Use only approved transport methods for placement of materials.
1. Spread a single lift of Finishing Stone to the depth specified, allowing for compaction. Perform compaction with a static roller of sufficient weight to insure proper compaction to the satisfaction of the Engineer.
 2. The final lift of aggregate should not be more than 2 inches deep.
 3. Provide complete compaction to the lines, grades, and slopes indicated on the Construction plans.

3.10 FIELD BASE AGGREGATE VERIFICATION

- A. The Contractor shall submit to the Town for review, a field base aggregate verification survey,
1. Conformance Survey of Finish Stone: The Contractor shall perform a conformance survey by a licensed surveyor, before any placement of the synthetic turf, on a 25-foot grid over the finish stone of the entire playing field. Provide spot elevations, based on the established benchmark, on the Construction plans, at each grid intersection and at the intersection of the perimeter and the grid. Submit a drawing showing the results of the above survey. The drawing shall include the scaled grid, all spot elevations and show contours at ¼" intervals of variation from the ideal planes. Interpolate spot elevations as required to provide contours.
 2. The Town will require three (3) working days to review survey. After review, the survey will be returned to Contractor with areas out of tolerance noted for correction. Contractor will be required to correct areas out of tolerance and certify that corrections have been made prior to turf installation.
 3. Tolerance for Finish Stone: Finish stone elevations shall be verified using laser-operation survey instruments. Finish Grade must be within ¼" of an inch plus or minus from the elevations shown on the plans. In addition, the finish stone shall be measured so that no point within the 25-foot grid deviates more than ½" of an inch from any other point within the 25-foot grid.

3.11 FIELD BASE AGGREGATE CERTIFICATION

- A. Prior to installation of the synthetic turf, the Contractor shall provide a certification from the Synthetic turf grass manufacturer that the field base aggregate meets the compaction, planarity and permeability requirements.

3.12 SYNTHETIC TURF GRASS SYSTEM INSTALLATION

- A. Pre-Installation Meeting

1. Convene one week before starting installation of the synthetic turf grass system.
- B. General
1. Only trained technicians, skilled in the installation of athletic caliber synthetic turf grass systems, working under the direct supervision of the approved installer supervisors, shall undertake any cutting, sewing, gluing, shearing, topdressing or brushing operations.
 2. The designated Supervisory personnel on the project must be certified, in writing by the Synthetic Turf Grass Manufacturer, as competent in the installation of this material, including sewing seams and proper installation of the Infill mixture.
 3. All designs, markings, layouts, and materials shall conform to all currently applicable National Federation of High School Association rules and other domestic and international standards that may apply to this type of synthetic turf grass installation and as detailed on the construction plans.
- C. Turf Grass Installation
1. Install shall be in accordance with Synthetic Turf Grass Manufacturer's instructions and the approved shop drawings. Any variance from these requirements must be accepted in writing, by the Synthetic Turf Grass Manufacturer's onsite representative, and submitted to the Town, verifying that the changes do not in any way affect the warranty. Infill materials shall be approved by the Synthetic turf grass manufacturer and installed in accordance with the Synthetic Turf Grass Manufacturer's standard procedures.
 2. The carpet rolls are to be installed directly over the properly prepared aggregate base. Extreme care should be taken to avoid disturbing the aggregate base, both in regard to compaction and planarity.
 3. The full width rolls shall be laid out across the field. Turf shall be of sufficient length to permit full cross-field installation from sideline to sideline. No head or cross seams will be allowed in the main playing area between the sidelines. Utilizing standard state of the art sewing procedures, each roll shall be sewed or glued properly to the next in accordance with the Manufacturer's specifications. When all of the rolls of the playing surface have been installed, the sideline areas shall be installed at right angles to the playing field turf. These rolls shall be glued or sewn as well.
 4. For sewn installation, all seams shall be sewn using double bagger stitches and polyester thread or adhered using seaming tape and high grade adhesive (per the Synthetic Turf Grass Manufacturer's standard procedures). Seams shall be flat, tight, and permanent with no separation or fraying. For glued installation, adhesives shall be hot-melt or a one-part moisture cured polyurethane obtained from a single manufacturer and be equivalent to Nordot 34-G as manufactured by Synthetic Surfaces of Scotch Plains, NJ or approved equal.
 5. Prior to the application of any line painting, the turf shall be fibrillated by means of a nylon rotary brush to provide the look, feel, and safety of

optimally maintained natural grass, including subtle undulations normally associated with natural grass athletic fields.

6. Non-tufted or inlaid lines and markings shall be painted according to the recommendations of the Synthetic turf grass manufacturer and of the paint manufacturer. Several applications may be required.
7. Synthetic turf shall be attached to the perimeter edge detail in accordance with the Synthetic Turf Grass Manufacturer's standard procedures.

D. Infill Installation

1. Heat Reducing Composite Infill

- a. Infill materials shall be applied in numerous thin lifts. The turf shall be brushed as the mixture is applied.
- b. The infill installation mixture shall be installed in accordance with, and to a depth determined by, the Synthetic Turf Grass Manufacturer.
- c. Infill materials shall be installed to fill the voids between the fibers and allow the fibers to remain vertical and non-directional.
- d. Upon completion, free pile height shall be no more than $\frac{3}{4}$ inch and no less than $\frac{1}{2}$ inch.
- e. The two, or three layered infill system shall be installed in a systematic order.

3.13 CLEANING

- A. Protect installed Synthetic turf from subsequent construction operations.
- B. Do not permit traffic over unprotected floor surface.
- C. Contractor shall provide the labor, supplies, and equipment as necessary for final cleaning of surfaces and installed items.
- D. All usable remnants of new material shall become the property of the Town.
- E. The Contractor shall keep the area clean throughout the project and clear of debris.
- F. Surfaces, recesses, enclosures, etc., shall be cleaned as necessary to leave the work area in a clean, immaculate condition ready for immediate occupancy and use by the Town.

3.14 UNDERGROUND UTILITIES

- A. The Contractor's attention is directed to the possible presence of water, sewer, gas mains, electric wires, conduit, communication cables (both overhead and underground), poles and house service connections in the street or common areas in which the construction project is to be performed. The Contractor shall locate all existing utilities, both private and public, and be responsible for their safety.
- B. Should any existing utilities be damaged or destroyed due to the operations of the Contractor, the damages or destroyed components shall be immediately replaced or repaired as necessary to restore the utility to a satisfactory working condition.

- C. These repairs or replacements shall be at no additional expense to the Town or the utility owner. The contractor shall notify respective utility companies in accordance with State of Florida law regarding any work to be performed in the vicinity of existing lines, cables, or other utility features.

3.15 OWNER ACCEPTANCE

- A. Prior to Final Acceptance, the Contractor shall submit to the Town:
 - 1. Three (3) copies of Maintenance Manuals, which will include all necessary instructions for the proper care and preventative maintenance of the synthetic turf system including, but not limited to, turf, infill, drainage system, painting and markings.
 - a. Provide specific guidelines to address proper and adequate maintenance needed to maintain G-Max values below the maximum.
 - b. Provide specific guidelines for the operation and maintenance of the field groomer.
 - 2. Project Record Documents in accordance with Section 01720 – Record Documents, including, at a minimum the following:
 - a. All proposed elevations.
 - b. The locations of seams, drains or other pertinent information.
 - c. The dimensions and location of all field markings.
 - 3. Warranty: Submit Manufacturer Warranty and ensure that forms have been completed in Town's name and registered with Manufacturer.
 - 4. Certification: Submit certification signed by Contactor that installed materials conform to specified requirements and drainage system was successfully checked and tested prior to covering with drainage gravel.
 - 5. A certification from the synthetic turf grass manufacturer that the installation has been performed in accordance with manufactures recommendation and is suitable for play and the commencement of the warranty period.
 - 6. Certified initial G Max test results.

3.16 WARRANTIES

- A. The synthetic turf grass manufacturer and a third party (insurer) shall provide a warranty to the Town that covers defects in materials and workmanship of the synthetic turf grass system for a period of 8 years from the date of Owner Acceptance.
- B. The synthetic turf grass manufacturer's warranty shall include general wear and damage caused from UV degradation. The warranty shall specifically exclude vandalism, and acts of God beyond the control of the Town or the manufacturer.
- C. Warranty Insurance
 - 1. The synthetic turf grass manufacturer's Warranty must be supported by a prepaid, non-cancelable insurance policy in the amount of the full, non-prorated, replacement value for the full eight (8) year period, or an 8-year

Warranty Bond.

2. The Surety shall have and maintain at least an "A" rating in A.M. Best Company's rating guide.
 3. Bidders shall submit a sample 8 - year insurance policy or Warranty Bond from the manufacturer of the synthetic turf grass system that they are proposing to install for this project at the time of bid.
- D. The Contractor shall provide a Warranty to the Town that covers defects in the installation workmanship, and further warrant that the installation was done in accordance with both the Manufacturer's recommendations and any written directives of the Manufacturer's onsite representative.
- E. Contractor shall be responsible for the testing of the G-Max levels:
1. At the installed synthetic turf at the completion of construction and
 2. At years two, four, six, and six months prior to the completion of year eight.
 3. If any of these tests do not fall within the G-Max range as specified, the Contractor will be required to modify the field composition to the sole satisfaction of the Town so that it falls within the target G-Max range.
 4. All costs associated with such work shall be borne solely by the Contractor.
 5. Any failed test shall be retested to verify that the field meets the specifications.
 6. All testing shall be paid by the Contractor.
 7. All testing shall be completed by an independent testing laboratory accredited for such tests, and shall be pre-approved by the Town.
 8. All testing and analysis of findings shall be completed by qualified persons utilizing the required techniques outlined in the ASTM standards.

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QUESTIONNAIRE

SYNTHETIC TURF GRASS SYSTEM

PART 1 - GENERAL

- A. The Specification requires that the synthetic turf grass shall be a carpet made of silt-film, UV resistant polyethylene fibers tufted into a fibrous, porous backing by Field Turf, Astro Turf, A Turf, UBU Sports, Shaw Sports Turf, or Limonta Sport.
 - 1. Is the Synthetic turf grass being submitted with the Bid one of the products as mentioned above?
 - a. Yes.
 - 1) If Yes, no further information is required
 - b. No.
 - 1) If No, Please complete the questions and information shown below
 - 2. Is the Heat Reducing Composite Infill Material being submitted with the Bid provided by Field Turf, Astro Turf, A Turf, UBU Sports, Shaw Sports Turf or Limonta Sport?
 - a. Yes.
 - 1) If Yes, no further information is required
 - b. No,
 - 1) If No, Please complete the questions and information shown below

PART 2 - PRODUCTS

2.01 SYNTHETIC TURF GRASS

- A. The Specification requires that the Synthetic turf grass shall consist of a carpet made of silt-film, UV resistant polyethylene fibers tufted into a fibrous, porous backing.
 - 1. Describe the composition of the Synthetic turf grass being submitted with the Bid:
 - _____
 - _____
 - _____
 - _____
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- B. The Specification requires that the installed Synthetic turf grass field shall meet the International Artificial Turf Standards and have the following properties:

Standard	Property	Specification
ASTM D D5823	Pile Height	2-1/4" nominal, minimum*
ASTM D 1577	Fiber Denier	9000 <u>minimum</u>
ASTM D 5848	Pile Weight	40 oz./sq. yd. <u>minimum</u>
ASTM D 1335	Tuft Bind	8 lbs. (with infill)
ASTM D 5034	Grab Tear (width)	>200 lbs./force
ASTM D 5034	Grab Tear (length)	>200 lbs./force
ASTM F 1015	Relative Abrasiveness Index	<25
ASTM D 4491	Carpet Permeability	>40 inches /hour
ASTM F 355/F 1936	Impact Attenuation, G-Max	100 Minimum 200 Maximum Less than 125 at Acceptance

1. Describe the above properties for the proposed Synthetic turf grass being submitted with the Bid:

Standard	Property	Specifications per Manufacturer's
ASTM D 1577	Fiber Denier	_____
ASTM D D5823	Pile Height	_____
ASTM D 5848	Pile Weight	_____
ASTM D 1335	Tuft Bind	_____
ASTM D 5034	Grab Tear (width)	_____
ASTM D 5034	Grab Tear (length)	_____
ASTM F 1015	Relative Abrasiveness Index	_____
ASTM D 4491	Carpet Permeability	_____
ASTM F 355/F 1936	Impact Attenuation, Gmax	_____

- C. The Specification requires that the carpet shall consist of fibers tufted into a primary backing with a secondary backing.

1. Describe the fiber composition of the Synthetic turf grass being submitted with the Bid:

- D. The Specification requires that the carpet shall be furnished in 15' wide rolls or the metric equivalent. Rolls shall be long enough to go from sideline to sideline without splicing. The perimeter marking line shall be tufted into the individual sideline rolls. Head seams, other than at sidelines, will not be acceptable.

1. Describe the Synthetic turf grass being submitted relative to the above.

- E. The Specification requires that the carpet's primary backing shall be a double-layered polypropylene fabric treated with UV inhibitors or per listed approved vendor's specifications. The secondary coating shall consist of an application of porous, heat-activated urethane to permanently lock the fiber tufts in place. Perforated (i.e. with punched or burned holes) backed carpet shall be acceptable as an alternate, per manufacturer's recommendations.

1. Describe the Synthetic turf grass being submitted relative to the above.

- F. The Specification requires that the fiber shall be 9,000 denier, low friction, UV-resistant fiber measuring not less than 2-1/4 inches, nor more than 2- 1/2 inches high.

1. Describe the Synthetic turf grass being submitted relative to the above.

- G. The Specification requires that the Non-tufted or inlaid lines and markings shall be painted with paint approved by the Synthetic Turf grass Manufacturer.

1. Describe the Synthetic turf grass being submitted relative to the above.

H. The Specification requires that the Thread for sewing seams of turf shall be UV resistant and as recommended by the Synthetic Turf grass Manufacturer.

1. Describe the Synthetic turf grass being submitted relative to the above.

I. The Specification requires that the Glue and seaming fabric for inlaying lines and markings shall be as recommended by the Synthetic Turf Grass Manufacturer.

1. Describe the Synthetic turf grass being submitted relative to the above.

J. Manufacturer Qualifications:

1. The Specification requires that the synthetic turf grass manufacturer must have installed a minimum of either 5 fields in the State of Florida, or 50 fields in the United States of 40,000 square feet or more in service for a minimum of eight (8) years with the same products being proposed for this field with no incidents of failure.

a. Describe the Synthetic turf grass being submitted relative to the above.

- 2. The Specification requires that the manufacturer must be ISO 9000 certified.
 - a. Describe the Synthetic turf grass being submitted relative to the above.

- 3. The specification requires that the synthetic turf grass shall be by Field Turf, Astro Turf, A Turf, UBU Sports, Shaw Sports Turf, or Limonta Sports.
 - a. To be considered equal, the alternative manufacturer must be approved by Bid Addendums, and all pre-bid submittal requirements shall be submitted to the Owner/Engineer by Monday, 4/24/17 close of business.
 - b. Describe why the synthetic turf grass being submitted is equal to Field Turf, Astro Turf, A Turf, UBU Sports, Shaw Sports Turf, or Limonta Sports.

2.02 HEAT REDUCING COMPOSITE INFILL

- A. The Specification requires that the Heat Reducing Composite infill shall be by Field Turf, Astro Turf, A Turf, UBU Sports, Shaw Sports Turf, or Limonta Sports.
 - 1. To be considered equal, the alternative manufacturer must be approved by Bid Addendums, and all pre-bid submittal requirements shall be submitted to the Owner/Engineer by Monday, 4/24/17 close of business.
 - 2. Describe why the Heat Reducing Composite infill being submitted is equal to Field Turf, Astro Turf, A Turf, UBU Sports, Shaw Sports Turf, or Limonta Sports.

B. The Specification requires that the Heat Reducing Composite infill shall consist of a resilient layered granular system, comprising of selected and graded sand, or a mixture of sand and S.B.R. crumb rubber or similar material, and a top layer of composite material with heat reducing properties.

1. Describe the Heat Reducing Composite Infill Material being submitted relative to the above.

C. The Specification requires that the infill materials shall be approved by the synthetic turf grass manufacturer.

1. Describe the Heat Reducing Infill Material being submitted relative to the above, and provide testing results that demonstrate heat reducing properties.

D. The Specification requires that the top layer shall be a composite material comprised of an exclusive cork composite, or an approved equal composite infill material proven in the synthetic turf industry.

1. Describe the composite infill Material being submitted relative to the above.

E. Installation:

1. The Specification requires that prior to installation of collection pipes or field aggregate, the Contractor shall provide a certification from the Synthetic turf grass manufacturer that the sub-grade meets the compaction, planarity and permeability requirements.

a. Confirm the alternative manufacturer agrees to the information relative to the above.

2. The Specification requires prior to installation of the synthetic turf, the Contractor shall provide a certification from the Synthetic turf grass manufacturer that the field base aggregate meets the compaction, planarity and permeability requirements.

a. Confirm the alternative manufacturer agrees to the information relative to the above.

F. System Performance Characteristics:

1. The infill system must meet the standards and testing criteria for synthetic turf fields and applied as such with at least 15 fields installed in the United States.

a. Describe the Infill Material being submitted relative to the above.

2. The infill system must prove reliable by having been installed in synthetic turf fields for commercial use for a minimum of a complete 8-year life cycle.

a. Describe the Infill Material being submitted relative to the above.

3. The use of the infill system must be proven by having been utilized in a minimum of 50 full sized synthetic turf fields worldwide with no incidence of failure or replacement.

a. Describe the Infill Material being submitted relative to the above.

G. Warranties:

1. The Specification requires that the synthetic turf grass manufacturer and a third part (insurer) shall prove a warranty to the Town as shown in 3.16, above.

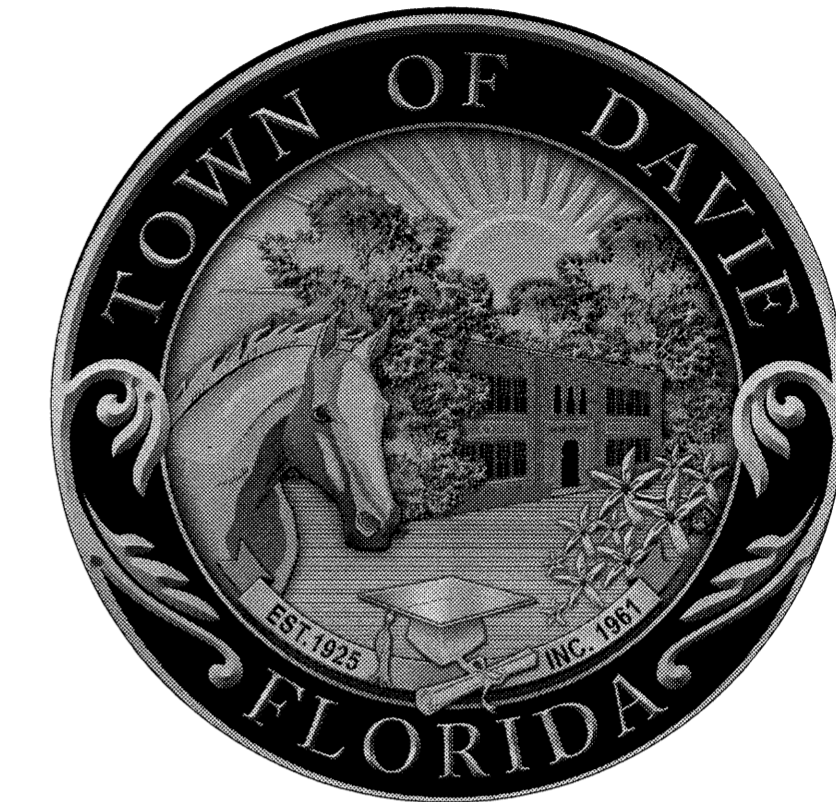
a. Describe the Warranty being submitted relative to the above.

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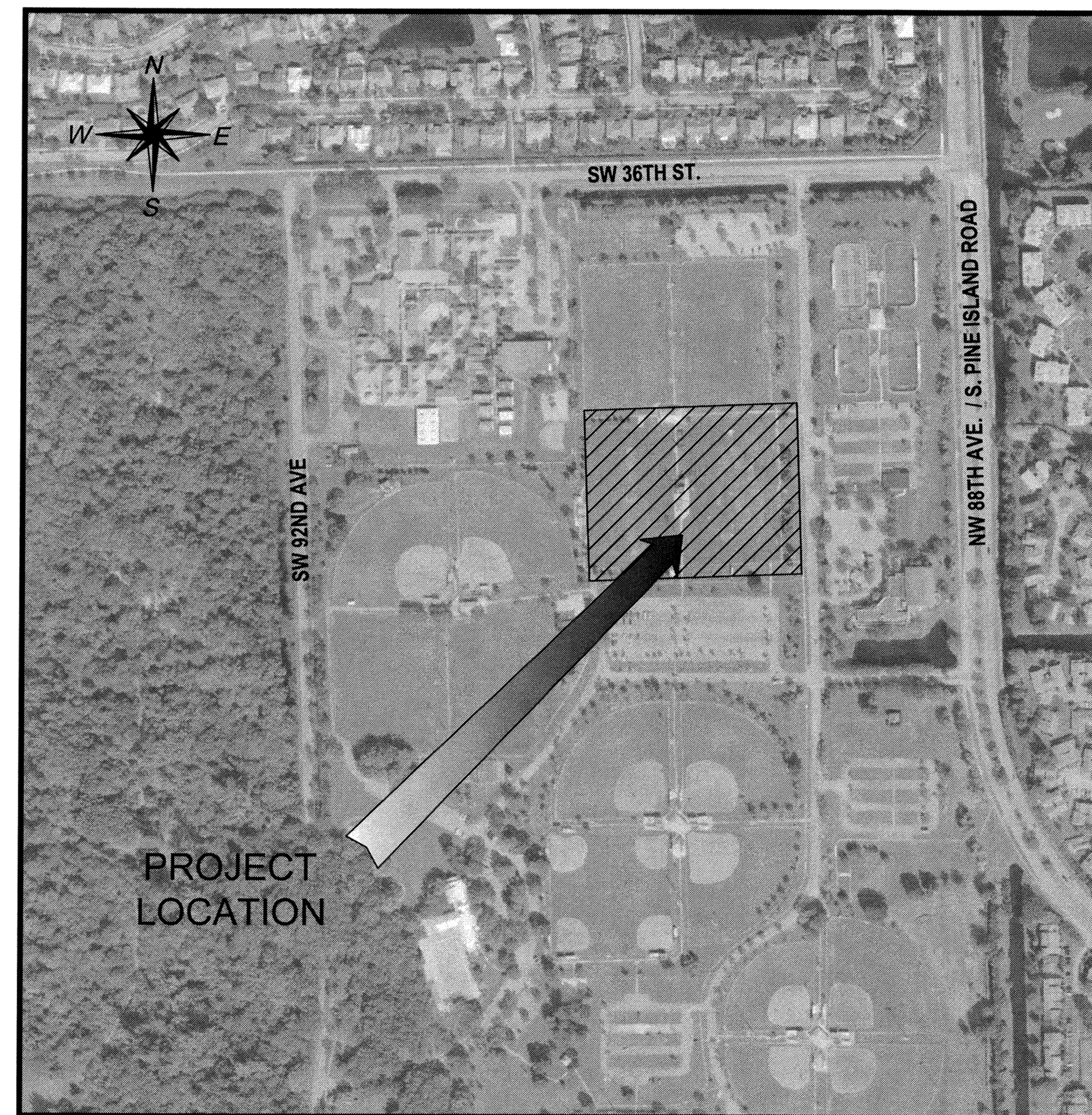
BAMFORD PARK ARTIFICIAL TURF INSTALLATION

DAVIE, FLORIDA

PROJECT No: 96-1630.112
961630.112-C-C006.dwg



SHEET LIST TABLE	
Sheet Number	Sheet Title
C1	COVER
C2	LEGENDS AND ABBREVIATIONS
D1	DEMOLITION PLAN
PD1	SITE LAYOUT PLAN
PD2	GRADING AND DRAINAGE PLAN
PD3	DETAIL SHEET
PD4	DETAIL SHEET
PD5	DETAIL SHEET
PD6	GENERAL NOTES
PD7	STORMWATER POLLUTION PREVENTION PLAN
PD8	STORMWATER POLLUTION PREVENTION NOTES
PD9	FOOTBALL AND SOCCER STRIPING PLAN
PD10	SOCCER STRIPING PLAN
PD11	LACROSSE STRIPING PLAN



LOCATION MAP
Scale: 1" = 300'

TOWN OFFICIALS	
MAYOR:	JUDY PAUL
VICE MAYOR:	MARLON LUIS
COUNCIL MEMBERS:	BRYAN CALETKA
	CARYL HATTAN
	SUSAN STARKEY
TOWN ADMINISTRATOR	RICHARD J. LEMACK

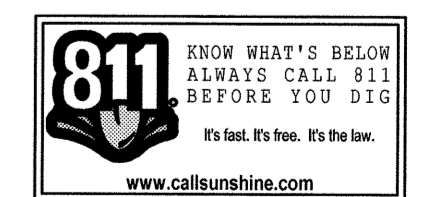
NOTES:

- RESPONSIBILITY FOR THE USE OF THESE PLANS FOR ANY PURPOSE PRIOR TO SECURING PERMITS FROM ALL AGENCIES HAVING JURISDICTION OVER THIS PROJECT WILL FALL SOLELY UPON THE USER.
- AN ELECTRONIC CAD FILE WILL BE PROVIDED FOR SURVEY LAYOUT.

BENCHMARK:

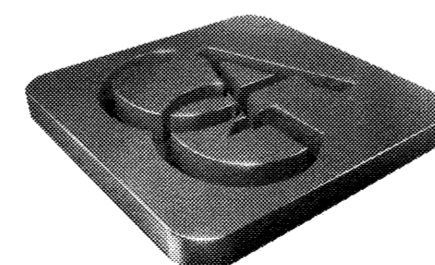
BENCH MARK NUMBER: 3485
SECTION-TOWNSHIP-RANGE: 29-50-41
ELEVATION: 5.69 NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88)
DESCRIPTION: SQUARE CUT SOUTH END OF CONCRETE CATCH BASIN-
1' EAST OF EAST EDGE OF PAVEMENT, SW 88th AVENUE
229± SOUTH OF CENTERLINE SW 38th COURT. BM
FOUND 6-20-2000 FOUND GOOD 12-04-2006

CALVIN, GIORDANO & ASSOCIATES
APPROVED FOR BIDDING
By: *Carl A. Kasper*
Date: 4/20/17



FOR BIDDING PURPOSES ONLY
ELEVATIONS SHOWN ARE NAVD 88

CURRENT REV No.: 1 - 04/20/2017	NICHOLAS B. MAHON, P.E. STATE OF FLORIDA PROFESSIONAL ENGINEER LICENSE No. 78361	SHEET: C1
	DATE: 03/29/17	



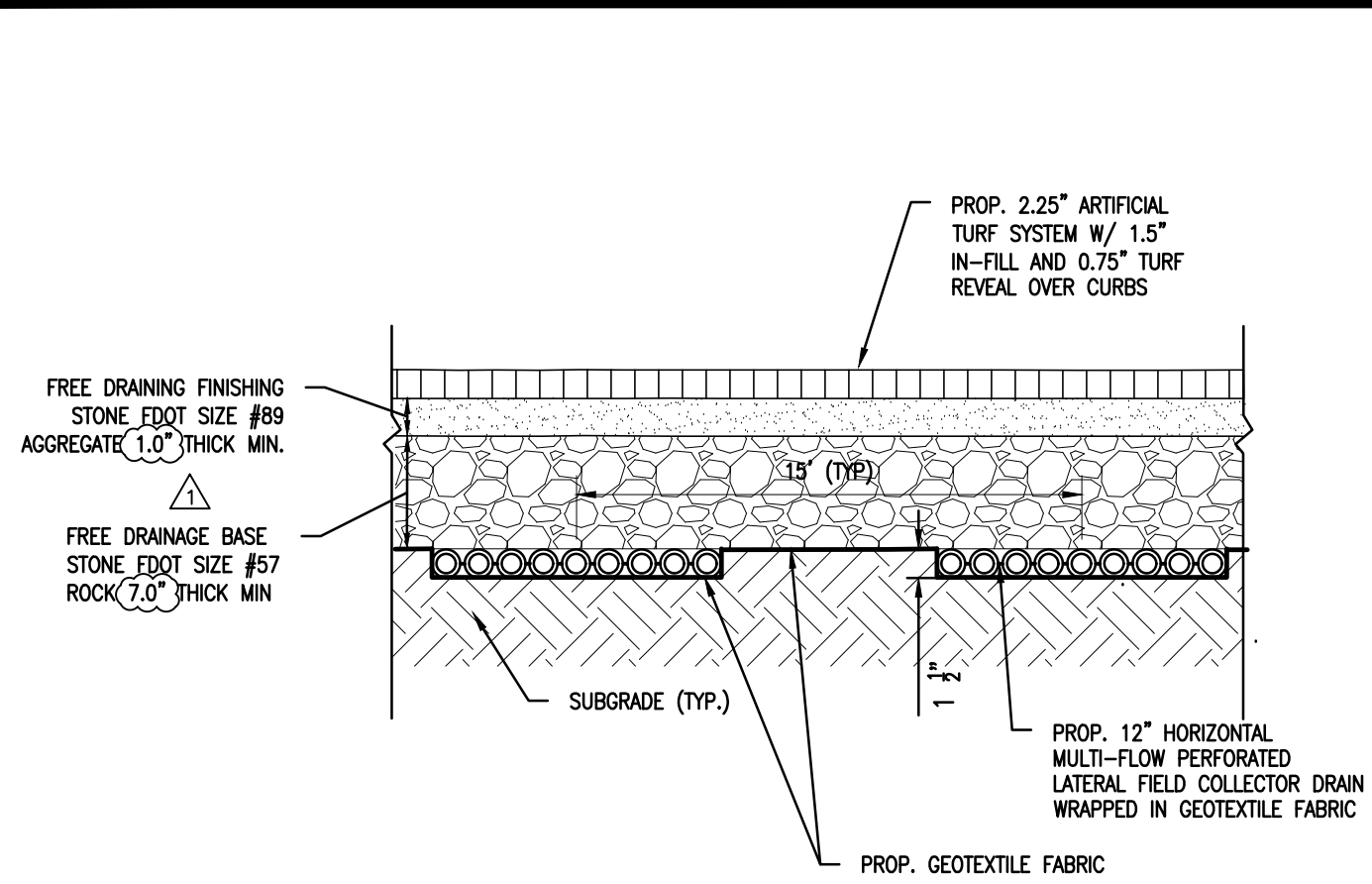
Calvin, Giordano & Associates, Inc.
EXCEPTIONAL SOLUTIONS™
1800 Eller Drive, Suite 600, Fort Lauderdale, Florida 33316
Phone: 954.921.7781 • Fax: 954.921.8807
Certificate of Authorization 514

File Name: P:\Projects\1996\961630.112 Bamford Park Artificial Turf Installation\CADD Files\Drawings\961630.112-C-C006.dwg - (Plotted by: Nicholas Mahon on Thursday, April 20, 2017 1:37:18 PM)

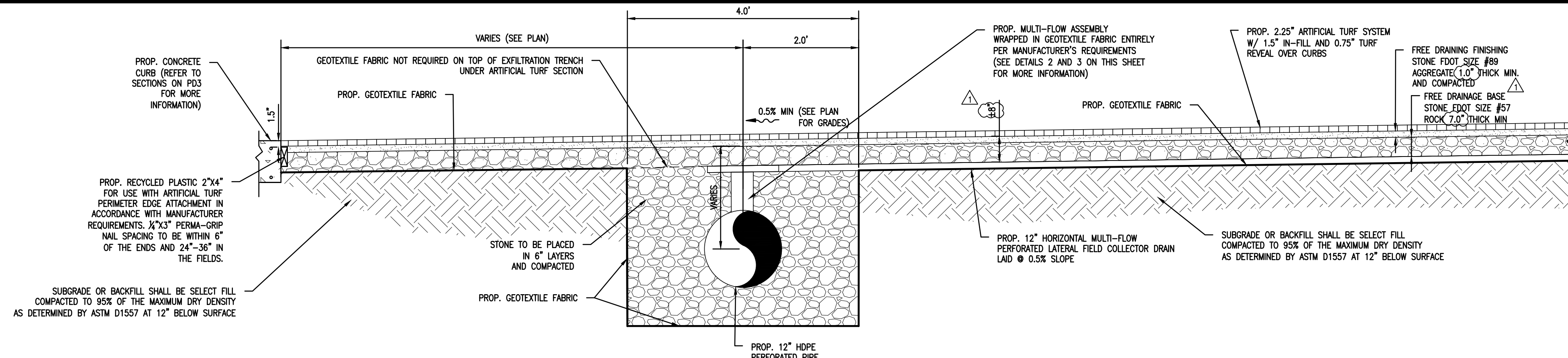
PERMITTING AGENCIES	DATE SUBMITTED	CGA INITIALS	DATE APPROVED	PERMIT NUMBER
TOWN OF DAVIE ENGINEERING DIVISION (BY CONTRACTOR)	-	-	-	-
CENTRAL BROWARD WATER CONTROL DISTRICT	11/30/2016	-	11/30/2016	-
SOUTH FLORIDA WATER MANAGEMENT DISTRICT (MODIFICATION)	12/08/2016	-	01/09/2017	06-03077-P

NO	DATE	REVISION	BY	NO	DATE	REVISION	BY
1	4/20/17	REVISION TO STONE DEPTH - ADD NO. 2 (PD4)	N.B.M.				

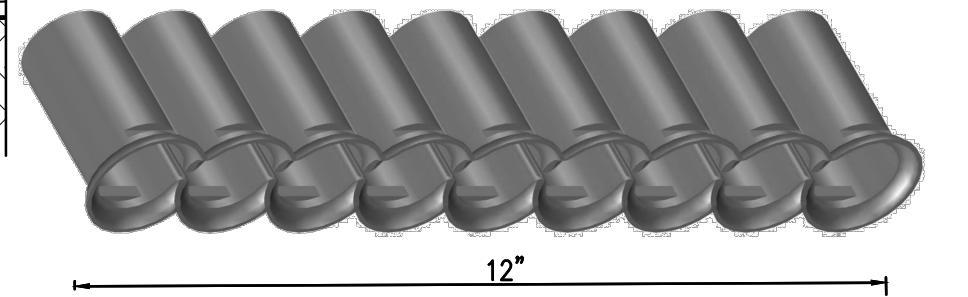
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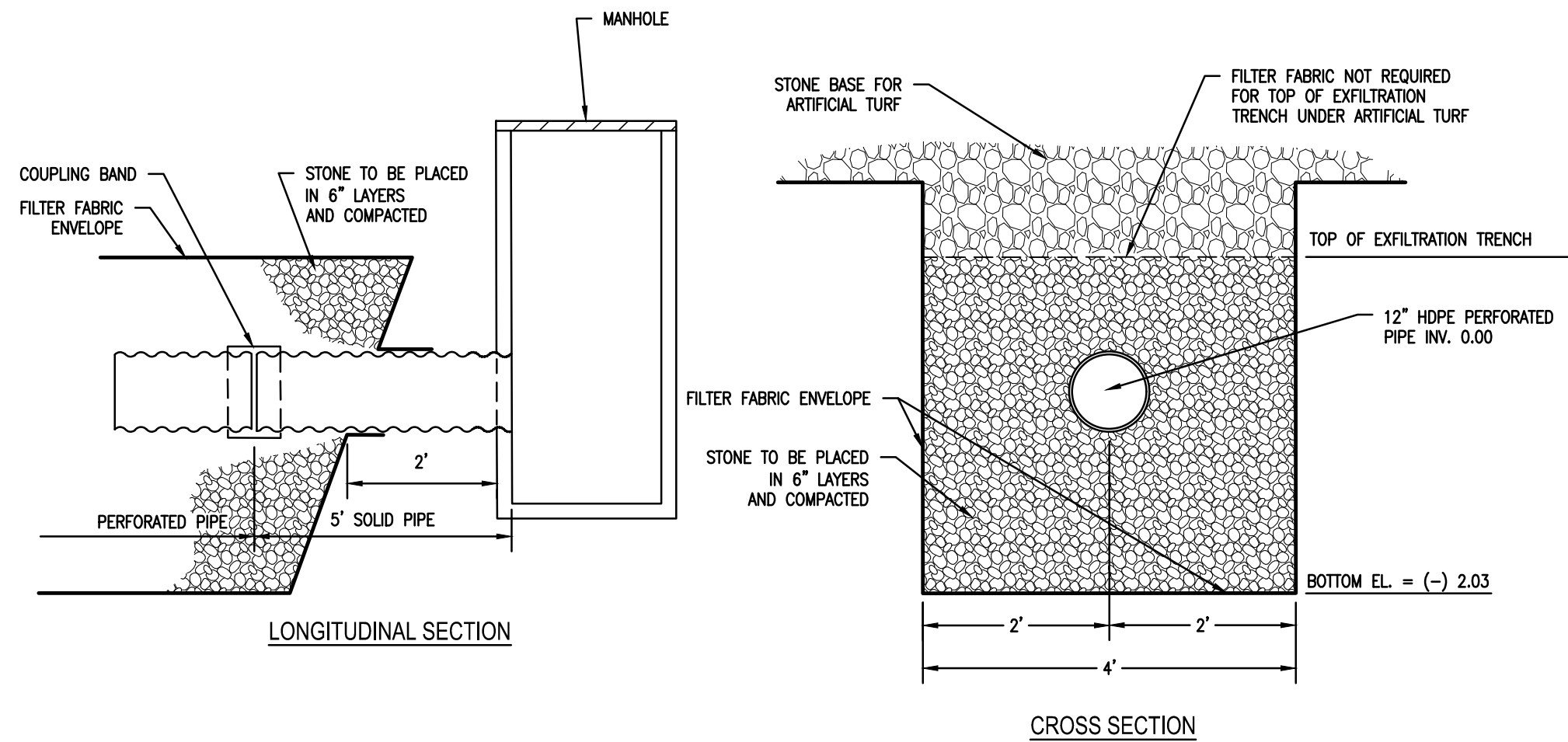
SECTION 10 - FIELD COLLECTOR DRAIN
SCALE: N.T.S.



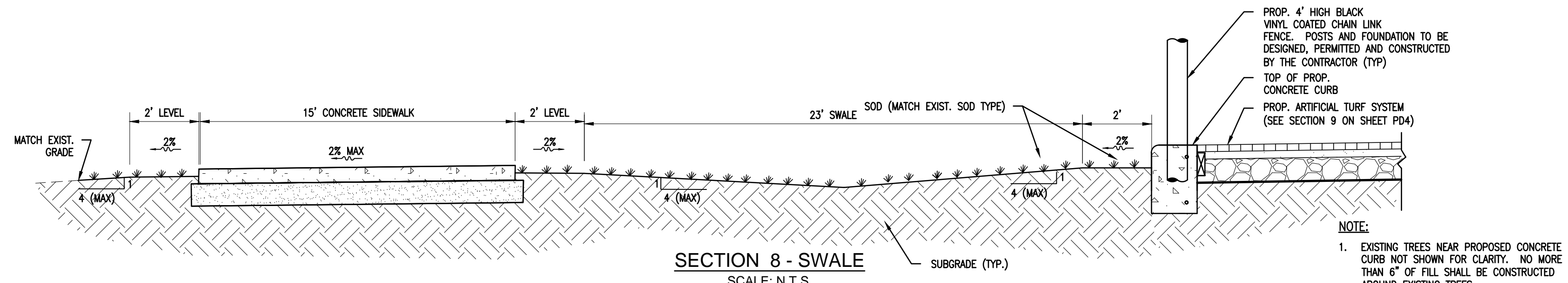
SECTION 9 - ARTIFICIAL TURF TYPICAL
SCALE: N.T.S.



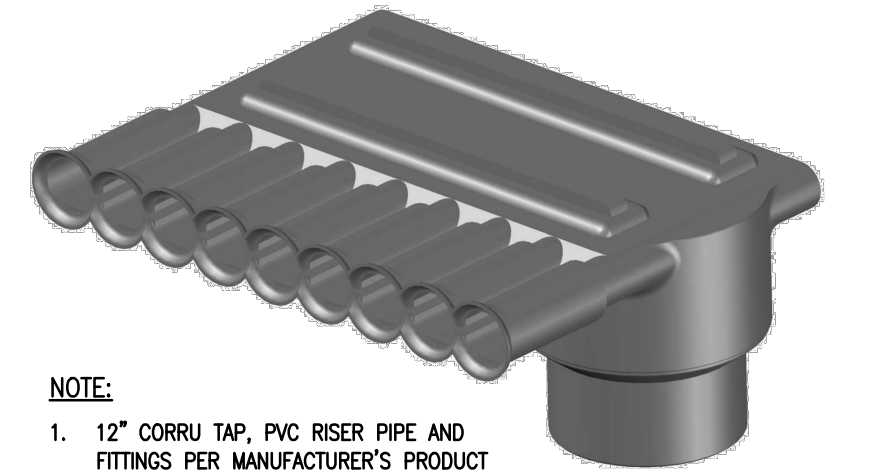
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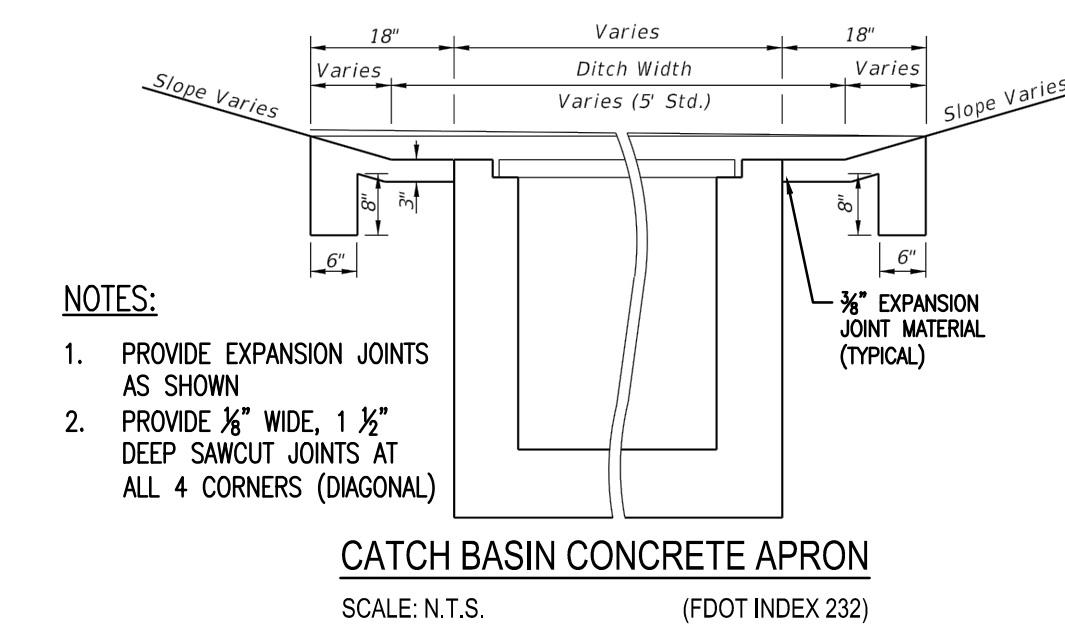
EXFILTRATION TRENCH
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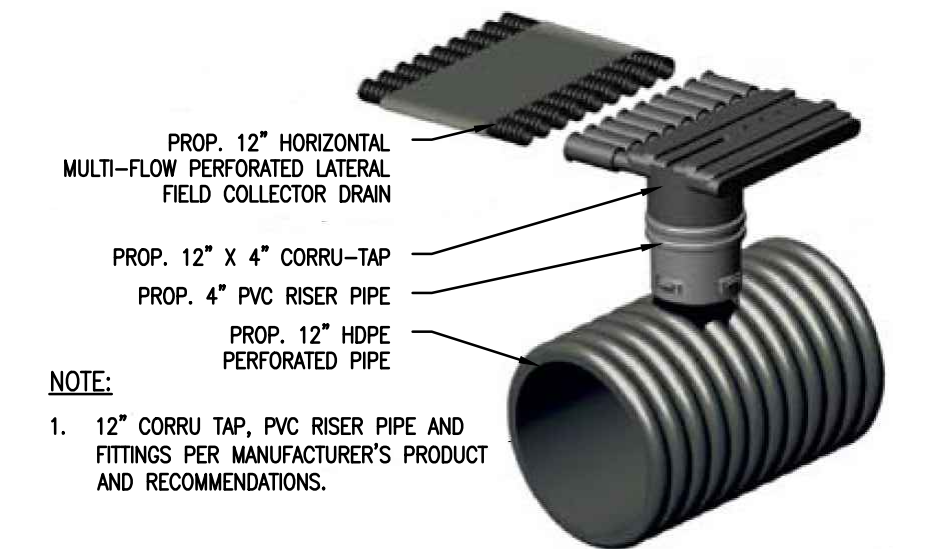
SECTION 8 - SWALE
SCALE: N.T.S.



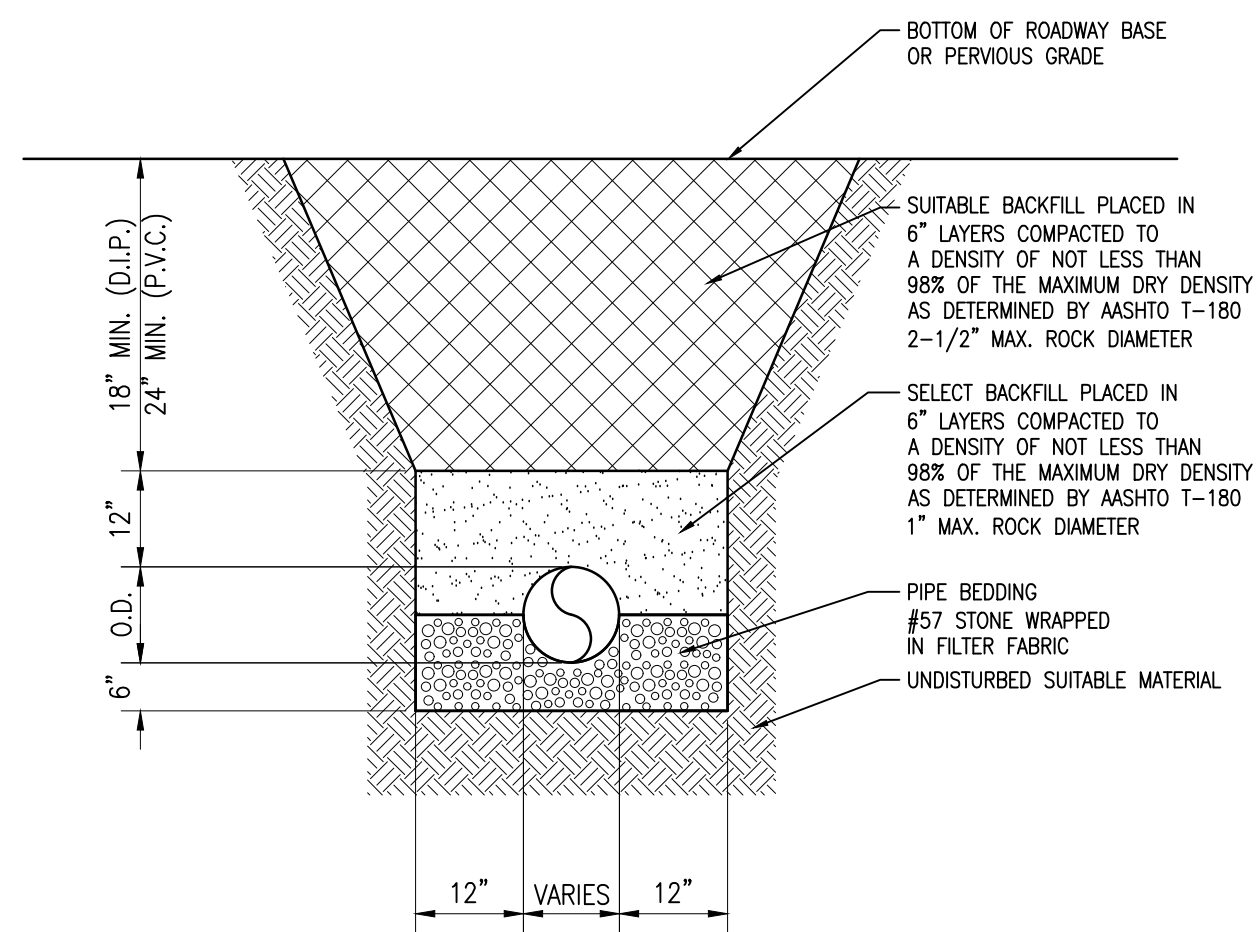
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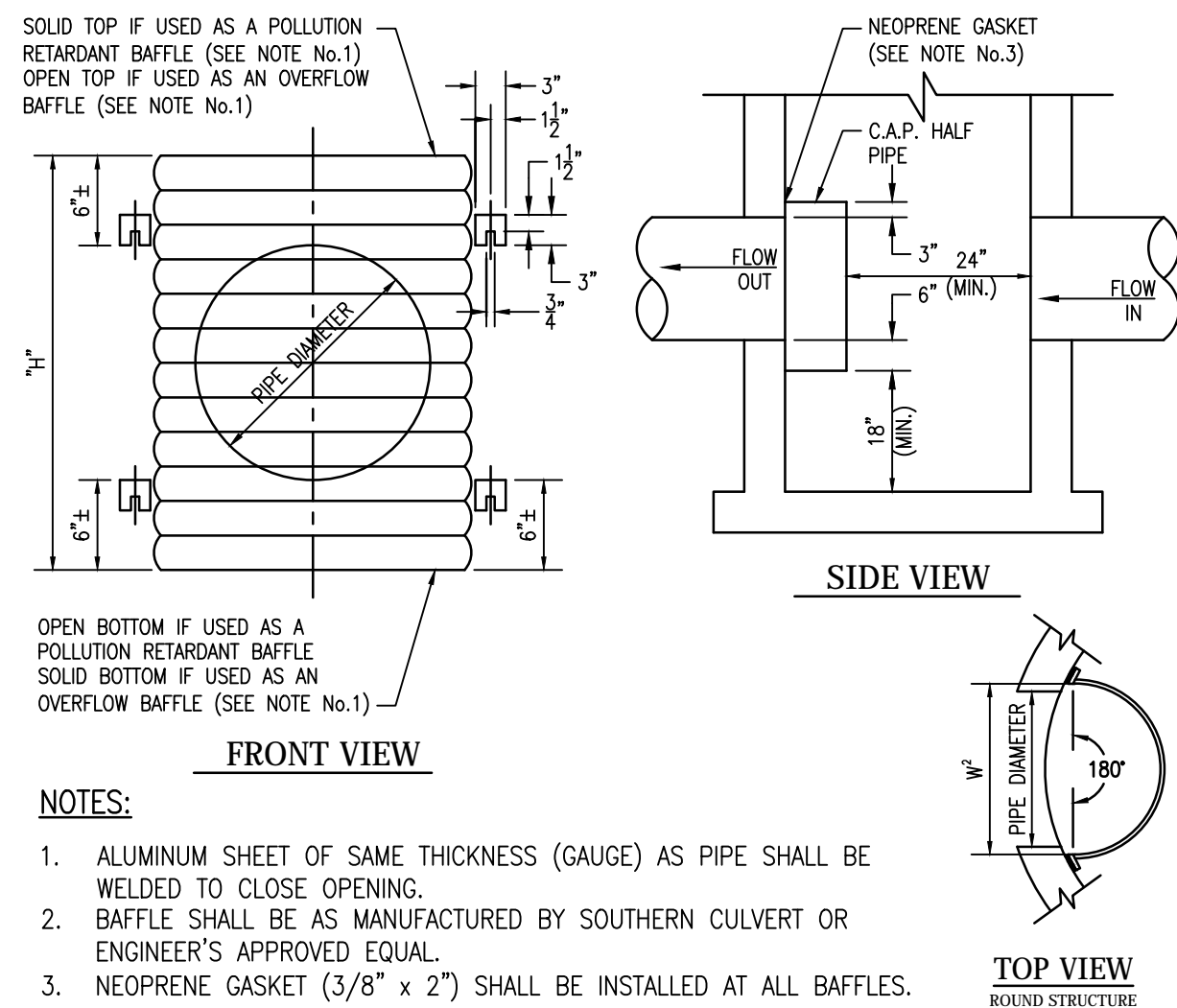
CATCH BASIN CONCRETE APRON
SCALE: N.T.S. (FDOT INDEX 232)



3 12\"/>

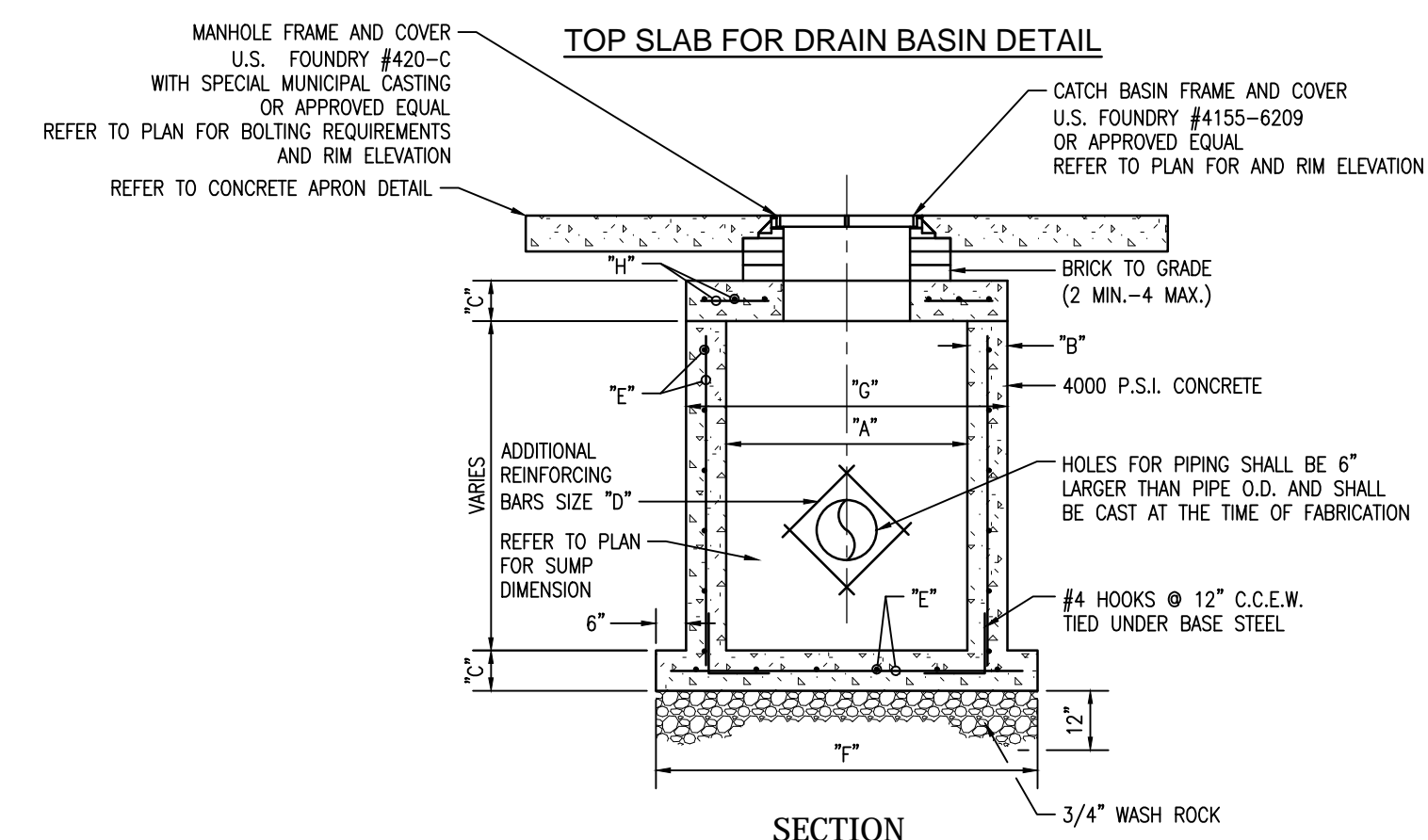
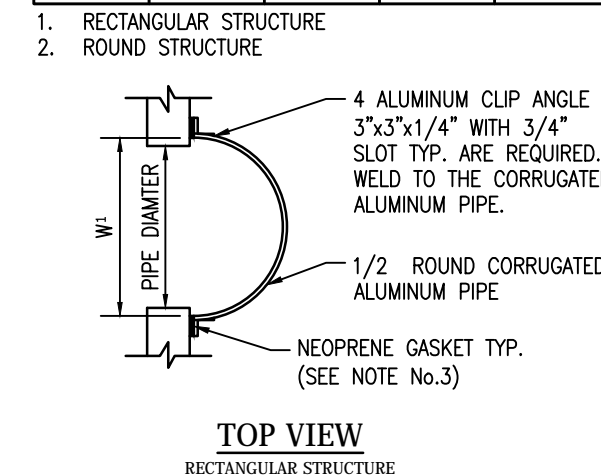


PIPE TRENCH IN SATISFACTORY SOILS
SCALE: N.T.S. CURRENT



POLLUTION RETARDANT BAFFLE (PRB)
SCALE: N.T.S.

STANDARD DIMENSIONS					
PIPE DIA. (INCHES)	W ¹ (INCHES)	W ² (INCHES)	T (GAUGE)	H (INCHES)	
12"	18"	18"	16	VARIES	
15"	21"	21"	16	VARIES	
18"	24"	24"	16	VARIES	
21"	30"	30"	16	VARIES	
24"	30"	36"	16	VARIES	
30"	36"	42"	14	VARIES	
36"	42"	48"	14	VARIES	
42"	48"	54"	14	VARIES	
48"	54"	60"	14	VARIES	
54"	60"	66"	14	VARIES	



TYPE	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
C-4/M-4	4'-0"	8"	8"	#4 @ 12" C.C.E.W.	#4 @ 12" C.C.E.W.	6'-4"	5'-4"	#4 @ 6" C.C.E.W.
C-5/M-5	5'-0"	8"	8"	#5 @ 12" C.C.E.W.	#5 @ 12" C.C.E.W.	7'-4"	6'-4"	#5 @ 8" C.C.E.W.
C-6/M-6	6'-0"	8"	8"	#5 @ 6" C.C.E.W.	#5 @ 6" C.C.E.W.	8'-4"	7'-4"	#5 @ 6" C.C.E.W.

PRECAST CIRCULAR MANHOLE AND CATCH BASIN
SCALE: N.T.S.



FOR BIDDING PURPOSES ONLY
ELEVATIONS SHOWN ARE NAVD 88

NICHOLAS B. MAHON, P.E.
STATE OF FLORIDA PROFESSIONAL ENGINEER
LICENSE No. 78361

DATE: 03/29/17

SCALE: AS SHOWN

PROJECT No: 96-1630.112

SHEET: PD4



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Phone: 954.921.7781 • Fax: 954.921.8807
Certificate of Authorization 514

BAMFORD PARK ARTIFICIAL TURF INSTALLATION

DAVIE, FLORIDA

DETAIL SHEET

NO	DATE	REVISION	BY	NO	DATE	REVISION	BY
4	4/20/17	REVISION TO STONE DEPTH - ADDENDUM NO. 2	N.B.M.				