

SECTION 32 13 13 - CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes exterior portland cement concrete paving for the following:
 - 1. Curbs and pavement.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 31 Section "Poured in Place Surfacing" for subgrade preparation, weepholes and surfacing course

1.3 SUBMITTALS

- A. General: Submit the following according to the Conditions of the Contract and Division 01 Specification Sections.
- B. Product data for proprietary materials and items, including reinforcement and forming accessories, admixtures, joint systems, curing compounds, dry-shake finish materials, and others if requested by Owner.
- C. Design mixes for each class of concrete. Include percentage of recycled content (20% minimum). Include revised mix proportions when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.

1.4 QUALITY ASSURANCE

- A. Concrete Standards: Comply with provisions of the following standards, except where more stringent requirements are indicated.
 - 1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
 - 2. ACI 318, "Building Code Requirements for Reinforced Concrete."
 - 3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."
- B. Concrete Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.
- C. Concrete Testing Service: Engage a qualified independent testing agency to perform materials evaluation tests and to design concrete mixes.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
 1. Use flexible or curved forms for curves with a radius 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
- C. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.
- D. Plain Steel Wire: ASTM A 82, as drawn.
- E. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
- F. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
- G. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:
 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2.4 CONCRETE MATERIALS

- A. Cementitious Material: Use one of the following cementitious materials, of the same type, brand, and source throughout the Project:
 1. Portland Cement: ASTM C 150, white portland cement, Type I, II, or III.
 - a. Fly Ash: ASTM C 618, Class F. 20% by weight of required cement content, with 1.2-lbs Fly Ash per 1-lb of cement replaced.
 - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120 with 1-lb slag per 1-lb of cement replaced.
- B. Normal-Weight Aggregates: ASTM C 33, Class 3S coarse aggregate, uniformly graded. Provide aggregates from a single source[with documented service record data of at least 10

years' satisfactory service in similar pavement applications and service conditions using similar aggregates and cementitious materials].

1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M, potable.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.5 FIBER REINFORCEMENT

- A. Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III, 1/2 to 1-1/2 inches long.
1. Available Products:
 - a. Monofilament Fibers:
 - 1) Axim Concrete Technologies; Fibrasol IIP.
 - 2) Euclid Chemical Company (The); Fiberstrand 100.
 - 3) FORTA Corporation; Forta Mono.
 - 4) Grace, W. R. & Co.--Conn.; Grace MicroFiber.
 - 5) Metalcrete Industries; Polystrand 1000.
 - 6) SI Concrete Systems; Fibermix Stealth.
 - b. Fibrillated Fibers:
 - 1) Axim Concrete Technologies; Fibrasol F.
 - 2) FORTA Corporation; Forta.
 - 3) Euclid Chemical Company (The); Fiberstrand F.
 - 4) Grace, W. R. & Co.--Conn.; Grace Fibers.
 - 5) SI Concrete Systems; Fibermesh.

2.6 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.

- D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.

1. Available Products:

- a. Axim Concrete Technologies; Cimfilm.
- b. Burke by Edeco; BurkeFilm.
- c. ChemMasters; Spray-Film.
- d. Conspec Marketing & Manufacturing Co., Inc.; Aquafilm.
- e. Dayton Superior Corporation; Sure Film.
- f. Euclid Chemical Company (The); Eucobar.
- g. Kaufman Products, Inc.; Vapor Aid.
- h. Lambert Corporation; Lambco Skin.
- i. L&M Construction Chemicals, Inc.; E-Con.
- j. MBT Protection and Repair, ChemRex Inc.; Confilm.
- k. Meadows, W. R., Inc.; Sealtight Evapre.
- l. Metalcrete Industries; Waterhold.
- m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
- n. Sika Corporation, Inc.; SikaFilm.
- o. Symons Corporation; Finishing Aid.
- p. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.

- E. Clear Waterborne Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

1. Available Products:

- a. Anti-Hydro International, Inc.; AH Curing Compound #2 DR WB.
- b. Burke by Edoko; Aqua Resin Cure.
- c. ChemMasters; Safe-Cure Clear.
- d. Conspec Marketing & Manufacturing Co., Inc.; W.B. Resin Cure.
- e. Dayton Superior Corporation; Day Chem Rez Cure (J-11-W).
- f. Euclid Chemical Company (The); Kurez DR VOX.
- g. Kaufman Products, Inc.; Thinfilm 420.
- h. Lambert Corporation; Aqua Kure-Clear.
- i. L&M Construction Chemicals, Inc.; L&M Cure R.
- j. Meadows, W. R., Inc.; 1100 Clear.
- k. Nox-Crete Products Group, Kinsman Corporation; Resin Cure E.
- l. Symons Corporation; Resi-Chem Clear.
- m. Tamms Industries Inc.; Horncrete WB 30.
- n. Unitex; Hydro Cure 309.
- o. Vexcon Chemicals, Inc.; Certi-Vex Enviocure 100.

2.7 RELATED MATERIALS

- A. Expansion and Isolation Joint Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- B. Slip Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 25 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.
- C. Bonding Agent: ASTM C 1059, Acrylic or styrene butadiene.
- D. Epoxy Adhesive: ASTM C 881, two-component material suitable for dry or damp surfaces. Provide material type, grade, and class to suit requirements.

2.8 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
 - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
 - 1. Compressive Strength (28 Days): 4000 psi, 3500 psi, or 3000 psi as indicated on the drawings.
 - 2. Maximum Water-Cementitious Materials Ratio at Point of Placement: As specified by NCDOT Standard Specifications for class of concrete indicated.
 - 3. Slump Limit: Maximum 3.5 inches for non-vibrated, maximum 4 inches for vibrated.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
 - 1. Air Content: 4-1/2 percent plus or minus 1.5 percent for 1-1/2-inch (38-mm) nominal maximum aggregate size.
 - 2. Air Content: 4-1/2 percent plus or minus 1.5 percent for 1-inch (25-mm) nominal maximum aggregate size.
 - 3. Air Content: 5 percent plus or minus 1.5 percent for 3/4-inch (19-mm) nominal maximum aggregate size.
- D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
 - 1. Use admixtures in concrete, as required, for placement and workability.
 - 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- E. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:
 - 1. Fly Ash: 20 percent.
 - 2. Ground Granulated Blast-Furnace Slag: 50 percent.
 - 3. Combined Fly Ash, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash not exceeding 20 percent.
- F. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd..

2.9 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116. Furnish batch certificates for each batch discharged and used in the Work.
 - 1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete mixes of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete mixes larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

2.10 JOINT SEALANTS

- A. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.
- B. Round Backer Rod for Cold-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depths and pavement bottom-side adhesion of sealant.

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

- A. Proof-roll prepared subbase surface to check for unstable areas and verify need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving. Ensure subgrade is graded for proper drainage. Repair as needed to avoid ponding on final pavement surfaces.
- B. Remove loose material from compacted subbase surface immediately before placing concrete.
- C. Herbicide Treatment: Apply chemical weed control agent in strict compliance with manufacturer's recommended dosages and application instructions. Apply to compacted, dry subbase.
- D. Place aggregate base courses and weep holes as specified in Division 31 Section "Poured in Place Surfacing".

3.2 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for paving to required lines, grades, and elevations. Install forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork and screeds for grade and alignment to following tolerances:
 1. Top of Forms: Not more than 1/8 inch in 10 feet.
 2. Vertical Face on Longitudinal Axis: Not more than 1/4 inch in 10 feet.
- C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

3.3 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars" for placing and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.4 JOINTS

- A. General: Construct contraction, construction, and isolation joints true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to the centerline, unless indicated otherwise.
 - 1. When joining existing paving, place transverse joints to align with previously placed joints, unless indicated otherwise.
- B. Contraction Joints: Provide weakened-plane contraction joints, sectioning concrete into areas as indicated below unless shown otherwise on Drawings. Construct contraction joints for a depth equal to at least 1/3 of the concrete thickness, as follows:
 - 1. Tooled Joints: Form contraction joints in fresh concrete by grooving and finishing each edge of joint with a radiused jointer tool.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into hardened concrete when cutting action will not tear, abrade, or otherwise damage surface and before development of random contraction cracks.
 - 3. Inserts: Form contraction joints by inserting premolded plastic, hardboard, or fiberboard strips into fresh concrete until top surface of strip is flush with paving surface. Radius each joint edge with a jointer tool. Carefully remove strips or caps of two-piece assemblies after concrete has hardened. Clean groove of loose debris.
 - 4. Spacing: Locate contraction joints at 10-ft max. intervals, each way in concrete pavement; 5-ft max. intervals, each way in concrete sidewalks/patios unless shown otherwise. Locate contraction joints in sidewalks less than 8-ft in width at 5-ft intervals across the walk. Locate contraction joints in sidewalks of 8-ft and greater width at 5-ft intervals across the walk and equally section the walk lengthwise with joints at 5-ft. max. intervals (example: an 8-ft wide walk shall have contraction joints at 5-ft. spacing across the walk and one joint dividing the walk lengthwise into two, equal 4-ft sections.)
- C. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than 1/2 hour, unless paving terminates at isolation joints.
 - 1. Continue reinforcement across construction joints unless indicated otherwise. Do not continue reinforcement through sides of strip paving unless indicated.
 - 2. Provide tie bars at sides of paving strips where indicated.
 - 3. Use bonding agent on existing concrete surfaces that will be joined with fresh concrete.
- D. Isolation (expansion) Joints: Form isolation joints of preformed joint filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
 - 1. Locate expansion joints in curbs and sidewalks at intervals of 30 feet, each way, unless indicated otherwise.
 - 2. Extend joint fillers full width and depth of joint 1/2 inch below finished surface where joint sealant is indicated. Place top of joint filler flush with finished concrete surface when no joint sealant is required.

3. Furnish joint fillers in one-piece lengths for full width being placed wherever possible. Where more than one length is required, lace or clip joint filler sections together.
 4. Protect top edge of joint filler during concrete placement with a metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- E. Dowel Joints: Install dowel sleeves and dowels or dowel bar and support assemblies at joints where indicated
1. Use dowel sleeves or lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.

3.5 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other trades to permit installation of their work. Ensure forms are set to ensure water will not pond on final surface.
- B. Remove snow, ice, or frost from base surface and reinforcing before placing concrete. Do not place concrete on surfaces that are frozen.
- C. Moisten base to provide a uniform dampened condition at the time concrete is placed. Do not place concrete around manholes or other structures until they are at the required finish elevation and alignment.
- D. Comply with requirements and with ACI 304R for measuring, mixing, transporting, and placing concrete.
- E. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- F. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- G. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete complying with ACI 309R.
1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcing, dowels, and joint devices.
- H. Screed paved surfaces with a straightedge and strike off. Use bull floats or darbies to form a smooth surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces prior to beginning finishing operations.
- I. Place concrete in two operations; strike off initial pour for entire width of placement and to the required depth below finish surface. Lay welded wire fabric or fabricated bar mats immediately in final position. Place top layer of concrete, strike off, and screed.
1. Remove and replace portions of bottom layer of concrete that have been placed more than 15 minutes without being covered by top layer or use bonding agent if acceptable to Architect.

- J. Cold-Weather Placement: Comply with provisions of ACI 306R and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
1. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
 2. Do not use frozen materials or materials containing ice or snow.
 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- K. Hot-Weather Placement: Place concrete complying with ACI 305R and as specified when hot weather conditions exist.
1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.6 CONCRETE FINISHING

- A. Float Finish: Begin floating when bleed water sheen has disappeared and the concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Finish surfaces to true planes within a tolerance of 1/4 inch in 10 feet as determined by a 10-foot-long straightedge placed anywhere on the surface in any direction. Cut down high spots and fill low spots to ensure positive drainage and eliminate ponding. Refloat surface immediately to a uniform granular texture.
1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across all site concrete sidewalk and pavement surfaces perpendicular to line of traffic to provide a uniform fine line texture finish.
 2. Very Fine Textured Broom Finish: Draw a very fine soft bristle broom across all concrete Play Area and Basketball Court surfaces perpendicular to direction of play to provide a uniform fine line texture finish for concrete.
- B. Final Tooling: Tool edges of paving, gutters, curbs, and joints formed in fresh concrete with a jointing tool to a radius of 1/4-inch unless indicated otherwise on the drawings. Repeat tooling of edges and joints after applying surface finishes. Eliminate tool marks on concrete surfaces.

3.7 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with the recommendations of ACI 306R for cold weather protection and ACI 305R for hot weather protection during curing.
- B. Evaporation Control: In hot, dry, and windy weather, protect concrete from rapid moisture loss before and during finishing operations with an evaporation-control material. Apply according to manufacturer's instructions after screeding and bull floating, but before floating.

- C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- D. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
 - 1. Moisture Curing: Keep surfaces continuously moist for not less than 7 days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with a 12-inch lap over adjacent absorptive covers.
 - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - 3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.8 FIELD QUALITY CONTROL TESTING

- A. The Owner shall employ an independent testing and inspection agency to sample materials, perform tests, and submit test reports during concrete placement in accordance with Division 01 Section "Quality Control" and as follows:
 - 1. When total quantity of a given class of concrete is less than 50 cu. yd., Architect may waive strength testing if adequate evidence of satisfactory strength is provided.
 - 2. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
 - 1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.
 - 2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
 - 3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
 - 4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when it is 80 deg F and above, and one test for each composite sample.
 - 5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
 - 6. Compressive-Strength Tests: ASTM C 39/C 39M; test one specimen at seven days and two specimens at 28 days.

- a. A compressive-strength test shall be the average compressive strength from two specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mixture will be satisfactory if average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
- D. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within one week of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.
- G. Concrete paving will be considered defective if it does not pass tests and inspections.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

3.9 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective, or does not meet the requirements of this Section.
- B. Drill test cores where directed by Architect when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep concrete paving not more than 2 days prior to date scheduled for Substantial Completion inspections.
- E. Remove and replace concrete paving that ponds water.

END OF SECTION

02800-B SPECIFICATION FOR GENERAL POURED-IN-PLACE PLAYGROUND
SURFACING

1.1 GENERAL SCOPE:

1.2 Scope: This work includes furnishing and installing the Poured-in-Place safety surface, a seamless synthetic rubber installed over concrete for Town of Chapel Hill (TCH) playground equipment area use zones.

1.3 Related Work:
321313-CONCRETE PAVING

1.4 Description of System and General Conditions:

Poured-In-Place safety surface shall consist of a poured-in-place polyurethane resin-based rubber shred material. Surface shall be troweled to provide a resilient, seamless rubber surface installed over the specified base. The surface shall be stable and slip resistant to comply with all requirements set forth in the Americans with Disabilities Act.

2.1 QUALITY ASSURANCE:

2.2 Delivery, Storage and Handling:

Materials and equipment shall be delivered and stored in accordance with the manufacturer's recommendations.

2.3 Site Conditions:

Synthetic safety surfacing shall be installed on a dry subsurface, with no prospect of rain within the initial drying period, the temperature should be 40 degrees F and rising during installation of surface. Installation temperature shall not exceed 90 degrees.

2.4 Sequencing and Scheduling:

Safety surfacing shall be installed in coordination with the surfacing curbing installation to ensure proper sequencing and scheduling of sub- base and equipment installation.

2.5 Certification:

A. The poured-in-place must be installed by a manufacture certified installer (Written proof of certification from the manufacture must be provided) or the installer must provide documentation showing 3 locations locally where their company's poured-in-place product has been installed for more than 5 years. All locations much have been installed by the same installation crew that will be installing the product for the TCH.

B. Manufacturer must be IPEMA certified for playground safety surfacing.

2.6 Manufacturer Requirements:

1. Test Results

- A. Impact Attenuation - ASTM F1292: Impact attenuation test results will be provided to the Owner. These test results shall be documented by a certificate of compliance and submitted on the letterhead of an independent testing lab. Impact attenuation test results shall meet or exceed Consumer Product Safety Commission Guidelines for impact attenuation (G-max and Head Injury Criteria "H.I.C").
 - B. Compaction Testing will be required after the crush & run is installed for a Crushed Stone Base Sub-base Installation under the poured-in-place. This test result shall be documented by a certificate of compliance and submitted on the letterhead of an independent testing lab.
 - C. Accessibility of Surface Systems – ASTM F1951: All playground surfacing products must pass testing to ensure wheelchair access under and around playground equipment as required by the American Disabilities Act. Children's outdoor play areas shall be in compliance with the Uniform Federal Accessibility Standards (UFAS) FED-STD-795 and the Architectural and Engineer Instructions (9AEI) Design Criteria. The requirements of the Americans with Disabilities Act Accessibility Guidelines (9ADAAG) 28 DFR Part 36 that provide equal or greater accessibility than the requirements of UFAS must also be met in children's outdoor play areas. Safety surfaces intended to serve as accessible paths of travel for persons with disabilities shall be firm, stable and slip resistant, have a 2% slope, and shall meet the requirements of FED-STD-795, 28 CFR Part 36, ASTM F 1487, ASTM F 1292 and CSA Z614.
 - D. Coefficient of Friction - ASTM D2047: All products must meet a minimum standard on coefficient of friction of .9-wet, 1.0-dry.
 - E. Permeability: Product shall meet or exceed a coefficient of permeability of 0.4 gallons per square yard per second.
 - F. Flammability of Finished Floor Cover - ASTM D2859: (Fed.Std.16 CFR Part 1630), ASTM E648 CRF Rated Class 1, ASTM 108 Rated Class A. Product shall pass flammability.
 - G. Manufacturer shall include test results certifying that surface components are not toxic.
 - H. Tensile Strength - ASTM D412 and Tear Resistance - ASTM D624: This test indicates a product's ability to stretch, and how far it will stretch before it breaks. Test results must be a minimum of tensile strength of 60 PSI, and minimum % elongation @ break of 140%.
2. Warranty:
 - A. Poured-In-Place safety surface shall maintain required impact attenuation characteristics and be guaranteed against defects in workmanship or material for a period of no less than three (5) years. Written warranty must be submitted by the surface manufacturer.
 - B. Any product for surfacing manufacturer which has not met the requirements of this section shall not be approved.

2.6 SUBMITTAL PACKAGES

1. Submittal packages shall include but not be limited to:
 - A. Manufacturer's descriptive data, catalog, color chart, and installation instructions, including cleaning and preventative maintenance instructions.
 - B. Drawings showing shop details of the safety surfacing system, including depths of material, sub-base materials, anchoring systems and edge details.
 - C. A list of all materials and components to be installed as part of the system, by weight, and/or volume and recommended coverage, including manufacturers name, shipment date, storage requirements, and precautions, and shall state chemical composition and test results to which material has been subjected in compliance with these specifications.
 - D. Two samples measuring 1' X 1' in 2" thickness with tapered edges,
 - E. A written guarantee from manufacturer of the proposed product against all defects in material and/or workmanship,
 - F. Impact attenuation (per fall height requirements and depth specified), accessibility of surface systems, coefficient of friction, permeability, flammability, toxicity and tensile strength test results from independent approved and certified testing laboratories, statement signed by an official authorized to certify on behalf of the manufacturer of the synthetic safety surfacing attesting that the surfacing meets the requirements of ASTM F 1292 for a head-first fall from the highest accessible portion of specified playground equipment.

3.0 MATERIALS:

1. Binder:
 - A. Polyurethane Primer and Binder - 100% Single Component Polyurethane Binding Agent - Methylene Diphenyl Isocyanate (MDI) based binder. No toluene diphenyl isocyanate (TDI) shall be used. COLOR TINTED BINDER WILL NOT BE ALLOWED.
2. Wear Surface:
 - A. All rubber shall remain consistent in gradation and size. All rubber shall be virgin Recycled rubber that is not derived from tires. STRAND, SHAVED, CHIPPED OR SHREDDED RUBBER IS NOT ACCEPTABLE IN THE WEAR SURFACE.
 - B. Thickness of wear surface shall be a minimum 5/8-inch and have a minimum weight of 3.2 pounds per square foot.
 - C. The wear surface shall be porous.
3. Impact Course:
 - A. The impact layer is to be a precise combination of black rubber and polyurethane binder and be free of foreign matter. All rubber in the impact course will be of a select quality and consistent blend of rubber sizings to achieve maximum porosity and minimum residue. Recycled rubber is acceptable.

- B. Impact Course shall consist of shredded styrene butadiene and consist of SBR or EPDM select rubber adhered with a 100 percent solids polyurethane binder to form a resilient porous material.

4.1 SITE PREPARATION

1. Finished Grade: Field verify finished elevations of adjacent areas and subgrade elevations. Contractor to make adjustments as necessary to ensure subgrade and adjacent areas are the appropriate depth for the particular safety surface to be installed, and that the subsurface has been installed in a true, even plane, and sloped to provide drainage away from play area. Verify minimum and maximum finished elevations of playground equipment such as steps, decks, slide exits, etc. Verify the subsurface irregularities have been corrected.

4.2 SUBSURFACE: Concrete Sub-Base Installation Process:

1. The base shall have the specific minimum slope (2%). Tolerance of concrete subsurface shall be within 1/8 inch (3.0 mm) in 10 feet (3050 mm).
3. Curing of Concrete: New concrete shall be allowed to cure a minimum of seven (7) days prior to commencement of surfacing. Concrete shall be reinforced and a minimum of 4" thick on a compacted sub-grade. Concrete shall be standard weight, ready-mixed concrete conforming to ASTM C 94. All concrete curing compounds and other deleterious substances that might adversely affect adhesion shall be removed. Surface shall be clean and dry and free from any foreign and loose material.
4. Finish: Concrete should be finished with a medium broom finish.
5. Drainage must be provided at the low end of the concrete slab. If concrete curbs or brick walls are installed around the surfacing, weepholes must be installed in the brick wall or concrete curbing for drainage through the wall.
6. Weepholes shall extend a minimum of 2" above the top of the concrete slab and a minimum of 1/8" below the top of the concrete slab. The weepholes shall be 2" in height and 3" in width, then installed every 3 feet through the wall or concrete curbing.

4.3 SUBSURFACE: Crushed Stone Base Installation Process:

1. A minimum 4" crushed stone base must be installed – Thickness of the crushed stone will depend on the fall height requirements for the particular structure receiving surfacing.
2. The stone must be crushed to a 95% standard proctor compaction. (As per ASTM Test).
3. Crushed stone base shall have a 2% slope to allow for run-off of excess water that doesn't percolate through the crushed stone.
4. The crushed stone base must be compacted by the use of a tamper, roller or combination of both to avoid settling of the crushed stone.
5. Drainage: Verify that subsurface drainage, if required, has been installed to provide positive drainage.

5.0 INSTALLATION

1. General: Safety Surface System: Components of the safety surface system shall be mixed on site in a rotating tumbler to ensure components are thoroughly mixed and are in accordance with manufacturer's recommendations. Installation of surfacing shall be seamless and completely bonded to subsurface. Material shall cover all foundations and fill around all elements penetrating the surface.
 - A. Impact Course:

Whenever practical, the substrate layer of surfacing material shall be installed in one continuous pour on the same day. When a second pour is required, fully coat the edge of the previous work with polyurethane binder to ensure 100 percent bond with new work. Apply adhesive in small quantities so that new substrate can be placed before the adhesive dries. The impact course will be poured in place by means of screeding using a measured screed rod 1/16" thicker than the required depth and shall be hand-troweled to maintain a seamless application.
 - B. Wear Surface:

Wearing surface must be of high quality virgin recycled rubber that is not derived from tires and shall be a minimum of 5/8" thick. Wearing surface shall be bonded to substrate. The wear surface shall be porous. Apply adhesive to substrate in small quantities so that wearing surface can be applied before adhesive dries. Surface shall be hand troweled to a smooth, even finish. Except where wearing surface is composed of differing color patterns, pour shall be continuous and seamless. Where seams are required due to color change, adjacent color shall be placed as soon as possible, before initial pour has cured. The edge of initial pour shall be coated with adhesive and wearing surface mixture shall be immediately applied. If graphic designs and color transitions are used, they shall be full wear course depth.
 - C. Perimeter: Surface edges shall be flush with edge of adjacent area or tapered for safe transition per plan in accordance with current ADA ramp slope ratio of 1:12 to provide safe transition. Surface shall be sloped to provide positive drainage.
 - D. Thickness: Construction methods, such as use of measured screeds 1/16 inch (1.0 mm) thicker than the required surfacing depth, shall be employed to ensure that full depth of specified surfacing material is installed. Total depth of the surface shall be as specified by playground designer or manufacturer, as thickness will vary in the impact course according to fall height. Surfacing system thickness throughout the playground equipment use zone shall be as required to meet the impact attenuation requirements specified for the equipment.
 - E. Large Areas - All areas in excess of 2,000 sq. ft. or that require adjacent color pours will have a cold joint or seam due to the nature of the installation process. Although seldom visible, large areas or adjacent colors require the Poured-In-Place material to be installed on separate days.
 - F. Clean up: Do not allow adhesive on adjacent surface. Immediately clean up spills of excess adhesive.

- G. Manufacturer's Services: For safety surfacing, service of the manufacturer's representative who is experienced in installation of playground safety surface shall be provided. The representative shall supervise the installation to ensure that the safety surfacing meets the impact attenuation requirements as specified for the equipment, and provide written certification that the surfacing was properly installed.
- H. Protection: The synthetic safety surface shall be allowed to fully cure in accordance with Manufacturer's instructions. The surface shall be protected by the Contractor from all traffic during the curing period of 48 hours or as instructed by the Manufacturer. The General Contractor shall be responsible for the protection of the surface during the curing period upon completion of the installation.

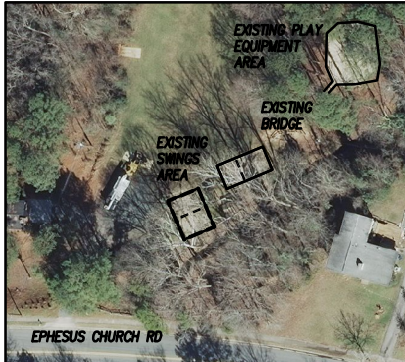
6.0 COLOR:

- 1. The color of Poured-In-Place will be as indicated on plans. Provide sample for review and approval.
- 2. Standard Color Blends - Will be chosen as indicated on plans, with sample submittal for TCH approval.

MINIMUM QUANTITIES:

(2) SWING AREAS

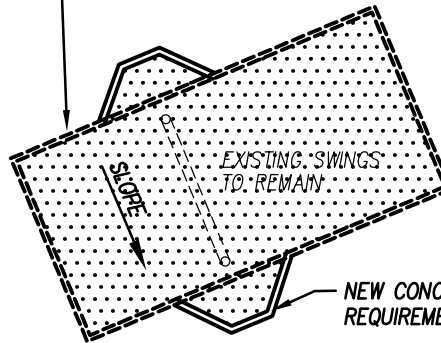
8" CONCRETE CURB:	245 L.F.
PIP SAFETY SURFACING:	1,730 S.F.



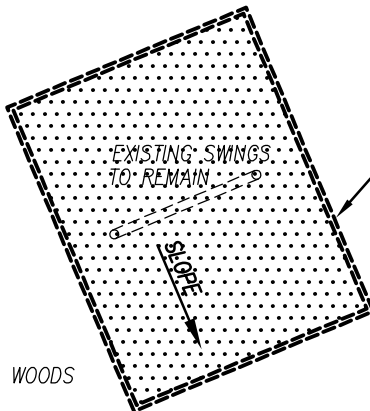
NOTE

CONTRACTOR TO VERIFY MEASUREMENTS AND QUANTITIES IN FIELD. NEW CURB LOCATIONS MUST MEET FALL ZONE SPECIFICATIONS OF THE CONSUMER PRODUCT SAFETY COMMISSION HANDBOOK FOR PUBLIC PLAYGROUND SAFETY. [HTTP://WWW.CPSC.GOV/CPSCPUB.PUBS/325.PDF](http://www.cpsc.gov/cpscpub/pubs/325.pdf)

REPLACE EXISTING WOOD CURB WITH 8" FLUSH CONCRETE CURB. CONTRACTOR TO RELOCATE CURB PROVIDING MINIMUM CLEARANCE FOR SAFETY FALL ZONE AROUND SWING POSTS. CONTRACTOR TO ADD MINIMUM 6" CLEAN TOPSOIL. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM PLAY AREAS.



NEW CONC. CURB TO MEET MINIMUM REQUIREMENTS OF CPSC.



REPLACE EXISTING WOOD CURB WITH 8" FLUSH CONC. CURB. CONTRACTOR TO REMOVE EXISTING CURBS AND SAFETY SURFACING AND DISPOSE OFF-SITE. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM PLAY AREAS.

EXISTING WOODS

EXISTING WOODS

SEE SHEET C1.01 FOR PARK'S PLAY EQUIPMENT AREA

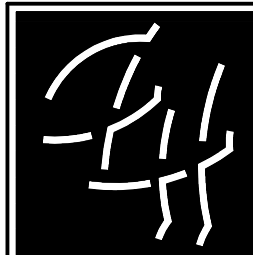
SCALE: 1" = 20'-0"



BURLINGTON PARK

1701 EPHESUS CHURCH RD, CHAPEL HILL, NC
DATE: AUGUST 3, 2015
CLH PROJECT NO: 15-130

DRAWING #: C 1.0



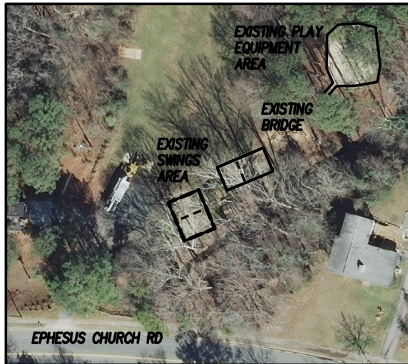
CLH
DESIGN, PA
400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1595

MINIMUM QUANTITIES:

PLAY EQUIPMENT AREA

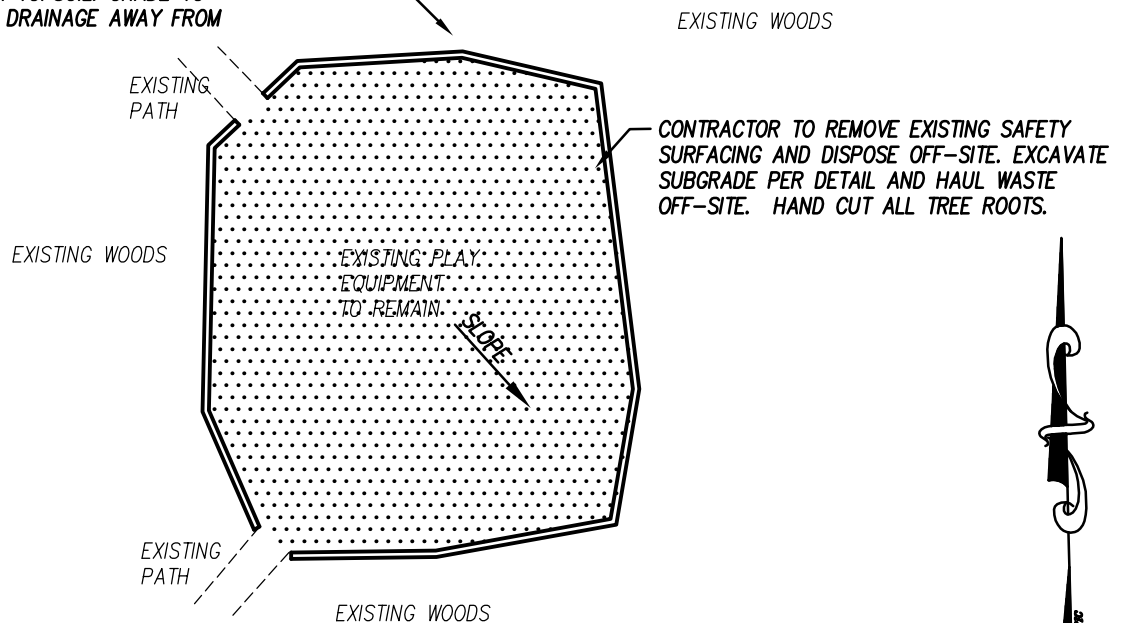
8" CONCRETE CURB: 165 L.F.

PIP SAFETY SURFACING: 2,000 S.F.

**NOTE**

CONTRACTOR TO VERIFY MEASUREMENTS AND QUANTITIES IN FIELD. NEW CURB LOCATIONS MUST MEET FALL ZONE SPECIFICATIONS OF THE CONSUMER PRODUCT SAFETY COMMISSION HANDBOOK FOR PUBLIC PLAYGROUND SAFETY. [HTTP://WWW.CPSC.GOV/CPSCPUB.PUBS/325.PDF](http://www.cpsc.gov/cpsc/pub/pubs/325.pdf)

CONTRACTOR TO INSTALL 8" FLUSH CONCRETE CURB. LOCATE CURB PROVIDING MINIMUM CLEARANCE FOR SAFETY FALL ZONE AROUND PLAY EQUIPMENT. CONTRACTOR TO ADD MINIMUM 6" CLEAN TOPSOIL. GRADE TO PROVIDE POSITIVE DRAINAGE AWAY FROM PLAY AREAS.



SEE SHEET C1.0 FOR PARK'S (2) SWING AREAS

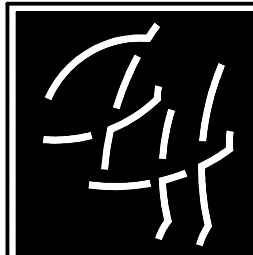
SCALE: 1" = 20'-0"

BURLINGTON PARK

1701 EPHEsus CHURCH RD, CHAPEL HILL, NC


DATE: AUGUST 3, 2015

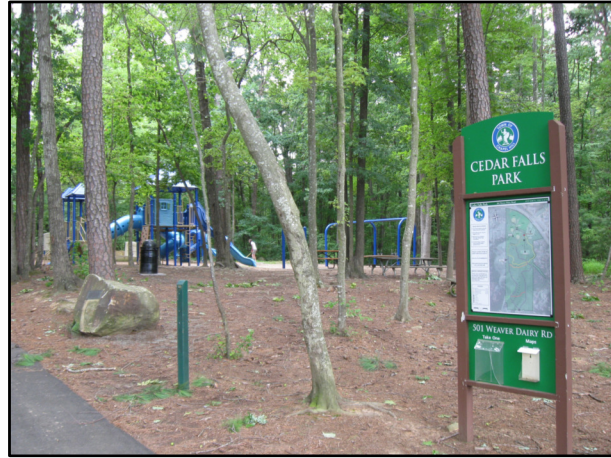
CLH PROJECT NO: 15-130

DRAWING #: C 1.01
CLH
DESIGN, PA

400 Regency Forest Dr.
 Suite 120
 Cary, NC 27518
 Phone: 919.319.6716
 Fax: 919.319.7516
 LA: C-106 PE: C-1595

MINIMUM QUANTITIES:

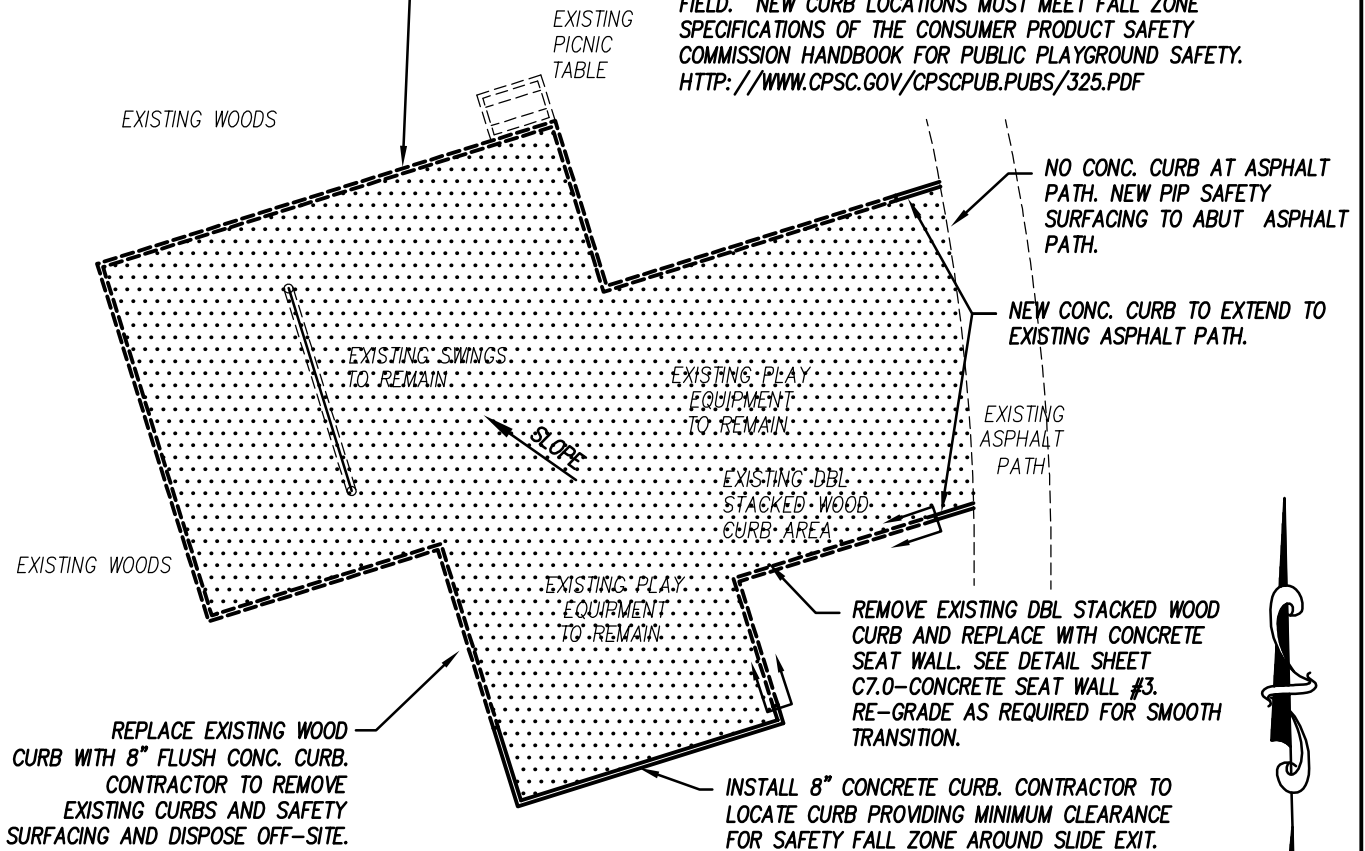
8" CONCRETE CURB:	265 L.F.	
PIP SAFETY SURFACING:	3,700 S.F.	



REPLACE EXISTING WOOD CURB WITH 8" FLUSH CONC. CURB. CONTRACTOR TO REMOVE EXISTING CURBS AND SAFETY SURFACING AND DISPOSE OFF-SITE.

NOTE

CONTRACTOR TO VERIFY MEASUREMENTS AND QUANTITIES IN FIELD. NEW CURB LOCATIONS MUST MEET FALL ZONE SPECIFICATIONS OF THE CONSUMER PRODUCT SAFETY COMMISSION HANDBOOK FOR PUBLIC PLAYGROUND SAFETY. [HTTP://WWW.CPSC.GOV/CPSCPUB.PUBS/325.PDF](http://www.cpsc.gov/cpscpub/pubs/325.pdf)



SCALE: 1" = 20'-0"

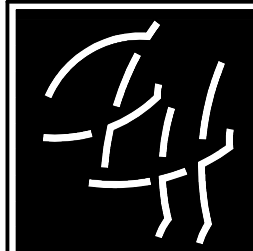
CEDAR FALLS PARK

501 WEAVER DAIRY ROAD, CHAPEL HILL, NC

DATE: AUGUST 3, 2015

CLH PROJECT NO: 15-130


DRAWING #: C 20



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DESIGN, PA**

400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1595

MINIMUM QUANTITIES:

8" CONCRETE CURB:	115 L.F.	
PIP SAFETY SURFACING:	4,260 S.F.	

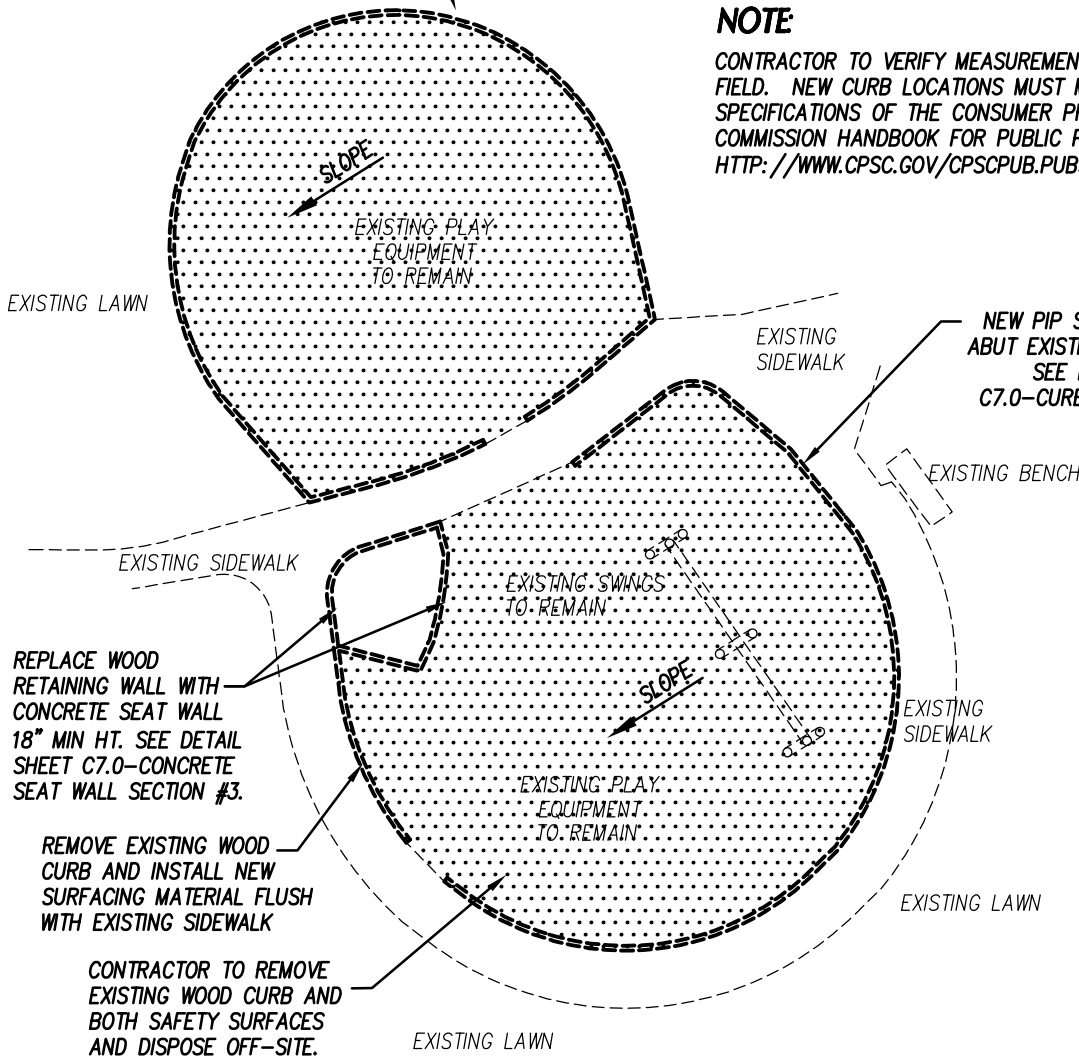


REPLACE EXISTING WOOD CURB WITH 8" FLUSH CONC. CURB ONLY WHERE WOOD CURB DOES NOT ABUT SIDEWALK. CONTRACTOR TO REMOVE EXISTING CURB AND BOTH SAFETY SURFACES AND DISPOSE OFF-SITE.

EXISTING LAWN

NOTE

CONTRACTOR TO VERIFY MEASUREMENTS AND QUANTITIES IN FIELD. NEW CURB LOCATIONS MUST MEET FALL ZONE SPECIFICATIONS OF THE CONSUMER PRODUCT SAFETY COMMISSION HANDBOOK FOR PUBLIC PLAYGROUND SAFETY. [HTTP://WWW.CPSC.GOV/CPSCPUB.PUBS/325.PDF](http://www.cpsc.gov/cpscpub/pubs/325.pdf)



SCALE: 1" = 20'-0"

HOMESTEAD PARK

100 NORTHERN PARK DRIVE, CHAPEL HILL, NC

DATE: AUGUST 3, 2015

CLH PROJECT NO: 15-130


DRAWING #: C 3.0



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Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1595

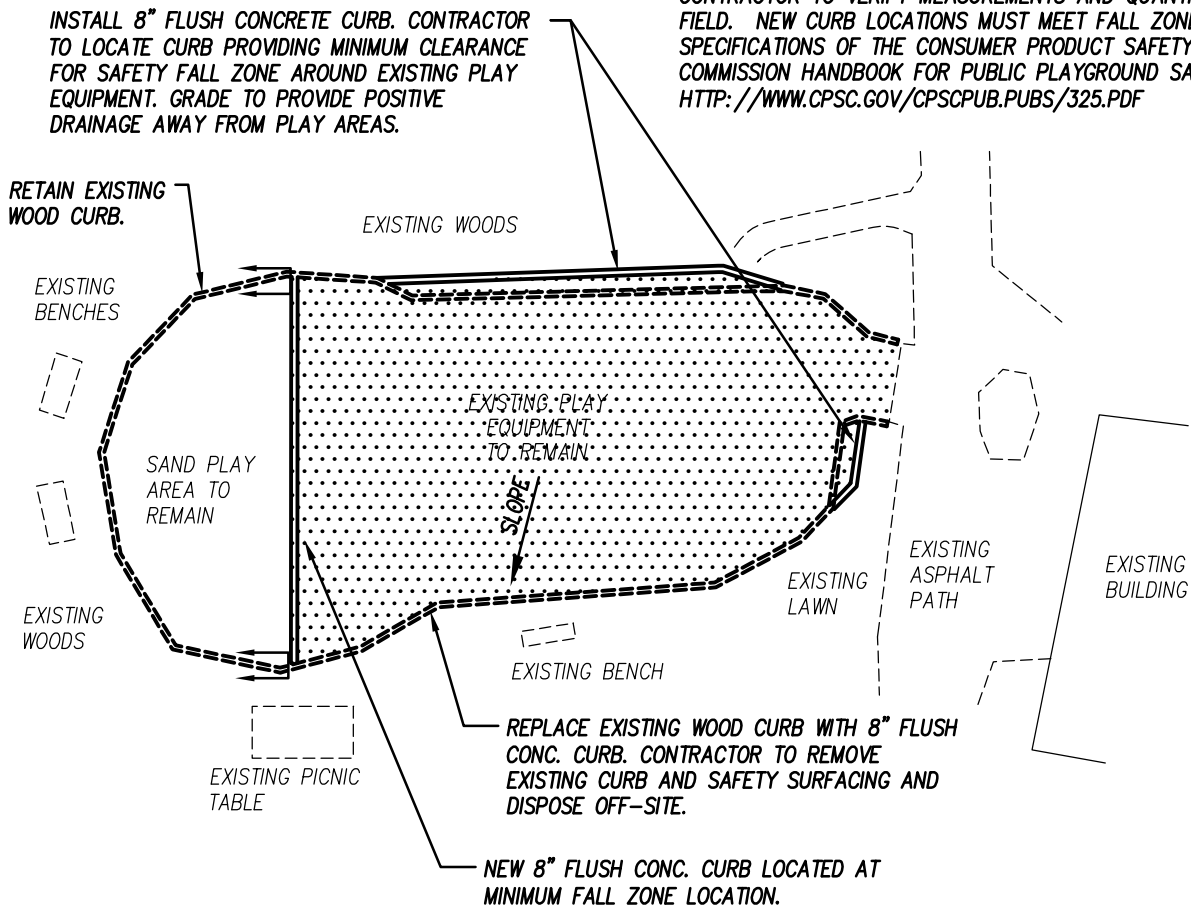
MINIMUM QUANTITIES:

8" CONCRETE CURB:	190 L.F.	
PIP SAFETY SURFACING:	1,935 S.F.	



NOTE

CONTRACTOR TO VERIFY MEASUREMENTS AND QUANTITIES IN FIELD. NEW CURB LOCATIONS MUST MEET FALL ZONE SPECIFICATIONS OF THE CONSUMER PRODUCT SAFETY COMMISSION HANDBOOK FOR PUBLIC PLAYGROUND SAFETY. [HTTP://WWW.CPSC.GOV/CPSCPUB.PUBS/325.PDF](http://www.cpsc.gov/cpscpub/pubs/325.pdf)

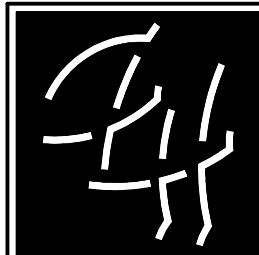


SCALE: 1" = 20'-0"


NORTH FOREST HILLS PARK

121 COLLUMS ROAD, CHAPEL HILL, NC
DATE: AUGUST 3, 2015
CLH PROJECT NO: 15-130

DRAWING #: C 4.0



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400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1595

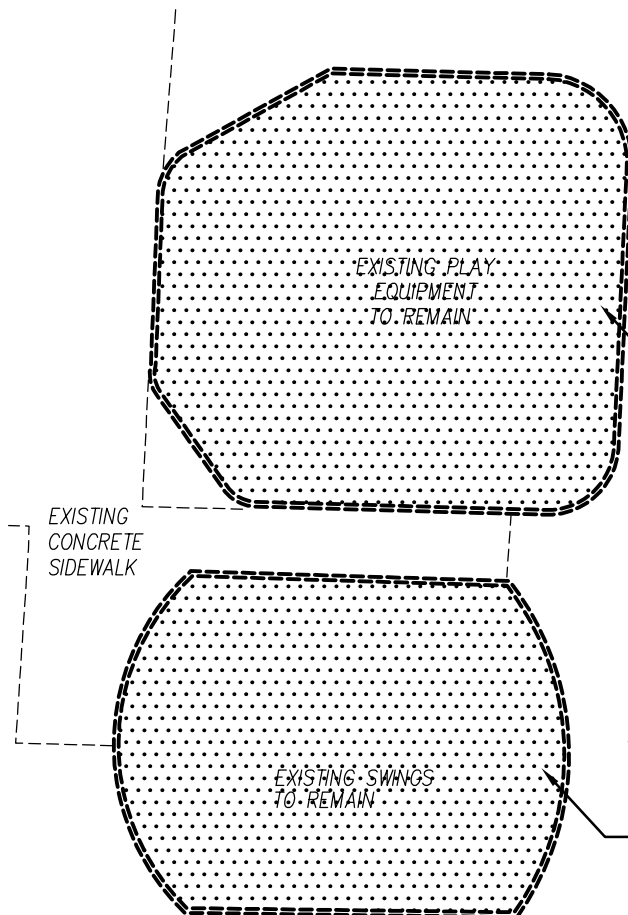
MINIMUM QUANTITIES:		
8" CONCRETE CURB:	0 L.F.	
PIP SAFETY SURFACING:	3,440 S.F.	



EXISTING LAWN

NOTE

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RETAIN EXISTING CONCRETE CURB AND INSTALL NEW SAFETY SURFACING MATERIAL. CONTRACTOR TO REMOVE EXISTING SAFETY SURFACING AND DISPOSE OFF-SITE.

EXISTING LAWN

RETAIN EXISTING CONCRETE CURB AND INSTALL NEW SAFETY SURFACING MATERIAL. CONTRACTOR TO REMOVE EXISTING SAFETY SURFACING AND DISPOSE OFF-SITE.



SCALE: 1" = 20'-0"

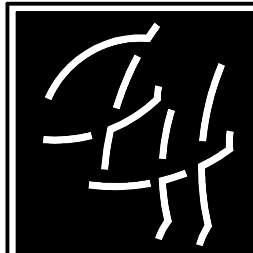
OAKWOOD PARK

20 OAKWOOD DRIVE

DATE AUGUST 3, 2015

CLH PROJECT NO: 15-130


DRAWING #: C 5.0



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400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1595

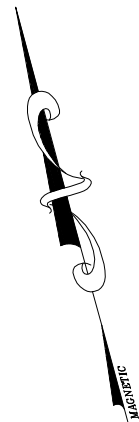
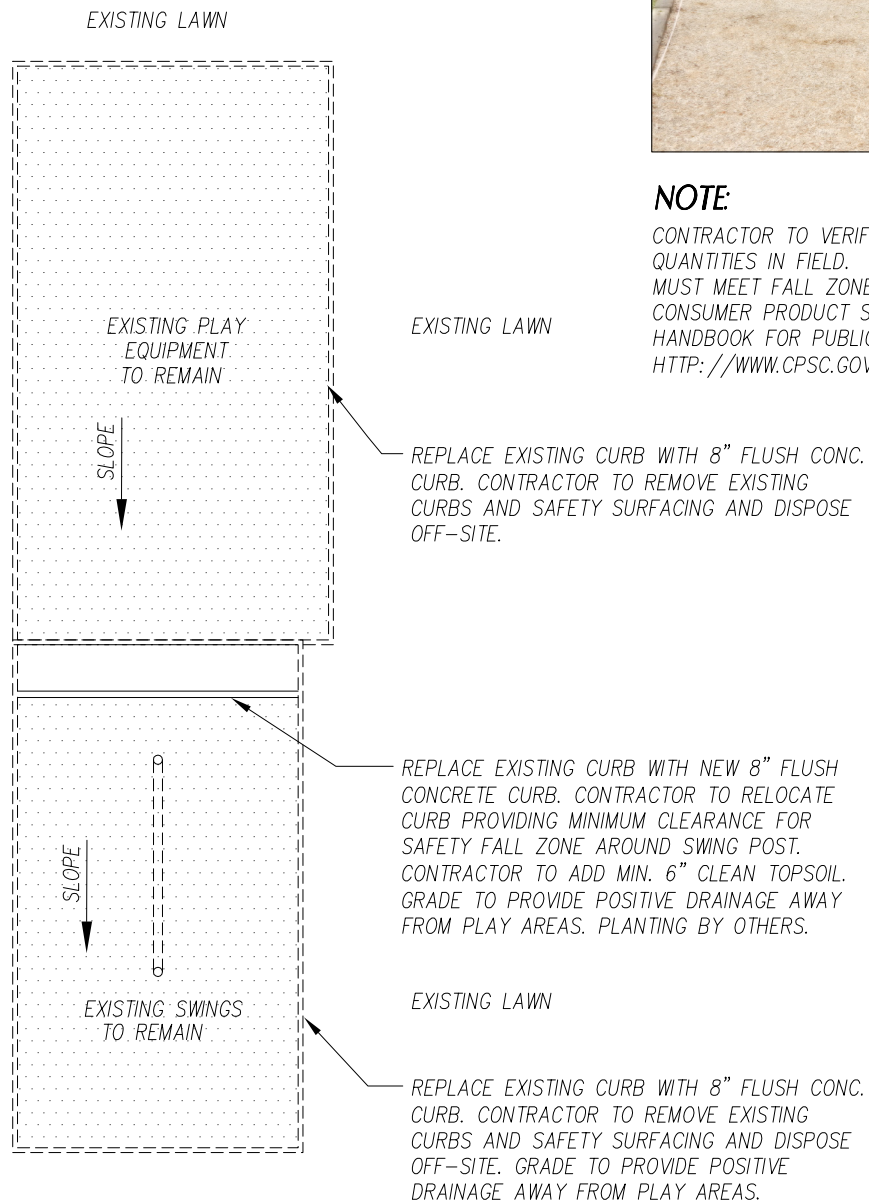
MINIMUM QUANTITIES:

8" CONCRETE CURB:	340 L.F.	
PIP SAFETY SURFACING:	3,310 S.F.	



NOTE

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SCALE: 1" = 20'-0"

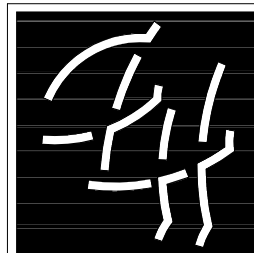
PINE KNOLLS PARK

107 JOHNSON STREET

DATE: AUGUST 3, 2015

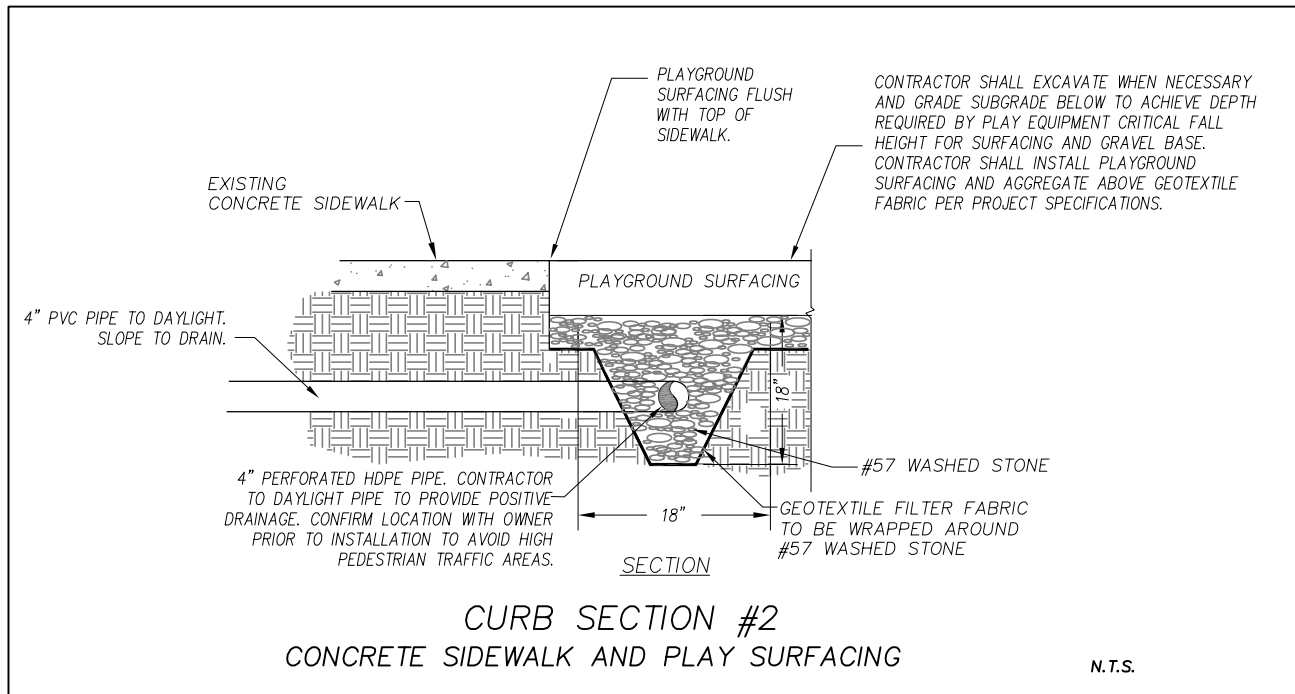
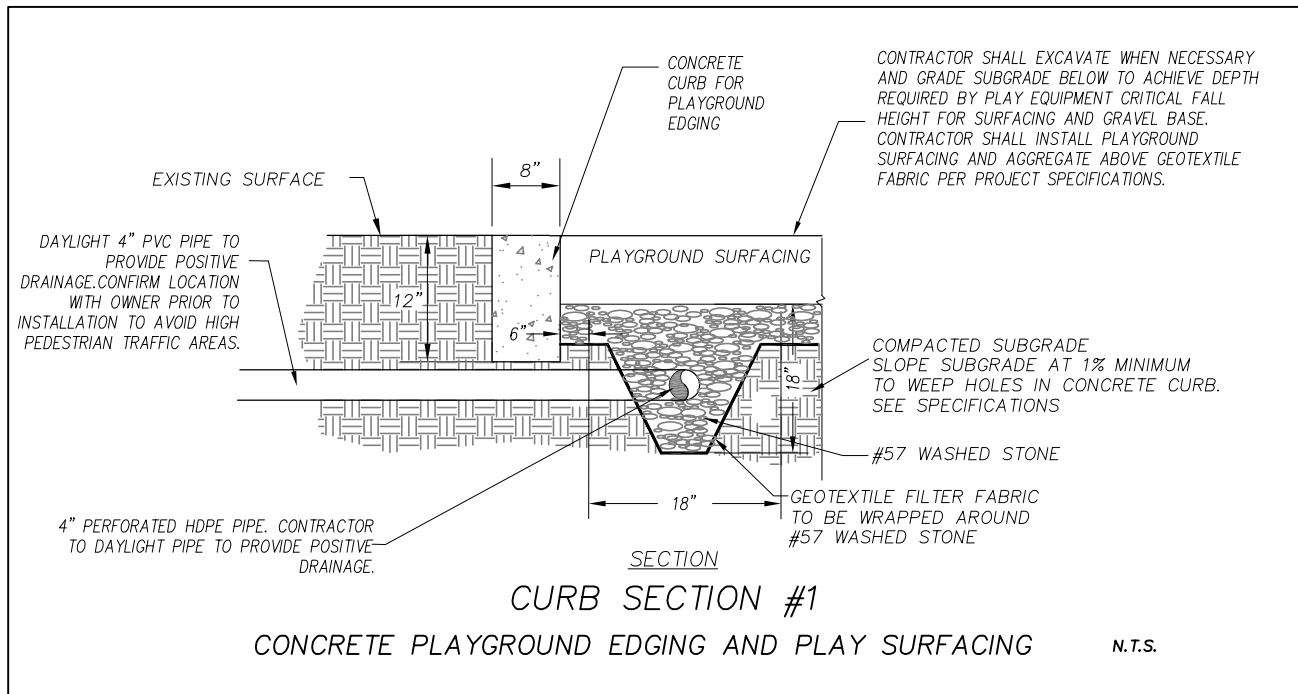
CLH PROJECT NO: 15-130

DRAWING #: C 6.0



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400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
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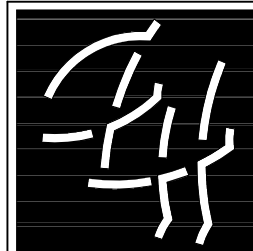
CHAPEL HILL PLAYGROUND REPAIRS

CHAPEL HILL, NC

DATE: AUGUST 3, 2015

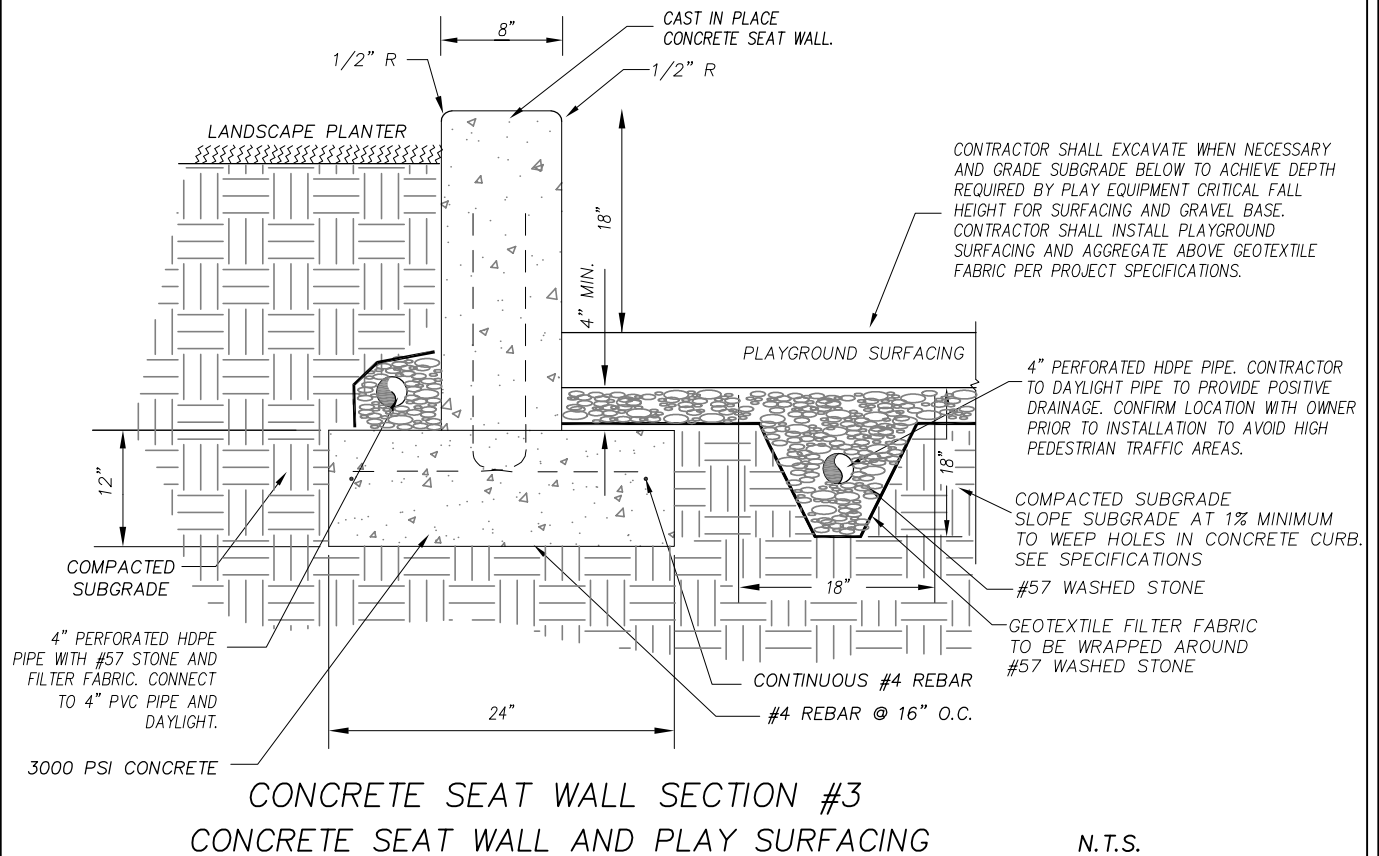
CLH PROJECT NO: 15-130

DRAWING #: C 7.01 - DETAILS



CLH
DESIGN, PA

400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1595



GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE IN STRICT ACCORDANCE WITH THE TOWN OF CHAPEL HILL'S AND THE CONSUMER PRODUCT SAFETY COMMISSION'S STANDARDS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFICATION OF ALL PLAYGROUND DIMENSIONS, MEASUREMENTS, QUANTITIES AND LAYOUTS IN THE FIELD. NEW CURB LOCATIONS SHALL MEET FALL ZONE SPECIFICATIONS OF THE CONSUMER PRODUCT SAFETY COMMISSION HANDBOOK FOR PUBLIC PLAYGROUND SAFETY, [HTTP://WWW.CPSC.GOV/CPSCPUB.PUBS/325.PDF](http://www.cpsc.gov/cpscpub/pubs/325.pdf).
3. CONSTRUCTION STAKE OUT IS THE RESPONSIBILITY OF THE CONTRACTOR.
4. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE EXISTENCE AND LOCATION OF ALL UTILITIES WITHIN THE WORK AREA.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING OR REPLACING ANY DAMAGED EXISTING SITE FEATURES, FACILITIES OR IMPROVEMENTS THAT OCCUR DURING THE DEMOLITION OR CONSTRUCTION OPERATION THAT ARE NOT INDICATED TO BE REMOVED.
6. ANY AND ALL LANDSCAPING, EXISTING TREES OR SHRUBS TO REMAIN WHICH ARE DAMAGED DURING DEMOLITION OR CONSTRUCTION SHALL BE REPLACED BY THE CONTRACTOR UTILIZING A LICENSED LANDSCAPE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
7. ALL EXISTING SITE FEATURES SHALL REMAIN UNLESS NOTED TO BE REMOVED OR DEMOLISHED.
8. THE CONTRACTOR SHALL CONDUCT THE WORK IN A SAFE MANNER AND WITH A MINIMUM AMOUNT OF INCONVENIENCE TO TRAFFIC.
9. ALL DISTURBED AREAS SHALL BE VEGETATIVELY STABILIZED IN ACCORDANCE TO TOWN OF CHAPEL HILL'S SEEDING AND LANDSCAPE SPECIFICATIONS.
10. ALL SITE WORK SHALL PRODUCE SURFACE GRADES ADEQUATE FOR STORM WATER RUNOFF TO PREVENT STANDING WATER ON ALL DEVELOPED AREA AND TO MEET EXISTING GRADES IN SMOOTH TRANSITION.
11. THE PROJECT WORK AREA SHALL REMAIN CLEAN OF CONSTRUCTION LITTER AND EXCESS DEBRIS AT ALL TIMES.

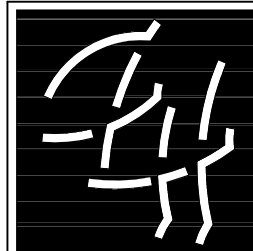
CHAPEL HILL PLAYGROUND REPAIRS

CHAPEL HILL, NC

DATE: AUGUST 3, 2015

CLH PROJECT NO: 15-130

DRAWING #: C 7.02 - DETAILS



CLH
DESIGN, PA

400 Regency Forest Dr.
Suite 120
Cary, NC 27518
Phone: 919.319.6716
Fax: 919.319.7516
LA: C-106 PE: C-1595