Project Manual

Sandy Creek Park Improvements
CITY OF DURHAM, NORTH CAROLINA

January 12, 2018

Parks and Recreation Department
400 Cleveland Street
Durham, NC 27701
(919) 560-4355
# TABLE OF CONTENTS

## DIVISION 00 – BIDDING AND CONTRACT REQUIREMENTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Invitation to Bidders</td>
<td>3</td>
</tr>
<tr>
<td>Instructions to Bidders</td>
<td>9</td>
</tr>
<tr>
<td>Bid Proposal Form</td>
<td>13</td>
</tr>
<tr>
<td>Non-Collusion Affidavit</td>
<td>16</td>
</tr>
<tr>
<td>Contractor Safety Record Information</td>
<td>17</td>
</tr>
<tr>
<td>Procurement Forms</td>
<td>21</td>
</tr>
<tr>
<td>Request for Approval of Substitution</td>
<td>30</td>
</tr>
</tbody>
</table>

## DIVISION 01

<table>
<thead>
<tr>
<th>Sec. No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>01100</td>
<td>Summary</td>
<td>01100-1</td>
</tr>
<tr>
<td>01220</td>
<td>Unit Prices</td>
<td>01220-1</td>
</tr>
<tr>
<td>01260</td>
<td>Contract Modification Procedures</td>
<td>01260-1</td>
</tr>
<tr>
<td>01330</td>
<td>Submittals</td>
<td>01330-1</td>
</tr>
<tr>
<td>01400</td>
<td>Quality Requirements</td>
<td>01400-1</td>
</tr>
<tr>
<td>01500</td>
<td>Temporary Facilities and Controls</td>
<td>01500-1</td>
</tr>
<tr>
<td>01600</td>
<td>Cleaning Up</td>
<td>01600-1</td>
</tr>
<tr>
<td>01700</td>
<td>Execution Requirements</td>
<td>01700-1</td>
</tr>
<tr>
<td>01770</td>
<td>Closeout Procedures</td>
<td>01770-1</td>
</tr>
</tbody>
</table>

## TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Sec. No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>015639</td>
<td>Temporary Tree and Plant Protection</td>
<td>015639-1</td>
</tr>
</tbody>
</table>

## DIVISION 31 – EARTHWORK

<table>
<thead>
<tr>
<th>Sec. No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>311000</td>
<td>Site Clearing</td>
<td>311000-1</td>
</tr>
<tr>
<td>312000</td>
<td>Earth Moving</td>
<td>312000-1</td>
</tr>
</tbody>
</table>

## DIVISION 32 – EXTERIOR IMPROVEMENTS

<table>
<thead>
<tr>
<th>Sec. No.</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>321216</td>
<td>Asphalt Paving</td>
<td>321216-1</td>
</tr>
<tr>
<td>329200</td>
<td>Turf and Grasses</td>
<td>329200-1</td>
</tr>
</tbody>
</table>
Invitation to Bidders – Sandy Creek Park Improvements, Durham, NC

Background and Purpose
Part of the existing path around Sandy Creek Park is crumbling and even buried in some places along the trail. A new path will replace the existing asphalt and concrete path that is in extreme disrepair. The new path will be asphalt and will meet ADA-accessible guidelines.

Scope of Services to be Performed
(This is a condensed list. See the attached Project Manual and Drawings for the full Scope of Work.) The Contractor shall provide staff and equipment to perform the work at the site.

Sandy Creek Park
3510 Sandy Creek Road
Durham, NC  27707

- Contractor shall remove the existing asphalt driveway and part of the existing concrete path and dispose off-site at an appropriate facility.
- Contractor shall install specified RCP pipe as shown on attached drawings.
- Contractor shall install asphalt for the new trail as specified in the attached Project Manual and on the attached drawings.
- Contractor shall seed and straw all disturbed areas.
- Once started, the work is to be completed within 60 calendar days.
- Each bidder must show evidence that they are licensed under Chapter 87 of the N.C. General Statutes. A General Contractors License is required.
- Contractor shall remedy any defects in the Work, and pay all expenses for any damage to other Work resulting there from, which shall appear within a period of one (1) year from the date of final acceptance of the work.
The schedule for the performance of the work shall be as follows:

<table>
<thead>
<tr>
<th>Bids received by the City (Parks and Recreation)</th>
<th>Responses are due by 3:00 PM on Tuesday, February 13, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Responses may be mailed or presented in person to:</td>
</tr>
<tr>
<td></td>
<td>Jill Pafford</td>
</tr>
<tr>
<td></td>
<td>Department of Parks and Recreation</td>
</tr>
<tr>
<td></td>
<td>City of Durham</td>
</tr>
<tr>
<td></td>
<td>400 Cleveland Street</td>
</tr>
<tr>
<td></td>
<td>Durham NC 27701</td>
</tr>
<tr>
<td></td>
<td>The envelope should be identified with the project name, time and date of Bid Opening, the Bidder’s name and address, and Bidder’s General Contracting license number.</td>
</tr>
</tbody>
</table>

| Pre-Bid Meeting (Optional) | Pre-Bid Meeting – Wednesday, January 31, 2018 at 2:00 PM at the Sandy Creek Park Picnic Shelter, 3510 Sandy Creek Drive, Durham, NC. |

<table>
<thead>
<tr>
<th>Bid Information (see attached Project Manual for forms)</th>
<th>One Lump Sum Quote (on Bid Form)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UBE Procurement Forms (Employee Breakdown Form)</td>
</tr>
<tr>
<td></td>
<td>Signed Non-Collusion Affidavit</td>
</tr>
<tr>
<td></td>
<td>Contractor Safety Record Information</td>
</tr>
<tr>
<td></td>
<td>Any bids submitted without these forms may be deemed as non-responsive. The City of Durham reserves the right to reject any or all bids, waive informalities, and/or accept such bid as appears in its judgment to be in the best interest of the City.</td>
</tr>
</tbody>
</table>
Questions/Substitutions

All inquiries, questions, requests for substitution, and/or clarifications must be submitted in writing via the email below according to the directions given in the Request for Approval of Substitution and in the Instructions to Bidders prior to 5:00 PM on Thursday, February 1, 2018.

General questions may be directed to: jill.pafford@durhamnc.gov

Drawing and technical specification inquiries should be directed to:

Coulter Jewell Thames PA
C/O Daniel A. Jewell, RLA
PH: 919-682-0368
EMAIL: djewell@cjtpa.com

Performance of the work

Work must be completed within 60 days after work is started on the site.

Project completed and accepted by City; invoice processed for payment

Within 30 days after completion of work.

Equal Business Opportunity Program

It is the policy of the City to provide equal opportunities for City contracting for underutilized firms owned by minorities and women doing business in the City’s Contracting Marketplace. It is further the policy of the City to prohibit discrimination against any firm in pursuit of these opportunities, to conduct its contracting activities so as to prevent such discrimination, to correct present effects of past discrimination and to resolve complaints of discrimination. This policy applies to all City contracting, including procurement services.

In accordance with the Ordinance, all contractors are required to provide the information requested in the “Equal Business Opportunity Program Procurement Forms” package included with this Request for Bids. Bids that do not contain the appropriate, completed forms will be deemed non-responsive and ineligible for consideration.

For procurement services that have no UBE goals, only the “Employee Breakdown” form is required. This project has no UBE goals.

The Department of Equal Opportunity/Equity Assurance is responsible for the Equal Business Opportunity Program. All questions about “Equal Business Opportunity Program Procurement Forms” should be referred to Deborah Giles or other department staff at (919) 560-4180.
**E Verification**
The contractor and its subcontractors must comply with the N. C. E-Verify law. The contractor will need to represent and covenant that the contractor and its subcontractors comply with the requirements of Article 2 of Chapter 64 of the NCGS. The words "contractor," "contractor’s subcontractors," and "comply" as used in this subsection shall have the meanings intended by NCGS 143-129(j). The City is relying on this subsection in entering into this contract. If this contract is subject to NCGS 143-133.3, the contractor and its subcontractors shall comply with the requirements of Article 2 of Chapter 64 of the NCGS.

**State Treasurer’s Lists Regarding Iran and Boycott of Israel**
If the candidate or the City signs the contract on October 1, 2017 or afterwards, and the value of the contract is $1,000 or more, the following applies unless the candidate otherwise states in its proposal: the candidate affirms (by submitting a proposal) that (1) its name does not appear on the list of companies that are engaged in a boycott of Israel developed by the N. C. State Treasurer under N.C.G.S. 147 86.81(a)(1) or on a list created by the Treasurer pursuant to N.C.G.S. 147 86.58 as a company engaging in investment activities in Iran, and (2) it has no reason to expect that its name will appear on either of those lists. Take notice that a contract between a company named on either list and the City may be void.

**Insurance Requirements**
Contractor agrees to maintain, on a primary basis and at its sole expense, at all times during the life of this Contract the following applicable coverage’s and limits. The requirements contained herein, as well as City’s review or acceptance of insurance maintained by Contractor is not intended to and shall not in any manner limit or qualify the liabilities or obligations assumed by Contractor under this Contract.

**Commercial General Liability** – Combined single limit of no less than $1,000,000 each occurrence and $2,000,000 aggregate. Coverage shall not contain any endorsement(s) excluding nor limiting Product/Completed Operations, Contractual Liability or Cross Liability.

**Automobile Liability** – Limits of no less than $1,000,000 Combined Single Limit. Coverage shall include liability for Owned, Non-Owned and Hired automobiles. In the event Contractor does not own automobiles, Contractor agrees to maintain coverage for Hired and Non-Owned Auto Liability, which may be satisfied by way of endorsement to the Commercial General Liability policy or separate Auto Liability policy. Automobile coverage is only necessary if vehicles are used in the provision of services under this Contract and/or are brought on a City of Durham site.

**Umbrella or Excess Liability** – Contractor may satisfy the minimum liability limits required above under an Umbrella or Excess Liability policy. There is no minimum Per Occurrence limit of liability under the Umbrella or Excess Liability, however, the Annual Aggregate limits shall not be less than the highest ‘Each Occurrence’ limit for required policies. Contractor agrees to endorse City of Durham as an ‘Additional Insured’ on the Umbrella or Excess Liability, unless the
Certificate of Insurance states the Umbrella or Excess Liability provides coverage on a ‘Follow-Form’ basis.

Worker’s Compensation & Employers Liability – Contractor agrees to maintain Worker’s Compensation Insurance in accordance with North Carolina General Statute Chapter 97 and with Employer Liability limits of no less than $1,000,000 each accident, each employee and policy limit. This policy must include a Waiver of Subrogation.

Additional Insured – Contractor agrees to endorse the City as an Additional Insured on the Commercial General Liability. The Additional Insured shall read ‘City of Durham as its interest may appear’.

Certificate of Insurance – Contractor agrees to provide City of Durham a Certificate of Insurance evidencing that all coverage’s, limits and endorsements required herein are maintained and in full force and effect, and Certificates of Insurance shall provide a minimum thirty (30) day endeavor to notify, when available, by Contractor’s insurer. If Contractor receives a non-renewal or cancellation notice from an insurance carrier affording coverage required herein, or receives notice that coverage no longer complies with the insurance requirements herein, Contractor agrees to notify the City within five (5) business days with a copy of the non-renewal or cancellation notice, or written specifics as to which coverage is no longer in compliance. The Certificate Holder address should read:

City of Durham  
Attn: Department of Parks and Recreation  
101 City Hall Plaza  
Durham, NC 27701

All insurance companies must be authorized to do business in North Carolina and be acceptable to the City of Durham’s Risk Manager.

City’s Responsibilities  
The Contractor may rely upon the following responsibilities being fulfilled or supplied by the City (DPR):

- Access to City property and park areas as necessary.
- Designated staff liaison to assist in procuring any necessary approvals, to walk the site with the Contractor to verify the work areas, and to approve the completed work.

The City is responsible for fulfilling these responsibilities on time, according to the project schedule.
**Compensation**
The City shall pay the Contractor at the completion of the work through the Durham Parks Foundation. The City shall not be obligated to pay the Contractor any payments, fees, expenses, or compensation other than those authorized by the City. If costs change because the City or its representatives have not provided timely feedback or because the City changes the agreed-upon scope of work, the Contractor will inform the City about these changes and will obtain approval before continuing.
INSTRUCTIONS TO BIDDERS

1. Bids will be received for Single Prime Contract. All proposals shall be for lump sum.

2. The submission of a bid will assume that the Contractor has fully examined the site and knows existing conditions, and has made every provision for operating under the existing conditions, and has included all necessary items, and has read and understands the Bidding Documents. No consideration shall be given to any claim for extra compensation or extension of contract time because of failure to comply with this provision.

3. Bids must be made in strict accordance on the “Bid Form” provided hereto and all blank spaces for the Unit Prices shall be properly filled in. When requested Unit Prices are not bid, the bid may be considered incomplete. All bids submitted must be on the blank proposal forms herein provided and prices given shall be both in writing and figures and the complete form shall be without any lineation, alterations, or erasures. Any modification to the Bid Form (including Unit Prices) may disqualify the Bid and/or cause the Bid to be rejected. In case of conflicting prices, the written prices shall govern.

One (1) original shall be submitted to City of Durham Parks and Recreation Department.

The Contractor shall fill in the Form of Bid as follows:

A. All bids must be signed by an authorized official of the firm.

B. Each proposal shall include the full name and address, phone number, and e-mail contact of the bidder.

C. It shall be the specific responsibility of the Bidder to deliver this Bid to address specified in Invitation to Bidders prior to the date and time specified in the invitation to bidders for opening of the Bids. Later delivery of a Bid for any reason, including delivery by the United States Mail, shall disqualify the Bid.

D. Modifications of previously deposited Bids will be acceptable only if delivered to the place of the bid by the specified time.

Bids shall be received in strict accordance with requirements of the General Statutes of North Carolina. All copies of the Bid, and any other documents required to be submitted with the Bid shall be enclosed in a double envelope. The envelope can be hand delivered or mailed and shall be addressed to the City of Durham, Parks and Recreation Department, Attn: Jill Pafford, 400 Cleveland Street, Durham, North Carolina 27701, and should be identified with the project name, time and date of Bid Opening, the Bidder’s name and address, and Bidder’s General Contracting license number.

4. Bidders are encouraged to attend a pre-bid conference at the date and time specified in the invitation to bidders,

5. **The bidder is hereby directed NOT to include the N.C. Sales Tax in the bid total.** The successful bidder to whom the award is made will be required to submit a sworn statement each month itemizing the purchases and taxes paid thereon and certifying that the articles
purchased were used in work performed for the City of Durham. The N.C. Sales and Use Tax so itemized will be made a part of the monthly estimate. A sample form which must be followed to qualify for these payments to Sales and Use Tax is shown in the Project Manual.

6. It is the intent of the City to award this bid to the lowest responsive and responsible bidder. The City reserves the right to reject any and all Bids, including without limitation, nonconforming, non-responsive, unbalanced, or conditional Bids. The City of Durham further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, not to be responsible. The City of Durham may also reject the Bid of any Bidder if the City believes that it would not be in the best interest of the Project to make an award to that Bidder. The City of Durham also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate terms with the Successful Bidder.

7. Except to the extent allowed by statute, bids shall not be withdrawn and bids shall remain subject to acceptance by the City for a period of 90 days.

8. Upon request, bidders must present satisfactory evidence that they have been regularly engaged in the business of constructing such work, such as company work history and references from similar construction projects. And upon request, bidders must show that they are fully prepared with the necessary capital, equipment, etc., to begin the work promptly, and complete the same in accordance with specifications.

9. The Contractor must provide the City of Durham a site – specific safety plan of their organization, prior to approval of the contract.

10. The bidder to whom the award is made shall be required to furnish work crews of adequate number, size, and experience to properly perform the work. The interpretation of the number of crews, size, and experience will be determined by the City of Durham as to their adequacy.

11. The contractor will furnish all materials, labor, equipment, supervision, tools, machinery, etc. for complete construction of projects in accordance with plans and specifications of the City of Durham.

12. The Contractor will perform, or have performed, all the necessary site layout (both lines and grades) for this construction.

13. The City reserves the right to extend the work in this Contract upon the same terms, provided that such extensions shall not exceed in cost fifty per cent (50%) of the original Contract price of the Contract being extended.

14. It shall be the contractors’ responsibility to obtain all necessary and required permits. These permits shall be maintained on site and available upon demand.

15. The contractor(s) to whom the award is made must carry insurance in the amounts and types outlined in the Insurance Requirements document in the Project Manual.

16. The successful bidder is required to commence work within ten (10) days after written notice from the Project Manager. Termination of work shall also be controlled by the City of Durham.
17. Contract completion time for all work on this project is **60 calendar days**.

18. Bidders are required by the City of Durham to be licensed. General Contractors are notified that Chapter 87, Article 1, General Statutes of North Carolina will be observed in receiving and awarding general contracts. Contractors submitting bids on this project must have license classification for general contractor.

19. GS143-128(d) requires all single prime bidders to identify their subcontractors for the Plumbing, Mechanical, and Electrical subdivisions of work. A contractor whose bid is accepted shall not substitute any person as a subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor’s bid is later determined by the contractor to be non-responsible or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor. The PME subcontractors **MUST** be listed or this will be cause for rejection. See the Proposal Form.

20. The bids will be evaluated and the contract awarded in accordance with statutory public contract requirements and as supplemented by the City of Durham’s Equal Business Opportunity Program Construction Forms included with this bid. The following forms are mandatory and must be filled out and returned with the bid proposal.

   A. **Bid Forms**
   B. **Non-Collusion Affidavit**
   C. **Contractor Safety Record Information**
   D. **Equal Business Opportunity Program Construction Forms**
      1. **Employee Breakdown.**

Any bids submitted without these completed forms may be deemed as “non-responsive”. If there are any questions or problems in filling out the UBE forms, please contact:

City of Durham
Equal Opportunity/Equity Assurance Department
(919) 560-4180

21. Substitutions: Any Bidder proposing a substitution shall bear the entire cost of incorporating the substitution into the finished work, including costs of administration, re-detailling, redesigning and changing the work of other contractors and sub-contractors. For proposed material substitutions submit the Request for Approval of Substitution form in the Project Manual to the Designer. If a material substitution is accepted by the Project Manager and Owner, Contractors will be notified by an addendum. The deadline for any request for substitution is as listed in the Invitation to Bidders in order allow time to issue responses in an addendum.

22. Any addenda issued during the time of bidding are to be considered covered in the Bid and the Contract they will become part thereof. It shall be the Contractor’s responsibility to ascertain prior to Bid time the addenda issues and to see that his/her Bid includes any changes thereby required. All Addenda shall be acknowledged by the bidder(s) on the Bid Form. Failure to do so may disqualify the Bid and may cause the Bid to be rejected.

23. Should the Bidder find discrepancies in, or omissions from, the drawings or documents or should he/she be in doubt as to their meaning, he/she shall at once notify the Designer in
CITY OF DURHAM  
Sandy Creek Park Improvements

writing. Any interpretation of the document will be made only by Addendum duly issued. The Designer will not be responsible for any explanation or interpretation of the proposed documents. Neither the Owner nor the Designer will be responsible for any oral instructions. Any questions regarding the Bid Documents or Contract Conditions must be in writing via email and received by the date and time specified in the Invitation to Bidders.

24. Plans and specifications and all bid addenda are available electronically on The City of Durham Finance Department Website under Purchasing:  http://durhamnc.gov/bids.aspx

25. The bidder to whom the award is made shall be required to enter into proposed Contract with the City of Durham, North Carolina,

END OF INSTRUCTIONS TO BIDDERS
BID PROPOSAL FORM  
(USE THIS FORM ONLY)

SUBMIT PROPOSALS IN CARE OF:  
City of Durham  
Durham Parks and Recreation Department  
Attn: Jill Pafford  
400 Cleveland Street  
Durham, NC 27701  
(919) 560-4355

BIDDER’S FIRM NAME:  

DATE:  

PROPOSAL:  Sandy Creek Park Improvements

The Undersigned, as Bidder, hereby declares that only person or persons interested in this proposal as principals or principals is or are named herein and that no other persons than herein mentioned has any interest in this proposal or in the contract to be entered, that this proposal is made without connection with any other person, company or parties making a bid or proposal; and that it is in all respect fair and in good faith without collusion or fraud.

The bidder further declares that he has examined the site of the work and informed himself fully in regard to all conditions pertaining to the place where the work is to be done; that he has examined the specifications for the work and the contract documents relative thereto, and has read all special provisions furnished prior to the opening of bids, that he has satisfied himself relative to the work to be performed.

Materials to be furnished shall be in compliance with standard specifications and special provisions. CONTRACTOR’S responsibility shall continue uninterrupted until expiration of the warranty period as stated in the specifications after completion of the work. The owner (City of Durham) reserves the right to select any or all of the alternates and to increase or decrease the total contract amount utilizing the unit prices supplied by the CONTRACTOR in the bid form.

The Base Bid shall not include any state or local sales tax. Such tax shall be accounted for separately and will be reimbursed from a separate source.

The Bidder agrees, if his proposal is accepted, to contract with the City of Durham, 101 City Hall Plaza, Durham, NC 27701, in the form of contract specified, to furnish all necessary materials, equipment, machinery, tools, apparatus, means of transportation, and labor necessary to complete within the time allotted as specified, the General Construction work on the Owner’s property, in complete accordance with the Plans, Specifications, and Contract
Documents bearing the title **Sandy Creek Park Improvements**, with a definite understanding that no money will be allowed for extra work except as set forth in the Contract Documents.

The undersigned proposes to perform alternatives for stated resulting additions from the Base Bid. Additions shall include any modifications of work or additional work that the undersigned may be required to perform by reason of acceptance of any alternative.

**Base Bid:**

$(\text{________________________})\text{________________________dollars}$

*GS 143-128(d) requires all single prime bidders to identify their subcontractors for the above subdivisions of work. A contractor whose bid is accepted shall not substitute any person as a subcontractor in the place of the subcontractor listed in the original bid, except (i) if the listed subcontractor’s bid is later determined by the contractor to be non-responsible or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work, or (ii) with the approval of the awarding authority for good cause shown by the contractor.*

**UNIT PRICES**

Unit prices quoted and accepted shall apply throughout the life of the contract, except as otherwise specifically noted. Unit prices shall be applied, as appropriate, to compute the total value of changes in the base bid quantity of the work all in accordance with the contract documents. All pricing below is for the element per the project specifications.

A. Unit Price No.1
   1-1/2” bituminous asphalt paving on 4” compacted CABC, SY $________

B. Unit Price No.2
   2” bituminous asphalt paving on 4” compacted CABC, SY $________

C. Unit Price #3
   Remove and dispose of asphalt CY $________

**ADDENDA**

The following addenda are acknowledged as having been received and noted, the provisions for which are included in the proposal(s). Failure to acknowledge receipt of any addenda will subject the bidder to disqualification. CONTRACTOR to sign.

Addendum No. 1:_________________________________________________
Addendum No. 2:_________________________________________________
Addendum No. 3:_________________________________________________
Addendum No. 4:_______________________________________________
REQUIRED FORMS
The following forms have been completed by the CONTRACTOR and are attached hereto.

CONTRACTOR to sign below:

UBE Procurement Forms:
Employee Breakdown
Non Collusion Affidavit
Contractor Safety Record Information

Respectfully submitted this ________________ day of __________________, 2018.

Signature: __________________________________________________________
Title: ______________________________________________________________________
Firm: ______________________________________________________________________
Address: ___________________________________________________________________
___________________________________________________________________________
NC GC License No._________________ Expiration Date _________________

END OF BID PROPOSAL FORM
NON-COLLUSION AFFIDAVIT

By executing this proposal, I certify that this proposal is submitted to the City of Durham competitively and without collusion. I am authorized to represent the candidate or bidder named below both in submitting this proposal and in making this Non-collusion Affidavit. To the best of my knowledge and belief, (1) the candidate or bidder has not violated N. C. General Statute section 133-24 in connection with the proposal, (2) the candidate or bidder has not entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with its proposal, and (3) the candidate or bidder intends to do the work with its own bonafide employees or subcontractors and is not bidding or making a proposal for the benefit of another contractor. The neuter includes the masculine and the feminine. The candidate or bidder to which this Non-Collusion Affidavit refers is:

________________________________________________________.

(insert name of candidate or bidder)

____________________________________________

(signature of individual)

ACKNOWLEDGMENT

Type or print name of the individual who signed the affidavit:

________________________________________________________.

Type or print the name of Notary Public signing this acknowledgment:

________________________________________________________

Place where acknowledgment occurred: County of ________________, State of ________
Notary’s residence: County of ________________________________, State of ___________

I, the Notary Public named above, certify (1) the individual named above personally appeared before me this day, (2) I have personal knowledge, or satisfactory evidence, of the individual’s identity; and (3) the individual acknowledged signing the foregoing affidavit.

This the _____ day of __________________, 20____.

Notary Public

My commission expires:

________________________________________________________
**Contractor Safety Record Information**

The Contractor’s safety record shall be reviewed and evaluated in addition to other quality and performance criteria as part of bid evaluation process. Failure to provide the requested information and documentation may result in rejection of your bid as non-responsive. Accordingly, all bidders must submit the following information regarding their safety record.

The following definitions shall apply to this section:

“DART incident rate” – Acronym for “Days Away, Restrictions and Transfers”. The DART incident rate may be used to show the relative level of injuries and illnesses within a firm compared to the industry. It is based only on those injuries and illnesses severe enough to warrant “Days Away, Restrictions and Transfers”. The DART incident rate is calculated using OSHA’s Form 300 and the following formula:

\[ \frac{(\text{Number of entries in column H (days away from work) + column I (job transfer or restriction)} \times 200,000)}{(\text{Number of hours worked by all employees})} = \text{DART Incident rate.} \]

“EMR” – Acronym for “Experience Modification Rate,” is an indicator of a contractor’s past safety performance, widely used by the insurance industry as an equitable means of determining premiums for workers’ compensation insurance. The rating system considers the average workers’ compensation losses for a given firm’s type of work and amount of payroll and predicts the dollar amount of expected losses to be paid by that employer in a designated rating period, usually three years. The rating is based on comparison of firms doing similar types of work, and the employer is rated against the average expected performance in each work classification. Losses incurred by the employer for the rating period are then compared to the expected losses to develop an experience rating.

“OSHA” – Acronym for the Federal Occupational Health and Safety Administration. The term “OSHA” as used in this Policy also refers to any state or local agency having jurisdictional authorization to enforce worker safety requirements and assess fines or warnings for violation of worker safety standards.

1. **OSHA DART Incident Rate.** Provide the bidder’s DART Incident Rate calculated from OSHA’s Form 300 for the last three years and the other required information shown in the example table below. The bidder must attach all supporting documentation and calculations including certified OSHA forms.
2. **Experience Modification Rate (EMR).** Provide the bidder’s most recent Experience Modification Rate (EMR) based on insurance claims history. *The bidder must provide the source of the EMR information and contact information of insurer entity providing the EMR.*

<table>
<thead>
<tr>
<th>YEAR</th>
<th>CONTRACTOR DART INCIDENT RATE</th>
<th>INDUSTRY DART INCIDENT RATE</th>
<th>INDUSTRY FIELD AND CODE</th>
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<tr>
<th>YEAR</th>
<th>CONTRACTOR EMR</th>
<th>INDUSTRY FIELD AND CODE</th>
<th>NAME AND CONTACT INFO FOR EMR INFORMATION</th>
</tr>
</thead>
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3. **Answer the following OSHA Specific Questions:**

(a) Within the last 2 years, has the bidder received any citations classified by OSHA as being (1) serious, (2) willful and/or (3) repeat violations where your company operates?

Yes _____  No _______

If yes, attach a copy of each such citation and violation.

(b) Has the bidder experienced any work-related fatalities within the last five years?

Yes _____  No _____

(c) Has the bidder had any citations issued by OSHA as a result of work related fatalities within the past 5 years?

Yes _____  No _____
(d) Is the bidder under investigation for any work-related fatalities?
   Yes _____  No _____

(e) If your answer is “yes” to 3(b), (c) or (d), provide a copy of the citation(s), list of number(s) of fatalities and documented explanation of the fatality.

4. Safety Plan:
   (a) Does the company have a written safety program that includes responsibility for all aspects of safety management?
      Yes_________  No _______

   (b) Does the company have a written plan for safety training of new employees and ongoing training of existing employees?
      Yes_________  No _______

   (c) Does the company have documented evidence of safety training that they have conducted?
      Yes_________  No _______

   (d) If the company has employees with limited English ability, does the company have a written plan for ensuring that their employees understand the training they are being given?
      Yes_________  No _______

   (e) Do all supervisors have an appropriate documented level of OSHA training (e.g., a minimum of 30 hour OSHA construction safety training)?
      Yes_________  No _______

   (f) Do employees have documented basic OSHA 10 hour construction safety training?
      Yes_________  No _______

   (g) Does the company have a documented Hazard Communication Program?
      Yes_________  No _______
5. **Required Written Explanation of Safety Record.** If the bidder has any of the following: (a) DART incident rate greater than its industry average, (b) an EMR greater than 1.0, (c) answered "yes" to any of the OSHA Specific Question above, or (d) answered "no" to any of the Safety Plan questions, the bidder shall provide the City, in its bid, a detailed written explanation of its safety record and the reasons why such safety history is NOT representative of its future performance and what specific actions it has taken to improve its overall safety record. Failure to provide a written explanation of its safety record pursuant to this paragraph may be deemed as non-responsive by the City.
CITY OF DURHAM
EQUAL BUSINESS OPPORTUNITY
PROGRAM

PROCUREMENT FORMS
Revised 3/2016

Street Address:
101 City Hall Plaza (Annex)
Durham, North Carolina 27701

The Department of Equal Opportunity/Equity Assurance
Good Things Are Happening In Durham
Equal Business Opportunity Program
UBE Procurement Documentation

All information in this document is applicable as indicated when UBE goals are required. If documents are not submitted, your bid may be deemed non-responsive. Only the Employee Breakdown form is required when there are no UBE goals. Underutilized Business Enterprise (UBE) means a business, including a sole proprietorship, partnership, corporation, limited liability company, joint venture or any other business or professional entity that has been certified by (i) the State of North Carolina as a historically underutilized business (HUB) pursuant to G.S. 143-128.4, as amended; (ii) the North Carolina Department of Transportation as a disadvantaged minority-owned or woman-owned business pursuant to G.S. 136-28.4, as amended; or (iii) the Small Business Administration 8(a) Business Development program of the Small Business Administration of the U.S. Department of Commerce pursuant to 15 U.S.C. 637(a), as amended.

UBE Participation On this form, “participation” is the dollar amount of subcontracts for significant goods and services to be used to perform the contract. For instance, if the bidder would enter into a subcontract with UBEs for a total of $30,000, that would be the UBE participation amount. The sum of UBE participation and non UBE participation should equal the amount of the bid. This form is required for a bid that has participation goals and must be completed and submitted with your bid.

Employee Breakdown must be completed and submitted for the location providing the service/commodity. If the parent company will be involved in providing the service/commodity on the City contract, a consolidated employment breakdown must be submitted.

Statement of Intent to Perform as Subcontractor The bidder must provide one of these forms for each UBE firm that the bidder would subcontract with if the City awards the contract to the bidder.

Request to Change UBE Participation After Bid Opening: If at any time during a City contract, the bidder/contractor proposes to do any of the following:

- to replace a subcontractor,
- to perform subcontracted work with the bidder/contractor’s own forces,
- to increase the quantity of subcontracted work,
- to decrease the quantity of subcontracted work, or
- to change the allocation of work among subcontractors,

then the bidder/contractor must make good-faith efforts to attain the goals that it has shown on the UBE Participation form, and the bidder/contractor must fill out the Request to Change UBE Participation After Bid Opening. Substitutions of subcontractors in these circumstances, both before and after the awarding of a contract, are subject to City approval. Consult the City’s EO/EA Department on the procedures to follow.

Questionnaire on Bidder's Good-Faith Efforts Bidders that do not attain the UBE goals have the responsibility to make good-faith efforts and to demonstrate to the City that they have made such efforts. In determining a bidder’s good-faith efforts to engage UBEs, the City Manager shall consider the information supplied by the bidder to answer the questions in this form, along with other criteria that the City Manager deems proper. This questionnaire is an optional tool that bidders may use to show that they have made good-faith efforts. Even though this form may be submitted after the bid opening, it cannot include information on efforts made after the bid opening. Even if a bidder does not use this form, the City will nevertheless attempt to answer the questions on the questionnaire using good-faith documentation supplied by the bidder. Bidders who do not turn in the questionnaire will still find it helpful to know how the City will determine whether good-faith efforts have been made.
EMPLOYEE BREAKDOWN

Part A – Employee Statistics for the Primary Location

<table>
<thead>
<tr>
<th>Employment Category</th>
<th>Total Employees</th>
<th>Total Males</th>
<th>Total Females</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Asian or Pacific Islander</th>
<th>Indian or Alaskan Native</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Asian or Pacific Islander</th>
<th>Indian or Alaskan Native</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
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</table>

Part B – Employee Statistics for the Consolidated Company (See instructions for this form on whether this part is required.)

<table>
<thead>
<tr>
<th>Employment Category</th>
<th>Total Employees</th>
<th>Total Males</th>
<th>Total Females</th>
<th>White</th>
<th>Black</th>
<th>Hispanic</th>
<th>Asian or Pacific Islander</th>
<th>Indian or Alaskan Native</th>
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<th>Hispanic</th>
<th>Asian or Pacific Islander</th>
<th>Indian or Alaskan Native</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
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</table>
## UBE PARTICIPATION ON BID

Name of Bidder: _____________________________________________

Is bidder a UBE (circle one):  Yes  No

Total dollar amount of UBE participation in bid work: ____________________________

---

**For each row, check one column: E or F.**

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
<th>Column E</th>
<th>Column F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name of proposed subcontractor for base bid work</td>
<td>Goods and services to be provided for base bid work</td>
<td>Subcontract amount, in dollars, for base bid work</td>
<td>Percentage of total base bid (Column C divided by total base bid)</td>
<td>Minority-owned UBE</td>
<td>Women-owned UBE</td>
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<td>$</td>
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</tbody>
</table>

Attach extra sheets as needed.

Do the above participation amounts meet the goals on this contract, assuming only the base bid is counted?

☐ Yes  ☐ No. If the answer is No: (1) the bidder must have made good-faith efforts; (2) the bidder must provide, within 2 business days after bid opening, documentation of good-faith efforts; and (3) the bidder must sign below.

As an authorized representative of the Bidder, I swear or affirm under penalty of fraud that the good-faith efforts documentation submitted with this bid, pertaining to the base bid and all alternates, if any, is correct and not intended to defraud or mislead. After the contract between the City and the Bidder is signed, except to the extent that the City gives prior written approval for changes, the Contractor agrees that it shall engage the subcontractors listed on this form to perform the work for the dollar amounts or percentages described on this form.

__________________________
Signature of individual authorized to sign for Bidder
STATEMENT OF INTENT TO PERFORM AS SUBCONTRACTOR

Name of Bidder: ________________________________

Name of Project: ________________________________

The undersigned firm meets the City of Durham’s criteria as a UBE.

The undersigned UBE represents that it will enter into a formal contract with the Bidder to perform the following work in connection with the Project, in the dollar amount or percentage listed below, if the Bidder signs a contract with the City of Durham for the Project.

Describe the work in sufficient detail so that it can be determined whether the UBE’s work is a substantial and necessary part of the Project.

<table>
<thead>
<tr>
<th>Column 1 - description of work to be done by undersigned UBE</th>
<th>Column 2 - dollar amount of the proposed subcontract between the bidder and the undersigned UBE</th>
<th>Column 3 - percentage of Bidder’s base bid represented by the proposed subcontract between the Bidder and the undersigned UBE</th>
</tr>
</thead>
</table>

The undersigned UBE will be ready to begin work on the subcontract on the following date: ________________

Name of UBE: ________________________________ Telephone No. ________________________________

Address, including Zip Code, of UBE: ________________________________ Fax No. ________________________________

Signature of authorized representative of UBE

Title of the person who signed above: ________________________________

What person with the UBE should the City contact with questions about this form or the proposed subcontract?

Name of individual: ________________________________ Telephone No. ________________________________

Title of individual: ________________________________

Email address: ________________________________

By submitting this form to the City of Durham, the Bidder represents that if the Bidder signs the contract with the City of Durham for the Project, the Bidder will enter into the subcontract described above with this UBE.
REQUEST TO CHANGE UBE PARTICIPATION AFTER BID OPENING

Project: ____________________________________________________________

Name of bidder or contractor: ________________________________________

Name and title of representative of bidder or contractor: ____________________

Address: ____________________                  Zip Code: __________________

Telephone No.: ____________________                      Fax No.: __________________

Email Address: ________________________________________________________

Total amount of original contract, before any change orders or amendments: ____________________

Total amount of the contract, including all approved change orders and amendments to date, but not counting the changes proposed in this form: ____________________

Dollar amount of changes proposed in this form: ____________________

The proposed change  (check one)  □ increases  □ decreases the dollar amount of the bidder's/contractor's contract with the City.

Does the proposed change decrease the UBE participation? (check one) □ yes  □ no

If the answer is yes, complete the following:

**BOX A. For the subcontract proposed to be changed (increased, reduced, or eliminated):** Name of subcontractor: ____________________

Goods and services to be provided before the proposed change: ____________________

Is it proposed to eliminate this subcontract? □ yes  □ no

If the subcontract is to be increased or reduced, describe the nature of the change (such as adding $5,000 in concrete work and deleting $7,000 in grading): ____________________

Dollar amount of this subcontract before this proposed change: ____________________

Dollar amount of this subcontract after this proposed change: ____________________

This subcontractor is (check one):

□ 1. Minority-owned UBE
□ 2. Women-Owned UBE
□ 3. Not a UBE
**BOX B. Proposed subcontracts other than the subcontract described in Box A above**

Name of subcontractor for the new work: __________________________________________

Goods and Services to be provided by this proposed subcontract: ________________________________

Dollar amount proposed of this proposed subcontract:  This subcontractor is:

- 1. Minority-owned UBE
- 2. Women-Owned UBE
- 3. Not a UBE

Add additional sheets as necessary.
This form is used only if the conditions described in the instructions are present.

**QUESTIONNAIRE ON BIDDER’S GOOD-FAITH EFFORTS**

Name of Bidder: ________________________________________________

*If you find it helpful, feel free to attach pages to explain your answers. How many pages is your firm attaching to this questionnaire? _______________

*(Don’t count the 2 pages of this questionnaire.)*

If a yes or no answer is not appropriate, please explain the facts. All of the answers to these questions relate only to the time **before** your firm submitted its bid or proposal to the City. In other words, actions that your firm took after it submitted the bid or proposal to the City cannot be mentioned or used in any answers.

1. **SOLICITING UBEs.**

   (a) Did your firm solicit, through all reasonable and available means, the interest of all-UBEs (that is, in the list provided by the City-) in the scopes of work of the contract? □ yes □ no

   (b) In such soliciting, did your firm advertise? □ yes □ no  Are you attaching copies to this questionnaire, indicating the dates and names of newspaper or other publication for each ad if that information is not already on the ads? □ yes □ no

   (c) In such soliciting, did your firm send written (including electronic) notices or letters? Are you attaching one or more sample notices or letters? □ yes □ no

   (d) Did your firm attend the pre-bid conference? □ yes □ no

   (e) Did your firm provide interested UBEs with timely, adequate information about the plans, specifications, and requirements of the contract? □ yes □ no

   (f) Did your firm follow up with UBEs that showed interest? □ yes □ no

   (g) With reference to the UBEs that your firm notified of the type of work to be subcontracted -- Did your firm tell them?

      (i) the specific work your firm was considering for subcontracting? □ yes □ no

      (ii) that their interest in the contract is being solicited? □ yes □ no

      (iii) how to obtain and inspect the applicable plans and specifications and descriptions of items to be purchased? □ yes □ no

2. **BREAKING DOWN THE WORK.**

   (a) Did your firm select portions of the work to be performed by UBEs in order to increase the likelihood that the goals would be reached? □ yes □ no

   (b) If **yes**, please describe the portions selected. **ANSWER:**
NEGOTIATION. In your answers to 3, you may omit information regarding UBEs for which you are providing Form E-105.

(a) What are the names, addresses, and telephone numbers of UBEs that you contacted? ANSWER:

(b) Describe the information that you provided to the UBEs regarding the plans and specifications for the work selected for potential subcontracting. ANSWER:

(c) Why could your firm not reach agreements with the UBEs that your firm made contact with? Be specific. ANSWER:

3. ASSISTANCE TO UBEs ON BONDING, CREDIT, AND INSURANCE.

(a) Did your firm or the City require any subcontractors to have bonds, lines of credit, or insurance? □ yes □ no (Note: In most projects, the City has no such requirement for subcontractors.)

(b) If the answer to (a) is yes, did your firm make efforts to assist UBEs to obtain bonds, lines of credit, or insurance? □ yes □ no If yes, describe your firm’s efforts: ANSWER:

(c) Did your firm provide alternatives to bonding or insurance for potential subcontractors? □ yes □ no If yes, describe. ANSWER:

4. GOODS AND SERVICES. What efforts did your firm make to help interested UBEs to obtain goods or services relevant to the proposed subcontracting work? ANSWER:

5. USING OTHER SERVICES.

(a) Did your firm use the services of the City to help solicit UBEs for the work? □ yes □ no Please explain. ANSWER:

(b) Did your firm use the services of available minority/women community organizations, minority and women contractors’ groups, government-sponsored minority/women business assistance agencies, and other appropriate organizations to help solicit UBEs for the work? □ yes □ no Please explain. ANSWER:
REQUEST FOR APPROVAL OF SUBSTITUTION

This form must be included as part of the Bid Package where substitution has been requested. In order for a substitution to be considered in the bid, all supporting information and specifications on the subject materials must be presented to the owner no later than ten (10) days prior to the bid opening and approved. Said approval will require an addendum to the bid being transmitted to all other bidders prior to the bid. Any substitution, which adds to the cost of the project budget, will be borne by the contractor requesting the substitution.

Original Item and Specification/Substitute Item and Specifications:
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

Requested by:_________________________ Date:________________________

Approved by:_________________________ Date:________________________

Disapproved by:_________________________ Date:________________________
SECTION 011000 – SUMMARY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. Site improvements including asphalt and soil removal, installation of new asphalt paved trail and walkway, seeding of disturbed areas.

1.3 CONTRACT

A. Project will be constructed under single prime contract.

1.4 WORK UNDER SEPARATE CONTRACTS

A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts. Coordinate the Work of this Contract with work performed under separate contracts.

1.5 USE OF PREMISES

A. Contractor shall have limited use of premises within construction limits for construction operations, including use of Project site, during construction period. Contractor’s use of premises is limited only by Owner’s right to perform work or to retain other contractors on portions of Project.

B. Contractor will be provided areas for material staging and parking. Keep City streets and other areas of Sandy Creek Park clear.

1.6 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.
1. Comply with limitations on use of public streets and other requirements of authority having jurisdiction.

B. On-Site Work Hours: Normal business working hours Monday through Friday.

1. Obtain approval from the City of Durham for extended hours of work and other special requests pertaining to construction activities.

C. Existing Utility Interruptions: Do not interrupt utilities in the area serving unless permitted under the following conditions:

1. Notify the City of Durham not less than two days in advance of proposed utility interruptions.

2. Obtain the City’s written permission before proceeding with utility interruptions.

D. Project Schedule: The time frame in which this project must be completed is 60 calendar days plus inclement weather days approved by Owner. It is anticipated that construction will commence in mid-March. No time extensions will be granted unless delay is beyond the control and without the fault or negligence of the contractor. Unavailability of ordered materials shall not be considered reason for delay. Rain days or days in which soil moisture conditions preclude doing work should be verified on a daily basis by the owner’s representative.

1.7 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Format: The Specifications are organized into Divisions and Sections using the 16-division format and CSI/CSC’s "MasterFormat" numbering system.

B. Section Identification: The Specifications use section numbers and titles to help cross-referencing in the Contract Documents. Sections in the Project Manual are in numeric sequence; however, the sequence is incomplete. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of sections in the Contract Documents.

C. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

3. The words "shall be", or "shall comply with", depending on the context, are implied where a colon is used within a sentence or phrase.
1.8 PRODUCTS (Not Used)

1.9 EXECUTION (Not Used)

END OF SECTION 011000
SECTION 012200 - UNIT PRICES

PART 1 - GENERAL

1.1 SUMMARY
A. Section includes administrative and procedural requirements for unit prices.
B. Related Section:
   1. Division 01 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
   2. Division 01 Section “Quality Requirements” for general testing and inspecting requirements.

1.2 DEFINITIONS
A. Unit price is an amount proposed by bidder, stated on the Bid Form, as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

1.3 PROCEDURES
A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
B. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the schedule contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES –
A. 1-1/2" bituminous asphalt paving on 4" compacted CABC, square yard.
B. 2” bituminous asphalt paving on 4” compacted CABC, square yard.

C. Remove and dispose of asphalt, cubic yard.

END OF SECTION 012200
SECTION 012600 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications.

1.3 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: Designer will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by Designer are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Unless otherwise stated, within 5 days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

3. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

4. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to the Designer.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.

3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.

4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's Construction Schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
5. Comply with requirements in Division 1 Section "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.


1.4 CONSTRUCTION CHANGE DIRECTIVE

A. Construction Change Directive: When the Owner and the Contractor disagree on the terms of the Proposal Request, the Designer may issue a Construction Change Directive on AIA Form G714. The Construction Change Directive instructs the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order. The Construction Change Directive contains a complete description of the change in the Work. It also designates the method to be followed to determine changes in the Contract Sum or Contract Time.

B. Documentation: Maintain detailed records on a time and material basis of work required by the Construction Change Directive.

1. After completion of change, submit an itemized account and supporting data necessary to substantiate cost and time adjustments to the Contract.

1.5 ALLOWANCES

A. Allowance Adjustment: To adjust allowance amounts, base each Change Order proposal on the difference between purchase amount and the allowance. If applicable, include reasonable allowances for tolerances, mixing wastes, normal product imperfections, and similar margins.

1. Include installation in purchase amount only where indicated as part of the allowance.

2. Submit substantiation of a change in scope of work, if any, claimed in Change Orders related to unit-cost allowances.

B. Submit claims for increased costs because of a change in scope or nature of the allowance described in the Contract Documents, whether for the Purchase Order amount or Contractor's handling, labor, installation, overhead, and profit.

1.6 UNIT PRICES

A. Unit Price Adjustment: Refer to Division 01 Section “Unit Prices” for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit price work.

CHANGE ORDER PROCEDURES

B. On Owner’s approval of a Proposal Request, Architect will issue a Change Order for signatures of Owner and Contractor on AIA Document G701.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600
SECTION 01330 SUBMITTALS

PART 1: GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY
   A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals.
   B. Related Sections include the following:
      1. Section 01700 "Closeout Procedures" for submitting warranties, Project Record Documents and operation and maintenance manuals.

1.3 DEFINITIONS
   A. Action Submittals: Written and graphic information that requires Designer’s responsive action.
   B. Informational Submittals: Written information that does not require Designer’s approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES
   A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
      1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
      2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
         a. Owner’s Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
   B. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner’s Representative receipt of submittal.
1. Initial Review: Allow seven (7) days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. Designer will advise Contractor when a submittal being processed must be delayed for coordination.

2. If intermediate submittal is necessary, process it in same manner as initial submittal.

3. Allow seven (7) days for processing each resubmittal.

4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

C. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.

2. Provide a space approximately 4 by 5 inches on label or beside title block to record Contractor's review and approval markings and action taken by Construction Project Manager.

3. Include the following information on label for processing and recording action taken:
   a. Project name.
   b. Date.
   c. Name and address of Owner.
   d. Name and address of Contractor.
   e. Name and address of subcontractor.
   f. Name and address of supplier.
   g. Name of manufacturer.
   h. Unique identifier, including revision number.
   i. Number and title of appropriate Specification Section.
   j. Drawing number and detail references, as appropriate.
   k. Other necessary identification.

D. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

E. Additional Copies: Unless additional copies are required for final submittal, and unless Designer or Construction Project Manager observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

1. Submit one copy of submittal to Owner’s Representative.

F. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Designer will discard submittals received from sources other than Contractor.

1. Transmittal Form: Provide locations on form for the following information:
   a. Project name.
   b. Date.
   c. Destination (To:).
   d. Source (From:).
   e. Names of subcontractor, manufacturer, and supplier.
   f. Category and type of submittal.
g. Submittal purpose and description.

h. Submittal and transmittal distribution record.

i. Remarks.

j. Signature of transmitter.

G. Use for Construction: Use only final submittals with mark indicating action taken by Designer connection with construction.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit three (3) copies of each submittal, unless otherwise indicated. Designer will return one (1) copies.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:

   a. Manufacturer's written recommendations.
   b. Manufacturer's product specifications.
   c. Manufacturer's installation instructions.
   d. Manufacturer's catalog cuts.
   e. Standard product operating and maintenance manuals.
   f. Compliance with recognized trade association standards.
   g. Compliance with recognized testing agency standards.
   h. Notation of coordination requirements.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

   a. Notation of dimensions established by field measurement.
   b. Identification of products.
   c. Fabrication and installation drawings.
   d. Roughing-in and setting diagrams.
   e. Schedules.
   f. Design calculations.
   g. Pressure loss calculations.
   h. Compliance with specified standards.
2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 11 by 17 inches.

3. Number of Copies: Submit three (3) prints of each submittal, unless prints are required for operation and maintenance manuals. Submit five (5) prints where prints are required for operation and maintenance manuals. Architect will retain two (2) prints; remainder will be returned.

D. Samples: Prepare physical units of materials or products, including the following:

1. Comply with requirements in Section 01400 "Quality Requirements" for mockups.
2. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
3. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from the same material to be used for the Work, cured and finished in manner specified, and physically identical with the product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
4. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Owner’s Representative sample where so indicated. Attach label on unexposed side that includes the following:
   a. Description of Sample including any certificates and pertaining assurances.
   b. Product name or name of manufacturer.
   c. Sample source.
5. Submit Samples for review of kind, color, pattern, material, warranty, and texture for a final check of these characteristics with other elements and for a comparison of these characteristics between final submittal and actual component as delivered and installed. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
6. Number of Samples for Initial Selection: Submit one (1) full set of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
7. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

2.2 INFORMATIONAL SUBMITTALS

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit two (2) copies of each submittal, unless otherwise indicated. Designer and Construction Project Manager will not return copies.
2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.

3. Test and Inspection Reports: Comply with requirements in Section 01400 "Quality Requirements."

B. Construction Schedule: Comply with requirements in Section 01320 "Construction Progress Documentation."

C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.

E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project; include evidence of installation experience.

F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with all requirements. Include evidence of manufacturing experience where required.

G. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.

H. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

I. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements.

J. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.

K. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

L. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
M. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Section 01770 "Closeout Procedures".

N. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.

O. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer. Include the following, as applicable:

1. Preparation of substrates.
2. Required substrate tolerances.
3. Sequence of installation.
4. Required installation tolerances.
5. Required adjustments.
6. Recommendations for cleaning and protection.

P. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:

1. Name, address, and telephone number of factory-authorized service representative making report.
2. Statement on condition of substrates and their acceptability for installation of product.
3. Statement that products at Project site comply with requirements.
4. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
5. Results of operational and other tests and a statement of whether observed performance complies with requirements.
6. Statement whether conditions, products, and installation will affect warranty.
7. Other required items indicated in individual Specification Sections.

Q. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.

R. Construction Photographs and Videotapes: Comply with requirements in Division 1 Section “Construction Progress Documentation.”

S. Material Safety Data Sheets: Submit information directly to Owner.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW
A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Designer.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 OWNER’S REPRESENTATIVE

A. General: Designer will not review submittals that do not bear Contractor's approval stamp and will return them without action.

B. Action Submittals: Designer will review each submittal, make marks to indicate corrections or modifications required, and return it.

C. Informational Submittals: Designer will review each submittal and will not return it, or will reject and return it if it does not comply with requirements.

END OF SECTION 01330
SECTION 01400 - QUALITY REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities.

2. Specified tests, inspections, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with the Contract Document requirements.

3. Requirements for Contractor to provide quality-control services required by Owner or authorities having jurisdiction are not limited by provisions of this Section.

1.3 DEFINITIONS

A. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and ensure that proposed construction complies with requirements.

B. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that completed construction complies with requirements. Services do not include contract enforcement activities performed by Owner.

C. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

1.4 SUBMITTALS

A. Qualification Data: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
B. Schedule of Tests and Inspections: Prepare in tabular form and include the following:

1. Specification Section number and title.
2. Description of test and inspection.
3. Identification of applicable standards.
4. Identification of test and inspection methods.
5. Number of tests and inspections required.
6. Time schedule or time span for tests and inspections.
7. Entity responsible for performing tests and inspections.
8. Requirements for obtaining samples.
9. Unique characteristics of each quality-control service.

C. Reports: Prepare and submit certified written reports that include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Ambient conditions at time of sample taking and testing and inspecting.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

D. Permits, Licenses, and Certificates: For Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

B. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.

D. Manufacturer Qualifications: A firm with then (10) years documented experience in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.

E. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1. Requirement for specialists shall not supersede building codes and similar regulations governing the Work, nor interfere with local trade-union jurisdictional settlements and similar conventions.

F. Testing Agency Qualifications: An agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E 548, and that specializes in types of tests and inspections to be performed.

1.6 QUALITY CONTROL

A. Owner’s Responsibilities: Where quality-control services are indicated as Owner’s responsibility, Owner will engage a qualified testing agency to perform these services.

1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspecting they are engaged to perform.
2. Cost for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Contractor and the Contract Sum will be adjusted by Change Order.

B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.

C. Retesting/Reinspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that revised or replaced Work that failed to comply with requirements established by the Contract Documents.

D. Testing Agency Responsibilities: Cooperate with the Owner’s Representative and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.

1. Notify Owner, and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
2. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
3. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
4. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
5. Do not perform any duties of Contractor.

F. Coordination: Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.

1. Schedule times for tests, inspections, obtaining samples, and similar activities.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

1. Provide materials and comply with installation requirements specified in other Sections of these Specifications. Restore patched areas and extend restoration into adjoining areas in a manner that eliminates evidence of patching.

B. Protect construction exposed by or for quality-control service activities.

C. Repair and protection are Contractor's responsibility, regardless of the assignment of responsibility for quality-control services.

END OF SECTION 01400
SECTION 01500 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS
   A. Drawings and general provisions of the Contract, including other Division 1 Specification
      Sections, apply to this Section.

1.2 SUMMARY
   A. This Section includes requirements, as necessary, for temporary facilities and controls,
      including temporary utilities, support facilities, and security and protection facilities.
   B. Temporary utilities may include, but are not limited to, the following:
      1. Temporary utilities, support facilities, and security and protection facilities.
      2. Lighting.
   C. Support facilities include, but are not limited to, the following:
      1. Project identification and temporary signs.
      2. Construction aids and miscellaneous services and facilities.
      3. Portable Toilet.
   D. Security and protection facilities may include, but are not limited to, the following:
      1. Environmental protection.
      2. Tree and plant protection.
      3. Site enclosure fence.
      5. Barricades, warning signs, and lights.

1.3 USE CHARGES
   A. General: Cost or use charges for temporary facilities are not chargeable to Owner and shall be
      included in the Contract Sum. Allow other entities to use temporary services and facilities
      without cost, including, but not limited to, the following:
      1. Owner's construction representatives.
      2. Occupants of Project.
      3. Testing agencies.

1.4 SUBMITTALS
A. Implementation and Termination Schedule: Within fifteen (15) days of date established for submittal of Contractor's Construction Schedule, submit a schedule indicating implementation and termination of each temporary utility.

1.5 QUALITY ASSURANCE


1. Trade Jurisdictions: Assigned responsibilities for installation and operation of temporary utilities are not intended to interfere with trade regulations and union jurisdictions.
2. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

A. Conditions of Use: The following conditions apply to use of temporary services and facilities by all parties engaged in the Work:

1. Keep temporary services and facilities clean and neat.
2. Relocate temporary services and facilities as required by progress of the Work.

PART 2 - EXECUTION

2.1 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:

1. Locate sanitary facilities for easy access.

B. Project Identification and Temporary Signs: Prepare Project identification and other signs in sizes indicated. Install signs where indicated to inform public and persons seeking entrance to Project. Do not permit installation of unauthorized signs.

2.2 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects. Avoid using tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near Project site.
B. Stormwater Control: Provide earthen embankments and similar barriers in and around excavations and sub-grade construction, sufficient to prevent flooding by runoff of stormwater from heavy rains if determined necessary by the Owner.

2.3 OPERATION, TERMINATION, AND REMOVAL

A. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.

B. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

END OF SECTION 01500
SECTION 01600: CLEANING UP

PART 1: GENERAL

1.1 General

a) The requirements specified in this section are in addition to those described in the General Conditions.

b) All debris and waste materials shall become the property of the Contractor, and shall be removed from the site as it accumulates and so as to comply with anti-pollution laws.

c) Burning or burying of rubbish and waste materials on the project site is not permitted.

d) Disposal of volatile fluid wastes such as mineral spirits, oil, or paint thinner in storm or sanitary sewer systems is not permitted, nor shall such materials be deposited anywhere on the project site.

PART 2: MATERIALS

2.1 Materials

The Contractor shall:

a) Use only cleaning materials recommended by the manufacturer of surfaces to be cleaned.

b) Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.

PART 3: EXECUTION

3.1 Execution during Construction

a) The Contractor shall provide suitable containers and locate on site for collection of waste materials, rubbish, and debris.

b) The Contractor shall not allow mud, earth droppings and dust from movement of vehicles to accumulate for more than one half day before removal from paved areas. At no time shall any accumulation be allowed which will create a hazard to safety or bad public relations.

PART 4: FINAL CLEANING

4.1 Final Cleaning

a) At completion of construction and just prior to acceptance, the Contractor shall conduct a final inspection of the site. The Contractor shall remove grease, oil, dirt, stains, and other foreign materials within contract limits that are not part of the finished construction.

b) The Contractor shall repair, patch and touch up any marred surfaces to match adjacent finishes.

END OF SECTION 01600
SECTION 01700 - EXECUTION REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

2. Field engineering and surveying.
4. Coordination of Owner-installed products.
5. Progress cleaning.
6. Starting and adjusting.
7. Protection of installed construction.
8. Correction of the Work.

B. Related Sections include the following:

1. Division 1 Section 01300: "Submittals".
2. Division 1 Section 01770: "Closeout Procedures"

1.3 QUALITY ASSURANCE

A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - EXECUTION

2.1 EXAMINATION

A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning Work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.

1. Before construction, verify the location and points of all elements to remain and to be demolished. Verify all salvageable material with the Owner.

B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.

1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
2. Furnish location data for Work related to Project that must be performed by public utilities serving Project site.

C. Acceptance of Conditions: Examine substrates, areas, and conditions for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:
   a. Description of the Work.
   b. List of detrimental conditions, including substrates.
   c. List of unacceptable installation tolerances.
   d. Recommended corrections.
2. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
3. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
4. Examine floors and roofs for suitable conditions where products and systems are to be installed.
5. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

2.2 PREPARATION

A. Existing Utility Information: Obtain information necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
   1. Do not proceed with utility interruptions without Owner’s written permission.

C. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

D. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.


2.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly. Architect is not responsible if discrepancies are noted by the Contractor but are not reported to the Architect prior to construction.

B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
   1. Establish benchmarks and control points to set lines and levels at each stage of construction and elsewhere as needed to locate each element of Project.
   2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
   3. Inform installers of lines and levels to which they must comply.
   4. Check the location, level and plumb, of every major element as the Work progresses.
   5. Notify the Architect when deviations from required lines and levels exceed allowable tolerances.
   6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

D. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Owner.
E. Use of Architect’s CAD drawings is at Contractor’s own risk. Architect is not responsible if discrepancies are discovered but not reported.
F. The Contractor shall demolish and replace any work that does not meet the intentions of the drawings or that has unresolved discrepancies that are not brought to the Architect’s attention prior to construction.

2.4 FIELD ENGINEERING

A. Identification: Existing benchmarks, control points, and property corners are noted in the drawings.
B. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.
   1. Do not change or relocate existing benchmarks or control points without prior written approval of Owner. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Owner before proceeding.
   2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
C. Benchmarks: Establish and maintain a minimum of two (2) permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
   1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.
   2. Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.
   3. Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

2.5 INSTALLATION

A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
   1. Make vertical work plumb and make horizontal work level.
   2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
E. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
   1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Landscape Architect.
F. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
G. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

2.6 PROGRESS CLEANING

A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
2. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

B. Site: Maintain Project site free of waste materials and debris.
C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
G. Cutting and Patching: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.
   1. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.
H. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
I. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
J. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
K. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period to the extent possible for normal events.

2.7 STARTING AND ADJUSTING
A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
D. Manufacturer's Field Service: If required, a factory-authorized service representative shall inspect field-assembled components and equipment installation.

2.8 PROTECTION OF INSTALLED CONSTRUCTION
A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
B. Comply with manufacturer's written instructions for temperature and relative humidity.

2.9 CORRECTION OF THE WORK
A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Restore permanent facilities used during construction to their specified condition.

C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.

END OF SECTION 01700
SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
   1. Inspection procedures.
   2. Project Record Documents.
   3. Operation and maintenance manuals.
   4. Warranties.
   5. Instruction of Owner's personnel.
   6. Final cleaning.

B. Related Sections include the following:
   1. Division 1 Section 01700: "Execution Requirements" for progress cleaning of Project site.
   2. Divisions 2 for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
   1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
   2. Advise Owner of pending insurance changeover requirements.
   3. Submit 2 copies of specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
   4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
   5. Prepare and submit 2 copies of Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
   6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
   7. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
   8. Submit changeover information related to the Owner's occupancy, use, operation, and maintenance.
   9. Complete final cleaning requirements, including touchup painting.
   10. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
   11. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
CLOSEOUT PROCEDURES

B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Designer will either proceed with inspection or notify Contractor of unfulfilled requirements. Designer will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by the Designer, that must be completed or corrected before certificate will be issued.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for Final Completion.

1.4 FINAL COMPLETION

A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:

1. Submit certified copy of Designers Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Owner. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Designer and Construction Project Manager will either proceed with inspection or notify Contractor of unfulfilled requirements.

1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Preparation: Submit (3) three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Include the following information at the top of each page:
   a. Project name.
   b. Date.
   c. Name of Owner.
   d. Name of Contractor.
   e. Page number.

1.6 PROJECT RECORD DOCUMENTS

A. General: Do not use Project Record Documents for construction purposes. Protect Project Record Documents from deterioration and loss. Provide access to Project Record Documents for Owner's reference during normal working hours.

B. Record Drawings: Maintain and submit one original and one copy of blue- or black-line white prints of Contract Drawings and Shop Drawings.

1. Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to prepare the marked-up Record Prints.
   a. Give particular attention to information on concealed elements that cannot be readily identified and recorded later.
   b. Accurately record information in an understandable drawing technique.
   c. Record data as soon as possible after obtaining it. Record and check the markup before enclosing concealed installations.
d. Mark Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. Where Shop Drawings are marked, show cross-reference on Contract Drawings.

2. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at the same location.

3. Mark important additional information that was either shown schematically or omitted from original Drawings.

4. Note Construction Change Directive numbers, Change Order numbers, alternate numbers, and similar identification where applicable.

5. Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.

C. Record Specifications: Submit (2) copies of Project's Specifications, including addenda and contract modifications. Mark copies to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.

3. Note related Change Orders, Record Drawings, where applicable.

D. Miscellaneous Record Submittals: Assemble (2) copies of miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.

1.7 OPERATION AND MAINTENANCE MANUALS

A. Assemble two (2) complete sets of operation and maintenance data indicating the operation and maintenance of each piece of equipment. Include operation and maintenance data required in individual Specification Sections and as follows:

1. Maintenance Data:
   a. Manufacturer's information, including list of spare parts.
   b. Name, address, and telephone number of Installer or supplier.
   c. Maintenance procedures.
   d. Maintenance and service schedules for preventive and routine maintenance.
   e. Maintenance record forms.
   f. Sources of spare parts and maintenance materials.
   g. Copies of maintenance service agreements.
   h. Copies of warranties and bonds.

B. Organize operation and maintenance manuals into suitable sets of manageable size. Bind and index data in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, with pocket inside the covers to receive folded oversized sheets. Identify each binder on front and spine with the printed title "OPERATION AND MAINTENANCE MANUAL," Project name, and subject matter of contents.

1.8 WARRANTIES

A. Submittal Time: Submit written warranties on request of Owner for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
   C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS
   A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 DEMONSTRATION AND TRAINING
   A. Instruction: Instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
      1. Provide instruction at mutually agreed-on times.
      2. Schedule training with Owner with at least 10 days’ advance notice.
   B. Develop an instruction session that includes training for all equipment as required by individual Specification Sections. Include instruction for the following:
      1. Review of documentation.
      2. Adjustments.
      4. Repair.

3.2 FINAL CLEANING
   A. Cleaning: Comply with manufacturer's written instructions.
      1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
         a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
         b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
         c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface and apply a layer of mulch.
         d. Remove tools, construction equipment, machinery, and surplus material from Project site.
         e. Clean exposed exterior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
         f. Remove labels that are not permanent.
CLOSEOUT PROCEDURES

City of Durham Sandy Creek Park Improvements

g. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
   1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

h. Leave Project clean and ready for occupancy.

B. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

PART 4: GUARANTEE

A. Neither the final certificate of payment nor any provision in the Contract Documents nor partial or entire occupancy of the premises by the Owner shall constitute an acceptance of Work not done in accordance with the Contract Documents or relieve the Contractor of liability in respect to any express warranties or responsibility for faulty materials or workmanship.

B. The Contractor shall remedy any defects in the Work, and pay all expenses for any damage to other Work resulting there from, which shall appear within a period of one (1) year from the date of final acceptance of the work unless a longer period is specified elsewhere. The Owner shall give notice of observed defects with reasonable promptness. Mechanical equipment that carries a manufacturer’s warranty will be considered guaranteed for the extent of the warranty only.

C. The Contractor shall submit to the Owner’s Representative, before final acceptance, two (2) copies of all warranties, guaranties, and surety bonds on the Work, as required in the Contract Documents. All such documents shall show the name of the Project, location, and name of the Owner.

END OF SECTION 01770
Section 015639 – Temporary Tree and Plant Protection

Part 1 - General

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

1.2 Summary
A. This Section includes the protection and trimming of existing trees that interfere with, or are affected by, execution of the Work, whether temporary or permanent construction.

1.3 Definitions
A. Tree Protection Zone: Area surrounding individual trees or groups of trees to remain during construction, and defined by the drip line of individual trees or the perimeter drip line of groups of trees, unless otherwise indicated.

1.4 Submittals
A. Product Data: For each type of product indicated.

1.5 Quality Assurance
A. Tree Pruning Standard: Comply with ANSI A300 (Part 1), "Tree, Shrub, and Other Woody Plant Maintenance--Standard Practices (Pruning)."
B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01.
   1. Before tree protection and trimming operations begin, meet with representatives of authorities having jurisdiction, Owner, Landscape Architect, consultants, and other concerned entities to review tree protection and trimming procedures and responsibilities.

Part 2 - Products

2.1 Materials
A. Drainage Fill: Selected crushed stone, or crushed or uncrushed gravel, washed, ASTM D 448, Size 24, with 90 to 100 percent passing a 2-1/2-inch sieve and not more than 10 percent passing a 3/4-inch sieve.
B. Topsoil: All placed topsoil, whether from off-site or on-site, shall be modified to meet the requirements of “amended topsoil” as stated in Section 32 92 00, Part 2.
CITY OF DURHAM  
Sandy Creek Park Improvements

C. Filter Fabric: Manufacturer’s standard, nonwoven, pervious, geotextile fabric of polypropylene, nylon, or polyester fibers.

D. Construction Fence: 48” orange plastic construction fence. Posts placed maximum 6’ O.C.

E. Organic Mulch: Shredded hardwood mulch, composted and free of growth or germination inhibiting ingredients and free of noxious weed seeds.

F. Protection signage: 12” H x 18” W signage per City of Durham Standards. Text to read, “TREE PROTECTION AREA - NO TRESPASSING WITHIN THE FENCE & PROHIBIDO ENTRAR / ZONA PROTECTORA PARA LOS ARBOLES.”

PART 3 - EXECUTION

3.1 PREPARATION AND PROTECTION

A. Temporary Fencing: Install temporary fencing around tree protection zones to protect remaining trees and vegetation from construction damage. Maintain temporary fence and remove when construction is complete.

   1. Install 48” orange plastic construction fence. Posts placed maximum 6’ O.C. Minimum of four ties per post.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Mulch areas inside tree protection zones and within drip line of trees to remain and other areas indicated.

   1. Apply 3” average thickness of organic mulch. Do not place mulch within 6” of tree trunks.

D. Do not store construction materials, debris, or excavated material inside tree protection zones. Do not permit vehicles or foot traffic within tree protection zones; prevent soil compaction over root systems.

E. Maintain tree protection zones free of weeds and trash.

F. Do not allow fires within tree protection zones.

3.2 EXCAVATION

A. Install shoring or other protective support systems to minimize sloping or benching of excavations.

B. Do not excavate within tree protection zones, unless otherwise indicated.
C. Where excavation for new construction is required within tree protection zones, hand clear and excavate to minimize damage to root systems. Use narrow-tine spading forks and comb soil to expose roots.

1. Redirect roots in backfill areas where possible. If encountering large, main lateral roots, expose roots beyond excavation limits as required to bend and redirect them without breaking. If encountered immediately adjacent to location of new construction and redirection is not practical, cut roots approximately 3 inches back from new construction.

2. Do not allow exposed roots to dry out before placing permanent backfill. Provide temporary earth cover or pack with peat moss and wrap with burlap. Water and maintain in a moist condition. Temporarily support and protect roots from damage until they are permanently relocated and covered with soil.

D. Where utility trenches are required within tree protection zones, tunnel under or around roots by drilling, auger boring, pipe jacking, or digging by hand.

3.3 ROOT PRUNING

A. Root Pruning at Cut Areas and Trenching:

1. Determine the location where the cut slope will originate within the protected root zones of the tree and mark in place using paint or ball field marking clay.

2. Mark a second line parallel to the first, 6 inches away from the cut slope and toward the tree. This line represents the location of the root pruning trench.

3. Use an approved root pruning machine such as a pavement saw or a vibrating plow to cut a trench a minimum of 18 inches deep along the line to the full extent of the trees protected root zone.

4. Fill the trench with soil mixture with high organic content such as sphagnum, leaf mold or compost.

5. Thoroughly wet filled trench area within 8 hours of opening the trench.

B. Trenching near Trees: Where utility trenches are required within protection zones, hand excavate under or around tree roots or tunnel under the roots by drilling, auger boring, or pipe jacking. Do not cut main lateral tree roots or taproots; cut only smaller roots that interfere with installation of utilities. Cut roots as required for root pruning.

C. Do not allow exposed roots to dry out before placing permanent backfill.

3.4 REGRADING

A. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade beyond tree protection zones. Maintain existing grades within tree protection zones.
CITY OF DURHAM
Sandy Creek Park Improvements

B. Grade Lowering: Where new finish grade is indicated below existing grade around trees, slope grade away from trees, unless otherwise indicated.
   1. Root Pruning: Prune tree roots exposed during grade lowering. Do not cut main lateral roots or taproots; cut only smaller roots. Cut roots with sharp pruning instruments; do not break or chop.

C. Minor Fill: Where existing grade is 6 inches or less below elevation of finish grade, fill with topsoil. Place topsoil in a single uncompacted layer and hand grade to required finish elevations.

D. Moderate Fill: Where existing grade is more than 6 inches but less than 12 inches below elevation of finish grade, place drainage fill, filter fabric, and topsoil on existing grade as follows:
   1. Carefully place drainage fill against tree trunk approximately 2 inches above elevation of finish grade and extend not less than 18 inches from tree trunk on all sides. For balance of area within drip-line perimeter, place drainage fill up to 6 inches below elevation of grade.
   2. Place filter fabric with edges overlapping 6 inches minimum.
   3. Place fill layer of topsoil to finish grade. Do not compact drainage fill or topsoil. Hand grade to required finish elevations.

3.5 TREE PRUNING

A. Prune trees to remain that are affected by temporary and permanent construction.

B. Prune trees to remain to compensate for root loss caused by damaging or cutting root system. Provide subsequent maintenance during Contract period as recommended by arborist.

C. Pruning Standards: Prune trees according to ANSI A300 (Part 1). as follows:
   1. Type of Pruning: Cleaning and Raising.

D. Cut branches with sharp pruning instruments; do not break or chop.

E. Chip removed tree branches and spread over areas identified by Landscape Architect.

3.6 TREE REPAIR AND REPLACEMENT

A. Promptly repair trees damaged by construction operations within 24 hours. Treat damaged trunks, limbs, and roots according to arborist's written instructions.

B. Remove and replace trees indicated to remain that die or are damaged during construction operations that Landscape Architect determines are incapable of restoring to normal growth pattern.
   1. Provide new trees of 2 ½-inch caliper size and of a species selected by Architect when damaged trees more than 6 inches in caliper size, measured 12 inches
CITY OF DURHAM
Sandy Creek Park Improvements

above grade, are required to be replaced. Plant and maintain new trees as
specified in Division 32 Section "Planting."

C. Aerate surface soil, compacted during construction, 10 feet beyond drip line and no
closer than 36 inches to tree trunk. Drill 2-inch- diameter holes a minimum of 12
inches deep at 24 inches o.c. Backfill holes with an equal mix of augered soil and
sand.

3.7 DISPOSAL OF WASTE MATERIALS

A. Burning is not permitted.

B. Disposal: Remove excess excavated material and displaced trees from Owner's
property.

END OF SECTION 015639
CITY OF DURHAM
Sandy Creek Park Improvements

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 SUMMAR Y

A. This Section includes the following:
   1. Protecting existing trees, shrubs, groundcovers, plants and grass to remain.
   2. Removing existing trees, shrubs, groundcovers, plants and grass as required on the drawings.
   3. Clearing and grubbing.
   4. Stripping and stockpiling topsoil.
   5. Temporary erosion and sedimentation control measures.

1.2 MATERIAL OWNERSHIP

A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.3 PROJECT CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
   2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.

B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.

D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

E. Note that on plans specific trees are labeled to be left in place.

PART 2 - PRODUCTS (Not Applicable)]

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Locate and clearly flag trees and vegetation to remain or to be relocated.
CITY OF DURHAM
Sandy Creek Park Improvements

C. Protect existing site improvements to remain from damage during construction.
   1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.3 UTILITIES

A. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.

B. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

3.4 CLEARING AND GRUBBING

A. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
   1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.

3.7 DISPOSAL

A. Disposal: Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner’s property.
1. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities.

END OF SECTION 311000
CITY OF DURHAM
Sandy Creek Park Improvements

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:
   1. Preparing subgrades for pavements
   2. Subbase and base course for asphalt paving.

1.2 DEFINITIONS

A. Base Course: Course placed between the subbase course and hot-mix asphalt paving.

B. Bedding Course: Course placed over the excavated subgrade in a trench before laying pipe.

C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
   1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
   2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.

E. Fill: Soil materials used to raise existing grades.

F. Undercut Excavation: Shall consist of the removal and disposal of unsuitable materials below the subgrade for footings and pavement sections and the replacement and compaction of suitable materials.

G. Open rock excavations: Includes removal and disposal of materials and obstructions encountered that cannot be effectively loosened or broken down by ripping in a single pass with a late model tractor-mounted hydraulic ripper equipped with one digging point of a standard manufacturer's design and adequately sized for use with and propelled by a D-8 CAT (min), having a draw bar pull of 65,000 lbs at 1MPH
   1. Typical of materials classified as rock are boulders 1 cu. yd. or more in volume, solid rock, rock in ledges, and rock-hard cementitious aggregate deposits.
2. Intermittent drilling, or ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as earth excavation.

H. Trench rock excavation: Includes removal and disposal of materials and obstructions encountered that cannot be effectively loosened or broken by a CAT 330 (min) equipped with a 1.0 cu. yd. Rock bucket with a minimum breakout force of 25,700 pounds at a rate of 10 cu. Yd. Per hour. Boulders in excess of 0.75 cu. yd. will be classified as trench rock. Trenches in excess of 10 feet in width and pits in excess of 30 feet in either length or width are classified as open rock excavation.

I. Subbase Course: Course placed between the subgrade and base course for hot-mix asphalt pavement, or course placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.

J. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

K. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.3 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

B. No warranty or guarantee is made that the site earthwork will balance. Borrow material may be required to be brought to the site to achieve the proposed grades. Excess material may be required to be removed from the site to achieve the proposed grades. No warranty or guarantee is made that the existing soil proposed to be excavated from the site will be suitable for reuse on the site. The Contractor shall, at no additional cost to the Owner, import or export material from the site to reach the proposed grades. If materials excavated from the site above grade are unsuitable for reuse on the site, the Contractor will, at no additional cost to the Owner, remove them from the site and replace them with borrow material as required. The Owner will only provide additional compensation for unsuitable materials below the proposed subgrade. The top soil will be stripped and an amount as necessary for landscape and grass areas will be stockpiled for later use. The Owner and Engineer may permit the final elevation of the landscape beds to be adjusted up or down to accommodate soil volume, to be determined on a site by site basis; however, the design cross slope and general stormwater drainage will be maintained.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations. Note that topsoil for landscape beds is to be imported.
CITY OF DURHAM
Sandy Creek Park Improvements

B. Satisfactory Soils: Non-highly plastic soil with a plasticity indices of 25 or less; free of rock or gravel larger than 1 inch in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: Highly plastic soil with a plasticity indices greater than 25, or soils not considered satisfactory.

1. Unsatisfactory soils also include satisfactory soils not maintained within 3 percent of optimum moisture content at time of compaction.

D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No.200 sieve.

E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No.200 sieve.

F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-inch sieve and not more than 8 percent passing a No.200 sieve.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."

C. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Site Clearing." during earthwork operations.

3.2 EXCAVATION


1. General Excavation: Excavation, removal and/or disposal of pavements and other obstructions visible on surface; underground structures utilities and other items indicated to be demolished and/or removed; together with soil, boulders and other materials encountered that are not classified as rock, unsuitable soil, or unauthorized excavation.
CITY OF DURHAM  
Sandy Creek Park Improvements

a. Soil (irregardless of nature) or other debris encountered above proposed subgrade elevations shall be considered general excavation unless determined by the Engineer to meet the definition of rock.

2. Unsuitable Soil Excavation: Removal and disposal of soil materials or other debris encountered at or below proposed subgrade elevations which is deemed to unsuitable to remain in place by the Engineer or Owner’s Independent Testing Agency.

a. Soil and/or other debris encountered above proposed subgrade elevations shall be considered general excavation.
b. Soil material which, in the opinion of the Engineer, can be repaired by scarifying, drying, and recompacting or material which is made unsuitable by delay of work, lack of protection, or other actions of the Contractor or his Sub-contractors shall not be considered as unsuitable soil and shall be repaired or replaced by the Contractor at no additional cost to the Owner.
c. Any material moved or removed without measurement and approval by the Engineer or Owner will be considered as general excavation.

3. Classified excavation requirements:

a. Excavations more than 10 feet in width and pits more than 30 feet in either length or width are defined as open excavations.
b. Contractor shall expose and clean the rock material for inspection and measurement.
c. Do not excavate rock or unsuitable material until it have been classified and cross-sectioned by the Engineer or Owner. Any material moved or removed without the measurement and approval by the Architect will be considered as unclassified excavation.
d. The Engineer will be the final judge as to what is classified as unsuitable or rock excavation.
e. The Contractor will provide equipment specification data verifying that the minimum rated equipment will be used for demonstration purposes. The equipment will be in good shape and in proper working condition.
f. Rippable rock, weathered rock, or overburden which is not classified as rock according to the definitions in this section shall be considered unclassified excavation.

3.3 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.4 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.
B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.
1. Clearance: 12 inches each side of pipe or conduit.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material. For materials requiring bedding, excavate 4 inches deeper to allow for bedding course.

3.5 SUBGRADE INSPECTION

A. Proof-roll subgrade below the building slabs and all pavements with a fully loaded tandem axel dump truck to identify soft pockets and areas of excess yielding in the presence of the Engineer or independent testing agency. Do not proof-roll wet or saturated subgrades.

B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.6 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of any remaining trees.

3.7 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use satisfactory soil material.
4. Under building slabs, use satisfactory soil material.
5. Under footings and foundations, use satisfactory soil material.

3.8 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 3 percent of optimum moisture content.
1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 3 percent and is too wet to compact to specified dry unit weight.

3.9 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers. Moisture content during fill placement shall be kept within 3% of the optimum moisture.

B. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D-698 (Standard Proctor).
   1. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 98 percent.
   2. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent.

3.10 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
   1. Lawn or Unpaved Areas: Plus or minus 1 inch.
   2. Walks: Plus or minus 1/2 inch.
   3. Pavements: Plus or minus 1/2 inch.

3.11 SUBBASE AND BASE COURSES

A. Place subbase and/or base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place subbase and base course under pavements and walks as follows:
   1. Proof roll prepared subgrade surface with a fully loaded tandem axel dump truck to identify soft pockets and areas of excess yielding in the presence of the Engineer or independent testing agency. Areas will be undercut and repaired as directed by the Engineer.
   2. Shape subbase and base course to required crown elevations and cross-slope grades.
   3. Compact subbase at optimum moisture content to required grades, lines, cross sections, and thickness to not less than not less than 98 percent of maximum dry unit weight according to ASTM D 698 and the final 12” below subgrade to 100%.
   4. Compact base course and gravel pavement at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 100 percent
of maximum dry unit weight as determined by AASHTO method T-180 as modified by NCDOT.

5. When thickness of compacted base course is 6 inches or less, place material in a single layer.

6. When thickness of compacted base course is 6 inches or more, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

7. Following compaction testing and within 48 hours prior to the application of asphalt or concrete pavement, the base course will be proof rolled with a fully loaded dual wheel tandem axel dump truck or similar construction equipment. The proof roll shall be observed by the Owner or his representative. Should any areas fail the proof roll, the base course will be scarified, moistened or aerated, recompacted, and repeat proof roll test.

3.12 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.13 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property, at no additional cost to the Owner.

END OF SECTION 312000
CITY OF DURHAM
Sandy Creek Park Improvements

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Hot-mix asphalt paving.

B. Related Sections:
   1. Division 31 Section "Earth Moving" for aggregate subbase and base courses and for aggregate pavement shoulders.

1.2 SUBMITTALS

A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
   1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
   2. Job-Mix Designs: For each job mix proposed for the Work.

B. Material Certificates: For each paving material, from manufacturer.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturers shall be registered with and approved by the North Carolina Department of Transportation

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the North Carolina Department of Transportation for asphalt paving work.
   1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

C. Preinstallation Conference: Conduct conference at Project site.

1.4 PROJECT CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
   1. Tack Coat: Minimum surface temperature of 60 deg F.
   2. Asphalt Base Course: Minimum surface temperature of 40 deg F and rising at time of placement.
   3. Asphalt Surface Course: Minimum surface temperature of 60 deg F at time of placement.
CITY OF DURHAM
Sandy Creek Park Improvements

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.

B. Fine Aggregate: ASTM D 1073 or AASHTO M 29, sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.

C. Mineral Filler: ASTM D 242 or AASHTO M 17, rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M 320 or AASHTO MP 1a.

B. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

2.3 AUXILIARY MATERIALS

A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.

2.4 MIXES

A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction; designed according to procedures in Al MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types"; and complying with the following requirements:
   1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
   2. Base Course: B-25.0B.
   3. Intermediate Course: I-19.0B.
   4. Surface Course: S-9.5B.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

B. Proceed with paving only after unsatisfactory conditions have been corrected.
CITY OF DURHAM
Sandy Creek Park Improvements

3.2 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.

C. Tack Coat: Apply uniformly to surfaces of existing pavement at a rate of 0.05 to 0.15 gal./sq. yd.
   1. Allow tack coat to cure undisturbed before applying hot-mix asphalt paving.
   2. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Remove spillages and clean affected surfaces.

3.3 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
   1. Spread mix at minimum temperature of 250 deg F.
   2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.4 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
   1. Clean contact surfaces and apply tack coat to joints.
   2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
   3. Offset transverse joints, in successive courses, a minimum of 24 inches.
   4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
   1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
   1. Base Course: Plus or minus 1/2 inch.
   2. Surface Course: Plus 1/4 inch, no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straight edge applied transversely or longitudinally to paved areas:
   1. Base Course: 1/4 inch.
   2. Surface Course: 1/8 inch.
   3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Contractor to engage a qualified testing agency to perform tests and inspections.

B. Replace and compact hot-mix asphalt where core tests were taken.

C. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.
CITY OF DURHAM
Sandy Creek Park Improvements

3.8 DISPOSAL

A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.

END OF SECTION 321216
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Seeding.

1.2 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.
B. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
C. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil;
D. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Product certificates.
C. Planting Schedule: Indicating anticipated planting dates.
D. Maintenance Instructions.

1.4 REGULATORY REQUIREMENTS

A. Comply with regulatory agencies for fertilizer and herbicide composition.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful lawn establishment.
B. Provide seed mixtures in containers clearly labeled and listing percentages, year of production, weight, germination, date and location of packaging.
1.6 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.

B. Fertilizer: Deliver in waterproof bags showing weight, analysis and manufacturer.

1.7 SCHEDULING

A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

PART 2 - PRODUCTS

2.1 SEED

A. See Site Plan sheet C200 for Seeding Schedule.

B. Seed Species: State-certified seed.

2.2 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent.

2.3 FERTILIZERS

A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
   1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

2.4 PLANTING SOILS

2.5 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

2.6 HERBICIDES

A. Herbicide, registered and approved by EPA, and of type recommended by manufacturer for application.

2.7 WATER:

1. Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.
PART 3 - EXECUTION

3.1 SEEDING

A. Sow seed at a total rate of 7 pounds per 1,000 sf, evenly in two intersecting directions. Do not seed more area than can be mulched the same day.

B. Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.

C. Protect seeded areas with slopes not exceeding 1:6 by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose thickness over seeded areas. Spread by hand, blower, or other suitable equipment.

3.2 LAWN PREPARATION

A. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property. Repeat cultivation in areas where spreading and hauling equipment has compacted subsoil.

B. Spread topsoil to a minimum depth of 2 inches over areas to be seeded. Incorporate into subsoil by tilling to 5" depth. Rake until smooth.

C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future. Ensure positive drainage.

D. Fertilize all areas to be grassed with 10-10-10 at a rate of 25 lbs per 1000 sq. ft. and dolomitic lime at a rate of 40lbs/1000 sq. ft.

E. Moist en prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

F. Restore areas if eroded or otherwise disturbed after finish grading and before planting.

3.3 TURF MAINTENANCE

A. Begin maintenance immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:
   1. Seeded Lawns: Until date of final acceptance.

B. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain height appropriate for species without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings.

C. Trim edges and hand clip as necessary.

D. Remove clippings immediately after mowing.
CITY OF DURHAM
Sandy Creek Park Improvements

E. Water to prevent grass and soil from drying out.

F. Control weed growth with herbicides and mechanical means.

G. Reseed bare areas.

3.4 SATISFACTORY TURF

A Notify Landscape Architect when landscape work is completed to request an inspection to determine acceptability.

B Turf installations shall meet the following criteria as determined by Landscape Architect:
   Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
   Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

END OF SECTION 329200