

R.G. KREUSLER PARK RESTROOM BUILDING  
AND ENTRY DRIVE MODIFICATIONS - #14204  
Specifications

**SECTION 02105 - SITE CLEARING**

**PART 1 - GENERAL**

**1.1 SCOPE OF WORK**

This section includes clearing of the site of incidental paving and curbs, debris, grass, trees, and other plant life in preparation for site or building excavation work as shown on the plans and as necessary to prepare the area for the proposed construction.

**1.2 SECTION INCLUDES**

- A Remove surface debris.
- B. Remove paving, curbs, and fencing.
- c. Clear site of plant life and grass.
- D. Remove tree and shrubs.
- E. Remove root system of trees and shrubs.
- F. Protection of existing trees and shrubs.

**1.3 REGULATORY REQUIREMENTS**

- A Conform to all applicable federal, state, and local codes pertaining to the disposal of materials and debris.
- B. Coordinate clearing work with utility companies.

**PART 2 - PRODUCTS - (NOT APPLICABLE)**

**PART 3- EXECUTION**

**3.1 PREPARATION**

Verify that existing plant life and features designated to remain are tagged or identified.

**3.2 PROTECTION**

- A Protect from damage all utilities that are to remain.
- B. Protect trees, plant growth, understory growth, environmentally sensitive areas, and features designated to remain as final landscaping.
- C. Protect benchmarks and existing structures from damage or displacement.
- D. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks and other adjacent occupied or used facilities. Do not close

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or obstruct streets, walks, or other occupied or used facilities without permission from authorities having jurisdiction.

**3.3 CLEARING**

- A. Remove and dispose of all trees, stumps, shrubs, grass, roots, and other such protruding objects, and buildings, structures, appurtenances, existing pavement, and other facilities necessary to prepare the area for the proposed construction and not designated to be protected.
- B. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.
- C. All stumps, roots, and other debris shall be grubbed and removed a minimum of 12 inches below the surface of the ground or as necessary to remove roots *W'* in diameter or larger.
- D. Remove such items elsewhere on site or premises as specifically indicated. Relocate items as directed.
- E. Remove and dispose of existing concrete pavement, concrete sidewalk, pavement, curb, and curb and gutter, where shown on plans or directed by the Engineer to be removed. (See Section 02050- Part 3)
- F. Fill depressions caused by clearing and grubbing operations with topsoil, unless further excavation or earthwork is indicated. Place fill material in horizontal layers not exceeding 12 inches loose depth and thoroughly compact to a density equal to adjacent original ground.

**3.4 REMOVAL**

- A. Timber, stumps, brush, roots, rubbish, and other objectionable material resulting from clearing and grubbing shall be disposed of by the Contractor in locations and by methods approved by the Engineer. All disposal costs are the Contractor's responsibility.
- B. Removal of Improvements: Remove existing above-grade and below-grade improvements necessary to permit construction and other work as indicated.
- C. Abandonment or removal of certain underground pipe or conduits may be shown on mechanical or electrical drawings, and is included under work of those sections. Removal of abandoned underground piping or conduit interfering with construction is included under this section.
- D. Hazardous Materials including asbestos pipe shall be removed and disposed of in accordance with all applicable codes and regulations.

**END OF SECTION**

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**SECTION 02200 - EARTHWORK, GENERAL**

**PART 1 - GENERAL**

**1.1 SCOPE OF WORK**

- A. This section consists of furnishing all labor, materials, tools, equipment, and supplies necessary in connection with all earthwork.
- B. Earthwork shall be interpreted to include clearing the work site, loosening, loading, removing, transporting and disposing of all wet or dry material necessary to be removed for the purpose of construction; the sheeting, bracing, drainage and backfilling of trenches and pits, and the grading and shaping of swales and berms around the finished structures.
- C. Remove topsoil and stockpile for later use or remove from site, as applicable.
- D. Excavate subsoil and remove unsuitable material from site. Save and stockpile for reuse soils of desirable quality for planting. Stockpile areas to be determined by Owner.
- E. The extent of earthwork is as shown on the drawings and/or specified.

**1.2 RELATED SECTIONS**

- A. Section 02105: Site Clearing.

**1.3 QUALITY ASSURANCE**

- A. Perform earthwork in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Protect existing benchmarks, monuments, and other reference points. If disturbed or destroyed, a registered land surveyor in the State of Florida is to replace it in its original condition and location.
- C. Protect existing trees and other landscaping which are to remain. See Landscape Plans, Landscape Specifications and the tree protection notes. Replace at no cost to owner any landscaping which is damaged or destroyed.
- D. Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed.

**1.4 SITE EXAMINATION**

- A. The data on indicated subsurface conditions are not intended as representations or warranties of the accuracy of continuity between soil borings. It is expressly understood that neither the Owner nor the Project Engineer will be responsible for interpretations or conclusions drawn there from by the Contractor. The data are made available for the convenience of the Contractor. Additional test borings and other exploratory operations may be made by the Contractor at no cost to the Owner or Project Engineer.

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- B. Contractors, before submitting bids, shall familiarize themselves as to location and nature of the work , character of equipment , and facilities needed for the performance of the work , general and local conditions prevailing at the site, and other matters which may in any way affect the work under contract.
- C. Examine sources of information concerning ground water level, whether surface or subsurface. Each bidder is to draw their own conclusion concerning ground water levels and how water affects their own work.
- D. The contractor must assume the risk of meeting quicksand, hard pan, boulders, clay rubbish, unforeseen obstacles, underground water mains, sewers, water service pipes, gas pipes, drain tile, hydrant leads, pavement, etc.

**1.5 JOB CONDITIONS**

A Existing utilities:

- 1. Locate existing underground utilities in the areas of work before starting earthwork operations. Where utilities are to remain in place, provide adequate means of protection during earthwork operations.
- 2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult the utility owner immediately for directions. Cooperate with the Owner, and public and private utility companies in keeping their respective services and facilities in operation. Repair damaged utilities to the satisfaction of the utility owner.
- 3. Do not interrupt existing utilities serving facilities occupied and used by the Owner or others, except when permitted in writing by the Project Engineer and then only after acceptable temporary utility services have been provided.
- 4. Demolish and completely remove from the site underground utilities indicated to be removed. Coordinate with local utility companies for shut-off of services if lines are active.

B. Use of Explosives: The use of explosive is not permitted.

C. Temporary Protection:

- 1. Barricade open excavations made as a part of earthwork operations and operate warning lights as required by authorities having jurisdiction, and applicable laws and regulations.
- 2. Protect structures, utilities, sidewalks, pavements, and other facilities from damages caused by settlement, lateral movement, undermining , washout , and other hazards created by earthwork operations .
- 3. Contractor shall take all precautions necessary to prevent soil erosion and provide all embankments with adequate slope protection.

**PART 2 - PRODUCTS**

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**2.1 SOIL MATERIALS**

A Backfill and Fill Materials:

1. Soil materials for use as backfill and fill shall be free of rock or gravel larger than two inches in any dimension, debris, waste, vegetable, and other deleterious matter.
2. Use excavated or borrow material that has been sampled, tested and certified as satisfactory soil material.

B. Subbase Material:

1. Properly graded mixture of natural and crushed gravel, crushed stone, crushed slag, natural or processed sand that will readily compact to the required density.
2. Use material complying with Section 120 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition.

C. Unsuitable materials:

1. Unsuitable materials as determined by the Project Engineer, such as peat, muck, roots, logs, debris, brush, sod, clay, loam or other similar materials, shall not be used.
2. Existing unsuitable materials as determined by the Project Engineer occurring beneath structure foundations shall be removed and replaced with compacted fill in accordance with the applicable compaction criteria.

**PART 3 - EXECUTION**

**3.1 INSPECTION**

- A Examine the areas and conditions under which earthwork is to be performed and notify the Project Engineer in writing of conditions detrimental to the proper and timely completion of the work . Do not proceed with the work until unsatisfactory conditions have been corrected in an acceptable manner.

**3.2 GENERAL**

- A Excavation consists of the removal and disposal of materials encountered when establishing the required grade elevations. Where it is necessary to cut roots projecting into an excavation or to trim branches for equipment clearance, all severed root ends or cuts to branches are to be saw cut or cut using landscape cutting tool and backfill over exposed roots as soon as possible.
- B. Accomplish earthwork in a manner that provides for the safety of the public and Workers, as well as for the protection of property.
- C. Conduct operations with minimum interference with road and other facilities.
- D. Perform dewatering as required to achieve results indicated herein.

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**3.3 EXCAVATION CLASSIFICATIONS**

- A. The following classifications of excavation will be made when unanticipated rock excavation is encountered in the work. Do not perform such work until material to be excavated has been cross-sectioned and classified by the Project Engineer. Such excavation is unclassified and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered.
1. Earth excavation includes the removal and disposal of pavements and other obstructions visible on the ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and all other materials encountered that are not classified as rock excavation or unauthorized excavation.
  2. Rock excavation consists of the removal and disposal of materials encountered that cannot be excavated with a 3/4 cubic yard capacity power shovel without drilling and blasting, or continuous use of a ripper or other special equipment, except such materials that are classified as earth excavation.
  3. Typical of materials classified as rock are boulders 1/2 cu. yd. or more in volume, solid rock, rock in ledges, and rock-hard cementitious aggregate deposits.
  4. Intermittent drilling that may be performed to increase production and is not necessary to permit excavation of the material encountered will be classified as earth excavation.
  5. Rock payment lines are limited to the following :
    - a. Two feet outside of concrete work for which forms are required, except footings,
    - b. One foot outside the perimeters of footings,
    - c. In pipe trenches, 6" below invert elevation of pipe and 2 feet wider than the inside diameter of pipe, but not less than 3-foot minimum trench width.
    - d. Neat outside dimensions of concrete work where no forms are required, and
    - e. Under slabs on grade, 6" below bottoms of concrete slab.
- B. Unauthorized excavation consists of removal of materials beyond indicated elevations or dimensions without the specific direction of the Project Engineer. Replace unauthorized excavation by backfilling and compacting as specified for authorized excavations of the same classification, unless otherwise directed by the Project Engineer.

**3.4 ADDITIONAL EXCAVATION**

- A. When excavation has reached required subgrade elevations, notify the Engineer who will make an inspection of conditions.
- B. If unsuitable materials are encountered at the required subgrade elevations, carry

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excavations deeper and replace the excavated material and its replacement as directed by the Project Engineer.

**3.5 DEWATERING**

- A. Prevent surface water and subsurface or groundwater from flowing into excavations, and flooding the project site and surrounding area. Do not allow water to accumulate in excavations. Remove water from excavations to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to the stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey the water away from the site.
- B. Convey water removed from excavations and rain water to collecting or run-off areas. Do not use trench excavations for site utilities as temporary drainage ditches.
- C. The Contractor shall do all pumping and bailing, build all drains, and do all other work necessary to keep the excavation clear of groundwater , sewage , storm water or other water during the progress of the work and until the finished work is safe from injury. All water pumped or drained from the work shall be disposed of in a satisfactory manner without damage to adjacent property or to other work under construction, and in accordance with Pollution Prevention Plan (PPP).
- D. The Contractors shall comply with all requirements of South Florida Water Management District Dewatering Permits and shall provide pump logs and Pollution Prevention Plan (PPP) reports to the Project Engineer as applicable.

**3.6 CLEARING AND GRUBBING**

- A. Within limits of areas designated for grading and site construction work , clear, grub, and remove trees , brush, stumps, wood debris, and other deleterious materials not required to remain as part of the finished work .
- B. Remove grass, plants, vegetation, and organic material from same area.

**3.7 EXCAVATION**

- A. Excavate after stripping, clearing, and grubbing has been completed. Remove unsuitable materials encountered.
- B. Excavation shall be as required for the construction to the lines and grades shown on the contract drawings.
- C. Stability of Excavations :
  - 1. Slope the sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible either because of space restrictions or stability of material excavated.
  - 2. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.
- D. Material Storage :

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1. Stockpile excavated materials classified as satisfactory soil material where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.
2. Locate and retain fill materials away from edges of excavations. Coordinate stock pile areas with Owner to minimize impact on project site and the adjacent active park areas.
3. Dispose of excess soil material and waste materials as needed or directed by Engineer.

**3.8 EXCAVATION FOR PAVEMENTS**

Cut the surface under pavements to comply with cross-sections, elevations and grades as shown.

**3.9 EXCAVATION FOR TRENCHES**

- A. Dig trenches to the uniform width required for the particular item to be installed, sufficiently wide to provide ample working room. Excavate trenches to the depth indicated or required. Carry the depth of trenches for piping to establish the indicated flow lines and invert elevations. Trench excavation shall comply with the "Florida Trench Safety Act" (90-96, Laws of Florida).
- B. Where rock is encountered, carry the excavation 6" below the required elevation and backfill with a 6" layer of crushed stone or gravel prior to installing pipe.
- C. Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for the entire body of the pipe.
- D. Do not backfill trenches until tests and inspections have been made and backfilling authorized by the Project Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

**3.10 BACKFILL AND FILL**

- A. Ground Surface Preparation:
  1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.
  2. When the existing ground surface has a density less than that specified under "Compaction" for the particular area classification, break-up the ground surface, pulverize, moisture-condition to the optimum moisture content, and compact to the required depth and percentage of maximum density.
- B. Placement and Compaction :
  1. Place backfill and fill materials in layers not more than 12" in loose depth for material compacted by heavy compaction equipment , and not more than 4" loose depth for material compaction by hand-operated equipment.
  2. Before compaction, moisten or aerate each layer as necessary to provide the

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optimum moisture content of the soil material. Compact each layer to the required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy.

3. Backfill excavations as promptly as the work permits, but not until completion of inspection, testing, approval, and recording location of underground utilities, as required.

### **3.11 COMPACTION**

A. General:

1. Control soil compaction during construction, providing the minimum percentage of density specified for each area classification.

B. Percentage of Maximum Density Requirements:

1. Miscellaneous slabs: Compact top 12" of subgrade and each layer of backfill or fill material at a minimum of 98% maximum density (optimum moisture) per ASSHTO T-180.
2. Lawn Areas: Compact each layer of backfill or fill material at a minimum of 90% maximum density (optimum moisture) per ASSHTO T-180.

C. Moisture Control:

1. Where the subgrade or layer of soil materials must be moisture conditioned before compaction, uniformly apply water to the surface of subgrade, or layer of soil material, to prevent free water appearing on the surface during or subsequent to compaction operations.
2. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing, until the moisture content is reduced to a satisfactory value.

### **3.12 GRADING**

- A. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surfaces within specified tolerances, compact with uniform levels or slopes between points where Elevations are indicated, or between such points and existing grades.
- B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

### **3.13 FIELD QUALITY CONTROL**

A. Quality Control Testing During Construction:

1. Testing service must inspect and approve subgrades and fill layers before further

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construction work is performed thereon. Secure representative samples of the fill material and determine the Standard Density and required moisture content to be maintained by the Moisture-Density Relation Test ASTM D-1557.

2. Make in-place soil density test during compaction operations in accordance with AASHTO T-180. Make at least one field density test of the subgrade for every 2,000 sq. ft. of paved area, but in no case less than three tests . In each compacted fill layer, make one field density test for every 2,000 sq. ft. of overlaying paved area, but in no case less than three tests.
3. If, in the opinion of the Project Engineer, based on reports of the testing service and inspection, the subgrade or fills which have been placed are below the specified density, additional compaction and testing will be required until satisfactory results are obtained .

**3.14 MAINTENANCE**

- A Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
  1. Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances .
- B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.
- C. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

**3.15 DISPOSAL OF EXCESS AND WASTE MATERIALS**

- A. Removal to Designated Areas on Owner's Property: Transport excess excavated material classified as satisfactory soil material to designated soil storage areas on the Owner's property. Stockpile soil or spread across the ground, as directed.
- B. Removal from Owner's Property: Remove waste materials, including excavated material classified as unsatisfactory soil material, trash and debris, and dispose of it legally.

**END OF SECTION**

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**SECTION 02231- AGGREGATE BASE COURSE**

**PART 1 -GENERAL**

**1.1 SCOPE OF WORK**

- A. The work covered by this section of the specifications consists of furnishing all plant, labor, materials, equipment and supplies and performing all operations in connection with the construction of the paving base, in strict accordance with this section of the specifications and the applicable drawings, and subject to the terms and conditions of the contract.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. The base shall consist of either lime rock, Grade No. 2, or local shell rock, constructed in courses as shown, all as specified in Sections 200, 250, 911 and 913 of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

**2.2 REFERENCE STANDARD**

- A. The following standards listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto.

- 1. Florida Department of Transportation (FOOT) "Standard Specifications for Road and Bridge Construction", latest edition.

Where reference is made herein to the FOOT specifications, delete the section referencing the basis of payment and other pay measurement requirements.

- 2. American Association of State Highway and Transportation Officials (AASHTO) Standard :

**PART 3 - EXECUTION**

**3.1 COMPACTING AND FINISHING BASE**

- A. In accordance with Section 200-6 of the FOOT Specifications.

**3.2 DENSITY TESTS:**

- A. In accordance with Section 200-6 and 200-7 of the FOOT Specifications.

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**3.3 CORRECTION OF DEFECTS**

- A. If at any time the subgrade material should become mixed with the base course material, the contractor shall, without additional compensation, dig out and remove the mixture, reshape and compact the subgrade and replace the materials removed with clean base material, which shall be shaped and compacted as specified above.
  
- B. If cracks or checks appear in the base, either before or after priming, which in the opinion of the Engineer would impair the structural efficiency of the base course, the Contractor shall remove such cracks or checks by rescarifying, reshaping, adding base material where necessary and recompacting.

**END OF SECTION**

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SECTION 02361 – TERMITE CONTROL

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes soil treatment for termite control.

1.2 SUBMITTALS

- A. Product Data: For each product indicated, including EPA-Registered Label.
- B. Product certificates.
- C. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:
1. Date and time of application.
  2. Moisture content of soil before application.
  3. Brand name and manufacturer of termiticide.
  4. Quantity of undiluted termiticide used.
  5. Dilutions, methods, volumes, and rates of application used.
  6. Areas of application.

1.3 QUALITY ASSURANCE

- A. Applicator Qualifications: A pest control operator who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located.
- B. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA's Federal Insecticide, Fungicide and Rodenticide Act.
- C. Testing Requirements: An independent testing laboratory shall certify that the treatment meets the requirements of the specifications.

1.4 WARRANTY

- A. Soil Termiticide Special Warranty: Manufacturer's standard form, signed by applicator and Contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered within **five** years from date of Substantial Completion, re-treat soil and repair or replace damage caused by termite infestation. Subcontractor shall offer an optional renewal of service on the same terms. The type of chemical treatment must be specified, including the amount of application per unit area. The service agreement shall state that in the event of damage during the guaranteed

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period, the contractor shall make repairs to structurally damaged surfaces to a dollar value based on the size of the building.

## PART 2 - PRODUCTS

### 2.1 TERMITE CONTROL

- A. Soil Treatment: EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent. Use only soil treatment solutions that are not harmful to plants.
1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. AgrEvo Environmental Health, Inc.; a company of Hoechst and Schering, Berlin.
    - b. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.
    - c. Bayer Corp.; Garden & Professional Care.
    - d. FMC Corp.; Pest Control Specialties.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.

### 3.2 SOIL TREATMENT APPLICATION

- A. Apply soil treatment at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.
1. Mix termiticide solution to a uniform consistency.
  2. Apply to produce a continuous horizontal and vertical termiticidal barrier or treated zone around and under building construction. Distribute the treatment evenly.
  3. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.
  4. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric

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conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.

5. Masonry: Treat voids.
  6. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.
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- B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.
  - C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.
  - D. Post warning signs in areas of application.
  - E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION

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**SECTION 02513 - TYPE "S" AND "SP" ASPHALTIC CONCRETE PAVEMENT**

**PART 1 - GENERAL**

**1.1 SCOPE OF WORK**

- A. Work Included: Type "S" and "SP" Asphaltic Concrete Paving (prime coat, tack coat, and surface course).
- B. Extent of asphaltic concrete paving work is shown on the drawings.
- C. Aggregate base course is specified in Section 02231.

**1.2 REFERENCE STANDARDS**

- A. The following standards listed below, but referred to thereafter by basic designation only, form a part of this specification to the extent indicated by the reference thereto:
  - 1. Florida Department of Transportation (FOOT) Standard Specifications for Road and Bridge Construction, latest edition.
    - a. Where reference is made herein to the FOOT Specifications delete there from the basis of payment and other pay measurement requirements.

**1.3 DESIGN REQUIREMENTS**

- A. Require tests of asphaltic concrete mix to comply with the requirements of Sections 331 and 334 of the FOOT Standard Specifications for Road and Bridge Construction, Latest Edition. Use of untested asphaltic concrete mix shall not be permitted.

**1.4 SUBMITTALS**

- A. Submit the following for approval:
  - 1. Asphaltic concrete design mix in accordance with Sections 331-4 and 334-5 of the FOOT Specifications.

**1.5 QUALITY ASSURANCE**

- A. Perform tests in accordance with Sections 331-5 and 334-5 of the FOOT Standards except for Method of Payment.
- B. Perform work in accordance with contract document in a neat and accurate manner.
- C. Mixing Plant: Conform to FOOT Standards.

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- D. Obtain materials from same source throughout.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Primer: Provide cut-back asphalt, RC-70 or RC-250 meeting the requirements of Section 916-3 and Section 300 of the FOOT Specifications.
- B. Tack Coat: Emulsified RS-2 asphalt tack coat per Section 300 FOOT Specifications.
- C. Asphalt Concrete: Asphaltic concrete mix in accordance with the requirements of the Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition, Sections 331, 332 and/or 334 using type and thickness as shown on the plans.
- D. Base Course: Provide aggregate base courses in accordance with requirements of Section 02231 "Aggregate Base Course" and Section 911 and 913 of the FOOT Specifications.
- E. Subgrade: Construct subgrade in accordance with Sections 160, 161, 162 and 171 of the FOOT Specifications.

**PART 3- EXECUTION**

**3.1 EXAMINATION**

- A. Verify that subgrade and base are dry and ready to support paving and imposed loads.
- B. Verify gradients and elevations of base are correct.
- C. Do not begin paving installation without Project Engineer acceptance of the substrate.

**3.2 PREPARATION**

- A. PRIMER:
  - 1. Apply prime coat in accordance with manufacturer's published instructions and FOOT Specifications, Section 300.
- B. TACK COAT
  - 1. Apply tack coat in accordance with manufacturer's published instructions and FOOT Specifications, Section 300.

**3.3 PLACING ASPHALT PAVEMENT**

- A. Place in accordance with Section 330-9 of the FOOT Specifications.
- B. Place each course to compacted thickness as shown on the plans.

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- C. Compact pavement by rolling in accordance with Section 330-10 of the FOOT Specifications.
- D. Prepare joints in accordance with Section 330-12 of the FOOT Specifications.
- E. Protect finished surface in accordance with Section 330-14 of the FOOT Specification

**3.4 TESTING**

- A. Asphaltic Concrete: Provide certified laboratory tests as specified by FOOT Sections 331 and 334.

**3.5 PROTECTION**

- A. Immediately after placement, protect pavement from mechanical or chemical damage for as long as required until accepted by Project Engineer.

**END OF SECTION**

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**SECTION 02514 - MILLING OF EXISTING ASPHALT PAVEMENT**

**PART 1 - GENERAL**

**1.1 DESCRIPTION**

A. WORK INCLUDED

The work specified in this Section consists of removing existing asphaltic concrete pavement by milling to improve the ride-ability of the finished pavement, to lower the finished grade adjacent to existing or proposed curb prior to resurfacing, or to completely remove existing pavement.

B. The finish grade, after resurfacing, will be specified in the plans.

C. Unless otherwise specified, the milled material becomes the property of the Contractor.

**1.2 REFERENCE**

A. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

**PART 2 - EQUIPMENT**

**2.1 DESCRIPTION**

A. In accordance with Section 327-2 (Equipment) FOOT Specifications.

**PART 3 - EXECUTION**

**3.01 CONSTRUCTION**

A. In accordance with Section 327-3 (Construction) FOOT Specifications.

**4.1 FINAL SURFACE CONDITIONS**

A. In accordance with Section 327-4 (Milled Surface) FOOT Specifications.

**5.1 BASIS OF PAYMENT**

A. The costs associated with all milling required to meet the intent of this project will be included in the Contractor's lump sum bid for the project. No separate payment will be made for this item.

B. The price and payment will be full compensation for all work specified in this Section, including hauling off and stockpiling or otherwise disposing of the milled material.

**END OF SECTION**

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**SECTION 02515 - CONCRETE CURBS, HEADERS, SIDEWALKS AND DRIVEWAYS**

**PART 1 - GENERAL**

**1.1 SCOPE OF WORK**

The work covered by this section of the specifications consists of furnishing all plant, labor, equipment, appliances and materials and performing all operations in connection with the construction of concrete curbs , headers, sidewalks, driveways, complete and in place, in strict accordance with these specifications and the applicable drawings and subject to the terms and conditions of this contract.

**1.2 RELATED SECTIONS**

Section 03010: Concrete

**1.3 REFERENCES**

- A. ACI 304 "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete".
- B. ACI 318 "Building Code Requirements for Reinforced Concrete".
- C. ACI 347 "Recommended Practice for Concrete Formwork".
- D. Florida Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

**1.4 SUBMITTALS**

Submit copies of laboratory test reports for concrete materials and mix design test as specified.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. The materials used shall conform to the requirements specified in the sections of these specifications for the several items which constitute the complete structure .
- B. Concrete shall be minimum of 3,000 PSI concrete.

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**PART 3- EXECUTION**

**3.1 FORMS**

- A Construct forms complying with ACI 347.
- B. Construction and dummy joints shall be placed where indicated and may be either formed or sawed.

**3.2 CONSTRUCTION**

- A Excavation shall be made to the required depth; and the sub-grade or base upon which the curb or header is placed shall be properly compacted as specified.
- B. Finish the edges as indicated on the drawing . Block out the work in 20' maximum length sections and install each section in one continuous operation so that the curb and gutter will be monolithic .

**3.3 CONCRETE PLACEMENT**

The concrete shall be placed in the forms to the depth specified, in layers four to five inches thick, and tamped and spaded until mortar entirely covers its surface. The top of the structure shall be floated smooth and the edges rounded to the radius shown.

**3.4 EXPANSION JOINTS**

A Curb and Gutters

Provide expansion joints with filler as specified hereinbefore, on 20 ft. maximum centers, and at other locations indicated.

B. Driveway Aprons

Provide expansion joints with filler as specified hereinbefore, at each end of all aprons where they abut the curb and gutter .

C. Concrete Sidewalk

Provide expansion joints with filler as specified hereinbefore , where sidewalk abuts curb and gutter, driveway and other locations.

**3.5 FINISH OF FORMED SURFACES**

The curb top, face and header top shall be given a surface finish while the concrete is still green. A brush finish will be required unless noted otherwise; however, additional finishing may be required in areas considered too rough or with minor defects.

**3.6 CURBING AND PROTECTION**

When completed , the curb, or headers shall be covered with suitable material and kept moist for a period of three (3) days or longer if necessary , and shall be protected in a satisfactory manner from damage by the elements or other cause until acceptance of the work.

**3.7 REMOVAL OF FORMS**

- A. The forms may be removed twenty-four hours after the concrete has been placed, and minor defects then filled with mortar composed of one part of Portland Cement and two parts of fine

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aggregate. All rejected curb, or header shall be removed and replaced without additional compensation.

- B. After concrete has set sufficiently, the spaces in front and back of the curb shall be refilled to the required elevation with suitable material, which shall be placed and thoroughly compacted in layers of not more than six inches in thickness.

**END OF SECTION**

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**SECTION 02530 - SANITARY SEWERAGE**

**PART 1 - GENERAL**

The sanitary sewerage collection system is to be constructed in accordance with City of Lake Worth Utilities Department specifications and standards.

**END OF SECTION**

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**SECTION 02618 -PAVEMENT MARKING**

**PART 1 • GENERAL**

**1.1 SCOPE OF WORK**

A Work Included:

1. Thermoplastic and paints for traffic striping and markings
2. Signs
3. Arrows
4. Letters
5. Raised retro-reflective paint markers (RPM's)

B. Related Work :

1. Asphaltic Concrete Pavement
2. Surface Coating
3. Fire Lanes

**1.2 REFERENCE**

Florida Department of Transportation Standard Specifications for Road and Bridge Construction, Latest Edition.

**1.3 SUBMITTALS**

Submit paint tests , as indicated in Sections 706, 710, 711, and 971 of FOOT Specifications and as applicable to hereinafter-indicated material.

**1.4 QUALITY ASSURANCE**

- A Perform work in accordance with the Contract Documents in a neat and accurate manner.
- B. Equipment shall be of a type and design which will readily obtain the required uniformity of application of the pavement markings both as to thickness of coating and as to alignment.

**1.5 STANDARDS**

Where reference is made herein to the FOOT Specifications delete therefrom the basis of payment and other pay measurement requirements.

**PART 2 • PRODUCTS**

**2.01 MATERIALS**

- A Traffic Paint and Thermoplastic Traffic Markings: In accord with requirements as indicated in Sections 971-12 and 711-2 of the FOOT Specifications.
- B. Paint Color: White and yellow. As shown on the drawings. All handicapped related markings are to be painted blue.

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**PART 3 - EXECUTION**

**3.1 APPLICATION**

- A. In accordance with Sections 706, 710 and 711 of the FOOT Specifications.

**3.2 PROTECTION OF PAINTED MARKINGS**

- A. Protection of Stripes: Newly-painted stripes, or other markings, shall be protected until the paint is sufficiently dry to permit vehicles to cross the marking without damage from the tires. While the stripes are being painted all traffic shall be routed to the opposite side of the painting operations and the newly-painted stripe.
- B. Protection of Traffic: Warning signs shall be set up before the beginning of each operation and extra signs shall be kept well ahead of the painting equipment. The painting equipment shall be so operated that traffic may pass safely. Warning signs are to be placed only where operations are in progress and are to be relocated as often as is necessary.
- C. Protective Devices: Erect adequate warning signs, and take necessary precautions for the protection of the wet paint and the safety of the public. Cones, rubber "Z" guards, or similar protective devices, shall be placed along the newly-painted stripe to prevent traffic from crossing the wet paint. Any such devices used shall be of a type that will not cause damage to vehicular traffic in the event that these objects are accidentally passed over.
- D. Repair of damaged Areas: Any portions of the stripes damaged by passing traffic or from any other cause shall be repainted at no cost to the Owner.

**3.3 CORRECTIVE MEASURES**

- A. Painting markings which fail to meet the guidelines, including the permissible tolerances and the appearance requirements, or are marred or damaged by traffic or from any other cause shall be corrected at no cost to the Owner. Drips and spattered paint shall be removed. Whenever it is necessary to remove paint it shall be done by means which will not damage the underlying surface of the pavement. When necessary to correct a deviation which exceeds the permissible tolerance in alignment, that portion of the stripe affected shall be removed and repainted in accordance with these guidelines.
- B. Corrective Devices: Misalignment, defective surfaces, and the like, shall be corrected by sandblasting or by any other type of mechanical device which will effectively remove the paint without damage to the pavement surface.

**END OF SECTION**

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**SECTION 02720 - STORM DRAINAGE**

**PART 1 - GENERAL**

**1.1 SECTION INCLUDES**

- A Storm drainage piping, fittings, structures, and accessories.
- B. The extent of the storm drainage system is shown on the drawings.

**1.2 RELATED SECTIONS**

- A Section 02105 - Site Clearing.
- B. Section 02200 - Earthwork, General.
- C. Section 02225- Trenching, Backfilling, and Compacting.

**1.3 REFERENCES**

- B. ANSI/ASTM C14- Concrete Sewer, Storm Drain, and Culvert Pipe.
- C. ANSI/ASTM C76 - Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
- E. FOOT Standard Specifications for Road and Bridge Construction, Latest Edition, Sections 125, 430, 942, and 945.

**1.4 REGULATORY REQUIREMENTS**

- A Conform to all applicable federal , state, and local codes for materials and installation of the work of this section .

**1.5 SUBMITTALS**

- A Submit shop drawings for pipe, catch basins, manholes, and accessories.

**1.6 PROJECT RECORD DOCUMENTS**

- A Accurately record location of pipe runs, connections, catch basins, manholes, cleanouts, and invert elevations. These shall be submitted to the Project Engineer on reproducible media, signed by a Professional Land Surveyor and also electronically per Section III, E., 2.

**PART 2 - PRODUCTS**

**2.1 DRAINAGE PIPE MATERIALS**

- A Reinforced concrete pipe: ANSI/ASTM C76, CLASS III, with wall type B, mesh reinforcement, unless otherwise indicated on the drawings.

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- C. Corrugated aluminum pipe: AASHTO M196.
- D. All pipe, fittings, jointing, materials, grates, manhole frames and covers. And other appurtenances shall be new material; and, if not specifically described in these specifications, shall be of the best quality and entirely suitable for the service intended. The Project Engineer prior to installation shall approve all such material.

**2.2 MANHOLES AND CATCH BASINS**

- A. Provide precast reinforced concrete manholes and catch basins, unless otherwise indicated on the drawings.

**2.3 FILL MATERIAL**

- A. Fill material shall meet the requirements of Sections 02200 and 02225.

**PART 3- EXECUTION**

**3.1 EXAMINATION**

- A. Verify that excavation base is ready to receive work, and excavations, dimensions. And elevations are as indicated on the drawings .

**3.2 PREPARATION**

- A. Hand trim excavations to required elevations. Correct over excavation with fill material of lean concrete or other approved material.
- B. Remove large stones or other hard matter which could damage pipe or impede consistent backfilling or compaction.
- C. Excavation of trenches. Preparation. Preparation of trench bottoms. Backfilling, and other earthwork in connection with installation of storm sewers shall be in accordance with the other applicable sections of these specifications.
- D. Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

**3.3 INSTALLATION- PIPE**

- A. Pipe shall be protected during storage and handling against impact shocks and free fall. Pipe shall be kept clean at all times.
- B. Lay pipe to slope gradients noted on the drawings with a maximum variation from true slope of 1/8 inch in 10 feet.
- C. All pipe shall be carefully installed starting at the lowest end, with hubs up grade and tongue end fully entered into the hub.
- D. Any pipe that is not in true alignment or which shows any settlement after installment shall be taken up and re-installed without additional compensation .

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All pipe joints irrespective of pipe material are to be wrapped using filter fabric. The filter fabric is to extend a minimum of 1.0' beyond the joint and to be wrapped completely around the pipe with a minimum of one (1) foot of overlap.

- E. Place plugs in ends of uncompleted conduit at end of day or whenever work stops.
- F. SPECIFIC REQUIREMENTS FOR CONCRETE PIPE:
  - 1. When rubber gaskets are used the pipe joints shall meet the requirement of the latest edition of FOOT Standard Specifications for Road and Bridge Construction Section 941-1.5. The gasket and the surface of the pipe joint, including the gasket recess, shall be clean and free from grit, dirt, and other foreign matter at the time the joints are made.
  - 2. Pipe shall be set firmly, according to the lines and grade; and preparatory to making joints for concrete pipe, all surfaces of the portion of the pipe to be jointed shall be thoroughly cleaned. The pipe shall be laid with the groove upstream. A shallow excavation shall be made underneath the pipe at the joint.
  - 3. Immediately prior to installation, the entire interior of the groove of the pipe already installed, and the rubber gasket of the pipe to be installed shall be coated with an approved vegetable soap lubricant. The groove and spigot ends shall be cleaned prior to application of the lubricant. The pipe shall then be aligned with the previously installed pipe and the joint pulled together. The joint shall be pulled by the use of interior or exterior pull jacks or winches, anchored by suitable means. The choice of method and type of equipment will depend on trench conditions, type and size of pipe, and its ability to properly seat the gasket. If, while making the joint, the gasket becomes loose and can be seen through the exterior joint recess, when the joint is pulled up to within one inch (1") of closure, the pipe shall be removed and the joint remade to the satisfaction of the Engineer.

**3.4 INSTALLATION- CATCH BASINS, MANHOLES**

- A. Form bottom of excavation clean and smooth to correct elevation.
- B. Form and place cast-in-place base pad, with provisions for storm sewer pipe end sections.
- C. The contractor may substitute precast inlets, manholes, and junction boxes in lieu of cast-in place units unless otherwise shown on the plans.
- D. Establish elevations and pipe inverts for inlets and outlets as indicated.
- E. Mount lid and frame level in grout, secured to top cone and set to elevation indicated.
- F. Where unsuitable material for foundations is encountered, the contractor shall excavate the unsuitable material and backfill with suitable material prior to constructing or setting inlets, manholes, and junction boxes.
- G. Wrap all joints with filter fabric per plan, irrespective of pipe material.

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**3.5 BACKFILLING**

- A Backfilling operations will closely follow the laying, jointing, and bedding of pipe and are to be in accordance with the applicable divisions of Section 02225.

**3.6 TESTS**

- A After completion of construction of the storm drainage system, or sections thereof, the Project Engineer may make tests of the completed work for correct grade and alignment. When completed, the interior surface of the piping shall conform accurately to the grade and alignment fixed by the Project Engineer.
- B. It is the intent of these specifications to secure construction of a storm drainage system with a minimum amount of leakage.

**3.7 RESPONSIBILITY**

- A The contractor shall be held strictly responsible for all parts of the work that bear the load of the backfill. If structural failures in the storm drainage piping or appurtenances develop within one (1) year from the date of final acceptance of the work, the contractor shall be required to replace all faulty material at his full expense. To this end, the contractor is advised to purchase material under a guarantee from the manufacturer, guaranteeing proper service under conditions which are established by the drawings, specifications and local conditions.

**END OF SECTION**

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SECTION 02821 - CHAIN-LINK FENCES AND GATES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
  - 1. Galvanized Polymer-coated steel chain-link fabric.
  - 2. Galvanized Polymer-coated steel framework.

1.2 SUBMITTALS

- A. Product Data: For each product indicated from manufacturer's technical data, specifications, and installation instructions.
- B. Shop Drawings: Show locations, components, materials, dimensions, sizes, weights, finishes of components, installation and operational clearances, gate swings, and details of post anchorage and attachment and bracing.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has at least three years' experience with same materials and similar scope to that indicated for this project.

PART 2 - PRODUCTS

2.1 CHAIN-LINK FENCE FABRIC

- A. Steel Chain-Link Fence Fabric: Comply with Chain Link Fence Manufacturers Institute's "Product Manual."
  - 1. Mesh and Wire Size: 2-inch 9-gage mesh.
  - 2. PVC – Coated Fabric: ASTM 668, class I over metallic-coated steel wire. Black, color as selected from manufacturer's full range, complying with ASTM F 934.
- B. Fabric Selvage: Knuckled at both selvages.

2.2 INDUSTRIAL FENCE FRAMING

- A. Round Steel Pipe: Standard weight, Schedule 40, galvanized steel pipe complying with ASTM F 1083. ASTM F 1043, Material Design Group IA, external and internal coating Type A, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) zinc; and line, end, corner, and pull posts and top rail as required for Heavy Industrial Fence.

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- B. Post Brace Rails: Match top rail for coating and strength and stiffness requirements. Provide brace rail with truss rod assembly for each gate, end, and pull post. Provide two brace rails extending in opposing directions, each with truss rod assembly, for each corner post and for pull posts. Provide rail ends and clamps for attaching rails to posts.
- C. Top Rails: With swedged-end or fabricated for expansion-type coupling.
- D. Intermediate Rails: Match top rail for coating and strength and stiffness requirements.
- E. Bottom Rails: Match top rail for coating and strength and stiffness requirements.

### 2.3 GATES

- A. Swing Gates: Comply with ASTM F 900 for single and double gates, made from pipe and tubing complying with ASTM F 1043, complete with hardware. Contractor is required to keep gates locked at all times except during work hours and provide the University Project Manager with two keys to gate locks.
  - 1. Frames and Bracing: For gate fabric height 6 feet.
    - a. Corners: Fittings.
  - 2. Gate Posts: Fabricate members from round galvanized steel pipe for gate fabric heights by leaf widths 8 feet.

### 2.4 TENSION WIRE AND FITTINGS

- A. Metallic-Coated Steel Tension Wire: 0.177-inch- (4.5-mm-) diameter, marcelled tension wire complying with ASTM A 824 at locations indicated.
- B. Fittings: Provide fittings for a complete fence installation, including special fittings for corners. Comply with ASTM F 626.

### 2.5 CAST-IN-PLACE CONCRETE

- A. General: Comply with ACI 301 for cast-in-place concrete; materials consisting of portland cement complying with ASTM C 150, aggregates complying with ASTM C 33, and potable water.
  - 1. Concrete Mixes: Normal-weight concrete with not less than 3000-psi (20.7- MPa) compressive strength (28 days), 3-inch (75-mm) slump, and 1-inch (25-mm) maximum size aggregate.

### 2.6 POLYMER FINISHED

- A. Supplemental Color Coating: In addition to specified metallic coatings for steel, provide fence components with Polymer coating.
- B. Metallic-Coated Steel Tension Wire: PVC-Coated wire complying with ASTM F 1664, Class 1.

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- C. Miscellaneous Components: Comply with ASTM F 626 for the following:
  - 1. Fittings.
  - 2. Post and line caps.
  - 3. Rail and brace ends.
  - 4. Top rail sleeves.
  - 5. Tension and brace bands.
  - 6. Tension bars.
  - 7. Truss rod assemblies.
  - 8. Tie wires, clips, and fasteners.
- D. Color: Dark green complying with ASTM F 934.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION

- A. General: Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated. Do not begin installation before final grading is completed, unless otherwise permitted by Architect.
- B. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed or compacted soil.
- C. Post Setting: Hand-excavate holes for post foundations in firm, undisturbed or compacted soil.
  - 1. Concrete Footings: Place concrete around posts and vibrate or tamp for consolidation. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during placement and finishing operations until concrete is sufficiently cured. Set the following post types in concrete footings and protect portion of posts aboveground from concrete splatter:
    - a. Terminal.
    - b. Line; Using mechanical devices to set line posts per ASTM F 567 is not permitted.
    - c. Gate.
- D. Terminal Posts: Locate terminal end, corner, and gateposts per ASTM F 567.
- E. Line Posts: Space line posts uniformly at 10 feet (3.05 m) o.c.
- F. Intermediate Rails: Install in one piece at post-height center span, spanning between posts, using fittings, special offset fittings, and accessories.
- G. Bottom Rails: Install, spanning between posts, using fittings and accessories.

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- H. Chain-Link Fabric: Apply fabric to outside of enclosing framework.
- I. Tie Wires: Attach wire to chain-link fabric per ASTM F 626. Tie fabric to line posts at maximum interval of 12 inches (304 mm) o.c. and to braces at maximum interval of 24 inches (609 mm) o.c.
- J. Gate Installation: Install gates level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust gate to operate smoothly, easily, and quietly throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.

END OF SECTION 02821