

EXHIBIT "A"
WORK ORDER FORM
PURSUANT TO AN AGREEMENT BETWEEN
THE CITY OF FORT COLLINS
AND
Evergreen Tennis

Dated: 11/28/2017

Work Order Number: _____
Purchase Order Number: _____
Project Title: Troutman Court Renovation
Commencement Date: 11/28/2017
Completion Date: 6/30/2018
Maximum Fee: (time & reimbursable direct costs): \$73,920.00
Project Description: Troutman Court Renovation
Scope of Services: Demolition of 2 tennis courts and one basketball court, installation of one post-tension basketball court per 8498 Tennis Court Maintenance and Renovation on-call

Acceptance *Bill Winsty* User

Service Provider agrees to perform the services identified above and on the attached forms in accordance with the terms and conditions contained herein and in the Services Agreement between the parties. In the event of a conflict between or ambiguity in the terms of the Services Agreement and this work order (including the attached forms) the Services Agreement shall control.

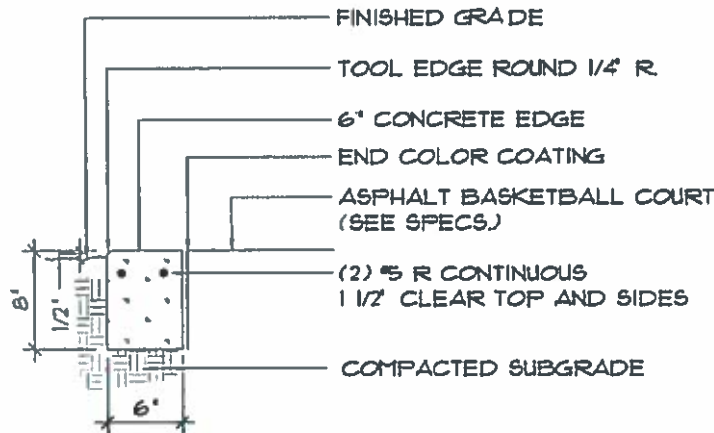
The attached forms consisting of ____ () pages are hereby accepted and incorporated herein by this reference, and Notice to Proceed is hereby given.

Service Provider
By: *George J. Stahlin*
Date: 11/29/17

City of Fort Collins
By: *[Signature]*
Date: 11/30/17

CC: Purchasing

Director of Purchasing and Risk Management
if over \$30,000



3 CONCRETE HEADER – SECTION

1" = 1'

Tennis Net, Posts and Related Equipment:

Contractor shall furnish required labor, materials, trenching, backfilling, equipment, implements, testing, parts and supplies necessary for, or appurtenant to installation of tennis net equipment in accordance with the drawings and specifications. Bid item includes work associated with furnishing and installing of tennis net, net posts, post footings and net center strap anchor, on the basis of each complete tennis net assembly installed.

Basketball Post, Backboard, Goal and Net:

Contractor shall furnish required labor, materials, trenching, backfilling, equipment, implements, testing, parts and supplies necessary for, or appurtenant to installation of basketball post/backboard assembly in accordance with the drawings and specifications. Bid item includes work associated with furnishing and installing of posts, post footings, goal and net on the basis of each complete backboard assembly installed.

Demolition of Tennis Court

SECTION 02111 – SITE PREPARATION/SITE REMOVALS

Install sediment and erosion controls; install construction fencing; remove the existing fence fabric, framework and gates; remove and dispose of existing net posts, center strap anchor and nets; excavate and dispose of existing bituminous concrete; regrade subsurface as necessary based on demolition

Demolition of Basketball Court

SECTION 02111 – SITE PREPARATION/SITE REMOVALS

Convert Existing Asphalt Tennis Court To 4 Pickleball Courts

Protect existing tennis court posts and nets, to be used as a divider.

Install Plexipave surfacing system per above Maintenance Bid Schedule Descriptions.

Follow USAPA specifications for lines.

Courts to be two-tone in color, review layout with Parks Project Manager prior to installation.

Furnish and install 4 Edwards Classic, 2 7/8" OD pickleball posts and 4 pickleball nets per manufacturer's specifications.

SECTION 02111 – SITE PREPARATION/SITE REMOVALS

PART 1 - GENERAL

1.01 Description

- A. Work under this section shall include, but not be limited to the following;
1. Setting soil and erosion control, layout project components, installing construction fencing, stripping and stockpiling existing topsoil as necessary.
 2. Removal of existing chain link fencing and framework, removal of signage on fencing, removal of existing tennis court components.
 3. Removal of cement concrete, bituminous concrete and other items designated in the specifications or as required to construct the proposed project.
 4. Salvage of materials as indicated.
 5. Disposal of waste materials

1.02 Submittals

- A. Contractor shall provide a demolition plan and schedule for work.

PART 2 – MATERIALS

PART 3- EXECUTION

3.01 General

- A. Contact "Call Before You Dig" (811) prior to commencing any demolition operations.
- B. Contractor shall provide a demolition plan and schedule to City Project Manager for review. No work shall take place until demolition plan is approved.
- C. The Contractor shall furnish signs, lights, barricades, and other equipment as may be necessary for the safe prosecution of his work. All protection shall be moved as required for construction staging and removed at the completion of work.
- D. The Contractor shall furnish all necessary sedimentation and erosion control measures as necessary.
- E. The Contractor shall be responsible for any and all damage related to structures and facilities which are to remain. He shall repair this damage to the satisfaction of the Owner and at no additional cost to the Owner.
- F. The Contractor shall clean up and remove the debris resulting from demolition as the work progresses and as ordered by the Owner. All debris except that noted for salvage shall become property of the Contractor, who is thereafter responsible for its proper disposal. No demolition material shall be left on the site at the completion of construction.
- G. The work shall be laid out to true lines and grades. Surveying of lines and grades, and staking shall be accomplished by the Contractor. Monuments shall be substantially established, protected and maintained in place by the Contractor for the duration of the contract or until such time as their removal may be authorized.

- H. The Contractor shall salvage any materials requested by the Owner and shall deliver materials to the location as directed by the Owner.
- I. The Contractor shall secure proper written authorization for any change in the scope of work prior to performing the work.
- J. The Contractor shall leave in place any construction fencing meant to protect the site and maintain until project completion.

3.02 Strip and Stockpile Soil

- A. The Contractor shall strip and stockpile, topsoil and common soil from within the limits of construction as required to complete the project in accordance to the lines and grades.
- B. Suitable topsoil and common soil shall be stockpiled on-site and shall reuse as required.

3.03 Asphalt Pavement Removal

- A. This work shall consist of the removal of the asphalt and gravel base.
- B. The removal and disposal of the asphalt to an approved site is the responsibility of the contractor.

End of Section

SECTION 02521 - POST-TENSION CONCRETE COURT PAVING

PART 1 - GENERAL

1.01 Work Included

- A. The contract work to be performed under this section consists of furnishing required labor, materials, equipment, implements, shop drawings, structural design, parts and supplies necessary for, or appurtenant to, the site preparation and grading of Tennis and Basketball Courts
- B. Construction of a post-tensioned concrete slab in accordance with these specifications.

1.02 Shop Drawings and Submittals.

- A. The contractor shall be responsible for the preparation of structural design drawings of the post-tension play court slabs.
- B. The contractor shall submit structural drawings and the associated structural calculations to the Owner's Representative for their records. The shop drawings and calculations shall be prepared and stamped by a structural engineer licensed by the State of Colorado. The structural engineer shall have a minimum of 5 years of experience in designing similar projects. The owner's representative shall review and approve the shop drawings prior to construction of the play courts. The City review and approval of the shop drawings does not relieve the contractor of providing structurally sound concrete play courts slabs.
- C. This specification section is performance based. If the design recommendations of the contractor's structural engineer conflict with this specification, the structural engineer's recommendations shall take precedence.
- D. Manufacturer's installation instructions and technical literature for products used in construction of the post-tension paving.

PART 2 - MATERIALS

2.01 Subgrade Material

- A. After topsoil has been stripped, the existing subgrade material can be used unless import fill is specified by a soils engineer.

2.02 Fine Grade Material

- A. Fine grade base material shall be an approved compactable, free draining base material (sand, fine gravel, etc.).

2.03 Moisture/Vapor Barrier

- A. A double moisture/vapor barrier, consisting of polyethylene (two-6 mil. thicknesses laid in opposite directions) should be installed prior to installation of any steel and/or cables. Overlap polyethylene sheets at least 6" and tape joints. Once in place no vehicular traffic should be allowed on the moisture/vapor barrier nor any other object which could puncture the barrier or otherwise compromise the integrity of the surface. All concrete should be pumped, not driven onto the court. Excessive loads at any time are unacceptable.

2.04 Tensioning Cables and Anchoring

- A. Post-tensioning strands and anchorages shall conform to the APTI Guide Specifications for Post-tensioning Materials.
- B. Unless specified otherwise by the contractor's structural engineer, the tensioning strands shall consist of one-half inch (1/2" diameter, 7-wire, stress relieved strands, having a guaranteed ultimate strength of 270,000 psi (270 Kips). Strands shall conform to ATSM-416. Cables shall be fabricated to proper length for each slab, coated with a permanent rust preventative lubricant and encased in slippage sheathing. Breaks in the sheathing shall be repaired with tape prior to concrete placement. A maximum of six inches (6") exposed strands is permitted at the dead-end anchor. Post-tensioning material should consist of seven wire stress-relieved strands, conforming to ASTM A 416, with an ultimate strength of 270 KSI. Strands should be coated with a permanent rust preventative lubricant and wrapped with plastic sheathing. End anchorage devices will conform to Post-Tensioning Institute (PTI) specifications.

2.05 Concrete Construction

- A. Unless specified otherwise by the contractor's structural engineer, the concrete shall have a compressive strength of not less than 3,500 psi after twenty-eight (28) days. Ready-mixed concrete shall be mixed and delivered according to ASTM C-94 specifications for ready-mixed concrete with a four inch (4 ") maximum slump.
- B. Cement: Cement (Type 1 or IA) should conform to one of the Standard Specifications for Portland Cement, ASTM C 150 or Specifications for Blending Hydraulic Cements, ASTM C 595, excluding slag cements Types S and SA. Do not use curing compounds.
- C. Air Entrainment: Air entrainment by total volume of concrete should be: 4 to 6% for 1 1/2" maximum size coarse aggregate, 5 to 7% for 3/4" or 1" maximum size coarse aggregate, 6 1/2 to 8 1/2% for 3/8" or 1/2" maximum size coarse aggregate.
- D. Aggregate: Aggregate should conform to Standard Specifications for Concrete Aggregates ASTM C 33. For concrete work that is 5" thick, the nominal size of the coarse aggregate should not exceed 1 1/2". Fly ash or other additives are not acceptable.
- E. Thickness of Concrete: Concrete work shall be a minimum of 5" thick.

PART 3 - EXECUTION

3.1 Subgrade

- A. Trees, bushes, and a minimum of four inches (4 ") of top soil will be removed from the site. The area will be graded to the required depth to accommodate the base and concrete thickness and provide a uniform one percent (1 %) slope at plus or minus one tenth of a foot (+.1') in one plane. Fills will be placed in six inch (6") layers and will be compacted to ninety five percent (95%) standard density at optimum moisture. The contractor will alert the owner of soft spots or structures that could affect the stability of the slab.
- B. The site preparation will be done so as to provide positive drainage away from the play courts and, if needed, to provide intercepting swales to prevent drainage on to the court.
- C. Post-tension courts may be laid on existing asphalt courts only with pre-approved permission from the City Project Manager.

3.02 Fine Grade

- A. The base material shall be placed with automatic laser-regulated equipment capable of providing a true accurate to plus or minus one-quarter inch(+ 1/4"). The depth of the fine grade base material shall be sufficient to develop a one-quarter inch (1/4") accuracy.

3.03 Forming

- A. Forms shall be accurately set to the lines and to plus or minus one-quarter inch(+ 1/4") of finished grades indicated on drawings and be securely staked to prevent settlement or movement during placement of concrete. Forms shall remain until concrete has taken final set.

3.04 Tensioning Cables and Anchors

- A. Unless specified otherwise by the contractor's structural engineer, cables shall be supported on chairs and loosely tied two inches (2 ") high at all intersections (too tightly tied, tendon friction will increase when tensioning) to prevent vertical and horizontal movement during concrete placement. Strands shall be places with no greater spacing than two feet six inches (2'6") wide over 100' and 3 '4" on lengths under 100'. See drawing details for cable spacing. After the forms are removed and the concrete has set to a minimum of 2,000 psi the tensioning procedure may be applied approximately one (1) week later. Each tendon may initially be tensioned to a maximum of eighty percent (80%) ultimate breaking strength and anchored at a minimum of seventy percent (70%) ultimate breaking strength.

Ultimate Breaking Strength: 41,300

80%: 33,000

70%: 28,900

- B. Post-Tensioning: If strand sheathing is damaged or removed, it is to be repaired by taping. A maximum of 6" exposed strand is permitted at the anchor. Dead end anchorages must be power seated. Cables should be laid out in grids no greater in dimension than that specified by the Contractor's Structural Engineer. Concrete must be well consolidated, especially in the vicinity of strand anchorages. Strands should be anchored at 28.9 KIPS, but may be initially stressed at 33 KIPS. A 9" diameter centered on the strand axis by a 36" length should be allowed for stressing equipment clearance. The stressing process generates tremendous pressures and extreme care should be taken to prevent injury from operator error or failure of equipment or materials.
- C. Slabs should be designed using acceptable engineering practices in accordance with the American Concrete Institute Building Code Requirements for reinforced concrete and the Post-Tensioning Institute's tentative specifications for post-tensioning materials. The soil condition and plasticity index of the court site should be considered in determining strand spacing and beam requirements.
- D. Unless specified otherwise by the contractor's structural engineer, the cable ends shall be cut off and cone holes grouted flush with edge of slab. Grout shall be non-shrink grout.

3.03 Joints

- A. Joint locations, if any, shall be specified by the Contractor's Structural Engineer.
- B. Single courts may be poured as a monolithic slab, or a metal key way joint or tooled control joint may be placed at the net line to minimize cracking of the slab due to shrinkage, prior to stressing the cables.

- C. An elastomeric metal construction joint may be placed on the net line if needed. Joints shall not be installed in the play areas.
- D. Multiple court banks may have an expansion joint between every two courts. Where this occurs, the cables will be "dead ended" on both sides.
- E. For multi-court banks, an accepted alternative expansion joint method would be to construct a common expansion joint between every two courts with a T-joint method. The cabling system can be continued through the system to allow for tension to be applied at the end of the total slab distance.

3.04 Placing and Finishing

- A. Fence posts, net posts, sleeves and center anchor should be installed prior to or during concrete placement. Fencing should be completed prior to surfacing.
- B. Concrete should be placed by pumping method.
- C. Unless specified otherwise by the Contractor's Structural Engineer, a full court shall be placed in one (1) continuous operation without intervening joints.
- D. The slab will be placed with a sixty foot (60') mechanical screed capable of providing a surface true to one-eighth inch (1/8") at a 1% slope.
- E. Concrete should be spread, consolidated, screeded, bull-floated and finished in accordance with Section 7.2 of ACI (American Concrete Institute) Standard 302, Recommended Practice for Concrete Floor and Slab Construction.
- F. When concrete is sufficiently set to withstand foot pressure and the water sheen has left the surface, the slab should be uniformly finished by power floating and troweling.
- G. The final finish texture should be a medium broom finish unless otherwise specified by the surface manufacturer. No curing compounds should be used at any time.

3.05 Curing

- A. Immediately after finishing, the concrete should be kept continuously moist for 7 days by covering with polyethylene film or waterproof curing paper, or by sprinkling or ponding or other acceptable coverings. Curing compounds shall not be used. Curing time should be in accordance with surfacing system manufacturer's recommendations (must be compatible with acrylic tennis surfacing material). Timing is critical on all of the above due to the possibility of disturbing the finished surface.

3.06 Surface Tolerances

- A. The finished surface of the court should not vary more than 1/8" (over a nickel) in 10' when measured in any direction. This is to be determined by flooding the court with water, allowing it to drain for one hour on a 70 degree or warmer day.

END OF SECTION

SECTION 02522 -ASPHALT TENNIS AND BASKETBALL COURT PAVING

PART 1 - GENERAL

1.01 Work Included

- A. The contract work to be performed under this section consists of furnishing required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the placing of a gravel base and asphalt mat for the Tennis and Basketball Courts.

PART 2 - MATERIALS

2.01 Subgrade Material

- A. After topsoil has been stripped, the existing subgrade material can be used unless import fill is specified by a soils engineer.

2.02 Gravel Base

- A. Gravel base shall meet the Colorado Department of Transportation standard specification for Class 6 three-quarter inch (3/4") gravel.

2.03 Soil Sterilants

- A. Soil sterilant for inhibiting future growth of flora shall be Hyvar XL, Casoron, Treflan, or equal.

2.04 Asphalt Mat

- A. The asphalt material shall meet all requirements of Colorado Department of Transportation grading S and SX hot bituminous pavement.

PART 3 - EXECUTION

3.01 Gravel Base

- A. Place specified gravel base to a depth of six inches (6"). The base shall be compacted to ninety five percent (95%) standard proctor density at plus or minus two percent (+/- 2%) optimum moisture content. Make sure to maintain a uniform one percent (1 %) slope in the direction indicated on the plans.

3.02 Soil Sterilant

- A. Immediately prior to installation of asphalt mat, apply specified sterilant to subbase. Apply as recommended by the manufacturer, taking extreme care not to sterilize adjacent landscape areas.

3.03 Asphalt Mat

- A. Total thickness of the asphalt mat shall be as shown on the plans and details. The first two inch (2") lift shall be grade S mix and the second lift shall be grade SX mix. Each asphalt lift shall be placed in the same direction as the drainage if at all possible and compacted to ninety five percent (95%) standard marshal. The final mat will have a uniform one percent (1 %) slope and will not vary more than three eighths inch (3/8") in ten feet (10') measured in any direction.

3.04 Control Joint

- A. Subsequent to placement of the asphalt mat and prior to court surfacing a saw-cut shall be placed at net line and between courts. The saw-cut depth shall match the overall asphalt depth.

END OF SECTION

SECTION 02541 - TENNIS AND BASKETBALL COURT SURFACING

PART 1 - GENERAL

1.01 Work Included

- A. The contract work to be performed under this section consists of furnishing required labor, materials, equipment, implements, parts and supplies necessary for, or appurtenant to, the surfacing of play courts (tennis and/or basketball) in accordance with these specifications.

1.02 Shop Drawings and Submittals.

- A. The contractor shall submit product information and manufacturers recommendations for installation to the Owner's Representative for their records. The owner's representative shall review and approve the submittals prior to construction of the surfacing. California Products Plexipave system pre-approved.

PART 2 - MATERIALS

2.01 Crack Filler

- A. Crack filling material shall be Acrylic-Bound Cement Patching compound California Products Patch binder and California Prodcuts Crack filler on smaller cracks, or approved equivalent.

2.02 Surfacing System for Asphalt

- A. California Products Plexipave System per manufacturer's specifications:
 - a. Level with Court Patch binder mix or Plexipatch
 - b. 1 coat Acrylic Resurfacer
 - c. 2 coats Fortified Plexipave
 - d. 1 coat finish (depending on speed of play- either Fortified Plexipave or Plexichrome)

2.03 Surfacing System for Concrete

- A. California Products Plexipave System per manufacturer's specifications:
 - a. Acid Etch with Concrete Preparer.
 - b. Level with Court Patch Binder.
 - c. Ti-Coat as Primer.
 - d. 1 Coat Acrylic Resurfacer.
 - e. Apply 3 coats Fortified Plexipave

2.04 Acrylic Color

- A. Color Selection: Playing Area: Dark Green; Perimeter Area: Medium Green
- B. Colors samples shall be approved by Owner's Representative prior to applying colors.

2.05 Playing Lines

- A. Playing lines shall be painted on using California Products textured white line paint.

PART 3 - EXECUTION

3.01 Surface Preparation

- A. Preparation of the surface shall include the work necessary to provide a clean, uniform and sound surface.
- B. Prior to the surfacing applications, the surface shall be thoroughly cleaned by the use of a power washer and/or power broom. Loose debris and flora shall be removed and cracks fill with the specified filler compound.
- C. Allow proper cure time on court surface based on asphalt or concrete court.

3.02 Crack Filling

- A. All cracks shall be cleaned of foreign debris to full depth, removing any vegetation. Cracks will be filled full depth with the specified crack filling compound.

3.03 Surfacing System for Asphalt

- A. Follow manufacturer's specifications.

3.04 Surfacing System for Concrete

- A. Follow manufacturer's specifications.

3.05 Playing Lines

- A. Playing lines two inches (2") wide will be accurately located and marked by snapping a chalk line and placing one inch (1 ") masking tape guides, using a line taper. Latex acrylic line paint will be brushed on to provide a uniform line. The lines shall have clear definition and ragged lines will not be accepted.

END OF SECTION

SECTION 02820 - CHAINLINK FENCES

PART 1 - GENERAL

1.01 Scope

- A. Furnish labor, materials and equipment, and perform operations required for the proper installation of chain link fences and gates, etc., including concrete footings, hardware, and other related appurtenances.

1.02 PERFORMANCE

- A. Lightning Protection System: Maximum grounding-resistance value of 25 ohms under normal dry conditions.

1.03 SUBMITTALS

- A. Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for chain-link fences and gates.
 - Fence and gate posts, rails, and fittings.
 - Chain-link fabric, reinforcements, and attachments.
 - Gates and hardware.
- B. Shop Drawings: Show locations offences, gates, posts, rails, tension wires, details of extended posts, extension arms, gate swing, or other operation, hardware, and accessories. Indicate materials, dimensions, sizes, weights, and finishes of components. Include plans, gate elevations, sections, details of post anchorage, attachment, bracing, and other required installation and operational clearances.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed chain-link fences and gates similar in material, design, and extent to those indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
 - i. Testing Agency's Field Supervisor: Person currently certified according to NETA ETT, or the National Institute for Certification in Engineering Technologies, to supervise on-site testing specified in Part 3.

1.05 PROJECT CONDITIONS

- A. Field Measurements: Verify layout information for chain-link fences and gates shown on Drawings in relation to property survey and existing structures. Verify dimensions by field measurements.

PART 2 - PRODUCTS

2.01 CHAIN-LINK FENCE FABRIC

- A. General: Height shall be as indicated on drawings and details. Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A392, CLFMI CLF 2445, and requirements indicated below:
- B. Steel Wire Fabric: Galvanized wire, wire gauge and size shall comply with the drawings and details and the following:
- C. Ten-foot high tennis court, ball field and dugout enclosures shall have 9 gauge wire, 1 3/4"-inch mesh.
- D. Weight of Metallic (Zinc) Coating: ASTM A 392, Type II, Class 2, with zinc coating applied before weaving.
- E. Selvage: Knuckled at both selvages.

2.02 FENCE FRAMING

- A. Posts and Rails: Comply with ASTM F 1043 for framing, ASTM F 1083 for Group IC round pipe, and the following:
- B. General: Fence framing materials shall be Schedule 40 round seamless galvanized extruded steel pipe.
- C. 2. Fence Height: As indicated on drawings.
- D. Strength Requirement: Light industrial according to ASTM F 1043.
- E. Post and Rail Diameter and Length: According to the following:
 - 1. Corner, Intermediate Terminal and Line Posts for Ten-Foot Chain Link: 2 and 7/8-inch O.D.
 - 2. Corner, Intermediate and Terminal Posts for Eight-foot and Five-Foot Chain Link Fences: 2 and 7/8-inch O.D.
 - 3. Posts shall be of sufficient length to allow for the required depth below grade level.
 - 4. Line Posts for Eight-foot and Five-foot Fences: 2 and 1/2-inch O.D.
 - 5. Top, Middle and Bottom Rail for Five-Foot, Eight Foot and Ten Foot Fences: 1 and 5/8-inch O.D.

2.03 SWING GATES

- A. General: Comply with ASTM F 900 for single and double swing gate types.
- B. Metal Pipe and Tubing: Galvanized steel. Comply with ASTM F 1043 and ASTM F 1083 for materials and protective coatings.
- C. Install two gates.
- D. Frames and Bracing: Fabricate members from round galvanized steel tubing with outside dimension and weight according to ASTM F 900 and the following:
 - a. Leaf Width: As indicated in the drawings and details.
 - b. Tubular Steel: 1 5/8" O.D.
- E. Frame Corner Construction:
 - a. Welded, also provide 5/16-inch- diameter, adjustable truss rods for panels 5 feet wide or wider.

- F. Hardware: Latches permitting operation from both sides of gate, hinges, center gate stops and keepers for each gate leaf more than 5 feet wide. Fabricate latches with integral eye openings for padlocking; padlock accessible from both sides of gate,
- G. Locks provided by Owner

2.04 FITTINGS

- A. General: Comply with ASTM F 626.
- B. Post and Line Caps: provide a cap for each post. Line post caps with loop to receive top rail.
- C. Rail and Brace Ends: Attach rails securely to each gate, comer, pull, and end post.
- D. Rail Fittings: Provide the following: Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches long. Rail Clamps: Line and comer boulevard clamps for connecting intermediate and bottom rails (where required) in the fence line-to-line posts.
- E. Tension and Brace Bands: Pressed steel.
- F. Tension Bars: Steel, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each comer and pull post.
- G. Truss Rod Assemblies: Steel rod and turnbuckle or other means of adjustment.
- H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.

2.05 FENCE GROUNDING

- A. Conductors: Bare, solid wire for No. 6 AWG and smaller; stranded wire for No. 4 A WG and larger.
- B. Material above Finished Grade: Copper.
- C. Material on or below Finished Grade: Copper.
- D. Bonding Jumpers: Braided copper tape, 1 inch wide, woven of No. 30 AWG bare copper wire, terminated with copper ferrules.
 - a. Connectors and Grounding Rods: Comply with UL 467.
- E. Grounding Rods: Copper-clad steel.
 - a. Size: 5/8 by 96 inches.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, and other conditions affecting performance.
 - i. Do not begin installation before final grading is completed
 - ii. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 100 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.03 INSTALLATION, GENERAL

- A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.

3.04 CHAIN-LINK FENCE INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm undisturbed soil.
- B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
- C. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices. Allow concrete to attain full strength prior to installing rails or fabric, in no case sooner than seventy-two (72) hours after placement.
- D. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
- E. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more.
- F. Line Posts: Space line posts uniformly at dimensions indicated on the drawings. If post spacing is not indicated on the drawing, provide a maximum post spacing of 10 feet.
- G. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Install braces at end and gate posts and at both sides of corner and pull posts.
- H. Locate horizontal braces at mid height of fabric on fences with top rail. Install so posts are plumb when diagonal rod is under proper tension.
- I. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch-diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches o.c. Install tension wire in locations indicated before stretching fabric.
- J. Bottom Tension Wire: Install tension wire within 4 inches of bottom of fabric and tie to each post with not less than same diameter and type of wire.
 - a. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing.
- K. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
 - a. Bottom Rails: Install, spanning between posts, as indicated.
- L. Chain-Link Fabric: Apply fabric to court/field side of enclosing framework. Leave 1 inch between finish grade or surface and bottom selvage, unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.

- M. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.
- N. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at 1 end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - a. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to rails and braces at 24 inches o.c.
- O. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- P. Tennis Court Fencing: Construct tennis court fence according to ASTM F 969.

3.05 GATE INSTALLATION

- A. Gate frame comers shall be mitered and welded. Provide a smooth continuous weld around the entire joint. Remove splatter, grind smooth exposed welds to blend, and contour surfaces to match adjacent surfaces.
- B. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

3.06 WELDING

- A. Comply with AWS D1.1. Provide smooth weld all around. Remove splatter, grind smooth exposed welds to blend, and contour surfaces to match adjacent surfaces.
- B. Paint welds to match color of framework.

3.07 FOOTINGS

- A. Minimum depth of footings shall be 3 feet for fence posts, unless directed otherwise by the Tennis Court Structural Engineer. Posts shall be set in cylindrical concrete foundations. Hole shall be excavated for the full depth of post and footing; not less than the diameter indicated on the drawings.
- B. Concrete ASTM C94 using 3/4-inch maximum size aggregate and having minimum compression strength of 3,000 psi at 28 days.

3.08 GROUNDING AND BONDING

- A. Fence Grounding: Install at maximum intervals of 1500 feet except as follows:
 - 1. Fences within 100 Feet of Buildings, Structures, Walkways, and Roadways: Ground at maximum intervals of 750 feet.
 - a. Gates and Other Fence Openings: Ground fence on each side of opening.
 - b. Bond metal gates to gate posts.
 - c. Bond across openings, with and without gates, except openings indicated as intentional fence discontinuities. Use No. 2 A WG wire and bury it at least 18 inches below finished grade.

- B. **Grounding Method:** At each grounding location, drive a grounding rod vertically until the top is 6-inches below finished grade. Connect rod to fence with No. 6 A WG conductor. Connect conductor to each fence component at the grounding location:
- C. **Bonding Method for Gates:** Connect bonding jumper between gate post and gate frame.
- D. **Connections:** Make connections so possibility of galvanic action or electrolysis is minimized. Select connectors, connection hardware, conductors, and connection methods so metals in direct contact will be galvanically compatible.
 - a. Use electroplated or hot-tin-coated materials to ensure high conductivity and to make contact points closer in order of galvanic series.
 - b. Make connections with clean, bare metal at points of contact.
 - c. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
 - d. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
 - e. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

3.09 FIELD QUALITY CONTROL

- A. **Grounding-Resistance Testing:** Engage a qualified independent testing and inspecting agency to perform field quality-control testing.
- B. **1. Grounding-Resistance Tests:** Subject completed grounding system to a megger test at each grounding location. Measure grounding resistance not less than two full days after last trace of precipitation, without soil having been moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural grounding resistance. Perform tests by two-point method according to IEEE 81.
- C. **Excessive Grounding Resistance:** If resistance to grounding exceeds specified value, notify Architect promptly. Include recommendations for reducing grounding resistance and a proposal to accomplish recommended work.
- D. **3. Report:** Prepare test reports certified by a testing agency of grounding resistance at each test location. Include observations of weather and other phenomena that may affect test results.

3.10 ADJUSTING

- A. **Gate:** Adjust gate to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. **Lubricate hardware and other moving parts.**

END OF SECTION

SECTION 02841-ATHLETIC EQUIPMENT

PART 1 - GENERAL

1.01 Scope

- A. Work covered by this specification concerns labor, materials, and equipment necessary for installation of:
 - a. Tennis Equipment
 - b. Basketball Equipment

1.02 Submittals & Samples

- A. Shop drawings and technical literature from manufacturer for each of the following:
 - a. Tennis Equipment
 - b. Basketball Equipment
- B. Submit color swatches on finish metal for each of the above site furnishings

1.03 Warranty

- A. Provide a two-year warranty (unless noted otherwise) from the date of Substantial Completion. The minimum two-year warranty applies to all aspects of this section including installation, and materials.
- B. Guarantee material used in this section against defects due to any cause for a period of two full years from the date of acceptance of work.
- C. Replace materials when it is no longer in a satisfactory condition as determined by the City
- D. Representative for the duration of the Warranty Period. Make replacements within fourteen days of notification from the City Representative.
- E. This guarantee will not be enforced should materials be subject to vandalism; improper maintenance procedures carried out by the Owner involving resulting in damage, or other similar circumstances beyond the control of the Contractor.

PART 2 - MATERIALS

2.01 Tennis Equipment

- A. Manufacturer: Edwards, or approved equivalent.
 - 1. Net: BX/DC 5021
 - 2. Net Post: Edwards Classic, 2 7/8" OD, Model # 63054
 - 2. Net Post Ground Sleeve: submit for approval
 - 4. Net Center Strap: submit for approval
 - 5. Center Anchor: submit for approval
 - 6. Windscreen: Shall be Black OMP9R, 9' high with fabric woven from 6.0 ounce per square yard polypropylene. Windscreens 9' high shall have a center seam with internal reinforcement. Hems and seams are to be sewn with #7 weather and ultraviolet light resistant dacron thread. Grommets shall be of brass material

spaced at a maximum of 12" apart on all hems. A 9' high windscreen center seam shall have grommets as above.

2.02 Basketball Equipment

- A. Basketball Post and Backboard and Goal: First Team Ruff Neck Max Post, 4 ½" O.D. heavy duty galvanized steel post with four-foot extension, or approved equivalent.

PART 3 - EXECUTION

3.01 General

- A. Installation in accordance with the plans and details and with the manufacturer's recommendations.
- B. Athletic equipment shall be installed in the locations and quantities shown on the plan and details.
- C. Owner's Representative shall approve the locations prior to pouring concrete pads or fastening in place.
- D. Use templates, provided by the manufacturer, to properly position mounting bolts.

3.02 Tennis Equipment

- A. Set tennis net posts in concrete foundations as shown in the plans and details. Net posts to be laid out according to the United States Tennis Court and Track Builders Association Specifications.
- B. Nets shall be hung flush with the net posts and thirty-six inches (36") high in the center.
- C. Loop center strap around net, hook into anchor, and tighten so that the net is thirty-six inches (36") high in the center.
- D. Set in concrete eight inches by eight inches (8"x 8").
- E. The nine foot (9') high curtains shall be accurately measured, fabricated, and attached with nine gauge (9 Ga.) Galvanized hog rings and #8 polyrope for the center seam.

END OF SECTION

Project #1 – Troutman Tennis Courts and Basketball Court

PROJECT DESCRIPTION: Demolition of existing 2 tennis courts and one basketball court; removal of all material from site down to subgrade; Installation of 2 post-tension tennis courts; Installation of 1 post-tension basketball court (60'x100'); Site protection and restoration. Site address: 500 W. Troutman Pkwy. Construction is expected to take place in late 2017, but part of the project may be delayed to 2018. If the project is delayed, price negotiations will be permitted but shall be based on the submitted Bid Schedule.

For this project, reference the full descriptions of the below section in Attachment 2.

SECTION 02111 – SITE PREPARATION/SITE REMOVALS

SECTION 02521 - POST-TENSION CONCRETE COURT PAVING

SECTION 02541 - TENNIS AND BASKETBALL COURT SURFACING

SECTION 02820 - CHAINLINK FENCES

SECTION 02841- ATHLETIC EQUIPMENT

APPENDIX J

Construction, Deconstruction Or Demolition Waste Diversion

This policy applies to waste material generated from the construction, deconstruction, or demolition of City of Fort Collins facility projects.

Purpose: To divert the maximum amount of building materials from the waste stream and reduce the demand for new materials - thus decreasing the environmental impact of providing those materials. Priority is to reuse materials in new or existing structures. Those materials not suitable for reuse shall be recycled - as feasible. Sending material to a landfill is a last resort. (Hazardous material is an exception.) Relocating and using a structure at another site is a method of reuse.

Background: In the context of physical construction, deconstruction is the selective dismantlement of building components, specifically for re-use, recycling, and waste management. It differs from demolition where a site is cleared of its building by the most expedient means. Deconstruction has also been defined as "construction in reverse." The process of dismantling structures is an ancient activity that has been revived by the growing field of sustainable, green building. Buildings, like everything, have a life cycle. Deconstruction focuses on giving the materials within a building a new life once the building as a whole can no longer continue.

When buildings reach the end of their useful life, they are typically demolished and hauled to landfills. Building implosions or 'wrecking-ball' style demolitions are relatively inexpensive and offer a quick method of clearing sites for new structures. On the other hand, these methods create substantial amounts of waste. Components within old buildings may still be valuable, sometimes more valuable than at the time the building was constructed. Deconstruction is a method of harvesting what is commonly considered "waste" and reclaiming it into useful building material.

A major difference between construction debris and deconstruction/demolition (D/D) debris is that construction debris tends to be cleaner and more easily separated. D/D materials typically tend to be from older facilities, so contaminants such as asbestos, lead based finishes, mercury, and PCB's complicates their reuse and recycling.

Policies, Procedures, and Guidelines:

1. City project managers are responsible for communicating the policies for waste diversion to contractors and subcontractors performing construction, deconstruction & demolition work. Project managers of projects that generate

large amounts of debris and waste material shall work closely with the City's Natural Resources Department (NRD) to ensure diversion meets specific City of Fort Collins goals.

2. For a D/D project, an environmental assessment and proper removal of any identified hazardous materials is required prior to further work.

3. Contractors and/or project managers must obtain all appropriate permits.

4. Diversion goals: New building construction waste diversion must adhere to the Leadership in Energy and Environmental Design (LEED) Gold diversion ratings. Deconstruction and demolition projects should achieve 100% diversion of materials such as concrete, rock, asphalt, dirt, bricks, and metals and at least 70% diversion of all remaining materials by weight or volume through source separation of reuse, recyclable or salvageable materials.

5. City's request for proposals (RFP) and contracts for these projects shall require the submission of a recycling, reuse, and disposal plan to the project manager for approval. To measure compliance, the plan shall include tracking of salvaged, recycled and waste materials be documented on a form similar to attachment one. Copies of receipts and/or weight tickets may also be required. A copy of the tracking form shall be provided to Natural Resources Department.

6. City contractors violating the City's diversion policy may be barred from City of Fort Collins construction, deconstruction or demolition contracts for a period of two years.

7. In the event of a natural or other disaster, the diversion goals as stated above shall apply to any/all disaster relief cleanup efforts unless modified by the Natural Resources Department.

8. The Natural Resources Department, in concert with the project managers, will maintain a construction, deconstruction, and demolition waste "best practices" manual with an annually updated list of recycling and reuse options.

9. A diversion cost analysis will be conducted on larger projects (>\$50,000) to determine if deconstruction is not cost prohibited along with a determination of project time requirement and if the facility is suitability for deconstruction.

EXHIBIT B**4. Project #1 – Troutman Tennis Courts and Basketball Court Bid Schedule**

See Attachment 3 for definition of item and specifications

Item No.	Description	Unit	Quantity	Unit Price	Total
29	Demolition of 2 tennis courts and one basketball court; removal of all material from site down to subgrade	LS	1	26520 ⁰⁰	26520 ⁰⁰
30	Installation of 1 post-tension tennis courts	LS	1	56880 ⁰⁰	56880 ⁰⁰
31	Installation of 1 post-tension tennis courts	LS	1	56880 ⁰⁰	56880 ⁰⁰
32	Installation of 1 post-tension basketball court (60'x100')	LS	1	47400 ⁰⁰	47400 ⁰⁰
33	Site protection and restoration	LS	1	2500 ⁰⁰	2500 ⁰⁰
				TOTAL	190,180⁰⁰

5. Warranty

1. 2-year warranty from accepted completion on materials & workmanship.
2. 4-year warranty from accepted completion on surface wear-out.
3. 5-year warranty on new 5" slab and post-tension system.