
ITEM 01 - MOBILIZATION

DESCRIPTION:

Under this work item the Contractor shall provide necessary bonds, insurance, and pre-financing and shall set up his necessary general plant, including shops, storage areas, office and such sanitary and other facilities as are required by local or state law or regulation.

MATERIALS:

Such materials as required for mobilization and that are not to be part of the work in place shall be as determined by the Contractor, except that they shall conform to any pertinent local or State Law, regulation or code.

CONSTRUCTION DETAILS:

The work required to provide the above facilities and service for mobilization shall be done in a safe and workmanlike manner and shall conform to any pertinent local or State Law, regulation or code. Good housekeeping consistent with safety shall be maintained.

BASIS OF PAYMENT:

The amount bid shall include the furnishing and maintaining of services and facilities noted under DESCRIPTION SECTION, to the extent and at the time the Contractor deems them necessary for his operations, consistent with the requirements of this work and the respective contract.

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

QUALITY PLAN:

Contractor shall submit Quality Assurance and Quality Control Plans to the Engineer.

SAFETY PLAN:

Contractor shall submit Safety and Security Management Plan to the Engineer.

ITEM 02 – WORK ZONE SAFETY CONTROL

DESCRIPTION:

General

Work zone traffic control shall consist of all work to provide for the safe and efficient movement of pedestrian, bicycle and vehicle traffic through or around work zones, and to protect workers and the public from damage to person and property which may result, directly or indirectly, from any construction operations, under the direction of trained, responsible person, as shown in the Contract Documents and as directed by the Engineer. The duration of this work shall be from the date any work is started on the contract site, including mobilization of equipment, signs, offices, and shops until the date of contract final acceptance. Temporary materials and components that are furnished by the Contractor shall remain the property of the Contractor.

Basic Work Zone Safety Control. Work shall consist of controlling traffic over reasonable smooth traveled way which shall be marked by signs, delineators, channelizing devices, pavement markings, and other devices as appropriate or as directed by the Engineer.

Work after sunset and before sunrise shall include additional requirements for nighttime operations including, but not limited to, a written plan for nighttime operations, additional worker and equipment protection, and additional channelizing devices.

The Contractor shall conduct its operations to ensure the safety and convenience of travelers, and abutting property owners as well as the safety of all workers on the contract. Travelers include, but may not be limited to motorists, motorcyclists, bicyclists and pedestrians.

Fencing. Temporary Construction Gates and Fencing: As required or directed by the Engineer, the Contractor shall furnish and erect a new temporary 6-foot high chain link fence, gates and all necessary incidentals. Costs for erecting, maintaining and removing the 6-foot temporary fence shall be included in this item of work.

Excavations. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property in accordance with OSHA.

Maintain Public Access. Work shall consist of maintaining public access to intersecting roads, residences, business establishments, adjacent property, bus stops and transportation facilities for pedestrians and bicyclists.

Construction Signs. Work shall consist of furnishing, installing, moving, deactivating, maintaining and removing construction signs as directed by the Engineer.

Flagging and Traffic Control. Work shall consist of furnishing the necessary traffic control equipment and flaggers for adjacent traffic control.

Interim Tubular Markers. Work shall consist of furnishing, installing, moving and maintaining interim tubular markers attached to the pavement as directed by the Engineer.

Construction Barricades. Work shall consist of furnishing, installing, moving, maintaining and removing construction barricade as directed by the Engineer.

MATERIALS:

All materials shall comply with the requirements of Materials Data Sheets and Manufacturing Specifications.

Construction Signs. Fabrication of all components shall produce a finished sign panel. Holes may be punched or drilled. Edges shall be smooth and true and free from burrs or ragged breaks. Sign panels, including face shape, color, dimensions and characters shall be fabricated using colors, character series and sizes, symbols, route shields and borders as shown in the Manual on Uniform Traffic Control Devices (MUTCD) or ordered by the Engineer.

CONSTRUCTION DETAILS:

General. The contractor shall each designate a trained, responsible person who has primary responsibility and sufficient authority for implementing the work zone traffic control plan and other safety and mobility aspects as necessary. The Contractor's responsible person shall be appropriately experienced and trained in accordance with the level of decisions that the individual will be required to make, reflecting current industry practices and Authority requirements.

When sidewalks, walkways, or shoulders must be temporarily closed to facilitate construction operations, accommodations for safe pedestrian passage shall be maintained, at all times, unless other temporary pedestrian accommodations are approved by the Engineer.

Maintain Public Access. The Contractor shall provide and maintain at all times safe and adequate ingress and egress for intersecting sidewalks, residences, business establishments, adjacent properties, bus stops and other transportation facilities for vehicles, pedestrians and bicycles; at existing or at new access points, consistent with the work, unless otherwise authorized by the Engineer. Whenever construction operations disrupt or interfere with normal traffic patterns, intersections, business establishment access points, and driveways shall be clearly marked using channelizing devices.

Where pedestrian facilities exist, or where pedestrian traffic is reasonably anticipated, the Contractor shall maintain pedestrian access on at least one side of the street at all times, and ensure accessibility for persons with disabilities in accordance with the contract documents and consistent with provisions of the Americans With Disabilities Act. Pedestrian access may be provided using existing pedestrian facilities, temporary sidewalks or walkways, or alternate paths. Where a sidewalk is closed, it shall be marked with construction barricade and a SIDEWALK CLOSED sign. Advance warning signs and directional guidance shall be provided to direct pedestrians to alternate paths and crosswalks and to alert motorists. Potentially hazardous areas adjacent to sidewalks, walkways, or other areas used by pedestrians shall be protected to prevent pedestrian intrusion.

Construction Vehicles and Equipment. All construction vehicles and equipment operating within the contract limits, whether in the work space, in the traffic space, in spoil areas, in storage areas, or any other areas of the contract, shall be operated at all times with due consideration for the safety of the public and workers.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

Progress payments for this item shall be made in proportion to the amount of work completed as determined by the Engineer.

ITEM 03 – DRAIN PIPES, CATCH BASINS AND MANHOLES CLEANOUT AND VIDEO INVESTIGATION

DESCRIPTION:

The work included in this item shall consist of furnishing all labor, materials, testing, submittals, tools and equipment to perform all work necessary for cleaning, removing and disposing of all sludge, dirt, sand, gravel, roots, grease, and other debris from the existing drainage system which includes: pipes, manholes; catch basins; and drop inlets, throughout the project limits, as directed by the Engineer. After cleaning, the Contractor shall video each line. Any problems shall be reported to the Engineer for further direction.

MATERIALS:

Not applicable.

SUBMITTALS:

Not applicable.

CONSTRUCTION DETAILS:

Selection of the equipment used shall be based on the condition of structures and the pipelines at the time the cleaning operations commence and shall be approved by the Engineer.

The sequence of the Contractor's work shall allow for the proper and adequate maintenance of all functional drainage systems.

Precautions shall be taken to protect the drainage systems at all times. All workmen shall be experienced and skilled in the use of the equipment used. The Engineer reserves the right to prohibit use of any equipment or method deemed inappropriate for the intended work.

Any and all debris resulting from the cleaning operations shall be removed from the job site and disposed of by the Contractor. Contractor shall remove all sludge, dirt, sand, gravel, roots, grease, and other debris from the existing drainage systems including discharge points. Washing of sludge, dirt, sand, gravel, roots, grease, and other debris downstream shall not be permitted.

Video of the drain pipes and structures shall be taken after cleaning activities are complete. Any abnormalities found during the video investigation shall be reported to the Engineer. Any drainage repairs or modifications shall be made as directed by the engineer.

BASIS OF PAYMENT:

The cost of all labor and equipment necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

Payment for any necessary drainage repairs or modifications as judged by the Engineer are included as allowance item A1. Payment amounts shall be determined in accordance with negotiations between the Contractor and the Engineer.

ITEM 04 – PRE-CONSTRUCTION INVENTORY

DESCRIPTION:

This work shall consist of providing all necessary surveying to establish, spatially position, measure, navigate to and verify the locations of all existing and proposed features and measure quantities of items in accordance with the contract documents or as directed by the Engineer. This work includes but is not limited to the location or verification of existing items or of constructed items, and the coordination and sharing of engineering data with BPCA or Engineers.

MATERIALS:

None specified

CONSTRUCTION DETAILS:

Prior to commencing work, all drain inlets within site limits shall be uncovered and cleaned. Contractor shall video each line in the presence of the Engineer to verify there are no obstructions. If during the videotaping, the contractor finds a break in the pipe, the contractor shall notify BPCA for further instructions..

Contractor shall complete a detailed pre-construction survey of the Site, existing playground equipment and furnishings, including documenting the location, quantities and dimensions of all timber pergolas, gazebo, playground posts and other timber wood elements being replaced, all steel playground components and mesh panels being refurbished and painted, all plastic and nylon playground elements being replaced and/or reinstalled, various hardware, steel picket fences and utility services. Dimensions of existing wood posts and other wood elements shall be utilized for shop drawings depicting replacement in kind. Identification tags referencing plan and elevation drawings shall be placed on all items being removed, and repaired to identify the location for reinstallation of items. Various details of elements included in the Contract Drawings shall provide information for missing or damaged elements required for completing the Work. Detailed photo survey shall be completed as a part of the preconstruction survey.

Submittals:

- Upon completion of pre-construction survey, Contractor shall use the information compiled and the Contract Drawings to document the as-built conditions of all elements to be replaced or refurbished.
- Contractor shall submit drawings including location, size and details of all items to be replaced or refurbished.

BASIS OF PAYMENT:

The cost of all labor and equipment necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

Progress payments for this item shall be made in proportion to the amount of work completed as determined by the Engineer.

ITEM 05 – TOPOGRAPHIC SURVEY OPERATIONS

DESCRIPTION:

The Contractor shall perform a detailed topographical site survey to establish existing site conditions, baseline elevations and benchmarks for the layout and completion of Work as specified, as shown on the Contract Drawings and as described in the Contract Documents. The site survey shall show the exact surveyed location and elevation of all Work in relation to the accepted benchmarks and reference points. This work shall also include the stakeout of existing and proposed features and surface elevations.

MATERIALS:

None specified

CONSTRUCTION DETAILS:

The Contractor shall utilize the services of a New York State Licensed Surveyor to perform all survey work.

Contractor shall:

1. Develop and maintain for the duration of the project all detailed surveys and measurements needed for construction including all working lines and elevations to the satisfaction of the Engineer.
2. Provide and maintain two (2) permanent survey benchmarks of known elevation measured from a benchmark(s) approved by the Engineer. The benchmarks shall be the reference point for establishing vertical elevations.
3. Submit stamped and signed survey drawings. Contractor shall revise and resubmit the survey drawings in accordance with Engineer's comments. Engineer's checking and approval of drawings will apply to content only. Contractor shall be responsible for the accuracy and completeness of its Work.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the lump sum price bid item of the Contract.

Progress payments will be made in proportion to the amount of work completed as determined by the Engineer.

ITEM 06 – REMOVE AND DISPOSE EXISTING SAFETY SURFACE, PLAYGROUND TYPE

DESCRIPTION:

Under this item the contractor shall carefully remove and properly dispose of existing safety surface, tiles or poured-in-place type, in the locations shown on the Contract Drawings, or as directed by the Engineer.

MATERIALS:

None specified.

CONSTRUCTION DETAILS:

Existing safety surface, tiles or poured-in-place playground type shall be removed and properly disposed. **Existing area of safety surface to remain at the Babies Fountain Area and Gargoyle Spray Pool shall be cut in a neat and workmanlike manner, and the cut edge protected throughout the duration of work for a vertical seam with new safety surface. Damage to existing edges of safety surfaces to remain shall be repaired at the Contractors' expense.**

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work, including removal and disposal, shall be included in the Lump Sum price of this bid item of the Contract.

Progress payments for this item shall be made in proportion to the amount of work completed as determined by the Engineer.

**ITEM 07 – REMOVE AND DISPOSE EXISTING ASPHALT/CONCRETE
UNDERLAYMENT AND BASE MATERIAL**

DESCRIPTION:

The work shall consist of the removal and proper disposal of asphalt/concrete underlayment, reinforcement, if present, excavation of existing stone base, and any miscellaneous materials encountered to the required subgrade elevation.

MATERIALS:

None specified.

CONSTRUCTION DETAIL:

Depth of removal shall be the depth necessary to allow the installation of the new safety surface and underlayment of the thickness specified in the Contract Documents. Depth of removal shall account for sloping of safety surface as recommended by the manufacturer. Final subgrade elevation shall be based on the existing finished surveyed elevation minus the specified thickness for safety surface and underlayment.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work, including removal and disposal, shall be included in the Lump Sum price bid item of the Contract.

Progress payments for this item shall be made in proportion to the amount of work completed as determined by the Engineer.

ITEM 08 – REMOVE AND DISPOSE EXISTING ALASKAN CEDAR LAMINATED TURNED ROUND TIMBER POSTS

ITEM 09 – REMOVE AND DISPOSE ALL EXISTING ALASKAN CEDAR LAMINATED TIMBER AND ALL PLAYGROUND WOOD ELEMENTS

DESCRIPTION:

Contractor shall carefully remove and properly dispose of all existing turned round Alaskan Cedar laminated timber posts (4.5, and 6 inch diameter and 8x8 inch square, various lengths) and other wood elements (various dimensions and lengths) including beams, decking, bridge planks, filler panels, pergolas, carousel gazebo, rafters, lattice, etc. at all locations shown in the Contract Drawings, or as directed by the Engineer.

Prior to removal, each of the posts and wood elements to be replaced shall be measured, located, and detailed, including portions below-grade. This information shall be used in developing shop drawings for new replacement posts and wood elements. The Contract Drawings, along with the location and inventory of all the existing wood posts and elements, shall be utilized in the reconstruction-in-kind. **Payment for measurements, locating and documenting each wood post and wood elements to be removed shall be included in the Lump Sum bid for Item 04 - Pre-Construction Inventory.**

MATERIALS:

None specified.

CONSTRUCTION DETAILS:

All Alaskan Cedar laminated turned round timber posts shall be carefully removed from the existing steel sleeves by any means necessary, assuring the protection of the existing steel sleeves from damage by the Contractor's removal operations. At each post removal location, the existing steel sleeve shall be exposed by localized hand excavation to reveal the base plate and anchor bolts for inspection by the Engineer. After inspection by the Engineer, the sleeves shall either remain for re-use, and excavation backfilled to proposed sub-grade, or replaced or repaired under pay Items #18 and #19, as ordered by the Engineer.

Prior to commencing the removal of the existing wood 3x6-inch decking and other wood elements, the Contractor shall notify BPCA to allow inspection and determination of reuse or disposal. Pieces deemed salvageable by BPCA shall be carefully removed, stockpiled, and delivered to a nearby BPCA store house. Payment for salvaging and delivering of said re-usable materials shall be part of the lump sum bid for this item.

All existing suspension elements including cables and chains must be replaced-in-kind, with the exception that the replacements shall be stainless steel. All existing hardware and fittings shall be replaced in-kind. Payment to furnish and install the new suspension elements, hardware and fittings to be replaced-in-kind shall be made under the Lump Sum price bid for Item 17 - Reinstall Existing Steel and Other Playground Elements. No additional cost to BPCA will be allowed for connecting hardware.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work, including removal and disposal, shall be included in the Lump Sum price bid item of the Contract.

Progress payments for this item shall be made in proportion to the amount of work completed as determined by the Engineer.

ITEM 10 – REMOVE/REFURBISH/STORE ALL EXISTING STEEL AND OTHER PLAYGROUND ELEMENTS

DESCRIPTION:

The Contractor shall remove, refurbish, and store all existing steel and other playground elements, including all associated hardware where indicated in the Contract Documents, or where directed by the Engineer. Storage and refurbishing work shall be at the Contractors' shop. Repainting work shall be performed under a separate pay item. The duration of storage shall continue until the completed pieces are re-installed. This work item also includes full refurbishment of the existing pedal carousel, including pedal assembly and other moving parts being restored to original condition.

All existing suspension elements including cables and chains must be replaced-in-kind, with the exception that the replacement elements shall be stainless steel. All existing hardware and fittings shall be replaced in-kind, with the exception that the replacement hardware and fittings shall be stainless steel. Payment to manufacture and install the new suspension elements, cables, chains, hardware and fittings to be replaced-in-kind shall be made under the Lump Sum price bid for Item 17 - Reinstall Existing Steel and Other Playground Elements. No additional cost to BPCA will be allowed.

All existing plastic slides and cargo nets shall be replaced-in-kind. Payment to furnish and install the new plastic slides and new cargo nets being replaced-in-kind shall be made under the Lump Sum price bid for Item 17 - Reinstall Existing Steel and Other Playground Elements.

MATERIALS:

All replacement elements and repair materials shall meet or exceed the existing elements in size, material and quality, or the criteria in the Contract Documents. All replacement parts shall be of equal or better quality and shall be approved by the BPCA or by the Engineer.

Contractor shall submit shop drawings detailing the various repair methods, and/or replacement parts for approval by the BPCA or the Engineer.

CONSTRUCTION DETAILS:

All existing steel and other playground elements including all fittings will be removed, refurbished, and stored in a location satisfactory to the Engineer.

All components damaged by the Contractor shall be replaced with in-kind, as directed by the Engineer, at NO expense to the BPCA.

All steel elements covered under this item shall additionally be repainted and reinstalled under separate pay items, except elements having no existing paint, whereas, those existing unpainted elements shall be re-installed without paint work.

METHOD OF MEASUREMENT:

Removal, refurbishment and storage of all existing steel and other playground elements including all hardware and fittings will be measured as a lump sum for all sections or pieces removed (25%) and ready for reinstallation (75%) in accordance with the Contract Documents, and as directed by the Engineer.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work, including removal, refurbishing and storage, shall be included in the Lump Sum price bid item of the Contract.

Contractor shall be paid 25% of the lump sum for this item upon removal of all steel and playground elements and 75% of the lump sum for this item once ready for reinstallation to the satisfaction of the BPCA or the Engineer.

ITEM 11 – STABILIZED SOIL - AGGREGATE SUBBASE

DESCRIPTION:

Under this item, the Contractor shall furnish and uniformly place a "Stabilized Soil-Aggregate Subbase" of a natural or artificial mixture of soils and/or crushed materials in the places designated on the Contract Drawings or as determined by field conditions and ordered by the Engineer. The material for this item must be brought in from outside the contract limits at the expense of the Contractor.

MATERIALS:

All material acceptable for this item shall consist of a natural or artificial mixture of soils and/or crushed materials well graded from coarse to fine. Gradation of the granular material shall conform to the proportions indicated below:

<u>Sieve</u>	<u>% Passing</u>
2"	100
1"	80 - 100
1/4"	50 - 85
#10	30 - 70
#40	15 - 40
#200	6 - 12

The material shall also achieve a maximum dry density of not less than 145 pounds per cubic foot at optimum moisture content when tested in accordance with ASTM Designation 01557 – Standard Test Methods for Laboratory Compaction Characteristics of soil using Modified Effort, Latest.

The source of material shall be stripped of all sod, topsoil, overburden and other objectionable materials before the excavation operations for the material are started, and shall be kept stripped for a minimum of thirty (30) feet from the top of the working face of the source at all times. Should, at any time during work and for any reason the material fails to conform with the specified quality and gradation requirements, the Contractor shall, by the addition of selected acceptable material, and/or satisfactory manipulation, produce a material meeting the requirements detailed herein.

Control graded recycled Portland Cement Concrete and recycled plant mixed bituminous concrete materials may be used in conjunction with or in place of native materials to construct the stabilized soil base course item, provided the materials comply with all requirements herein. The final gradation obtained from the intermixing of coarse, fine and binder materials shall be within the limits stated for this item.

If the Contractor chooses to utilize recycled materials, he shall submit a written request to the BPCA or the Engineer and provide a Laboratory analysis of the material. Final approval will be made on the basis of the submitted laboratory analysis. Work shall not start until such approval is received.

The coarse fraction of the recycled material shall have a resistance to abrasion by the Los Angeles Abrasion Test of not more than 50%, (ASTM C131), nor show a total soundness loss greater than 25 percent using magnesium sulfate (ASTM C88). Of the particles retained on the 1/2" square sieve, not more than 30

percent by weight shall consist of flat or elongated pieces. A flat or elongated piece is defined herein as one, the greatest dimension of which is more than 3 times the least dimension.

The fine aggregate portion passing the No. 200 sieve shall not be greater than two-thirds of the fraction passing the No. 40 sieve, as determined by the wet analysis method. The fraction passing the No. 40 sieve shall have a liquid limit not greater 25, and a plasticity index not greater than 4.

SUBMITTALS:

The Contractor shall submit, in writing, all third party testing results to the Engineer.

The Contractor shall submit shop drawings for approval prior to construction.

CONSTRUCTION DETAILS:

Stockpiling and Sampling: After excavation from the source, and processing and blending in a manner approved by the Engineer, the material shall be stockpiled. During the blending operation, the materials shall be thoroughly mixed with the required amount of water to obtain maximum density. Stockpiles shall be located at a distance of not less than fifty (50) feet from the outside bottom edge of the conical stockpile built up under the processing plant conveyer, or not less than 50 feet from the toe of the working face of the source. Unless otherwise approved, in writing, these stockpiles shall be formed in layers having a maximum thickness of two (2) feet and to a height not exceeding twelve (12) feet, and shall contain not less than 1,000 cubic yards or the amount needed for the job, whichever is smaller. Removal of material from stockpiles for placement on the grade shall be by side excavation along nearly vertical faces from the full depth of stockpile. The use of a clam shell type bucket for loading the removal trucks or the use of pan type scrapers for moving the stockpile material to its final position as subbase course will not be permitted. No material shall be added to a stockpile after the stockpile has been sampled for approval. Only material from approved stockpiles shall be placed on the grade for this item. The presence of any oversize particles in the stockpile will be cause for rejection of the entire stockpile.

No material shall be removed for use from any stockpile until the stockpile has been sampled, tested, and approved in writing, by the Engineer, for placement on the grade. It shall be the duty of the Contractor to furnish suitable and approved excavating equipment for such sampling. Approval of a stockpile for placement on the grade shall not relieve, in any degree, the full responsibility of the Contractor to furnish, in its compacted position, a subbase course of select granular materials, the final condition of which conforms to all the requirements of the specifications for this item.

In the event the Contractor shall have a plant or procedure to produce Item 11 material of uniform quality, at a rate satisfactory to the Engineer, and such that satisfactory samples for tests can be obtained, the requirement for stockpiling may be waived. Prior approval of the Engineer must be obtained and the work must be done in accordance with such conditions as may be imposed in the approval. Such waiver shall remain in force only so long as a satisfactory material is produced.

Excavation:

The Contractor in accordance with the plans, specifications and requirements herein shall perform all earthwork operations required to achieve the proposed grades. This includes but is not limited to excavation, filling, grading, compaction, removal and replacement of unsuitable materials, disposal of any surplus

materials, importation of fill in borrow situation if required, any unforeseen items required to be removed in order for the work under this contract to be properly installed, and all other earthwork required as indicated on the Contract Documents, and/or as directed by the Engineer.

Excavation will include any structures indicated on the plans for removal in proposed subbase areas, and not paid for under any other item, shall be included in this item.

Disposal of Excavated Material:

The price bid for Item 07 – Remove and Dispose of Asphalt/Concrete Underlayment and Base Material, shall include the removal and disposal of all material excavated from the site in a manner acceptable to the Engineer.

Placing:

The spreading of any layer of subgrade shall be done with spreader equipment approved by the Engineer, and shall be spread to such thickness that the maximum depth of the layer, after compacting, will be as shown on the plans. The soil base shall not be in muddy or frozen condition. The material, as spread, shall be well graded, with no pockets of fine material. Segregation occurring during the spreading operation shall be corrected by remixing until a homogeneous mixture has been obtained.

Water shall be added in such amounts as the Engineer may consider necessary to obtain satisfactory compaction. Six (6) percent moisture shall be a guideline for the optimum moisture content, unless specific moisture density report on the base course material reveals otherwise. It shall be the contractor's responsibility to properly place and compact the stabilized soil aggregate subbase, and to correct any deficiencies occurring during the contract period.

The Contractor shall obtain a density of 95 percent standard proctor of maximum dry weight density in pounds per cubic foot as determined by A.S.T.M. Designation: D698-78.

Preparing Fine Grade:

Before any paving material is placed upon the fine grade, it shall be shaped to line and grade and compacted with an approved self-propelled roller weighing not less than 10 tons. All hollows and depressions which develop under rolling shall be filled with acceptable material conforming to the requirements of Item 6 and shall again be rolled. This process of shaping, rolling and filling shall be repeated until no depressions develop. After compaction, the top surface of the fine grade shall not extend above nor more than ½” below, true grade and surface at any location. The subgrade shall not be muddy nor otherwise unsatisfactory when the pavement is placed upon it. If the fine grade becomes rutted or displaced due to any cause whatsoever, the Contractor shall regrade same without additional payment.

Any scarified old macadam used for the subgrade shall be forked or raked over, after which the surface shall be compacted by rolling with a self-propelled roller weighing not less than 10 tons until an even and firm surface is produced, after which suitable earth, fine gravel or screenings shall be used to fill all voids, and again rolled. If necessary in order to satisfactorily compact the subgrade, the surface may be sprinkled with water during the process of rolling and filling.

In all cases, the subbase course must be so thoroughly compacted that significant rutting under the action of the compactor is not observed in the final passes on a lift. Rolling must begin at the sides and continue toward the center and shall continue until there is no movement of the course ahead of the roller.

After compaction, the top surface of this course shall be tested for smoothness and accuracy of grade and pitch with a sixteen (16) foot edge. Any portion found to vary by more than three-eighths of an inch in sixteen feet shall be scarified, reshaped, recompact, finished and otherwise completed to the above tolerance, and approved by the Engineer, before any succeeding course is placed at that location. Any depressions or holes shall be filled with approved material meeting the requirements for this item and the surface re-rolled.

No traffic, or hauling other than that necessary for bringing material for the next course, shall be permitted over this course.

The Contractor shall assume full responsibility for any contamination and/or degradation of any part of this course during construction and shall, at his own expense, remove any and all portions of this course which do not conform to the requirements of these specifications and replace these portions with specified material.

TESTING:

Upon completion of the stabilized soil-aggregate subbase, the Contractor shall request an inspection by the Engineer and shall not proceed with further pavement work until inspection has been made and the work approved. In addition, witness testing of subgrade base density must be performed by an independent testing laboratory in the presence of the Engineer prior to approval being granted for paving.

It the Contractor's responsibility to coordinate and schedule third party testing to confirm the requirements are being met. All costs associated with testing and correcting deficiencies shall be included in the unit price bid for this item.

BASIS OF PAYMENT:

The cost of all labor, equipment, materials and testing necessary to satisfactorily complete the work, shall be included in the Lump Sum price bid item of the Contract.

Progress payments for this item shall be made in proportion to the amount of work completed as determined by the Engineer.

ITEM 12 – ASPHALT CONCRETE UNDERLAYMENT

DESCRIPTION:

Under this item, the Contractor shall construct a hot, plant-mixed bituminous concrete pavement. It shall be laid on a prepared surface in accordance with these specifications and in conformity with the required lines, grades, thicknesses, and typical sections shown on the plans and/or as ordered by the Owner's Representative.

MATERIALS:

Asphalt concrete underlayment shall consist of an asphalt binder course meeting the requirements of the New York State Department of Transportation Standard Specification Section 403 Hot Mix Asphalt (HMA) Pavements for Municipalities – Type 3 Binder Course.

The binder course bituminous material shall meet the requirements of ASTM Designation: D 3381-81 Viscosity Grade AC-20. All materials used in the binder course mix including the bituminous material shall be proportioned as specified under the following table "Composition of Mixture":

COMPOSITION OF MIXTURE

SCREEN SIZES	GENERAL LIMITS PERCENT PASSING	JOB MIX TOLERANCE
1 ½"	100	--
1"	95-100	--
½"	70-90	±6
¼"	48-74	±7
1/8"	32-62	±7
No. 20	15-39	±7
No. 40	8-27	±7
No. 80	4-16	±4
No. 200	2-8	±2
Asphalt Cement, %	4.5-6.5	±0.4
Mixing and Placing Temperature Range °F Description and Typical Uses	250-325 Dense intermediate coarse with relatively low permeability	

Notes:

1. All aggregate percentages are based on the total weight of the aggregate. The asphalt content is based on the total weight of the mix.
2. The asphalt cement shall be introduced into the pugmill at a temperature compatible with that of the aggregate between the limits of 225°F and 350°F.

CONSTRUCTION DETAILS:

1. Asphalt Base Course: Minimum surface temperature of 40°F and rising at time of placement.
2. Sawcutting shall be along straight neat lines as indicated on the plans or where ordered by the Engineer. Saw cuts shall be made to the full depth of the existing pavement/sidewalk unless specified otherwise by the Engineer.
3. Preparation of Surface: Prior to placing the binder course, any defective areas of subbase shall be repaired as directed by the Engineer. Before any asphalt paving is placed, the surface shall be thoroughly swept and cleaned of all dirt, loose and foreign matter and be free from standing water.
4. The surface mixture shall be brought to the site in covered trucks so as to maintain a minimum temperature at time of placing of not less than 275°F. It shall be deposited and spread by means of an approved mechanical spreader to a depth, which after final compaction, shall be of the required minimum thickness. No walking will be permitted on the surface mixture during the laying operations.
5. The surface mixture shall be rolled immediately after placing or as soon as practicable without causing displacement. Rolling shall proceed continuously at the rate not to exceed 400 square yards per hour per roller. Rolling shall be done utilizing a “break down” roller and a “finishing” roller both of sufficient weight so that at completion the surface shall be fully compacted and smooth, free from all depressions, waves, bunches and unevenness. Rollers must be minimum 1-ton static and must have functional water spray at time of use. The laying and rolling operations shall be planned so as to provide nearly a continuous operation as possible and to allow the roller to pass over the unprotected end of the freshly laid asphalt. Placing asphalt next to cold joints will not be permitted. The Contractor shall, when directed by the Engineer, cut back or heat joints with infrared heaters to ensure proper bond between paving passes.
6. All paving that is defective in composition, density, grade (irregular by more than 1/4-inch when measured with a 10-foot straight edge) or does not otherwise comply with the plans and specifications, shall be removed by the Contractor and relaid at no additional expense to the Town.
7. Required period for paving is April 15 to November 15 otherwise written permission must be requested and approved by the Engineer.

Application of Tack Coat:

It shall be applied only when the surface is clean and dry or but slightly damp and unless otherwise permitted when the surface temperature is not less than 50°F. The asphaltic tack coat shall be applied for the full width by means of a pressure distributor at a temperature falling within the specified range. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

Progress payments for this item shall be made in proportion to the amount of work completed as determined by the Engineer.

ITEM 13 – NON-POROUS POURED-IN-PLACE PLAYGROUND SAFETY SURFACE

DESCRIPTION:

Provide all necessary materials, labor, and equipment to install a non-porous thermoplastic aliphatic polyurethane surfacing system designed to be used as the impact attenuating surface for playground areas over asphalt underlayment. The poured-in-place surface shall be designed for impact attenuation of a 10-ft critical fall height as defined by ASTM 1292.

REFERENCE:

ASTM F1292 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment

MATERIALS:

The safety surface shall consist of a top layer and an impact layer as manufactured by AquaFlex or approved equal and as specified below:

1. Top Layer:

- Top layer shall consist of a non-porous aliphatic thermoplastic polyurethane Pebbles and aliphatic polyurethane Binder. The Binder/Primer shall be a two-part aliphatic, chlorine-resistant polyurethane.
- Any equal product granule or pebble must be aliphatic polyurethane based; not rubber based such as EPDM, TPV, polyolefin-based TPE; must include a two-part aliphatic polyurethane binder proven to be chlorine resistant and must be 100% color. Recycled black material is not acceptable.

2. Impact layer:

- The impact layer is to be made of rubber and a binder with a minimum thickness as recommended for a critical fall height of 8'-0" throughout entire site meeting ASTM F1292.
- The impact layer can be a composite of foam and SBR rubber or SBR rubber alone. The foam material shall be 100% recycled cross-linked, closed-cell polyethylene foam that is heat-sealed together. The SBR rubber is to be a 50/50 blend of short strand and granular.
- The binder to be used shall be a single component aromatic polyurethane Binder/Primer.

Finish texture shall be Pebble grain.

Color: Selected from Manufacturer's color chart and shall be a light colored matrix submitted as samples, and mixed on site to the ratios in the approved sample.

Submittals

Contractor shall submit the following:

- Manufacturers Product Data and specifications
- ASTM 1028 Skid Resistance Test.
- Color samples of various light-colored matrix for review and approval by BPCA.
- Written statement on manufacturer's letterhead certifying that the top surface will be light stable for a period of 3 years from date of installation.
- Test results from a Zenon Arc Weatherometer exposure test from a third party shall be submitted by the installer to the requiring agency prior to installation of the surface. The surfacing system (top layer) shall be tested for a minimum of 10,000 hours and show no less than 15% tensile strength (PSI) degradation.
- Written manufacturer's warranty for water playgrounds.
- A product liability insurance certificate showing project owner as certificate holder.
- MSDS and Product data sheets for items.
- Impact attenuation test results prior to installation of the surface. The results shall be submitted on the letterhead of the independent testing lab. Impact attenuation results must comply with ASTM 1292 Standard Specification for Impact Attenuation of Surface Systems Under and Around Playground Equipment for the critical fall height of the equipment.

CONSTRUCTION DETAILS:

The installation of the new surface shall be completed by Surface America Inc. Certified Installer, or approved manufacturer's certified installer. Manufacturer's detailed installation procedures shall be submitted for approval prior to installation.

Certified installer shall follow the installation instructions included herein and as recommended by the manufacturer.

Surface Preparation - Asphalt

New asphalt must be at least 15 days old. Asphalt shall be broom scrub using a degreaser to remove any surface oils and power washed to remove any contaminants off the surface. Allow 24 hours for the surface to dry. AquaFlex CANNOT BE INSTALLED OVER ASPHALT CURED FOR LESS THAN 15 DAYS. Asphalt shall have a minimum of 1/8"/ft. slope to a drain to ensure proper drainage.

Surface Preparation - Concrete

If AquaFlex is being applied directly to concrete, then the concrete must be cured for at least 28 days. If an SBR layer is used between the concrete and AquaFlex, then the concrete must be cured a minimum of 14 days. New concrete must be light broom finish and can be prepared simply by acid etching. Add acid slowly to water in clean polyethylene buckets at a ratio of eight parts water to one part acid. Care should be taken to prevent splashing on workers. Protective clothes such as safety glasses, rubber gloves, boots, etc. should be used. The acid solution should be used on the concrete at a rate of 100 square feet per 5 gallons of acid solution. Concrete needs to be damp before applying acid. Using a stiff broom, scrub acid solution into the surface where the solution was poured and continue the process to other areas. Never let the concrete dry with acid on it. After 5 minutes, rinse the concrete with large amounts of clean water to remove all the acid solutions, and then allow the concrete to dry. Old concrete that is contaminated with grease or oil can be cleaned with a power-washer. Use a degreasing agent before power-washing. For concrete where a power-washer cannot be used, a diamond grinder can be used to lightly grind the surface to remove contamination. Concrete shall have a minimum of 1/8"/ft. slope to a drain to ensure proper drainage.

Concrete or asphalt base must have adequate drains to prevent water from backing up into the surface.

Surface Preparation – Metal Preparation

All metal surfaces must be rigid and structurally sound. Contamination such as grease, oil and dirt must be removed prior to coating. Rust or scale should be removed through mechanical means such as sanding or sand-blasting. The surface should be abraded until bright metal is showing. If the surface is to be exposed for an extended period of time, it should be treated with a 10% phosphoric acid solution to prevent new rust formation.

Foam Panels

The foam panels should be laid out in accordance with the splash pad design including the appropriate use zone. Cut the foam to fit around the legs of the equipment. Leave a gap of 1" between all the panels during the installation. Over concrete, adhere the foam to the sub-base using AquaFlex® two-part epoxy primer. Over the foam, prime the surface using AquaFlex single component binder/primer cut with 5% xylene. Apply a minimum of 1 1/8" of SBR Buffings over the top of the foam panels creating a consistent and even surface.

SBR Buffings

Over concrete, adhere the SBR to the concrete by applying a coat of AquaFlex single component aromatic polyurethane binder diluted with 5% xylene over the entire surface. Over foam panels, adhere the SBR to the foam by applying a coat of the above AquaFlex binder mixture over the entire surface. For surrounding curbing, prime the vertical surface of the curb using the above binder/primer mixture. Mix two 50-pound bags of SBR buffings (50/50 short strand/ granular mix) with 8 quarts of AquaFlex single component aromatic polyurethane binder so that the buffings are covered evenly. Spread the mix and trowel to the appropriate depth immediately after the application of the primer. Against curbing taper the SBR at a 45-degree angle so that the mixture is no less than 1" lower than the keyway cut in the curbing. Let cure.

Sealing

Premix AquaFlex HC aliphatic two-component Binder/Primer in a plastic pail with a paddle mixer and add 2 times the volume of primer of calcium carbonate to thicken the liquid to a paste consistency. Pour the entire mixture onto surface in a tight line. Using a hand float rubber squeegee pull the material over the surface making sure to cover the entire surface filling all voids, or use rubber hand squeegee to cover the surface filling all voids. Let cure until tack free.

AquaFlex Mixing and Finishing

Mix a ratio of 50 pounds large pebbles to 50 pounds of small pebbles creating 100 pounds of AquaFlex pebbles in a mortar mixer. Pre-mix 2.14 gallons of AquaFlex HC aliphatic two-component binder in an appropriate plastic container with a paddle mixer. Add the premixed 2.14 gallons of binder to the pebbles in the mortar mixer. Mix thoroughly so that all pebbles are covered evenly. Dump the mix onto the area and spread it with a cam rake or screed box at a thickness of 7/16". Fresno the area keeping the surface as level as possible. Hand or power-trowel the surface using a solution of AquaFlex Trowel Slick to lubricate the surface of the trowel. This will allow easier manipulation of the trowel. Do not use water on the surface as a troweling aid. The compounded mixture will compress to approximately 1/2". Let the surface set for 72 hours.

Vertical Surfaces

For vertical surfaces to receive the safety surfacing, prime the vertical surface of the curb, step risers, and/or play equipment posts using the SBR Binder. Binder shall not be applied on vertical surfaces above the elevation of the top layer ensuring no primer is exposed after installation is complete. Mix one fifty-pound bag of SBR buffings with 8.14 pounds of aromatic polyurethane binder so that the buffings are covered evenly. Spread the mix and trowel to the appropriate depth. Let cure.

Large Areas

All areas in excess of 1,800 square feet, or areas that require adjacent color pours due to designs, shall have this work done in strict accordance with the manufacturer's installation requirements with adjacent poured layer surfaces being flush throughout. The installer shall employ proper techniques to ensure that no gaps or separation will occur. All cold joints must be coated with binder prior to the application of the adjacent top layer, or other existing safety surface remaining.

Temperature

Temperature shall remain above 50 degrees F. throughout the entire installation and curing processes. Surface shall be dry, and no rain in the immediate forecast upon starting installation.

Other Surfaces

Existing manholes, valve boxes, and other castings to be covered over by the new safety surface system shall be formed and poured with a different top layer color matrix than the general area to identify and locate for maintenance. Submit details and procedures where manhole covers are encountered for approval

by the BPCA prior to installation. All curbs, step treads, and step risers having existing safety surfacing shall be resurfaced with the new safety surface system after removal of existing surfacing system.

Cleaning

The contractor should clean the job site and remove any excess materials. The contractor shall instruct the owner's personnel on proper maintenance and repair of the AquaFlex surface.

PRECAUTIONS:

Protect the installed playground safety surface from damage resulting from subsequent construction activity on the site.

Warranty: Provide warrantee from manufacturer for minimum of 3 years after installation.

PAYMENT:

The cost of all labor, equipment, materials and testing necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract. Payment shall be made upon completion and receipt of warranty. There shall be no partial payment for this item.

ITEM 14 - ALL PLAYGROUND STEEL ELEMENTS PAINTING

DESCRIPTION:

This work includes in-shop surface preparation, priming and painting of refurbished steel play unit elements. The play unit elements not painted (i.e. stainless steel firemen's poles, ladders, climbers, etc.) shall remain unpainted.

Field painting will not be allowed unless requested in writing to the Engineer, and written consent is given by the Engineer.

All steel elements covered under this work item shall additionally be stored, refurbished and reinstalled under separate respective pay items. No additional payment shall be made for handling and transportation of steel elements.

REFERENCES:

Codes and standards referred to in this Section shall be as follows:

SSPC - The Society of Protective Coatings (formerly of Steel Structures Painting Council)

SSPC-SP 10 Near white cleaning

SUBMITTALS:

Contractor shall submit Shop Drawings for approval of the Engineer. Submittals shall include, but not be limited to:

- **Color Chart:** The Contractor shall submit the manufacturer's chart for color selection for painting of items. Colors shall match existing.
- **List of paint products with mil thickness and solids by volume.** The list shall be in accordance with the requirements of this Section and the recommendations of the paint manufacturer.
- **Applicator's Quality Assurance:**

Submit list of a minimum of 3 completed projects of similar size and complexity to this work. Include for each project:

Project name and location

Name of owner

Name of contractor

Name of engineer

Name of coating manufacturer

Approximate area of coatings applied.

Date of completion.

- **Warranty:** Submit manufacturer’s standard warranty.

MANUFACTURERS AND MATERIALS:

- All coats of paint for any particular surface shall be from the same manufacturer.
- Paint shall be of approved color as selected by the Engineer.
- Proprietary protective coatings included herein by brand name or trade mark are given solely as standards of quality and for bidding purposes and do not preclude the use of an approved equivalent.
- Unless specified otherwise, the proprietary protective coatings of the manufacturer's latest products in regular production on the date of receipt of order shall be provided.
- Equivalent products shall be of a standard, regularly produced product of a manufacturer. Equivalent products shall be submitted on their applicable published printed literature that states the generic type, instructions for use, solids by volume, application rates, and chemical components of vehicles and solids. Should the manufacturer's literature of the product being offered call for higher film thickness, the greater film thickness shall be applied, and the submitted schedule shall so state.

Paint Information			
Coat	Product Name and Number	Volume Solids %	Dry Film Thickness (DFT) Mils per Coat
Primer	Carboline: Carboguard 60/61 or Carboguard 635	72 65	3.0-6.0 3.0-6.0
	Sherwin Williams: Copoxy Shop Coat Primer	72	2.0-4.0
	International Paint: Interseal 670 HS or Bar Rust 233HS	82	3.0-6.0
Finish Coats	Sherwin Williams: Macropoxy 646 PW	72-98	4.0-6.0 Up to 50 Mils
	International Paint: Interseal 670 HS or Bar Rust 233HS	82	3.0-6.0
	Carboline: Carboguard 61/691 Carboguard 635	80-100 65	4.0-8.0 4.0-8.0

CONSTRUCTION DETAILS:

Surface Preparation

Surface preparation prior to painting shall be in accordance with the following guidelines and as recommended by the painting material manufacturer.

All visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products and other foreign matter shall be removed by compressed air nozzle blasting, centrifugal wheels or other specified method. Discoloration caused by certain stains shall be limited to no more than 5 percent of each square inch of surface area in accordance with Society of Protective Coatings (SSPC-SP10).

Application

- All painting and coatings shall be shop-applied in accordance with the manufacturer's recommendations and approved submittals. **All steel play units shall be provided with shop coats of primer and two finish coats.**
- To prevent intercoat adhesion failure, recoating must be performed within the manufacturer's recommended recoat window, or 14 days, whichever is shorter.
- All paint shall be thoroughly mixed with mechanical mixers in accordance with the manufacturer's recommendations. After mixing the bottom of the container shall have no unmixed pigment.
- Painting shall not begin until cleaned surfaces have been inspected and approved by the Engineer.
- All paint shall be applied to produce a uniform, even coating, free of runs, sags, drips, ridges or other defects.
- Paint shall be applied to produce the specified dry-film thickness (DFT). Areas failing to meet the specified minimum dry-film thickness shall be top coated with the same paint to produce the total dry film thickness required. The top coating must be performed within the paint manufacturer's specified recoat window
- Touch-up of any and all damaged portions and imperfections of in shop-primed and finished items shall be accomplished using the same paint as used for the shop prime and finish. Surface shall be prepared prior to touch-up by wire brushing and sanding to remove rust, scale and loose paint.

Quality

The Contractor shall rectify any failures or breakdowns, loosening of the paint or coatings within a year after acceptance of work, regardless of the paint systems used. This will require removal of the entire coating where failure occurs and repainting with the coating system previously specified. Patching will not be allowed

Inspection

- The Contractor shall provide adequate access, suitable lighting, and time for inspections to be made in the shop. Any work done while the Engineer has been denied, or restricted from access, shall be recleaned and repainted at no additional cost to the BPCA
- Contractor shall allow inspection of the surface preparation prior to applying finish coats.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work in shop and touch-up in the field shall be included in the Lump Sum price bid item of the Contract.

Progress payments will be based on the percentage of steel cleaned and painted. 50% of the lump sum bid will be paid for surface preparation and priming. The remaining 50% will be paid following the finish coats and satisfactory completion of work.

ITEM 15 - FURNISH AND INSTALL NEW TO REPLACE EXISTING ALASKAN CEDAR LAMINATED TURNED ROUND TIMBER POSTS, REPLACE WITH NON-LAMINATED EQUIVALENT POSTS

ITEM 16 – FURNISH AND INSTALL NEW TO REPLACE ALL EXISTING ALASKAN CEDAR LAMINATED TIMBER AND WOOD ELEMENTS, REPLACE WITH NON-LAMINATED EQUIVALENT ELEMENTS

DESCRIPTION:

Under these items the Contractor shall replace all existing Alaskan Yellow Cedar Laminated Turned Round Timber Posts and Alaskan Yellow Cedar laminated and/or solid timber wood elements at the Playground, in various sections and configurations, at the locations and to the dimensions shown on the pre-construction survey and on the Contract Drawings **with non-laminated equivalents**. Posts and Wood Elements include, but not limited to, posts, beams, decking, bridge planks, filler panels, pergolas, carousel gazebo, rafters, etc. at all locations shown in the contract plans, or as directed by the Engineer.

The 1” x 1” continuous vertical lattice panel along the sidewalk side of the South Pergola does not require replacement. All other elements of Pergolas shall be replaced.

All existing suspension elements including cables and chains must be replaced-in-kind, with the exception that the replacement elements shall be stainless steel. All existing hardware and fittings shall be replaced in-kind, with the exception that the replacement hardware and fittings shall be stainless steel. Payment to manufacture and install the new suspension elements, cables, chains, hardware and fittings to be replaced-in-kind shall be made under the Lump Sum price bid for Item 17 - Reinstall Existing Steel and Other Playground Elements.

MATERIALS:

Alaskan Yellow Cedar turned round timber playground posts 4.5”, 6” or 8” Diameter and 8”x 8” at a variety of lengths. Posts shall be kiln dried Alaskan Yellow Cedar turned round timber grade #1 or better if overall length is greater than 10 linear feet. Posts with overall length less than 10 linear feet shall be from solid select for appearance and seasoned dry peeled logs.

All Alaskan Yellow Cedar Wood Elements other than posts shall be from solid Alaskan Yellow Cedar Grade C and better clear kiln dried with a smooth finish.

Alaskan Yellow Cedar turned round timber posts and solid wood elements shall be as provided by Bear Creek Lumber Inc., Winthrop, WA; or approved equal.

All posts, decks, beams, steps, filler panels, rails and other wood elements shall be pressure treated with a water-borne wood preservative conforming to the requirements herein specified.

WOOD PRESERVATIVE:

Waterborne wood preservatives shall be Alkaline Copper Quaternary (ACQ), Copper Azol, or Ammoniacal Copper Arsenite (ACA) conforming to the requirements of American Wood-Preservers' Association Standard P5. No Chromated Copper Arsenate (CCA) treatment shall be utilized.

Waterborne wood preservatives shall be applied in conformance with American Wood Preservers' Association Standards C1, C2, C3, C4, C5, C14 and C18. Minimum net retention shall be as required for material in contact with soil.

BASIS OF ACCEPTANCE:

Acceptance of this material shall be in accordance with procedural directives of BPCA.

Alaskan Yellow Cedar Turned Round Timber shall be sound, free from loose knots or decay, and with no through checks on tops or butts. Posts, beams, decking, and other miscellaneous wood components shall be machine peeled to a smooth uniform appearance and free from all inner bark.

The Playground posts and other elements shall conform to the existing dimensions or as shown on the Contract Drawings and be constructed from the wood specified above.

Fittings and Fasteners

Material for fittings and fasteners shall be hot dipped galvanized A307 steel with a 60,000 psi tensile strength.

CONSTRUCTION DETAILS:

The contractor shall furnish and install Alaskan Yellow Cedar Turned Round Timber Playground post and other wood elements, plumb and true to the lines, grades, and limits established and according to the details as shown on the Contract Drawings and as directed by the Engineer.

Slotted wood beams which cover steel beam members of play units shall be through bolted to the steel member upon replacement, in lieu of the previous connection (construction adhesive). All finished timber elements shall have eased edges and corners. All protruding hardware shall be countersunk into wood elements.

All work shall be completed in a workman-like manner and in accordance with acceptable construction practices to insure a neat and finished appearance.

METHOD OF MEASUREMENT:

The quantity of Alaskan Yellow Cedar Laminated Turned Round Timber Posts (of various size sections) to be paid shall be the linear feet of post (above and below grade) furnished and placed as shown on the Contract Drawings. Cost shall include fitting into sleeves, various woodworking required for fitting of attachments, and all associated hardware to anchor to existing sleeves.

All Alaskan Yellow Cedar Wood Elements furnished and installed in the Playground, Pergolas, Gazebo areas, except posts, shall be paid as a Lump Sum. The Lump Sum bid shall include furnishing all wood elements, all woodworking required for fitting and attaching other elements, and all new hardware to install to match existing.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work, including milling and drilling for attachments, fitting and bolting post bottoms into steel anchor sleeves, and other incidentals necessary to complete the work in accordance with this specification and to the satisfaction of the Engineer shall be included in the Lump Sum price bid item of the Contract.

Progress payment shall be made at 25% upon delivery, and remaining 75% upon installation, to the satisfaction of the Engineer.

ITEM 17 - REINSTALL EXISTING STEEL AND OTHER PLAYGROUND ELEMENTS

DESCRIPTION:

Contractor shall furnish and reinstall:

- All new plastic slides and associated hardware to match existing in quantity and dimensions.
- All new cargo net assemblies and associated hardware to match existing in quantity, color, and dimensions.
- All steel suspension elements including cables and associated hardware replaced in-kind, with the exception that the replacement elements shall be stainless steel.

Contractor shall reinstall:

- All existing refurbished steel and other playground elements, including new hardware and fittings

All playground elements shall be installed in original locations, where indicated in the Contract Documents or where directed by the Engineer.

Suspension Bridge shall be installed with head clearance as shown on the Contract Drawings in lieu of the clearance existing at time of the Pre-Construction Survey. New suspension elements shall be coordinated accordingly.

MATERIALS:

All replacement and repair materials shall meet contract drawing criteria specified in the existing details. All replacement parts should be of equal or better quality and approved by the BPCA, or by the Engineer.

Contractor shall submit shop drawings for new plastic slides, new cargo net assemblies, and new suspension elements and hardware for approval by the BPCA or the Engineer.

CONSTRUCTION DETAILS:

All existing steel and other playground elements including all hardware and fittings which was previously removed, refurbished, and stored, shall be reinstalled in accordance to Contract Documents, preconstruction survey and to the satisfaction of to the Engineer.

All components damaged by the Contractor shall be replaced with in-kind, as directed by the Engineer, at NO expense to BPCA.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work in shop and touch-up in the field shall be included in the Lump Sum price bid item of the Contract.

ITEM 18 - REPAIR SPALLING AND/OR CRACKS ON EXISTING PRE-CAST CONCRETE TABLE/SEATS

DESCRIPTION:

The work included in this item shall consist of furnishing all labor, materials, and equipment to perform all work necessary for preparing and repairing spalled or cracked areas of all the existing pre-cast concrete tables or seats in-place within the site limits

REFERENCES:

ASTM C33 - Concrete Aggregates.

ASTM C881 - Epoxy-Resin Base Bonding System for Concrete.

ACI 503.4 - Standard Specification for Repairing Concrete with Epoxy Mortars.

ACI 546 - Guide to Concrete Repair

MATERIALS:

EPOXY BONDING AGENT:

Epoxy bonding agent shall conform to ASTM C881 Type I, II, IV or V; Grade 2 for epoxy resin adhesives, depending on the application. The class of epoxy bonding agent shall be suitable for all ambient and substrate temperatures.

The epoxy bonding agent resin shall be:

- Sika Armatex 110 as manufactured by Sika Corp. Lyndhurst, NJ.
- CR 246 as manufactured by Sto Concrete Restoration Division, Atlanta, GA.
- Duralbond as manufactured by Tamms Industries Co., Kirkland, IL.
- Or an approved equal.

ANTI-CORROSION COATING:

Anti-corrosion coating shall be a two-component, polymer-modified cementitious material.

Coating material shall be:

- Sika Armatex 110 as manufactured by Sika Corp., Lyndhurst, NJ.
- CR 246 manufactured by Sto Concrete Restoration Division, Atlanta, GA.
- Or an approved equal.

STRUCTURAL CRACK REPAIR MATERIAL:

Structural crack repair material shall be a two-component, polymer-modified cementitious mortar and shall conform to EPA/USPHS standards for surface contact with potable water supplies.

Structural crack repair (patch repair) material shall be:

- Sikatop 123 Plus as manufactured by Sika Corp., Lyndhurst, NJ.
- CR 735 Trowel-Grade Mortar as manufactured by Sto Concrete Restoration Division, Atlanta, GA.
- Duraltop Gel as manufactured by Tamms Industries, Kirkland, IL.
- Or an approved equal.

EPOXY CRACK REPAIR BINDER:

Epoxy crack repair binder shall be a two-component, 100 percent solids, high-modulus, low viscosity epoxy adhesive designed for structural repair.

Epoxy crack repair (injection repair) binder shall be:

- Sikadur 35-Hi-Mod LV as manufactured by Sika Corp., Lyndhurst, NJ.
- CR 633 Epoxy Binder as manufactured by Sto Concrete Restoration Division, Atlanta, GA.
- Duralcrete LV as manufactured by Tamms Industries, Kirkland, IL.
- Or an approved equal.

SPALL REPAIRS NOT REQUIRING FORMWORK:

Spall repairs not requiring formwork shall be repaired using a two-component, polymer-modified cementitious mortar and shall have a minimum 28-day compressive strength of 7,000 psi.

Spall repair mortar for use in horizontal applications shall be:

- Sikatop 122 Plus as manufactured by Sika Corp., Lyndhurst, NJ.
- CR 700 as manufactured by Sto Concrete Restoration Division, Atlanta, GA.
- Duraltop Fast Set as manufactured by Tamms Industries, Kirkland, IL.
- Or an approved equal.

Spall repair mortar for use in vertical applications shall be:

- Sikatop 123 Plus as manufactured by Sika Corp., Lyndhurst, NJ.
- CR 702 as manufactured by Sto Concrete Restoration Division, Atlanta, GA.
- Duraltop Gel as manufactured by Tamms Industries, Kirkland, IL.
- Or an approved equal.

All spall repair materials shall conform to EPA/USPHS standards for surface contact with potable water supplies.

SUBMITTALS:

The Contractor shall submit Shop Drawings and material specifications for the approval of the Engineer. Submittals shall include, but not be limited to:

- Proposed methods and corresponding area to be repaired.
- Samples of all materials proposed to be used.
- Material certifications and technical data sheets on all grouts, mortars, chemical resins, sealers, aggregates and repair products specified.

CONSTRUCTION DETAILS:

All Work shall be performed during dry weather and appropriate temperature conditions in accordance with the manufacturer's recommendations. All unfinished work shall be protected during inclement weather with tarpaulins or heavy gage polyethylene sheeting. All Work in spaces within structures shall be performed at temperature and conditions suitable for proper curing in accordance with the manufacturer's recommendations.

Concrete rehabilitation Work shall be coordinated and sequenced by the Contractor. Scaling, broken, loose and disintegrating materials shall be removed by use of hand tools or power driven saws, down to solid unyielding material.

Scaling, broken, loose and disintegrating materials shall be removed by use of hand tools or power driven saws, down to solid unyielding material.

All surfaces shall be thoroughly cleaned of efflorescence, oils, grease and other objectionable material in area to be repaired in accordance with the manufacturer's recommendations.

Epoxy Bonding Agent:

As directed by the Engineer, an epoxy bonding agent shall be used to adhere fresh repair material to existing concrete. Existing concrete surfaces shall be roughened prior to application of bonding agent. Concrete surface shall be clean and sound, free of all foreign particles and laitance. Repair material shall be placed

while bonding agent is still tacky. If bonding agent cures prior to placement of repair material, bonding agent shall be reapplied.

Repairing concrete with epoxy mortars shall conform to all the requirements of ACI 503.4 and ACI 546, and as specified herein.

Anti-Corrosion Coating:

Reinforcing steel cut or exposed during alteration and/or repair operations shall be sandblasted, cleaned and coated with an anti-corrosive coating.

Coating shall thoroughly cover all exposed parts of the steel and shall be applied according to manufacturer's recommendations.

Structural Crack Repair:

As directed by the Engineer, all existing structural cracks 1/16-inch and wider to be repaired shall utilize a structural crack repair material. Rout crack to 3/4-inch wide by 3/4-inch deep V-notch to expose sound concrete.

Where rebar has deteriorated, crack shall be routed to expose 3/4 inch all around rebar. The resulting void in concrete shall be patched flush with the existing concrete surface using structural crack repair material.

Epoxy Crack Repair:

Cracks 1/4-inch and Narrower: As directed by the Engineer, all existing structural cracks 1/4-inch or narrower to be repaired shall be pressure injected an epoxy crack repair binder into the prepared crack. Crack surface shall be sealed and injection ports installed per manufacturer's recommendations.

Holes drilled for injection ports shall not cut rebar. If rebar is encountered during drilling, the hole shall be abandoned and relocated, and the abandoned hole shall be patched immediately with non-shrink grout flush with the surface of the existing concrete.

Once the surface sealing material has cured, inject crack with epoxy crack repair binder using pressure injection equipment as directed by the manufacturer.

Cracks wider than 1/4-Inch: As directed by the Engineer, all existing structural cracks wider than 1/4 inch to be repaired shall be gravity fed an epoxy crack repair binder into the prepared crack.

Concrete surface shall be routed to form a minimum 1/4 inch wide by 1/4 inch deep V-notch and the crack cleaned to remove all loose and foreign particles. Crack shall be filled with clean, dry sand and then epoxy crack repair binder poured into V-notch, completely filling crack.

As binder penetrates into crack, additional binder shall be applied to the V-notch.

SPALL REPAIR:

Concrete Removal

Mark a rectilinear perimeter around the damaged section of concrete, extending 1½” beyond the outer most edge of the required removal.

Provide ¾” deep saw cut along marked rectilinear edge to provide a fault line for demolition and to prevent feathered edges. Do not cut or damage underlying reinforcement.

Utilizing a 15lb pneumatic hammer tool (or similar hand tool) remove all deteriorated concrete inside enlarged cavity following the marked outline

Extend concrete removal to a minimum depth of ¾” beyond steel reinforcing bar within the cavity.

Cavity Preparation

Upon completing removal of concrete, remove all loose and/or delaminating rust and make all areas available for inspection by engineer for additional instruction.

Clean all approved uncovered reinforcing bars with a wire brush only. remove all rust, scale to bring repair to bright metal. In the event that rust extends beyond previously observed, notify engineer for further instructions.

At areas where existing reinforcing steel projects beyond the specified 1½", reinforcing maybe bent or cut at the direction of the engineer only.

Clean cavity of all debris with compressed air and flush cavity with potable water. do not use any tools or material that may cause bond-inhabitation.

Allow cavity and bars to dry prior to application of corrosion resistant rebar coating. See corrosion resistant rebar coating requirement on section 3.03.

Prepare cavity per manufacturer's specifications to receive bonding agent and cementitious topping. saturate cavity utilizing clean potable water free of contaminants. Ensure surface is dry and free of standing water prior to application of bonding agent.

Apply bonding agent per manufacturer's specification. See epoxy bonding agent requirement above.

No pins or additional reinforcement is required, unless directed by the engineer to replace damaged reinforcement.

All patching shall provide a final finished surface which is flat, level and even with the existing concrete surface. repair mortar shall not be feathered to meet existing concrete surface.

Final patching on horizontal surfaces shall receive a finish consistent with the finish on the existing structure.

CURING:

All repair materials utilized shall be cured in strict accordance with manufacturer recommendations.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

ITEM 19 – REPLACE EXISTING SANDBOX/PLAYGROUND SAND, COARSE FINE SAND WASHED AND SCREENED

DESCRIPTION:

The work shall consist of the removal and proper disposal of the existing sand, and placement of new sand in the areas shown on Contract Drawings for up to 12” thick.

MATERIALS:

New sandbox/playground sand shall consist of Coarse Fine white beach sand consisting of hard, durable, uncoated grains, free from lumps of clay or other deleterious matter, of such size that when dry one hundred percent (100%) shall pass a No. 20 sieve and not more than five percent (5%) shall pass a No. 100 sieve. The sand may be rejected if it contains more than six percent (6%) by volume of loam and silt.

The new sand may be rejected for this class if it contains more than ten percent (10%) by weight of loam and silt.

Two (2) ten-pound (10 lb.) samples of proposed sand shall be submitted for prior to delivery and installation. Samples shall be submitted with a gradation analysis for review and approval by the BPCA and Engineer.

CONSTRUCTION DETAILS:

Existing sand shall be removed and properly disposed of from the two (2) areas indicated on Contract Drawings, to a depth of 12”. New approved sand shall be placed in the locations shown to a depth of 12”, and kept free of debris until project completion.

The cost for removal and proper disposal of the existing playground sand shall be included in the unit cost for new sand.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

Partial payment for this item shall be made after removal and disposal of the existing sand at 25%. Remaining payment for this item shall be made upon placement of new sand to the depth described, to the satisfaction of the Engineer.

ITEM 20 - REPAINT EXISTING 4'0" HT. STEEL PICKET FENCE WITH GATES AND HANDRAILS, IN-PLACE

DESCRIPTION:

The work shall consist of preparation and painting existing steel fence, gates, and handrails in-place in accordance with the Contract Documents and specifications, and where directed by the Engineer.

Reference SSPC – The Society for Protective Coatings (formerly Steel Structures Painting Council).

MATERIALS:

First coat of primer for previously painted surfaces in sound condition shall be water borne acrylic coating having a dry film thickness of 0.9 to 1.0 Mils, similar to the Extreme Bond Primer as Manufactured by Sherwin Williams Company, or approved equal.

Second coat of primer for previously painted steel surfaces shall be Kem Bond HS Metal Primer B50NZ3, red oxide, as Manufactured by Sherwin Williams Company, or approved equal.

Finish coats shall be two coats of Steel Master 9500 Silicone Alkyd, Color black, as Manufactured by Sherwin Williams Company, or approved equal. Finish coats shall be semi-gloss having a dry film thickness of 1.7 to 3.0 Mils minimum.

CONSTRUCTION DETAILS:

Immediately prior to painting, all surfaces of frameworks shall be thoroughly clean. All surfaces shall be cleaned in accordance with SP-1 Solvent Cleaning. Cleaning shall be performed with a solvent such as mineral spirits, xylol or turpentine to remove all dirt, grease and foreign matter. Surfaces that show evidence of loose mill scale, non-adherent rust, peeling paint and other deleterious matter shall be cleaned in accordance with SP-2 Hand Tool Cleaning, a method generally confined to wire brushing, sandpaper, hand scrapers or hand impact tools or SP-3 Power Tool Cleaning, a method generally confined to power wire brushes, impact tools, power sanders and grinders in order to achieve a sound substrate. Paint shall be applied immediately after final SP-1 solvent cleaning and drying.

All paints shall be applied when ambient air temperature is 50 degrees F. and rising. Surfaces to be painted shall be moisture free. No painting shall be allowed below the minimum ambient air temperature. No painting shall occur below the temperature at which moisture will condense on surfaces per Dew Point Chart.

Application of paint shall be performed in a neat and workmanlike manner. The paint shall be applied by brush, and thoroughly worked into the surface and into all cracks and fissures without leaving fins or runs. Drop clothes shall be used to protect existing ground surfaces and adjacent areas and appurtenances.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

ITEM 21 - REPOINT JOINTS AND/OR SEALANT AT EXISTING GRANITE WALLS AND SEATS IN THE GARGOYLE SPRAY POOL AREA

DESCRIPTION:

This work shall include the repointing the joints of the existing granite seatwall in the Gargoyle Spray Pool area only. The existing joints shall be cleaned of loose mortar and sealant, and repointed and resealed to match existing colors and finishes. Clear waterproofing sealant shall be applied to all repointed mortar joints after curing is complete.

REFERENCES:

ASTM C404 - Standard Specification for Aggregates for Masonry Grout

ASTM C476 - Standard Specification for Grout for Masonry

ASTM C595 - Standard Specification for Blended Hydraulic Cement

ASTM C780 - Standard Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry

ASTM C1329 - Standard Specification for Mortar Cement

ASTM C1019 - Standard Test Method for Sampling and Testing Grout

NYCBC - Section BC 2103 Masonry Construction Materials, BC 2104 Construction

MATERIALS:

Complete selection of standard and custom colors of epoxy grout used for pointing mortar, for final selection by Engineer.

Label samples to indicate type and amount of colorant used. Engineer's review will be for color only. Compliance with all other requirements is the responsibility of Contractor.

Aggregates for Grout: Provide fine and coarse aggregates that conform to the requirements of ASTM C404, ASTM C476.

Coloring Additive: A mineral-oxide pigment, harmless to mortar set and strength shall be provided. Colors shall be as selected by the Engineer.

Epoxy Pointing Mortar:

- Provide a two-component non-sag epoxy resin and hardener with mineral filler complying with ANSI A118.3.
- Colors: Complete selection of standard and custom colors for final selection by Engineer.

-
- Provide epoxy mortar capable of water-cleanup during installation but which, after curing, is waterproof.

CONSTRUCTION DETAILS:

- Epoxy pointing mortar shall be mixed in strict accordance with the manufacturer's instructions.
- Clean out any loose mortar and sealant from the horizontal and vertical joints in the granite. Prior to placing mortar or grout, remove laitance, loose aggregate and any substance that may prevent mortar or grout from bonding to the foundation
- Installation of epoxy grout shall be in accordance with the manufacturer's instructions and recommendations.
- No work under this item shall be performed unless temperature is above 40 degrees F. and rising. No sub-freezing temperatures shall be forecasted for the entire manufacturer's recommended time for curing.
- Pre-wet all surfaces within the joint and remove any standing water.
- Place or inject mortar into joints, compact as required to eliminate voids.
- Where mortar injection is used, the outermost 5/8" shall be placed by hand.
- Finish the joint surface uniformly and leave the granite and mortar surfaces clean.
- Repointed joints shall match the existing adjacent stone in color and have a smooth finish.
- Apply waterproofing sealer on the cured mortar joints as recommended by manufacturer.
- Existing joints having flexible sealant shall be raked out, cleaned, backer rod installed, and new sealant applied per manufacturer's recommendation. Color to match the adjacent stone, or as directed by the Engineer.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

ITEM 22 – REMOVE/STORE AND REINSTALL BENCHES, PICNIC TABLES, AND OTHER SITE FURNISHINGS IN THE AREA AFFECTED BY CONSTRUCTION

DESCRIPTION:

The work shall consist of the removal, storage and reinstallation of the existing benches, picnic tables, sand trays, and other site furnishings within the site limits affected by construction. Areas indicated on the Contract Drawings for replacement of the safety surface underlayment and crushed stone base shall be considered as affected by construction.

MATERIALS:

Anchor bolts utilized to reinstall benches and other furnishings shall be hot-dipped galvanized steel HILTI ½” KWIK BOLT-TZ or approved equal in accordance with ASTM 307, Grade A at a minimum ½” diameter and to a minimum depth as per manufacturer’s recommendation, or as approved by the Engineer.

Existing concrete piers and/or slab footings for furnishings shall remain undisturbed, or at the discretion of the Engineer, replaced with new concrete footings. New concrete footings, if ordered, shall be paid under Item #20 Cast-In-Place Concrete.

CONSTRUCTION DETAILS:

Existing benches, picnic tables, and sand trays shall be carefully removed, and stored at a location designated by the BPCA. Work shall be carried out to completion without damaging the existing concrete footings. Benches and other furnishings shall be protected from damage during storage. All furnishings shall be reinstalled after the underlayment work is completed. The fixed benches shall be re-anchored to the existing concrete footing using two-part adhesive or wedge type anchors, and/or anchored to a new concrete footing using embedded “J” bolts, or as directed by the Engineer.

New concrete footing, if required, shall be paid under Contract Item 20 Cast-In-Place Concrete.

BASIS OF PAYMENT:

The cost of all labor, materials and equipment necessary to remove, store and reinstall site furnishing affected by construction shall be included in the Lump Sum price bid item of the Contract.

New concrete footing, if required, shall be paid under the Unit Price Item UP4 – Concrete Footing.

ITEM 23 – REPLACE EXISTING DRINKING FOUNTAIN WITH NEW TROUGH-TYPE DRINKING FOUNTAIN

DESCRIPTION:

The work shall consist of the removal and disposal of the existing drinking fountain, plug and abandon the existing drain piping below-grade, and installation of a new drinking fountain, including proper connection to the existing water supply compliant with NYS Plumbing Code.

MATERIALS:

New drinking fountain shall be Pedestal-Type Barrier-Free design, consisting of welded heavy duty 12 Gauge galvanized steel construction, stainless steel recessed push button type valve and strainer assembly, polished chrome-plated brass adjustable flow bubbler with guard, bib/faucet option, drain-free, access doors for maintenance, vandal resistant hardware, 100% lead-free design, CSA Certified, similar to Model 3202G manufactured by Haws Company; or approved Equal.

CONSTRUCTION DETAILS:

Existing drinking fountain shall be carefully removed and properly disposed of. Work shall be carried out to completion without damaging the existing concrete footing, drain and water supply piping. The existing drain pipe shall be plugged and abandoned below-grade to the satisfaction of the Engineer. The new drinking fountain shall be anchored to the existing concrete footing (if appropriate for installation as per the manufacturers recommendation). Concrete anchors shall be wedge expansion anchor type Kwik Bolt II as manufactured by Hilti Inc or Trubolt Wedge Anchor as manufactured by ITW.

If ordered by the Engineer, a new concrete footing shall be placed in the same location as the existing and new drinking fountain shall be anchored to the new concrete footing meeting the manufacturers recommendation using embedded “J” bolts, or as directed by the Engineer.

Installation shall include anchoring of the fountain to the existing or new concrete footing and connection to the existing water supply and any incidentals necessary to complete the work to the satisfaction of the Engineer.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

ITEM 24 - CLOSE-OUT

DESCRIPTION:

Under this work item Contractor shall:

1. Remove all temporary facilities including offices, storage and sanitary facilities set up on site.
2. Provide as-built drawings
3. Provide all warranties including but not limited to: warranty for safety surface, painting and drinking fountain.
4. Compile and submit bound copies of all maintenance manuals and all special tools included with the equipment
5. Provide cleaning and final adjustment of the various playground components.

MATERIALS:

None specified.

CONSTRUCTION DETAILS:

At the completion of the Work, the Contractor shall remove all rubbish from and about the Site of the Work, and all temporary structures, construction signs, tools, materials, supplies and equipment which it or any of its Subcontractors may have used in the performance of the Work. Contractor shall broom clean paved surfaces and rake clean other surfaces of grounds.

The Contractor shall thoroughly clean all materials, equipment and structures on Site so as to leave the Work in a clean and new appearing condition

The Contractor shall remove spatter, grease, stains, fingerprints, dirt, dust, labels, tags, packing materials and other foreign items or substances from all surfaces and equipment on Site.

BASIS OF PAYMENT:

The cost of all labor, equipment and materials necessary to satisfactorily complete the work shall be included in the Lump Sum price bid item of the Contract.

UNIT PRICE ITEMS

UNIT PRICE ITEM 1 (UP1) - REPLACE EXISTING GALVANIZED STEEL SLEEVE AND BASE PLATE ASSEMBLY FOR WOOD POSTS

UNIT PRICE ITEM 2 (UP2) - REPLACE ANCHOR BOLT FOR EXISTING STEEL SLEEVE ASSEMBLY

DESCRIPTION:

Item UP1: This item of work shall consist of replacing existing galvanized steel sleeve and base plates for various size wood posts. Work shall include excavation, concrete and galvanized steel sleeve, base plates, anchor bolts and thru bolts necessary for a complete installation and as shown on the Contract Drawings. This item will be used if upon inspection of the sleeve and base plate, the Engineer determines the replacement to be necessary.

Item UP2: This item of work shall consist of replacing anchor bolts for existing steel post sleeves assemblies in accordance with Contract Drawings, or as directed by the Engineer. This work will only be performed when ordered by the Engineer.

REFERENCE STANDARDS

ASTM A307 – Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength

ANSI/AWS D1.1 – Structural Welding Code – Steel

ASTM A563 – Carbon and Alloy Steel Nuts

MATERIALS:

Concrete anchor bolts shall be hot-dip galvanized with a 60,000-psi tensile strength in accordance with ASTM A307 Grade A. Anchor bolts shall be of the size and configuration shown on the Contract Drawings and shall be supplied with hexagonal nuts meeting the requirements of ASTM A563 Grade A.

Sleeves, base plate and thru bolts including nuts and washers used in the installation of the wood post footings will be hot dipped galvanized steel. Sleeves for all wood posts shall be Schedule 40, thru bolts shall be ¾-inch diameter, anchor bolts shall be 1-inch diameter and base plates shall be 1-inch thick as shown on the Contract Drawings.

Concrete anchors shall be wedge expansion anchor type Kwik Bolt II as manufactured by Hilti Inc or Trubolt Wedge Anchor as manufactured by ITW.

Non-shrink grout shall be used for grouting beneath the base plates. The grout material shall be an approved ready to use mixture requiring only water for use at the job site. The compressive strength of 2-inch cubes shall be 3,000 psi at 7 days. Non-shrink grout shall be Sikagrout 212 as manufactured by Sika Corporation, Masterflow 713 as manufactured by Master Builders Solutions or approved equal.

CONSTRUCTION DETAILS:

Two options are included in the Contract Drawings for the installation of the wood post sleeve: Pre-Embedded J Anchors and Post-Installed Expansion Anchors. Contractor shall follow the details shown on the Contract drawings and the applicable installation instructions included herein.

Installation:

1. Anchor bolts shall be installed in accordance with AISC "Code of Standard Practice" by setting in concrete while it is being placed and positioned by means of a rigidly held template
2. The installation of concrete anchors shall be done in strict conformance with the manufacturer's recommendations
3. No concrete anchor shall be installed before base concrete has attained specified 28-day strength
4. Expansion anchors shall be embedded to the depths shown on the Contract Drawings. If no embedment depth is given, the standard embedment depth as recommended by the manufacturer shall be used
5. Prior to the placement of non-shrink grout beneath base plates, the bottom surface of the plates shall be cleaned of all foreign materials, and bearing surface shall also be cleaned of all foreign materials and roughened to improve bonding.
6. Anchor bolts shall be tightened after the supported members have been positioned and plumbed and the non-shrink grout has attained its specified strength.
7. Baseplates shall be grouted with non-shrink grout to assure full uniform bearing. Grouting shall be done prior to placing loads on the structure
8. Baseplate shall be welded to the sleeve as shown on the contract drawings.
9. All welding shall be performed in accordance with ANSI/AWS D1.1 and ANSI/AWS D1.4. No welding shall be performed when the base metal temperature is lower than 32 degrees Fahrenheit.
10. Each welder assigned to work on this Contract shall be certified in conformance with ANSI/AWS D1.1, Section 4. Welders shall also be New York City certified. Proof of certifications shall be submitted with the shop drawing.

Shop drawings shall be prepared for Engineer's approval to include materials of construction and installation details.

METHOD OF MEASUREMENT:

Item UP1: Payment for this work shall be measured by the number of complete galvanized steel sleeves furnished and replaced for wood posts, including excavation, concrete, sleeve, base plate, anchor bolts and thru bolts in accordance with the plans and specifications.

Item UP2: Payment for this work shall be measured by the number of anchor bolts replaced for existing steel post sleeves assemblies in accordance with the Contract Documents, if ordered by the Engineer.

BASIS OF PAYMENT:

The unit prices bid shall include the cost of furnishing all labor, materials, and equipment necessary to satisfactorily complete the work.

Payment will be made under:

Item No.	Item	Pay Unit
UP1	Replace Existing Galvanized Steel Sleeve and Base Plate Assembly for Wood Posts.	Each
UP2	Replace Anchor Bolts for Existing Steel Sleeve Assembly.	Each

UNIT PRICE ITEM 3 (UP3) - CAST-IN-PLACE CONCRETE

DESCRIPTION:

- A. This item shall consist of cast-in-place concrete footing constructed in accordance with these specifications at the locations and to the dimensions, shown on the Contract Documents or as ordered by the Engineer.

MATERIALS:

- A. General: The concrete shall be composed of coarse aggregate, fine aggregate, Portland cement, Type II A or Type III A, and water.
- B. Individual Materials: Each ingredient shall conform to the following requirements:
1. Cement: The cement shall conform to the requirements of the “Standard Specifications for Portland Cement, ASTM Designation: C-150”, as currently revised, and/or “Standard Specifications for Air-Entraining Additions” ASTM Designation C-226, as currently revised.
 2. Aggregates: The aggregates shall be non-reacting broken stone (maximum size 1”) or screened gravel (maximum size 1”), and fine (washed) aggregate all conforming to “Specifications for Concrete Aggregates” ASTM Designation: C-33, as currently revised.
 3. Water: The water for mixing and for washing aggregates shall be completely free of organic acids, alkalis and oil. The water shall be potable and the quality shall meet the requirements of AASHTO Designation T-26 as currently revised.
 4. Reinforcing: ASTM A615 tensile strength 60,000 psi when required and indicated on the Contract Drawings or as directed by the Engineer.
 5. Joint Filler: The expansion joint material shall be preformed non-extruding bituminous fiber conforming to the requirements of “Standard Test Methods for Preformed Expansion Joint Fillers” ASTM Designation: D-545 and Standard Specification for Preformed Expansion Joint Filler” ASTM Designation: D-994, both as currently revised.
 6. Admixtures: Admixtures, when permitted or ordered, shall conform to “Specifications for Chemical Admixture for Concrete” ASTM Designation: C-494, as currently revised.
- C. Mixture Requirements:
1. Cement: The minimum cement factor shall be 7 sacks per cubic yard.
 2. Water: The maximum permissible water-cement rate shall be 5 gallons per sack of cement.
 3. Air: The average air content shall be 5%. The fine aggregate or sand content shall be reduced accordingly in order to provide the required air content.
 4. Slump: The slump of the concrete shall not exceed 4 inches when tested in accordance with ASTM Designation: C-143. Batches or transit mixed concrete showing more than this slump will be rejected and the Contractor shall have no claim against the Owner for such rejection or for waiting

time involved in making the test. The slump specified above is the maximum limit; no tolerance above this limit will be permitted.

5. Design: The mixture shall be designed in accordance with the “A.C.I. Standard Practice for Selecting Proportions for Concrete” A.C.I. Designation: 211.1, as currently revised.

D. Sampling and Testing:

1. It is the Contractor’s responsibility to coordinate and schedule third party testing to confirm the requirements are being met. All costs associated with testing and correcting deficiencies shall be included in the unit price bid.
 2. Sampling and testing shall be done in conformance with “Method of Making and Curing Concrete Compression and Flexure Test Specimens in the Laboratory” ASTM Designation: C-192 with current revisions thereto, and “Test for Compressive Strength of Molded Concrete Cylinders” ASTM Designation: C-39, as currently revised. The cost of sampling and testing the concrete shall be borne by the Contractor. The Contractor shall provide any assistance required for the taking and storing of cylinders.
 3. Tests of the concrete by the Engineer on random batches shall be permitted by the Contractor. At least one test of at least three cylinders for testing at 28 days and one cylinder for testing at 7 days shall be obtained each day.
 4. The concrete shall show an average strength in compression of 4000 psi, when sampled, cured and tested at 28 days in accordance with the preceding specifications. To conform to this average strength, the following requirements shall be met:
 - a. The average of the three 28-day tests shall be a minimum of 3650 psi.
 - b. All three tests below 4000 psi, shall constitute failure to meet the specifications and shall be sufficient basis to reject the areas containing concrete delivered on that day.
- E. Alternate Strength Tests: Where there is a question as to the quality of concrete because of strength test failures, approval may be given to the Contractor to institute strength tests to verify or disprove the results. The test and the basis of acceptance (or rejection) of the quality of the concrete by these alternate tests shall be agreed upon by the Engineer and the Contractor where such approval is granted.
- F. Trial Mixes: The Contractor shall note that if the strength requirements cannot be met by the screened gravel, he will be required to show strength tests on trial mixes from a reliable independent laboratory sufficient to establish average strength that can be used to guide the Engineer in determining the quality of the concrete. These tests shall be made using the cement content, slump and water cement ratio specified herein. This information must be presented to the Engineer before concrete work begins.

SUBMITTALS:

The Contractor shall submit, in writing, all third party testing results to the Engineer.

CONSTRUCTION DETAILS:

Sawcutting:

- A. Sawcutting shall be as indicated on the Contract Documents or where ordered by the Engineer. Saw cuts shall be made to the depth specified or as directed by the Engineer.

Excavation and Fill:

- A. Excavation or fill shall be made to the required subgrade elevation, and subgrade or base upon which the footing is to be set excavation shall be thoroughly compacted with a mechanical tamper or vibratory compactor.
- B. The cost of compaction and all excavation or fill required to set the footing to the correct alignment shall be included in the unit price bid for this Item.

Forms:

- A. All forms shall be set true to line and grade and held rigidly in position. The forms shall be left in place until the concrete has set sufficiently so that in the opinion of the Engineer, they may be removed without cracking, shattering or otherwise injuring the concrete.
- B. Formwork and reinforcing shall be properly set and secured.

Placing Concrete:

- A. Concrete shall be placed only on moist, well compacted subgrade. The subgrade shall not be muddy, soft or frozen when the concrete is placed. The concrete shall be compacted by approved means.
- B. The slump of the concrete shall not be greater than 4 inches.
- C. Concrete shall not be placed when the temperature is below 40 degrees F. except under conditions approved by the Engineer.
- D. Ensure all items to be embedded are at their proper location and elevation prior to pouring concrete.

Adverse Weather Requirements:

- A. The requirements of “Recommended Practice for Hot Weather Concreting” ACI Designation: 305 current revision and “Recommended Practice for Winter Concreting” ACI Designation: 306 as currently revised, shall govern all adverse weather concreting and its protection.
- B. Admixtures shall be used to modify the rate of hardening of the mixtures for the conditions listed below:
 - 1. Ambient temperature above 90 degrees F and relative humidity below 70% - rate of hardening shall be retarded.
 - 2. Ambient temperature below 50 degree F, - rate of hardening shall be accelerated.

Curing and Protection:

- A. Curing shall be done by means of the membrane curing compound specified in the materials section of this item. This compound shall be applied at the rate recommended by the manufacturer immediately upon completion of the finishing operation on the face and top and immediately upon stripping the rear forms. The Contractor shall submit manufacturer's literature to the Engineer for approval of the compound.
- B. The Contractor shall protect the curbing and keep it in first class condition until the completion of the work. Any curbing which is damaged at any time prior to the final acceptance of the work shall be removed and replaced with satisfactory curbing at the Contractor's expense.

METHOD OF MEASUREMENT:

The quantity to be paid for under this item shall be by the number of cubic yards of concrete measured in place and accepted by the Engineer in accordance with the Contract Documents.

BASIS OF PAYMENT:

Payment at the unit price bid per linear foot for this Item shall constitute full compensation for furnishing and preparation of all materials, including all joints, joint filler, dowels and reinforcing, rebar, if required in the construction drawings or special provisions; placing, finishing, curing, protection, backfill, select fill, sawcutting, all necessary excavation; all labor, tools, incidentals and testing necessary to complete the work.

Payment will be made under:

<u>Item No.</u>	<u>Item</u>	<u>Pay Unit</u>
UP4	Cast-In-Place Concrete	Cubic Yard