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REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
OFFICE OF THE SECRETARY
MANILA

897.13 DPWH
01-23-2017

DEPARTMENT ORDER)


SUBJECT: DPWH Standard Specification for
Item 807 – Site Development

NO. 06)
Series of 2017 01.23.17)

In order to ensure uniformity in the application of landscaping and aesthetic design in Government-owned structures such as buildings, public schools, and other infrastructure projects implemented by the Department, the attached **DPWH Standard Specification for Item 807 - Site Development** is hereby prescribed, for the guidance and compliance of all concerned.

This Specification shall form part of the on-going revision of the DPWH Standard Specifications for Public Works Structures - Buildings, Ports and Harbors, Flood Control and Drainage Structure and Water Supply Systems, Volume III, 1995 Edition.

This Order shall take effect immediately.


MARK A. VILLAR
Secretary

14.1.2 FET/JFS

Department of Public Works and Highways
Office of the Secretary



WIN7U01421

DPWH Standard Specification for Item 807 – Site Development

807.1 Description

This Item shall consist of furnishing and installation as per approved Plans of the complete site development work consisting of excavation, turfing, planting, mowing, carpentry works, plumbing, electrical works, delivery of materials and other labor necessary for the completion of the project.

807.2 Material and Construction Requirements

807.2.1 Softscape Specification

807.2.1.1 Turfing

807.2.1.1.1 Preparation

The areas to be turfed shall be completely cleared of all builders' debris, large stones and other obstructions.

The planting area shall be cultivated to an average depth of 150mm. Where the ground is clay, hardpan, sun baked earth or other impervious materials, it shall be ploughed or scarified to a minimum depth of 150 mm to reduce to granular material of sizes not exceeding 75 mm.

The ground shall be later finished by lightly rolling with roller not exceeding 136 kgs in weight. Rolling shall only be done when the formation is dry.

807.2.1.1.2 Trimming and Levelling

Before spreading the top soil the ground of filled earth must be trimmed and levelled. In case of banks, the edge must be trimmed off to a curve to allow the grass to be cut with a motor mower.

807.2.1.1.3 Turfing Existing Ground

Where existing ground is to be turfed, mounds shall be levelled and depressions, holes, channels, etc., shall be filled-in to the general level of the area or to the levels shown on the Plans.

807.2.1.1.4 Garden Soil (Top Soil)

The top soil is to be selected vegetable garden soil, free from roots, weeds and any unnecessary hard granular material. Top soil shall be spread and levelled over the whole area to be turfed to form an even layer of 50 mm (consolidated thickness). The Contractor shall submit a sample of the top soil to the Architect/ Engineer for approval before application.

807.2.1.1.5 Ground to be Forked

Before turfing, the ground or filled earth shall be forked to a depth of 100 mm to 150 mm to thoroughly loosen the soil.

807.2.1.1.6 Turf

The turf for use in the work shall be of the best quality and shall be obtained from sources approved by the Architect/ Engineer. The turfs shall be very healthy, free from defects, decay, disfiguring of roots, sun or wind scaled injury, plant disease, insect or pest or any other form of infestation.

The Contractor shall furnish the Architect/ Engineer of approved samples of the turf before planting. The Architect/ Engineer shall visit and inspect the nursery from where the turfs are obtained.

The turfs for use in the Contract shall be of the following type:

a) Cow Grass

The turf shall be cut into approximately 225 mm square and lifted carefully with proper cutting tools and shall be flat, square or rectangular, with even thickness, but shall be as thick as possible. The minimum thickness of turf shall be 40 mm. The root formation shall be moist and the grass shall not exceed 20 mm long and shall be dense green with vigorous roots and healthy.

The grass shall be stacked on site, and the Architect/ Engineer shall inspect the grass for weeds before laying. The grass shall always be kept moist by spraying with water and covering with wet sacks.

b) Grass Planting

Cow grass shall be planted within 24 hours after being cut or stripped off. Dry turf shall be rejected.

i) Spot Turfing - Spot shall be at 450 mm at centers.

ii) Close Turfing - The turf shall be laid on top of vegetable garden soil and shall be laid accurately to level and full with close butt joints. Immediately after laying, the turfs shall be lightly beaten with wooden beater until they are firmly bedded to the ground. Any depression produced by the beatings shall be leveled by packing the depression with additional top soil from underneath the turf. The turf shall be beaten again. Laying and beating shall continue until all the turfs are firmly bedded and a continuous turfing area is obtained.

The minimum total thickness of the turf and the top soil shall be 75 mm and shall be measured after the turf has been laid and beaten. For this purpose, small trial holes shall be dug as directed by the Architect/ Engineer. If the thickness between the top of the grass and the formation level is less than 75 mm, the Contractor shall, without additional cost, relay the turfs to the approval of the Architect/ Engineer. Turfing to banks shall be firmly cured by 150 mm long wooden pegs driven each piece.

807.2.1.1.7 Top Dressing

The material used for the top dressing shall be between 80/20 and 90/10 sand/soil mixes. Organic matter shall be included in the mixture. Fertilizers, soil ameliorants such as lime, and pesticides shall also be included for special purposes. The Contractor shall apply top dressing

to the turfed area immediately after they are laid and thereafter until the turfs survive independently.

The top dressing shall be deposited and spread evenly over the turfed area at the rate of 11.2 grams per m².

807.2.1.1.8 Commencement of Turfing

Turfing shall be carried out at least well in advance three (3) months before the completion of the whole works.

807.2.1.1.9 Watering

The Contractor shall immediately after laying, water the turf adequately. The Contractor shall water the turf throughout the planting and maintenance periods until the turfs survive independently.

The Contractor shall water the turfs by spraying so that no turf or soil will be disturbed. The rate of application shall be not less than 0.47 mL/ m².

807.2.1.2 Softscape Maintenance

807.2.1.2.1 Nursing and Watering

It is the Contractor's responsibility to ensure that the grass is properly nursed and tended until fully established, including watering as necessary during dry periods. Any grass which fails to flourish shall be replaced at the Contractor's expense until the grassess survive independently.

807.2.1.2.2 Cutting and Rolling

The Contractor shall cut the grass at least once a month throughout the planting and maintenance periods or at any time instructed by the Architect/ Engineer. Grass cutting shall be carried out with hand or mechanical tools with sharp and well-adjusted blade, so that the turf shall be cleanly cut and no tearing will take place.

The Contractor shall take reasonable care not to cut or damage the stolons or rhizones of the spreading grass when cutting spot turfing. No cutting shall be carried out when the grass is wet or when it is raining.

Where and when instructed by the Architect/ Engineer, the Contractor shall roll the turf with a roller weighing not exceeding 360 kgs to press the roots firmly into the soil and to produce a close well knitted turfing.

807.2.1.3 Lawn Maintenance

807.2.1.3.1 Watering

During drought periods, the only way to maintain a desirable greenness is to give the lawn a thorough soaking once or twice a week. Light daily sprinkling does more harm than good. It requires from 1900 to 2840 liters of water for every 93 m² of lawn for each application to give

an equivalent 20 mm to 38 mm of rain. This will moisten the soil from 65 mm to 125 mm deep.

Continuous heavy watering favors diseases.

The surface layer of soil must be kept damp by frequent light watering with a fine spray during the germination period after seeding or vegetative planting and until the young plants are rooted firmly. It is often necessary to water three (3) or four (4) times daily in hot windy periods. After the grass is established, water should be used sparingly and with maximum intervals between applications.

Water should be applied to new seeding and vegetative plantings in a fine spray that will not wash that soil away from the base of young plants. It must be applied slowly so that the surface will not puddle and crust.

807.2.1.3.2 Weeding

Keep all planting areas free from weeds and undesirable grasses, by a method and by materials approved/ permitted by the Architect/ Engineer.

807.2.1.3.3 Mowing

All grass area shall be mowed at regular intervals which will keep grass height from exceeding 80 mm. Mower blades shall be set at 40 mm unless otherwise directed by the Engineer. All for season beyond the Contractor's control, the height of the grass has exceeded 80 mm, the mower blades shall be raised so that at no time will more than 1/2 of the grass leaf surface be removed.

807.2.1.4 Planting

Plant holes shall be excavated at a minimum of twice the size of the volume of the pot size specified in the Plans.

Plants shall be provided with the following characteristics:

- a) Large healthy root systems, with no evidence of root curl, restriction or damage;
- b) Vigorous, well established, free from disease and pests, of good form consistent with the species or variety; and
- c) Hardened off, not soft or forced, and suitable for planting in the natural climatic conditions prevailing at the site.

Trees which, unless required to be multi-stemmed, have a single leading shoot shall be provided.

At least one plant shall be labelled of each species or variety in a batch using a durable, readable tag.

Planting shall be carried out on the same day that plants are delivered to the site. Plants shall not be planted in unsuitable weather conditions such as extreme heat, cold, wind or rain. In other than sandy soils, excavation shall be suspended when the soil is wet.

Plants shall be watered thoroughly before planting and immediately after planting.

807.2.1.4.1 Mulching

Mulch shall be free from deleterious and extraneous matter such as stones, soil, weeds and sticks.

Mulch shall be placed clear of plant stems, and rake to an even surface flush with the surrounding finished levels.

Depth shall be at 75 mm. maximum.

Mulch types hays shall be from seasonal grasses and free from noxious weeds etc.

Laterite gravel shall be uniform in color and size or graded from 5 to 25 mm.

Brush Chippings shall be approved "Forest Blend" vegetative material processed to pieces not larger than 75 x 50 x 15 mm and aged from 6 to 12 weeks.

Washed River Pebble shall be uniform in size or graded from 10 to 25 mm.

807.2.1.4.2 Stakes

Stakes material shall be hardwood, straight, free from knots or twists, pointed at one end.

807.2.1.4.2.1 Installation

Stakes shall be driven into the ground at least one third of their length, avoiding damage to the root system. Those no longer required at the end of the establishment period shall be removed.

Stake sizes shall conform to the following:

- a) For plants 1 to 2.5 m high: Two 50 mm x 50 mm x 1800 mm stakes per plant.
- b) For plants smaller than 1 m high: One 38 mm x 38 mm x 1200 mm stake per plant.

807.2.1.4.2.2 Ties

Ties fixed securely to the stakes, one tie at half the height of the main stem, shall be provided whenever necessary to stabilize the plant. Ties shall be attached loosely and 50 mm hessian webbing stapled to the stake shall be likewise provided.

807.2.1.5 Irrigation

807.2.1.5.1 Installation

Pipework shall be installed in straight lines and uniform grades. Unions, flanges and isolating valves shall be provided for the satisfactory removal of piping and fittings for maintenance or replacement of plant. Pipework shall be arranged and supported so that it remains free from vibration while permitting necessary movements such as thermal expansion and contraction. Pipework shall conform to the applicable requirements of Item 1201 – Water Pumping System.

807.2.1.5.2 Accessibility Location

Fittings requiring maintenance or servicing, including control valves, joints designed to enable removal of pipes, and the like, shall be located in accessible positions, with adequate clearance. The pipework shall be arranged so that it does not interfere with the removal or servicing of associated equipment or valves.

Fixed location type with automatically or manually operated sprinklers, sprays, microsprays and drippers shall be used.

807.2.1.5.3 Irrigation Controller

The controller shall be mounted in a weatherproof lockable cabinet. The following features shall be included:

- a) Variable timer for each station with a range from 1 minute to not less than 30 minutes.
- b) Manual cycle and individual station operation.
- c) Manual on-off operation of irrigation without loss of program.
- d) 240 V input and 24 V output capable of operating 2 control valves simultaneously.
- e) 24-hour battery program backup (if possible).

Micro irrigation system Polyethylene irrigation pipe shall conform to Item 1201 – Water Piping System with barbed fittings of similar pressure rating fastened with ratchet type clamps. Lay pipe on finished ground surface under planting bed mulch and anchor at minimum 1.5 m intervals with U-shaped stakes. Connect micro-tube laterals with proprietary push-in or screw in-fittings.

Microsprays shall be mounted on stakes 300 mm above ground and connected to the pipework with microtubes.

807.2.1.5.4 Drippers

Use drippers which are turbulent flow types, easily dismantled for cleaning. Connect directly into the pipework or with microtubes. Micro irrigation valve box: Use micro irrigation valve boxes which are of high impact plastic with snap lock covers at finished ground level, each housing a stop cock, filter (200 mm for microsprays, 100 mm for drippers), pressure reducing valve (170 kPa outlet pressure) and automatic control valve. Use vandal resistant controls in public areas.

807.2.1.5.5 Completion of Planting

Maintenance manual shall be provided which includes notes and specifications of all landscape and irrigation work and recommendations for on-going maintenance work.

807.2.1.5.6 Plant Establishment

The planted areas shall be maintained for a minimum of 13 weeks from the time of practical completion. Damaged, stolen or vandalized stock shall be replaced as required and at the expense of the Contractor. For all other work including irrigation and hardworks, the contractual provisions for defects liability period shall apply.

807.2.1.6 Trees and Shrubs

Specifications for the trees and shrubs to be used in the project shall be specified in detail in the Plans. The Architect/ Engineer shall inspect whether the delivered trees and shrubs are approved based on physical features and the capacity of the trees and shrubs to survive after planting.

Specifications and procedures for establishing trees and shrubs shall be submitted by the Contractor prior to planting. Fertilization, mulching, staking, establishment and irrigation shall be indicated on the procedures.

807.2.2 Hardscapes Specifications

807.2.2.1 Fountains

Work of this Section includes all labor, materials, equipment, tools, incidentals, and services necessary to design, engineer, manufacture, supply, and install the Fountain with related mechanical and electrical systems complete including all components, hardware, and accessories as indicated on the Plans and specified herein:

1. Discharge and suction piping systems
2. Electrical conduit and wiring systems
3. Subterranean vaults
4. Collector Tank
5. Mechanical and electrical equipment with components and accessories
6. Manufacture of primary fountain equipment and components is a "Basis of Design"
7. Include fountain system testing, adjustment, and operational training for Owner
8. Fountain Electrical Control Panel

Related Fountain System Work shall be as follows:

1. Paving systems
2. Cast-In-Place Concrete
3. Earthwork including trench excavation and backfill
4. Waterproofing

The material to be used in the project shall be, as much as possible, cast aluminum with mounting pit to house plumbing, curvilinear blade. Dimensions, height, sizes, and thickness shall be indicated in the Plans.

Installation shall be based on manufacturer's specification and relevant standards and codes.

The fountain to be installed shall be inspected by the Contractor prior to gathering. Defects in installation shall be replaced at the expense of the Contractor.

807.2.2.1.1 Quality Control Submittals

Test Reports: Fountain manufacturer's test report must be included in the control panel information package. This report shall include results of the test on both motors and all lighting circuits.

Field Reports: The manufacturer shall provide a field test report in the controls package. This report, which includes information on the field voltage, current, and resistance at all components, must be filled out by the installing electrical contractor and submitted to the manufacturer and the Architect/ Engineer for approval.

807.2.2.1.2 Contract Closeout, Operations and Maintenance

Manuals shall be submitted pertaining to the operations and maintenance of the fountain system prior to final approval of system installation. The manuals shall include specification sheets, operations and maintenance data, copies of field and test reports, exploded diagrams, preventative maintenance schedule, water quality information, cleaning instructions, and warranty information.

807.2.2.1.3 Quality Assurance

Insofar as possible, all materials and equipment used in the installation of this work shall be of the same brand or manufacturer throughout for each class of material or equipment.

Piping materials shall bear Department of Trade and Industry (DTI) approved ICC sticker, and or other markings of specified testing agency.

807.2.2.1.4 Maintenance and Extra Materials

The Contractor shall supply chemical treatment materials of sufficient quantity, in addition to materials needed for system testing and adjustment, in maintenance of the system for a period of at least one month after Substantial Completion.

The Contractor shall supply any other special tools or parts that would be needed for maintenance of the fountain system.

Extra Material – Contractor shall be the one to provide one spare element for each cartridge filter, an extra solenoid valve for water make-up, and one replacement bulb for each U.V.

807.2.2.2 Benches

Raw materials for steel benches shall conform to the applicable requirements of PNS 49 - Steel bars for concrete reinforcement and ASTM A 36 - Standard Specification for Carbon Structural Steel.

Wooden benches shall conform to the specie indicated in the Plans and shall conform to the applicable requirements of Item 1003 – Carpentry and Joinery Works.

Other materials to be used on the projects shall submit certificates of conformance to ASTM and/or PNS.

807.2.2.3 Gazebos

Wooden gazebos shall conform to the specie indicated in the Plans and shall conform to the applicable requirements of Item 1003 – Carpentry and Joinery Works.

Vinyl gazebos shall conform to the specifications indicated in the Plans.

Roofing tiles/ shingles shall be as indicated in the Plans and shall conform to the applicable requirements of Item 1015 – Clay Roof Tile and Item 1015A – Asphalt Roofing Shingles.

807.2.3 Aquatic Plants

807.2.3.1 Plant Materials

Provide select quality of root stocks, tubers, rhizomes or container grown plugs/ quarts of moisture-favoring plants, trees and shrubs. All referenced seeding rates are bulk. All seeds and container grown stock will be subject to standards for such material. All plant materials are subject to review and approval by the Architect/ Engineer. Inferior or substandard material will be rejected and must be replaced with acceptable material at the Contractor's expense.

807.2.3.2 Installation

Woody and herbaceous plants associated with the wetland shall be installed in the arrangements shown on the Plans. The limits of each planting area indicated on the plan (whether for individual species or groups of species) shall be staked with survey lath by the contractor and checked by the designer prior to planting. Stakes shall be repositioned as directed by the designer.

Plant in masses of a single species, if so indicated on the Plans, shall be spaced at 600 mm on center for wetlands. Plants may be hand planted (push manually into soil with growing ends exposed) in soft substrates or planted using a planting bar, if necessary, in firmer substrates.

Planting of plugs in wetlands shall follow all specifications for other container grown, terrestrial, herbaceous material.

Sedges and other wetland species provided as seed, shall be hand seeded at the specified rates, and then lightly raked into the top 6.35 mm to 1.27 mm of soil and mulched lightly with straw.

807.2.3.3 Maintenance

Wetland Plantings: During the first growing season, restore eroded wetland soils with organic soil, fertilize and replace dead plants as directed by the Architect/ Engineer.

Sedimentation Basin: Accumulated sediments shall be removed periodically. If dredging is required, the root stock of installed rhizomatous material shall be removed prior to dredging. Following removal of dredging spoil, reinstall root stock in same relative topographic and hydrologic positions from which it was removed. If root stock is not salvageable, replace emergent and wetland vegetation with original species and in original quantities. Following dredge spoil removal, re-seed basin as required with original mix at original rates and cover with coconut-straw erosion control blanket to stabilize immediately.

807.2.4 Aquatic Animals

It may be salt water or fresh water fishes, molluscs, or crustaceans, depending on the request of the Architect/ Engineer or if specified in the Plans.

The aquatic animals to be transported shall be free from any diseases (such as Epizootic haematopoietic necrosis, Oncorhynchus masou virus disease, Viral haemorrhagic septicaemia, and others). The animals shall be checked-up and approved by licensed veterinarian prior to delivery to the site.

807.2.4.1 Water Parameters for Salt Water Animals

The following table shall be the general guideline of acceptable water parameter ranges for different types of tropical marine aquariums.

Parameter	Suggested Level: Reef Aquarium	Suggested Level: FOWLR Aquarium	Average Level: Coral Reefs	Test Requirements
Specific Gravity	1.023 - 1.025	1.020 - 1.025	1.025	ASTM D1429 -Standard Test Methods for Specific Gravity of Water and Brine
Temperature	22 - 26°C	22 - 26°C	28°C	
pH	8.1 - 8.4	8.1 - 8.4	8.0 - 8.5	ASTM D1293 -Standard Test Methods for pH of Water
Alkalinity	8 - 12 dKH	8 - 12 dKH	6 - 8 dKH	ASTM D1067 -Standard Test Methods for Acidity or Alkalinity of Water
Ammonia (NH3)	Undetectable	Undetectable	Near Zero	ASTM D1426 -Standard Test Methods for Ammonia Nitrogen In Water
Nitrite (NO2)	Undetectable	Undetectable	Near Zero	ASTM D3867 -Standard Test Methods for Nitrite-Nitrate in Water
Nitrate – Nitrogen(NO3)	< 1.0 ppm	< 30 ppm	0.25 ppm	
Phosphate (PO4)	< 0.2 ppm	< 1.0 ppm	0.13 ppm	ASTM D4327 -Standard Test Method for Anions in Water by Suppressed Ion Chromatography
Calcium	350 - 450 ppm	350 - 450 ppm	380 - 420 ppm	ASTM D511 -Standard Test Methods for Calcium and Magnesium In Water
Magnesium	1250 - 1350 ppm	1150 - 1350 ppm	1300 ppm	
Iodine	0.06 - 0.10 ppm	0.04 - 0.10 ppm	0.06 ppm	
Strontium	8 - 14 ppm	4 - 10 ppm	8 - 10 ppm	ASTM D3920 -Standard Test Method for Strontium in Water

807.2.4.2 Water Parameters for Fresh Water Animals

The following table shall be the general guideline of acceptable water parameter ranges for different types of freshwater aquariums, brackish water aquariums, and ponds. The water parameters listed are a general guideline for maintaining each specific type of aquarium or pond.

Parameter	Freshwater Community	African Cichlid	Freshwater Plants & Discus	Brackish	Test Requirements
Temperature	22 - 28°C	22 - 28°C	22 - 28°C	22 - 28°C	
pH	6.5 - 7.5	7.8 - 8.5	6.0 - 7.5	7.5 - 8.4	ASTM D1293
Ammonia	0.0	0.0	0.0	0.0	ASTM D1426
Nitrite	0.0	0.0	0.0	0.0	ASTM D3867
Nitrate	< 50 ppm	< 50 ppm	< 30 ppm	< 50 ppm	
Alkalinity (Carbonate Hardness)	4 - 8 KH	10 - 18 KH	3 - 8 KH	10 - 18 KH	ASTM D1067
General Hardness	4 - 12 GH	12 - 20 GH	3 - 8 GH	12 - 20 GH	ASTM D1126 - Standard Test Method for Hardness in Water

807.2.5 Concrete Masonry Unit

Concrete masonry units (also called pavers, concrete pavers, paving stones, paving block, and brick pavers) included in the design for vehicles (such as driveways, access lanes and parking areas), floors (such as floors on grade and patios) and walking paths (including sideways) shall conform to the applicable requirements of Item 741 - Interlocking Precast Concrete Blocks.

807.2.6 Curbs

Curbs shall conform to the requirements of Item 600 – Curb and/or Gutter.

807.2.7 Column Guards

The cover for column guards shall be extruded high impact vinyl, with nominal thickness of 2.2 mm. For retainer, it shall be extruded recycled high impact vinyl, with nominal thickness of 1.8 mm. Injection molded thermoplastic shall be the material for closure caps.

807.2.7.1 Impact Resistance

Extruded profiles shall resist damage from impact at apex of 90° corner when tested in accordance with applicable sections of ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies.

Izod impact strength shall conform to ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics method A notched, 130 kg-cm/cm average with no break.

Charpy impact strength shall conform to ASTM D6110 Standard Test Method for Determining the Charpy Impact Resistance of Notched Specimens of Plastics notched, 142 kg-cm/cm average with no break.

807.2.7.2 Installation

The substrate shall be cleaned to remove dust and debris prior to installation of the column guards.

The materials shall be acclimatized to building conditions for at least 24 hours prior to installation.

Install wall protection products in accordance with manufacturer's installation instructions provided by the manufacturer.

807.2.8 Wheel Guard

Wheel guard shall conform to the applicable requirements of Item 900 – Reinforced Concrete, or as specified in the Plans.

807.2.9 Fences

807.2.9.1 Concrete Fences

Concrete fences shall conform to the applicable requirements of Item 1046 – Masonry Works and Item 1027 – Cement Plaster Finish. The Bars and Grills at the top of fences shall conform to PNS 49 - Steel Bars for Concrete Reinforcement.

807.2.9.2 Steel Fences

Steel fence materials (such as angular, tubular and rod/ rectangular steel bars) shall conform to the applicable requirements of PNS 49 and ASTM A 36 - Standard Specification for Carbon Structural Steel.

807.2.10 Gates

807.2.10.1 Wood Gates

Wooden gates shall conform to the specie indicated in the Plans and shall conform to the applicable requirements of Item 1003 – Carpentry and Joinery Works.

807.2.10.2 Metal Gates

The aluminum to be used for the gate shall conform to the applicable requirements of ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

The stainless steel plate to be used for the gate shall conform to the applicable requirements of ASTM A 240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.

The framing for the gate shall conform to the applicable requirements of Sub-section 807.2.9.2 - Steel Fences.

Gates shall be constructed to match the fencing and in the locations shown on the Plans or as directed by the Architect/ Engineer.

807.3 Method of Measurements

All the units installed shall be measured and determined by the number of units approved by and ready for service as provided in the Bill of Materials and Quantities accepted to the satisfaction of the Architect/ Engineer.

807.4 Basis of Payment

The items measured and determined as provided in subsection 807.3 - Method of Measurements shall be paid for at the unit bid price which payment constitute full compensation of materials, labor, and incidentals necessary to complete this Item.

Payment shall be made under:

Pay Item (Number)	Description	Unit Of Measure
807 (1)	Site Development	Lump Sum
807 (2)	Softscape	Lump Sum
807 (2)	Softscape (Trees)	Each
807 (2)	Softscape (Shrubs)	Each
807 (2)	Softscape (Grass)	Square Meter
807 (3)	Hardscape	Lump Sum
807 (3)	Hardscape (Fountains)	Each
807 (3)	Hardscape (Benches)	Each
807 (3)	Hardscape (Gazebos)	Each
807 (4)	Garden Soil	Cubic Meter
807 (5)	Aquatic Plants	Each
807 (5)	Aquatic Animals	Each
807 (6)	Paver Blocks	Square Meter
807 (7)	Curbs	Linear Meter
807 (8)	Column Guards	Pieces
807 (8)	Wheel Guards	Pieces
807 (9)	Fence	Square Meter
807 (10)	Gate	Lump Sum

References:

- *PNS 49 - Steel Bars for Concrete Reinforcement*
- *ASTM A 36 - Standard Specification for Carbon Structural Steel.*
- *ASTM F476 - Standard Test Methods for Security of Swinging Door Assemblies.*
- *ASTM D256 - Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics*
- *ASTM D6110 - Standard Test Method for Determining the Charpy Impact Resistance of Notched Specimens of Plastics*
- *ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.*
- *Manual of Diagnostic Tests for Aquatic Animals – Dr. Bernard Vallat and Dr. Eva-Maria Bernoth*
- *ASTM A 240 - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications*
- *SECTION 10 26 13 CORNER GUARDS - Pawling Pro-Tek® Model CG-20R*
- *Stainless Steel Guard Column Instructions*
- *DGCS vol 6 – Public Buildings and Other Related Structures 2015*
- *Item 1003 – Carpentry and Joinery Works*
- *Item 1201 – Water Pumping System*
- *Item 1015 – Clay Roof Tile*
- *Item 1015A – Asphalt Roofing Shingles*
- *Item 741 - Interlocking Precast Concrete Blocks.*
- *Item 600 – Curb and/or Gutter.*
- *Item 900 – Reinforced Concrete*
- *Item 1027 – Cement Plaster Finish*
- *<http://www.liveaquaria.com/PIC/article.cfm?aid=89> - Maintaining Proper Water Quality in the Home Aquarium - Drs. Foster & Smith Educational Staff (2016)*
- *Interactive Fountain Specifications (2010)*
- *Guidelines For Establishing Aquatic Plants – USDA*
- *Hardscapes for Sustainable Landscapes -A.M.VanDerZanden*
- *Specifications for Planting Trees and Shrubs -Edward F. Gilman*
- *Topdressing Amenity and Playing Turf - Simon Leake BScAgr (Sydney Environmental & Soil Laboratory Pty Ltd)*
ABN 70 106 810 708