



AGENDA

Regular Town Board Meeting (VIRTUAL)

February 1, 2021 - 6:00 PM

HOSTED FROM TOWN HALL (101 Huntersville-Concord Road)

Virtual Meeting Information *This meeting will be held both in person at the Huntersville Recreation Center located at 11836 Verhoeff Drive, Huntersville, NC 28078, and virtually via livestream at <https://www.facebook.com/HuntersvilleNCTownGovernment>. The Board of Commissioners will participate remotely. The public is invited to attend and comment during public comment or during any of the public hearings (1) in person at the Huntersville Recreation Center, 11836 Verhoeff Drive, Huntersville, NC 28078 or (2) by telephonic communication in accordance with instructions sent to persons who have registered with the Town Clerk no later than 3 p.m. on February 1, 2021 to speak by telephonic communication. The public may also submit comments by email to the Town Clerk at jpierson@huntersville.org. For public hearings only, emailed comments may continue to be submitted until 24 hours after close of the public hearing. The Town Clerk may be reached by email to jpierson@huntersville.org or by phone at (704) 766-2202.*

1. Pre-meeting - 5:15 p.m.

1.A. New Town Hall Discussion

2. Call to Order

3. Invocation - Moment of Silence

4. Pledge of Allegiance

5. Mayor and Commissioner Reports-Staff Questions

6. Public Comments, Requests, or Presentations - *Speakers are limited to 3 minutes. The Mayor reserves the right to shorten the time limit for speakers when an unusually large number of persons have signed up to speak. Speakers may not give all or a portion of their time to other speakers.*

6.A. Huntersville Family Fitness & Aquatics Update.

6.B. Colonial Pipeline Update.

7. Agenda Changes

8. Public Hearings

8.A. Conduct public hearing on the proposed adoption of a verifiable percentage goal for locally funded business projects costing \$300,000 or more. *(Emily Sloop)*

9. Other Business

9.A. Consider adopting Resolution to establish a verifiable percentage goal for participation by minority businesses. *(Emily Sloop)*

9.B. Consider decision on the sale of the Robert B. Blythe Building. *(Anthony Roberts)*

9.C. Consider adopting Resolution Determining Design-Build is the Appropriate Method of Contracting for New Town Hall Project and Establishing Criteria Under Which the Design-Build Method for Contracting is Appropriate. *(Emily Sloop)*

9.D. Consider adopting Resolution to award the bid for the Rosedale Nature Park Project and approve the Construction Contract. *(Michael Jaycocks)*

10. Consent Agenda

10.A. Adopt Resolution approving designation of certain Town-owned property to public right-of-way. *(Stephen Trott)*

10.B. Award Formal Bid for Materials for Bulk Feeder Projects (Electric). *(Don Mitchell)*

10.C. Adopt Resolution to purchase playground equipment for the Rosedale Nature Park Project and approve the purchasing contract. *(Michael Jaycocks)*

10.D. Approve budget amendment appropriating Park Capital reserve revenue of \$108,000 and Fund Balance of \$109,000 to the Rosedale Nature Park project. *(Pattie McGinnis/Michael Jaycocks)*

10.E. Approve Tax Refund Report from Mecklenburg County. *(Pattie McGinnis)*

10.F. Call a Public Hearing for Monday, February 15, 2021 at 6:00 p.m. on Petition #ANNEX20-02, a request by Huntersville Magnolia Development Company LLC to annex 59.889-acres (North Creek Village) into the Town of Huntersville. This public

hearing will be held both in person at the Huntersville Recreation Center located at 11836 Verhoeff Drive, Huntersville, NC 28078, and virtually via livestream at <https://www.facebook.com/HuntersvilleNCTownGovernment>. The Board of Commissioners will participate remotely. (*David Peete*)

- 10.G. Accept streets located in Arbormere Phase II for Town Maintenance. (*Kevin Fox*)
- 10.H. Accept streets located in Bryton Parcel 6 (NVR Townhomes) for Town Maintenance. (*Kevin Fox*)
- 10.I. Accept streets located in Bryton Parkway Map 2 for Town Maintenance. (*Kevin Fox*)
- 10.J. Accept streets located in Bryton Single Family Phase 1 for Town Maintenance. (*Kevin Fox*)
- 10.K. Accept streets located in Courtyards at Huntersville for Town Maintenance. (*Kevin Fox*)
- 10.L. Accept streets located in Courtyards at Kinnamon Park for Town Maintenance. (*Kevin Fox*)
- 10.M. Accept streets located in Lakemont Commons Phase 1 for Town Maintenance. (*Kevin Fox*)
- 10.N. Accept street located in Villages of Skybrook North, Phase 4 Map 1, for Town Maintenance. (*Kevin Fox*)

11. Closing Comments

12. Adjourn

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Emily Sloop, Town Attorney

Date: February 1, 2021

Subject: Conduct public hearing on the proposed adoption of a verifiable percentage goal for locally funded business projects costing \$300,000 or more. *(Emily Sloop)*

EXPLAIN REQUEST:

ACTION RECOMMENDED:

Conduct Public Hearing

FINANCIAL IMPLICATIONS:

ATTACHMENTS:

1. Verifiable Percentage Goal and HUB Outreach Plan

**RESOLUTION TO ESTABLISH A VERIFIABLE PERCENTAGE GOAL FOR
PARTICIPATION BY MINORITY BUSINESSES PURSUANT TO N.C.G.S. §143-128.2**

WHEREAS, N.C.G.S. §143-128.2(a) requires each local government to adopt, after a notice and public hearing, an appropriate verifiable percentage goal for participation by minority businesses in the total value of work for locally funded building projects costing three hundred thousand dollars (\$300,000) or more;

WHEREAS, N.C.G.S. §143-128.2(b) requires that, prior to soliciting bids for building projects costing \$300,000 or more, a unit of local government must establish the good faith efforts that it will take as set forth in to N.C.G.S. 143-128.2(e) to make it feasible for minority businesses to submit successful bids or proposals for building project contracts; and

WHEREAS, among other good faith effort requirements, N.C.G.S. §143-128.2(e) requires each local government to develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and nonminority businesses; and

WHEREAS, pursuant to N.C.G.S. §143-128.2(b), public entities shall require contractors to make good faith efforts pursuant to N.C.G.S. §143-128.2(f) when responding to solicitations for bids or proposals for building project contracts costing \$300,000 or more.

NOW THEREFORE, BE IT RESOVLED AS FOLLOWS:

1. The Town of Huntersville shall have a verifiable goal of ten percent (10%) for participation by minority businesses in locally funded building project contracts costing \$300,000 or more.
2. Prior to the solicitation of bids for building projects costing \$300,000 or more, the Town shall establish the good faith efforts that it will take to make it feasible for minority businesses to submit successful bids or proposals for the contracts for building projects.
3. The Town shall develop and implement a minority business participation outreach plan, as may be amended from time to time, to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in building projects to include education, recruitment, and interaction between minority businesses and nonminority businesses
4. The Town shall require contractors to make good faith efforts pursuant to N.C.G.S. § 143-128.2(f) when responding to solicitations for bids or proposals for building project contracts costing \$300,000 or more.

5. The Town Manager is hereby authorized to impose additional requirements, not inconsistent with the requirements of this resolution for the purposes of which are to promote the goal and intent of this resolution.

Adopted this the _____ day of _____ 2021.

Attest:

Clerk to the Board

Mayor, Town of Huntersville

Approved as to Form:

Town Attorney

Town of Huntersville
Minority Business Participation Outreach Plan

SECTION 1. POLICY STATEMENT

It is the policy of the Town of Huntersville (the “Town”) to encourage minorities to participate in its building construction, renovation, and repair projects.

In accordance with N.C.G.S. 143-128.2, the purpose of this plan is to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and nonminority businesses.

It is further the policy of the Town to prohibit illegal discrimination against any person or business enterprise and to conduct its building construction, renovation, and repair programs so as to prevent such discrimination.

The Town provides minorities and women equal opportunity for participating in all aspects of the Town’s contracting and procurement programs, including but not limited to, building projects, supplies and materials purchases, and professional and personal service contracts. We consider the participation of minority and women-owned businesses and the value of the quality and diversity of goods and services provided an investment. Any subsequent growth of businesses related to minority business participation parallels greater economic expansion, more jobs, and increased revenue to build our future.

It is the policy of the Town in concert with other local, state, and federal agencies and with the assistance of minority groups and agencies, to seek and identify qualified minority and women’s business enterprises (M/WBEs) and to offer them the opportunity to participate, and to encourage them to participate, in the Town’s building construction and repair programs. Under this policy, the Town adopts the definition of M/WBEs contained in N.C.G.S. § 143-128.2.

It is the intent of this policy to secure contractors’ participation and ensure competition. Nothing in this policy shall be construed to require contractors or the Town to award contracts or subcontracts or to make purchases of materials or equipment from minority business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

The Town will award public building construction and repair contracts to the lowest responsible, responsive bidder as provided by Article 8 of Chapter 143 of the North Carolina General Statutes.

OBJECTIVES:

The primary objective of the Town's Minority Business Participation Outreach Plan will be to focus on full utilization of minority and women businesses in the Town's construction activities; the assurance of a good faith effort program that benefits contractors, subcontractors and vendors alike; and early conflict intervention of general and discriminatory concerns in addition to the following areas of assistance:

- Maintain and promote minority-owned and women-owned business utilization.
- Increase the Town of Huntersville's knowledge of minority and women owned business firms and become familiar with their product line.
- Provide up-to-date information on Town bidding opportunities.
- Management and technical assistance guidance and support throughout the process to ensure significant minority and female business participation.
- HUBs will have an opportunity to receive technical assistance in licensing, bonding, completing bid forms, clarification of any area of the contract in which there are questions (not including estimates for any specific project), and other procedures involved in securing Town contracts.
- Provide and administer procedures for reporting and monitoring compliance of contract activity, subject to the provisions of the HUB requirements of the Town of Huntersville.
- Provide and administer procedures for resolving complaints of discrimination made against businesses holding construction contracts with the Town of Huntersville.

SCOPE:

This Policy Applies to Minority Business, Minority Persons, and Socially and Economically Disadvantaged Individuals.

A. A Minority Business is a business:

1. In which at least fifty-one percent (51%) is owned by one or more minority persons or socially and economically disadvantaged individuals, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals, and
2. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

B. A Minority Person¹ is a person who is a citizen or lawful permanent resident of the United States, and who is:

1. Black, that is, a person having origins in any of the black racial groups in Africa;
2. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
3. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
4. American Indian or Alaskan Native, that is, a person having origins in any of the original peoples of North America; or
5. Female.

C. A Socially and Economically Disadvantaged Individual is defined by 15 U.S.C. 637 as a socially disadvantaged individual whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged. In determining the degree of diminished credit and capital opportunities, the federal government considers factors such as assets and net worth. This category includes M/WBEs of economically disadvantaged Indian tribes.

SECTION 1.1 VERIFIABLE GOALS FOR MINORITY BUSINESS ENTERPRISE PARTICIPATION²

The Town has established a verifiable goal of ten percent (10%) for participation by minority businesses in locally funded building projects costing three hundred thousand dollars (\$300,000) or more. The goal will be for the total value of work for the building project.

Pursuant to N.C.G.S. 143-128.2(a), the Town shall also require a verifiable goal of ten percent (10%) of the total value of work for participation by minority businesses in building projects receiving state appropriations or other State grant funds, including a building project done by a private entity on a facility to be leased or purchased by the Town, where the project cost is one hundred thousand dollars (\$100,000) or more.

This policy shall not apply to the purchase and erection of prefabricated or relocatable buildings or portions thereof, except that portion of the work which must be performed at the construction site, as excepted in N.C.G.S. 143-128.2(j).

¹ For building projects funded in whole or in part with federal funds, Hasidic Jews are also considered minority persons.

² Projects funded in whole or in part with federal funds will comply with applicable federal thresholds regarding Minority and Woman Owned Business Enterprises participation.

SECTION 1.2 MINORITY BUSINESS RESPONSIBILITIES

The Town does not certify minority, disadvantaged or woman-owned businesses. In order to participate, you must first become a certified minority or woman-owned business with the State of North Carolina. Certification is handled through the NC Department of Administration's Office for Historically Underutilized Businesses. Through Vendor Link, the online vendor registration software, businesses may register with the State and verify their status as a HUB vendor. Registration not only certifies you to do business with the Town as a M/WBE, but also makes you eligible for work with the State of NC.

If you would like to be certified, please visit the [NC Department of Administration's Office for Historically Underutilized Businesses](#) and complete the online application. The application process takes approximately 6-8 weeks.

SECTION 2. REGULATIONS AND PROCEDURES FOR IMPLEMENTING MINORITY BUSINESS ENTERPRISE PARTICIPATION POLICY

SECTION 2.1 FORMAL BUILDING PROJECTS:

Building projects costing \$300,000 or more.

A. Town Responsibilities:

1. Advertise building projects. When soliciting bids for formal building projects, the Town shall advertise on their website via: <https://www.huntersville.org/Bids.aspx>.

At least 10 days prior to the scheduled day of bid opening, the Town shall notify minority businesses that have requested notices from the Town for public construction or repair work and minority businesses that otherwise indicated to the Office of Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:

- i. a description of the work for which the bid is being solicited,
 - ii. the date, time, and location where bids are to be submitted,
 - iii. the name of the individual within the public entity who will be available to answer questions about the project,
 - iv. where bid documents may be reviewed, and
 - v. any special requirements that may exist.
2. Hold a pre-bid conference prior to bid opening for each project and assure a Town representative is in attendance. The conference may be hosted in-person or through a virtual meeting platform.
3. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.

4. The Town will research the Historically Underutilized Business (HUB) resources on an annual basis and update its list of registered HUBs.
5. The Town shall report to the shall report to the Department of Administration, Office of Historically Underutilized Business: 1) the verifiable percentage goal; 2) the type and total dollar value of the project, minority business utilization by minority business category, trade, total dollar value of contracts awarded to each minority group for each project; 3) the applicable good faith effort guidelines or rules used to recruit minority business participation; 4) good faith documentation accepted by the public entity from the successful bidder; and 5) the utilization of minority businesses under the various construction methods under N.C.G.S. 143-128(a1).

B. Contractor Responsibilities:

1. Attend the scheduled pre-bid conference.
2. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
3. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification must include all of the following:
 - i. A description of the work for which the sub-bid is being solicited.
 - ii. The date, time and location where sub-bids are to be submitted.
 - iii. The name of the individual within the company who will be available to answer questions about the project.
 - iv. Where bid documents may be reviewed.
 - v. Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.
4. All bidders on building projects in the formal bidding range shall undertake a good faith effort to recruit minority businesses and provide documentation of meeting the minimum requirements of N.C. Gen. Stat. § 143-128.2. Failure to comply with these procedural requirements and requirements for submittal may render the bid non-responsive and may result in rejection of the bid.
5. Each bidder, which shall include first-tier subcontractors for construction manager at risk projects, on a building projects within the formal bidding range shall identify on its bid the minority businesses that it will use on the project and an affidavit listing the good faith efforts it has made pursuant to N.C. Gen. Stat. § 143-128.2(f) and Section 2.2 below, and the total dollar value of the bid that will be performed by the minority businesses. A contractor, including a first-tier subcontractor on a construction manager at risk project, that performs all of the work under a contract with its own workforce may submit an affidavit to that effect in lieu of the affidavit otherwise required under this subsection.

The apparent lowest responsible, responsive bidder shall also file the following:

(1) Within the time specified in the bid documents, either:

- a. An affidavit that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal. An affidavit under this sub-subdivision shall give rise to a presumption that the bidder has made the required good faith or effort; or
- b. Documentation of its good faith effort to meet the goal. The documentation must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations, and evidence of other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

(2) Within 30 days after award of the contract, a list of all identified subcontractors that the contractor will use on the project.

6. During the construction of a project, if it becomes necessary to replace an M/WBE subcontractor, the prime contractor shall advise the Town in writing. No M/WBE subcontractor may be replaced with a different subcontractor except for the following:

- a) If the subcontractor's bid is later determined by the contractor or construction manager at risk to be nonresponsive or nonresponsive, or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work; or
- b) With the approval of the Town for good cause.

Prior to substituting a subcontractor, the contractor shall identify the substitute subcontractor and inform the Town, in writing, of its good faith efforts to replace with another M/WBE Subcontractor. Good faith efforts as set forth in N.C.G.S. § 143-131(b) apply to the selection of a substitute subcontractor.

SECTION 2.2 MINIMUM GOOD FAITH EFFORT REQUIREMENTS N.C.G.S. § 143-128.2(F):

All written statements, affidavits, or intentions made by the bidder shall become a part of the agreement between the contractor and Town for the performance of the contract. Failure to comply with any of these statements, affidavits, or intentions, or with the minority business guidelines shall constitute a breach of contract. A finding by the Town that any information, submitted either prior to award of the contract or during the performance of the contract, is inaccurate, false, or incomplete, shall constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. The Town shall determine, in the exercise of its sole discretion, whether to terminate the contract for breach.

In determining whether a contractor has made good faith efforts, the Town will evaluate all efforts made by the contractor and will determine compliance in regard to quantity, intensity, and results

of these efforts. Bidders must earn at least 50 points from the good faith efforts listed below in order for their bids to be considered responsive:

- (1) Contacting those minority businesses reasonably expected to submit a quote and known or identified to the contractor, or available on State or local government-maintained lists, at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. (Value = 10 points)
- (2) Making the construction plans, specifications, and requirements available for review by prospective minority businesses or providing these documents to them at least 10 days before the bid or proposals are due. (Value = 10 points)
- (3) Breaking down or combining elements of work in economically feasible units to facilitate minority participation. (Value = 15 points)
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and those included in the bid documents to provide assistance in recruitment of minority businesses. (Value = 10 points)
- (5) Attending any pre-bid meetings scheduled by the public owner. (Value = 10 points)
- (6) Providing assistance in obtaining required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. (Value = 20 points)
- (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification shall have the reasons documented in writing. (Value = 15 points)
- (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit. (Value = 25 points)
- (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public building construction or repair project when possible. (Value = 20 points)
- (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. (Value = 20 points)

Failure to file a required affidavit or document demonstrating that the contractor made the required good faith effort is grounds for rejection of the bid.

SECTION 2.3 INFORMAL BUILDING PROJECTS

Locally funded building projects costing more than thirty thousand dollars (\$30,000), but less than three hundred thousand dollars (\$300,000).

A. Town's Responsibilities:

1. Notify Minority Business Enterprises of bidding opportunities by one of the following methods:
 - a) Advertise on their website via: <https://www.huntersville.org/Bids.aspx>.
 - b) Advertise the project in an identified Minority Business Enterprise targeted newspaper(s) or;
 - c) Attempt to contact Minority Business Enterprises.
2. Record all contractors contacted, along with the list of contractors provided with bidding documents.
3. Document Minority Business firms contacted and record their minority category along with any other efforts to recruit minority businesses.
4. Record all contractors submitting bids, along with the amount of each bid.
5. All data, including the type of project, total dollar value of the project, dollar value of minority business participation on each project, and documentation of efforts to recruit minority participation shall be reported to the Department of Administration, Office for Historically Underutilized Business, upon the completion of the project.

B. Contractor Responsibilities:

1. The Contractor will provide the following documentation prior to final payment by the Town.
 - a. A list of minority businesses used on the project, identifying the businesses name, type of work performed, and minority category.
 - b. List the dollar amount paid to each minority business and the percentage it represents of the final project value.

SECTION 2.4 QUALIFICATIONS-BASED SELECTION FOR ARCHITECTURAL, ENGINEERING, SURVEYING, AND CONSTRUCTION MANAGEMENT-AT-RISK SERVICES

For the qualifications-based selection process to procure professional architectural, engineering, surveying, construction-management-at-risk services, design-build services, and public-private partnership construction services, the Town shall make good faith efforts to encourage minority participation. These good faith efforts shall include notifying Minority Business Enterprises of opportunities by similar means as described in Section 2.3 of this policy.

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Emily Sloop, Town Attorney

Date: February 1, 2021

Subject: Consider adopting Resolution to establish a verifiable percentage goal for participation by minority businesses. *(Emily Sloop)*

EXPLAIN REQUEST:

ACTION RECOMMENDED:

Conduct Public Hearing

FINANCIAL IMPLICATIONS:

ATTACHMENTS:

1. Verifiable Percentage Goal and HUB Outreach Plan

**RESOLUTION TO ESTABLISH A VERIFIABLE PERCENTAGE GOAL FOR
PARTICIPATION BY MINORITY BUSINESSES PURSUANT TO N.C.G.S. §143-128.2**

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WHEREAS, N.C.G.S. §143-128.2(b) requires that, prior to soliciting bids for building projects costing \$300,000 or more, a unit of local government must establish the good faith efforts that it will take as set forth in to N.C.G.S. 143-128.2(e) to make it feasible for minority businesses to submit successful bids or proposals for building project contracts; and

WHEREAS, among other good faith effort requirements, N.C.G.S. §143-128.2(e) requires each local government to develop and implement a minority business participation outreach plan to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and nonminority businesses; and

WHEREAS, pursuant to N.C.G.S. §143-128.2(b), public entities shall require contractors to make good faith efforts pursuant to N.C.G.S. §143-128.2(f) when responding to solicitations for bids or proposals for building project contracts costing \$300,000 or more.

NOW THEREFORE, BE IT RESOVLED AS FOLLOWS:

1. The Town of Huntersville shall have a verifiable goal of ten percent (10%) for participation by minority businesses in locally funded building project contracts costing \$300,000 or more.
2. Prior to the solicitation of bids for building projects costing \$300,000 or more, the Town shall establish the good faith efforts that it will take to make it feasible for minority businesses to submit successful bids or proposals for the contracts for building projects.
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4. The Town shall require contractors to make good faith efforts pursuant to N.C.G.S. § 143-128.2(f) when responding to solicitations for bids or proposals for building project contracts costing \$300,000 or more.

5. The Town Manager is hereby authorized to impose additional requirements, not inconsistent with the requirements of this resolution for the purposes of which are to promote the goal and intent of this resolution.

Adopted this the _____ day of _____ 2021.

Attest:

Clerk to the Board

Mayor, Town of Huntersville

Approved as to Form:

Town Attorney

Town of Huntersville
Minority Business Participation Outreach Plan

SECTION 1. POLICY STATEMENT

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In accordance with N.C.G.S. 143-128.2, the purpose of this plan is to identify minority businesses that can perform public building projects and to implement outreach efforts to encourage minority business participation in these projects to include education, recruitment, and interaction between minority businesses and nonminority businesses.

It is further the policy of the Town to prohibit illegal discrimination against any person or business enterprise and to conduct its building construction, renovation, and repair programs so as to prevent such discrimination.

The Town provides minorities and women equal opportunity for participating in all aspects of the Town’s contracting and procurement programs, including but not limited to, building projects, supplies and materials purchases, and professional and personal service contracts. We consider the participation of minority and women-owned businesses and the value of the quality and diversity of goods and services provided an investment. Any subsequent growth of businesses related to minority business participation parallels greater economic expansion, more jobs, and increased revenue to build our future.

It is the policy of the Town in concert with other local, state, and federal agencies and with the assistance of minority groups and agencies, to seek and identify qualified minority and women’s business enterprises (M/WBEs) and to offer them the opportunity to participate, and to encourage them to participate, in the Town’s building construction and repair programs. Under this policy, the Town adopts the definition of M/WBEs contained in N.C.G.S. § 143-128.2.

It is the intent of this policy to secure contractors’ participation and ensure competition. Nothing in this policy shall be construed to require contractors or the Town to award contracts or subcontracts or to make purchases of materials or equipment from minority business contractors or minority-business subcontractors who do not submit the lowest responsible, responsive bid or bids.

The Town will award public building construction and repair contracts to the lowest responsible, responsive bidder as provided by Article 8 of Chapter 143 of the North Carolina General Statutes.

OBJECTIVES:

The primary objective of the Town's Minority Business Participation Outreach Plan will be to focus on full utilization of minority and women businesses in the Town's construction activities; the assurance of a good faith effort program that benefits contractors, subcontractors and vendors alike; and early conflict intervention of general and discriminatory concerns in addition to the following areas of assistance:

- Maintain and promote minority-owned and women-owned business utilization.
- Increase the Town of Huntersville's knowledge of minority and women owned business firms and become familiar with their product line.
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SCOPE:

This Policy Applies to Minority Business, Minority Persons, and Socially and Economically Disadvantaged Individuals.

A. A Minority Business is a business:

1. In which at least fifty-one percent (51%) is owned by one or more minority persons or socially and economically disadvantaged individuals, or in the case of a corporation, in which at least fifty-one percent (51%) of the stock is owned by one or more minority persons or socially and economically disadvantaged individuals, and
2. Of which the management and daily business operations are controlled by one or more of the minority persons or socially and economically disadvantaged individuals who own it.

B. A Minority Person¹ is a person who is a citizen or lawful permanent resident of the United States, and who is:

1. Black, that is, a person having origins in any of the black racial groups in Africa;
2. Hispanic, that is, a person of Spanish or Portuguese culture with origins in Mexico, South or Central America, or the Caribbean Islands, regardless of race;
3. Asian American, that is, a person having origins in any of the original peoples of the Far East, Southeast Asia and Asia, the Indian subcontinent, the Pacific Islands;
4. American Indian or Alaskan Native, that is, a person having origins in any of the original peoples of North America; or
5. Female.

C. A Socially and Economically Disadvantaged Individual is defined by 15 U.S.C. 637 as a socially disadvantaged individual whose ability to compete in the free enterprise system has been impaired due to diminished capital and credit opportunities as compared to others in the same business area who are not socially disadvantaged. In determining the degree of diminished credit and capital opportunities, the federal government considers factors such as assets and net worth. This category includes M/WBEs of economically disadvantaged Indian tribes.

SECTION 1.1 VERIFIABLE GOALS FOR MINORITY BUSINESS ENTERPRISE PARTICIPATION²

The Town has established a verifiable goal of ten percent (10%) for participation by minority businesses in locally funded building projects costing three hundred thousand dollars (\$300,000) or more. The goal will be for the total value of work for the building project.

Pursuant to N.C.G.S. 143-128.2(a), the Town shall also require a verifiable goal of ten percent (10%) of the total value of work for participation by minority businesses in building projects receiving state appropriations or other State grant funds, including a building project done by a private entity on a facility to be leased or purchased by the Town, where the project cost is one hundred thousand dollars (\$100,000) or more.

This policy shall not apply to the purchase and erection of prefabricated or relocatable buildings or portions thereof, except that portion of the work which must be performed at the construction site, as excepted in N.C.G.S. 143-128.2(j).

¹ For building projects funded in whole or in part with federal funds, Hasidic Jews are also considered minority persons.

² Projects funded in whole or in part with federal funds will comply with applicable federal thresholds regarding Minority and Woman Owned Business Enterprises participation.

SECTION 1.2 MINORITY BUSINESS RESPONSIBILITIES

The Town does not certify minority, disadvantaged or woman-owned businesses. In order to participate, you must first become a certified minority or woman-owned business with the State of North Carolina. Certification is handled through the NC Department of Administration's Office for Historically Underutilized Businesses. Through Vendor Link, the online vendor registration software, businesses may register with the State and verify their status as a HUB vendor. Registration not only certifies you to do business with the Town as a M/WBE, but also makes you eligible for work with the State of NC.

If you would like to be certified, please visit the [NC Department of Administration's Office for Historically Underutilized Businesses](#) and complete the online application. The application process takes approximately 6-8 weeks.

SECTION 2. REGULATIONS AND PROCEDURES FOR IMPLEMENTING MINORITY BUSINESS ENTERPRISE PARTICIPATION POLICY

SECTION 2.1 FORMAL BUILDING PROJECTS:

Building projects costing \$300,000 or more.

A. Town Responsibilities:

1. Advertise building projects. When soliciting bids for formal building projects, the Town shall advertise on their website via: <https://www.huntersville.org/Bids.aspx>.

At least 10 days prior to the scheduled day of bid opening, the Town shall notify minority businesses that have requested notices from the Town for public construction or repair work and minority businesses that otherwise indicated to the Office of Historically Underutilized Businesses an interest in the type of work being bid or the potential contracting opportunities listed in the proposal. The notification shall include the following:

- i. a description of the work for which the bid is being solicited,
 - ii. the date, time, and location where bids are to be submitted,
 - iii. the name of the individual within the public entity who will be available to answer questions about the project,
 - iv. where bid documents may be reviewed, and
 - v. any special requirements that may exist.
2. Hold a pre-bid conference prior to bid opening for each project and assure a Town representative is in attendance. The conference may be hosted in-person or through a virtual meeting platform.
3. Utilize other media, as appropriate, likely to inform potential minority businesses of the bid being sought.

4. The Town will research the Historically Underutilized Business (HUB) resources on an annual basis and update its list of registered HUBs.
5. The Town shall report to the shall report to the Department of Administration, Office of Historically Underutilized Business: 1) the verifiable percentage goal; 2) the type and total dollar value of the project, minority business utilization by minority business category, trade, total dollar value of contracts awarded to each minority group for each project; 3) the applicable good faith effort guidelines or rules used to recruit minority business participation; 4) good faith documentation accepted by the public entity from the successful bidder; and 5) the utilization of minority businesses under the various construction methods under N.C.G.S. 143-128(a1).

B. Contractor Responsibilities:

1. Attend the scheduled pre-bid conference.
2. Identify or determine those work areas of a subcontract where minority businesses may have an interest in performing subcontract work.
3. At least ten (10) days prior to the scheduled day of bid opening, notify minority businesses of potential subcontracting opportunities listed in the proposal. The notification must include all of the following:
 - i. A description of the work for which the sub-bid is being solicited.
 - ii. The date, time and location where sub-bids are to be submitted.
 - iii. The name of the individual within the company who will be available to answer questions about the project.
 - iv. Where bid documents may be reviewed.
 - v. Any special requirements that may exist, such as insurance, licenses, bonds and financial arrangements.
4. All bidders on building projects in the formal bidding range shall undertake a good faith effort to recruit minority businesses and provide documentation of meeting the minimum requirements of N.C. Gen. Stat. § 143-128.2. Failure to comply with these procedural requirements and requirements for submittal may render the bid non-responsive and may result in rejection of the bid.
5. Each bidder, which shall include first-tier subcontractors for construction manager at risk projects, on a building projects within the formal bidding range shall identify on its bid the minority businesses that it will use on the project and an affidavit listing the good faith efforts it has made pursuant to N.C. Gen. Stat. § 143-128.2(f) and Section 2.2 below, and the total dollar value of the bid that will be performed by the minority businesses. A contractor, including a first-tier subcontractor on a construction manager at risk project, that performs all of the work under a contract with its own workforce may submit an affidavit to that effect in lieu of the affidavit otherwise required under this subsection.

The apparent lowest responsible, responsive bidder shall also file the following:

(1) Within the time specified in the bid documents, either:

- a. An affidavit that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the applicable goal. An affidavit under this sub-subdivision shall give rise to a presumption that the bidder has made the required good faith or effort; or
- b. Documentation of its good faith effort to meet the goal. The documentation must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations, and evidence of other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.

(2) Within 30 days after award of the contract, a list of all identified subcontractors that the contractor will use on the project.

6. During the construction of a project, if it becomes necessary to replace an M/WBE subcontractor, the prime contractor shall advise the Town in writing. No M/WBE subcontractor may be replaced with a different subcontractor except for the following:

- a) If the subcontractor's bid is later determined by the contractor or construction manager at risk to be nonresponsive or nonresponsive, or the listed subcontractor refuses to enter into a contract for the complete performance of the bid work; or
- b) With the approval of the Town for good cause.

Prior to substituting a subcontractor, the contractor shall identify the substitute subcontractor and inform the Town, in writing, of its good faith efforts to replace with another M/WBE Subcontractor. Good faith efforts as set forth in N.C.G.S. § 143-131(b) apply to the selection of a substitute subcontractor.

SECTION 2.2 MINIMUM GOOD FAITH EFFORT REQUIREMENTS N.C.G.S. § 143-128.2(F):

All written statements, affidavits, or intentions made by the bidder shall become a part of the agreement between the contractor and Town for the performance of the contract. Failure to comply with any of these statements, affidavits, or intentions, or with the minority business guidelines shall constitute a breach of contract. A finding by the Town that any information, submitted either prior to award of the contract or during the performance of the contract, is inaccurate, false, or incomplete, shall constitute a breach of the contract. Any such breach may result in termination of the contract in accordance with the termination provisions contained in the contract. The Town shall determine, in the exercise of its sole discretion, whether to terminate the contract for breach.

In determining whether a contractor has made good faith efforts, the Town will evaluate all efforts made by the contractor and will determine compliance in regard to quantity, intensity, and results

of these efforts. Bidders must earn at least 50 points from the good faith efforts listed below in order for their bids to be considered responsive:

- (1) Contacting those minority businesses reasonably expected to submit a quote and known or identified to the contractor, or available on State or local government-maintained lists, at least 10 days before the bid or proposal date and notifying them of the nature and scope of the work to be performed. (Value = 10 points)
- (2) Making the construction plans, specifications, and requirements available for review by prospective minority businesses or providing these documents to them at least 10 days before the bid or proposals are due. (Value = 10 points)
- (3) Breaking down or combining elements of work in economically feasible units to facilitate minority participation. (Value = 15 points)
- (4) Working with minority trade, community, or contractor organizations identified by the Office for Historically Underutilized Businesses and those included in the bid documents to provide assistance in recruitment of minority businesses. (Value = 10 points)
- (5) Attending any pre-bid meetings scheduled by the public owner. (Value = 10 points)
- (6) Providing assistance in obtaining required bonding or insurance or providing alternatives to bonding or insurance for subcontractors. (Value = 20 points)
- (7) Negotiating in good faith with interested minority businesses and not rejecting them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification shall have the reasons documented in writing. (Value = 15 points)
- (8) Providing assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisting minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit. (Value = 25 points)
- (9) Negotiating joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public building construction or repair project when possible. (Value = 20 points)
- (10) Providing quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands. (Value = 20 points)

Failure to file a required affidavit or document demonstrating that the contractor made the required good faith effort is grounds for rejection of the bid.

SECTION 2.3 INFORMAL BUILDING PROJECTS

Locally funded building projects costing more than thirty thousand dollars (\$30,000), but less than three hundred thousand dollars (\$300,000).

A. Town's Responsibilities:

1. Notify Minority Business Enterprises of bidding opportunities by one of the following methods:
 - a) Advertise on their website via: <https://www.huntersville.org/Bids.aspx>.
 - b) Advertise the project in an identified Minority Business Enterprise targeted newspaper(s) or;
 - c) Attempt to contact Minority Business Enterprises.
2. Record all contractors contacted, along with the list of contractors provided with bidding documents.
3. Document Minority Business firms contacted and record their minority category along with any other efforts to recruit minority businesses.
4. Record all contractors submitting bids, along with the amount of each bid.
5. All data, including the type of project, total dollar value of the project, dollar value of minority business participation on each project, and documentation of efforts to recruit minority participation shall be reported to the Department of Administration, Office for Historically Underutilized Business, upon the completion of the project.

B. Contractor Responsibilities:

1. The Contractor will provide the following documentation prior to final payment by the Town.
 - a. A list of minority businesses used on the project, identifying the businesses name, type of work performed, and minority category.
 - b. List the dollar amount paid to each minority business and the percentage it represents of the final project value.

SECTION 2.4 QUALIFICATIONS-BASED SELECTION FOR ARCHITECTURAL, ENGINEERING, SURVEYING, AND CONSTRUCTION MANAGEMENT-AT-RISK SERVICES

For the qualifications-based selection process to procure professional architectural, engineering, surveying, construction-management-at-risk services, design-build services, and public-private partnership construction services, the Town shall make good faith efforts to encourage minority participation. These good faith efforts shall include notifying Minority Business Enterprises of opportunities by similar means as described in Section 2.3 of this policy.

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Janet Pierson, Town Clerk

Date: February 1, 2021

Subject: Consider decision on the sale of the Robert B. Blythe Building. (*Anthony Roberts*)

EXPLAIN REQUEST:

The high bid received for the Robert B. Blythe Building was from HFW Huntersville, LLC in the amount of \$1,889,000.

Pursuant to the Upset Bid Process, the Town Board can accept the final high offer within 30 days after the final upset bid period has passed or reserves the right to withdraw the property from sale at any time before the final high bid is accepted and the right to reject at any time all bids.

Two separate resolutions are included for your consideration, depending on which direction the Town Board would like to go.

ACTION RECOMMENDED:

Town Board Direction Requested

FINANCIAL IMPLICATIONS:

ATTACHMENTS:

1. AttachmentA
2. AttachmentB

**RESOLUTION OF FINAL ACCEPTANCE OF NEGOTIATED OFFER RECEIVED
PURSUANT TO THE UPSET BID PROCEDURES SET FORTH IN N.C.G.S. § 160A-269**

WHEREAS, the Town of Huntersville (the “Town”), North Carolina owns certain real property, approximately 1.671 acres, consisting of all or portions of three separate (3) parcels: (i) PIN 01712210, approximately 1.26 acres; (ii) PIN 01712211, approximately .231 acres; and (iii) PIN 01712245, approximately .0180 acres; and

WHEREAS, North Carolina General Statute Section 160A-269 permits the Town to sell property by upset bid after receiving an offer to purchase; and

WHEREAS, the Town received an offer to purchase the above-described property pursuant to N.C.G.S. § 160A-269 (the “Offer”); and

WHEREAS, on November 16, 2020, the Board of Commissioners for the Town of Huntersville (the “Board”) issued a proposed acceptance the Offer and authorized the Offer to be advertised for upset bids pursuant to N.C.G.S. § 160A-269; and

WHEREAS, the Offer was initially advertised in the Charlotte Observer on November 19, 2020; and

WHEREAS, the Town received upset bids requiring the offer to be advertised again on December 3, 2020; December 17, 2020; and January 1, 2020 with a final high bid being received on December 29, 2020 in the amount of \$1,889,000.00 from HFW Huntersville, LLC; and

WHEREAS, subject to the terms below, the Town Board of Commissioners wishes to issue a final acceptance of the Offer (attached hereto as Exhibit A) to the final, highest bidder;

NOW THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. The Board issues a final acceptance of the Offer received pursuant to N.C.G.S. § 160A-269 and authorizes the sale of the above-described property to the submitter of the final high bid, HFW Huntersville, LLC.
2. The Town Manager, Clerk to the Board, and the Town Attorney are authorized to take all actions on behalf of the Town which are consistent with the terms of the Offer, including but not limited to the signature of all necessary documentation, to execute the agreement and effectuate the closing on the sale of the property.

Adopted this _____ day of _____ 2021.

ATTEST:

Janet Pierson, Town Clerk

John Aneralla, Mayor

Approve as to Form:

Emily Sloop, Town Attorney

**RESOLUTION REJECTING ALL UPSET BIDS
AND WITHDRAWING PROPERTY FOR SALE**

WHEREAS, the Town of Huntersville owns certain real property, approximately 1.671 acres, consisting of all or portions of three separate (3) parcels: (i) PIN 01712210, approximately 1.26 acres; (ii) PIN 01712211, approximately .231 acres; and (iii) PIN 01712245, approximately .0180 acres; and

WHEREAS, the Board of Commissioners for the Town of Huntersville (the “Board”) authorized the sale of the property described above through the upset bid procedure pursuant to North Carolina General Statute § 160A-269 on November 16, 2020; and

WHEREAS, the Board reserved the right to reject all bids received through the upset bid procedure and withdraw the property from sale any time before acceptance of the final high bid; and

WHEREAS, the Town wishes to exercise its right to reject all bids received for the purchase of the above-described property pursuant to the upset bid procedure and withdraw said property from sale; and

NOW THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. The Board rejects all bids received for the above-described property pursuant to the upset bid procedure.
2. The Board withdraws said property from sale pursuant to the upset bid procedure.

Adopted this _____ day of _____ 2021.

ATTEST:

Janet Pierson, Town Clerk

John Aneralla, Mayor

Approve as to Form:

Emily Sloop, Town Attorney

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Bobby Williams, Assistant to the Manager

Date: February 1, 2021

Subject: Consider adopting Resolution Determining Design-Build is the Appropriate Method of Contracting for New Town Hall Project and Establishing Criteria Under Which the Design-Build Method for Contracting is Appropriate. (*Emily Sloop*)

EXPLAIN REQUEST:

ACTION RECOMMENDED:

Consider adopting resolution

FINANCIAL IMPLICATIONS:

Use of Design-Build method of contracting will give Town a guaranteed maximum price once conceptual design drawings have been completed (approximately 33%).

ATTACHMENTS:

1. Resolution to Use Design Build 012521
2. Town Criteria for Using Design Build EAS BW 012521

RESOLUTION #21-XX-XXXX
Establishment of Criteria Used for Determining the Circumstances
Under Which the Design-Build Method of Contracting is Appropriate

WHEREAS, N.C. Gen. Stat. § 143-128(a1)(6) grants authority to local governments to contract for capital projects using the design-build method pursuant to G.S. § 143-128.1A; and

WHEREAS, the Town of Huntersville (the “Town”) wishes to utilize the design-build method to contract for the design and construction of a new town hall (the “new Town Hall project”); and

WHEREAS, G.S. § 143-128.1A requires local governments who wish to utilize the design-build method of contracting to first establish criteria to determine if the design-build method is appropriate for the desired project; and

WHEREAS, the Town wishes to establish the criteria contained in Exhibit A as attached hereto and incorporated herein to determine whether the design-build method is appropriate for the new town hall project; and

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. The Town of Huntersville Board of Commissioners (the “Board of Commissioners”) hereby adopts the criteria contained in Exhibit A for purposes of determining whether the design-build method of contracting is appropriate for the new Town Hall project.
2. The Board of Commissioners determines that the design-build method of contracting is appropriate for the New Town Hall project.
3. The Board of Commissioners authorizes the Town Manager to advertise a request for qualifications for a design-builder and take necessary actions to execute a design-build contract for the new Town Hall project.

READ, APPROVED AND ADOPTED, this the _____ day of _____, 2021.

John Aneralla, Mayor

Attest:

Clerk to the Board

Approved as to Form:

Town Attorney



Design-Build Criteria for the New Town Hall Project

Pursuant to N.C.G.S. 143-128.1A, governmental entities must establish written criteria for determining when the design-build contracting method is appropriate for a project.

The established criteria for determining that the design-build contracting method is appropriate for constructing the new Town Hall project are as follows:

1) The extent to which the Town of Huntersville can adequately and thoroughly define the project requirements prior to the issuance of the request for qualifications for a design-builder.

RFQ 2021-XXXX adequately and thoroughly defines the project requirements. The RFQ has been developed in consultation with qualified and experienced Town staff from the Planning, Engineering, Public Works, Legal, and Administration departments to determine the project requirements in development and issuance of the RFQ. The planned site for this project is pad ready as it was anticipated a companion building to the Town Center would be constructed at some point in the future. The RFQ outlines anticipated project budget, anticipated project schedule, site location, scope of work, expectations, and submission guidelines.

2) The time constraints for the delivery of the project.

The new Huntersville Town Hall project is estimated to begin in May 2021 with a completion of June 30, 2023. It is within the Town's best interest to remain tight to this schedule as possible. The new town hall will provide increased office space needed due to growing staff levels as aligned with the Town's need to effectively carry out operations.

3) The ability to ensure that a quality project can be delivered.

Staff possess graduate level coursework in public contract management. The Town has a variety of staff who are experienced with project management and construction methods and management. Additionally, the Design-Build RFQ requires submitters to assign a project manager to oversee both the design and construction phases of the project. A multi-disciplinary team from the Town will work with the design-build contractor's project manager and other key personnel on-site and through regular communication to ensure a quality project is delivered.

4) The capability of the Town of Huntersville to manage and oversee the project, including the availability of experienced staff or outside consultants who are experienced with the design-build method of project delivery.

The Town Manager and assigned staff will oversee the project. Within staff, there exists multiple members familiar with design, construction, and construction administration to ensure the Town's interests are met with the project. Furthermore, the town will utilize a diverse project team to communicate regularly with the design-builder to address questions and coordinate any

and all issues as they arise. If it becomes necessary, there are professional consultants in Huntersville and surrounding areas available to lead contractual and construction inquiries.

Additionally, RFQ 2021-XXXX requires submitters to assign a project manager experienced with the design-build method of project delivery to oversee both the design and construction phases of the project.

5) A good-faith effort to comply with G.S. 143-128.2, G.S. 143-128.4, and to recruit and select small business entities.

RFQ 2021-XXXX does not limit or otherwise preclude any respondent from submitting a response so long as the respondent, itself or through its proposed team, is properly licensed and qualified to perform the work defined by the public notice issued in relation to this design-build project. The Town of Huntersville will make a good-faith effort to comply with G.S. 143-128.2, G.S. 143-128.4, and to recruit and select small business entities. It will also encourage the selected contractor to meet or exceed the Town's verifiable percentage goal for participation by minority businesses in building projects.

6) The criteria utilized by the Town of Huntersville, including a comparison of the advantages and disadvantages of using the design-build delivery method for a given project in lieu of the delivery methods identified in subdivisions (1), (2), and (4) of G.S. 143-128(a1).

Advantages:

One fundamental difference between design-build and other construction contracting methods including the traditional design, bid, build (DBB) method and the use of a construction manager at risk (CMR) is that, under the DBB and CMR methods, the local government is required to contract separately with an architect and/or engineer for design services, while a design-build project involves a single contract with both the design professional and the contractor encompassing the design and construction phases of the project. Under the DBB and CMR methods, the designer works for the public owner; under design-build, the designer works for the contractor, reducing the project management burden on Town staff.

Under the design-build method, project specifications are not drawn prior to initiating the procurement process. Instead, the project owner advertises general information about the project and selects the design-builder based on the firm's (or individual's) qualifications to design and construct the project. Once under contract, the design-builder (oftentimes a team comprised of the designer and the general contractor) works with the owner to design the project based on the owner's project criteria, usually by preparing a preliminary design followed by detailed specifications after the owner's approval of the preliminary design. The design work can be done in phases, allowing construction to commence and proceed in phases to expedite project completion, or the design work can be finalized prior to construction. Under both systems, the designer continues to work with the builder throughout the project addressing unforeseen issues or design revisions as the project proceeds. This ability for the designer and contractor(s) to work together on the front will likely result in potential cost savings and other efficiencies due to a reduced need for revisions and change orders.

Disadvantages:

Because a firm, individual, or team must provide both design and construction service in one contract, the Design-Build method places a higher standard and professional burden on the submitting firms. The Design-Build method requires the design-builder to certify that each licensed designer and sub-consultant who is a member of the design-build team is selected based on "demonstrated competence and qualifications" in the manner provided by N.C.G.S. 143-64.31.

Because it is unlikely that one, or a few, individuals will possess the required competence and qualifications of all the trades necessary for the contract, the Design-Build method may be difficult for smaller firms. Larger firms, or smaller firms with established subcontracting relationships, are more likely to respond to a Design-Build RFQ. This may have the effect of limiting the pool of firms that will bid on the Town Hall project.

However, staff believes that the advantages of the Design-Build method outweigh the disadvantages for the Town Hall project. This method will enable the Town to secure a team in order to utilize the existing graded site and adequate storm water to construct the type of building that was previously envisioned next to Town Center. Staff does not have extensive capacity to manage multiple contracts through a further elongated project. The Design-Build method provides for one expedited contract whereby the submitting firm manages the project from start to finish. Furthermore, the higher standard required by the method may have the effect of encouraging more experienced or more qualified firms to participate in the bidding process, which is essential for the quality of our new town hall.

Staff recommends the Design-Build contracting method for the Town Hall and that Commissioners direct staff to move forward with seeking NC Local Government Commission Approval as necessary, investigating methods of financing, and advertising RFQ 2021-XXXX.

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Michael Jaycocks, Director

Date: February 1, 2021

Subject: Consider adopting Resolution to award the bid for the Rosedale Nature Park Project and approve the Construction Contract. *(Michael Jaycocks)*

EXPLAIN REQUEST:

The Town opened sealed bids on January 14th for the Rosedale Nature Park Project. JD Goodrum was the lowest bidder out of the three bids that were submitted. JD Goodrum is based in Cornelius, NC and has done many park projects in Huntersville and the greater Charlotte region. The bid submitted from JD Goodrum is for \$1,303,936, which includes alternate No. 1 (paved trails in lieu of gravel trails). The contract period is for 210 days.

ACTION RECOMMENDED:

Approve Resolution and Construction Contract with JD Goodrum for the Rosedale Nature Park

FINANCIAL IMPLICATIONS:

\$1,303,936 from the approved Rosedale Nature Park Construction Budget

ATTACHMENTS:

1. Resolution awarding the contract-Rosedale Nature Park
2. JD Goodrum - Rosedale Nature Park Project Construction Contract
3. JDG. Bid- Rosedale Nature Park
4. Rosedale Nature Park Bid Tab
5. Rosedale Nature Park Project Manual Addendum 1 - 1.6.21
6. Rosedale Nature Park Drawing Set Addendum 1 - 1.6.21



RESOLUTION OF THE TOWN OF HUNTERSVILLE TO AWARD THE BID FOR THE ROSEDALE NATURE PARK PROJECT AND APPROVE THE CONSTRUCTION CONTRACT

Whereas, the Town of Huntersville received formal, written, sealed bids for the construction of the Rosedale Nature Park Project (the "Project"); and

Whereas, the lowest responsive responsible bidder was JD GOODRUM, LLC, a North Carolina limited liability company located in Cornelius, NC ("Low Bidder"); and

Whereas, the Town wishes to award the Project to the Low Bidder, accept certain alternates that were bid, and approve and establish administrative authority for the construction contract with the Low Bidder;

NOW THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. The Board of Commissioners awards the Project to the Low Bidder, in accordance with the Bid Proposal submitted, as modified by the Contract Documents, and accepts the alternates bid as follows:

- Base Bid consisting of:

1. <u>Construction of the Park</u>	\$1,299,996.00 (lump sum)
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<u>Total Base Bid:</u>	\$1,299,996.00
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- Add Alternate #1, Asphalt trail in lieu of gravel trail: \$17,940.00 (lump sum)
- Accept Substitution Deduct- Playground Fencing: (\$14,000.00)

<u>Total Bid Amount:</u>	\$1,303,936.00
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2. The draft Construction Contract, attached hereto as Exhibit 1, is hereby approved. As used herein, the Construction Contract is deemed to include Exhibit A, attached thereto, and all Contract Documents identified and incorporated therein by reference.
3. The Board hereby authorizes the Town Manager, acting on advice of counsel, to take any actions necessary to effect the provisions of this Resolution, including signing the Agreement attached with such modification as may be required. Provided a budget amendment is not necessary, the Town Manager shall have the authority to approve change orders to the Construction Contract for time and price, however the total of

all change orders approved by the Town Manager may not exceed five percent (5%) of the Total Bid Amount stated in paragraph 1, above.

4. This Resolution shall be effective as of the date its adoption.

Adopted this _____ day of February, 2021.

ATTEST:

TOWN OF HUNTERSVILLE

Town Clerk

Town Mayor

APPROVED AS TO FORM:

Town Attorney



101 Huntersville-
Concord Rd
Huntersville, NC 28078
(704) 875-6541

CONSTRUCTION CONTRACT

CONTRACTOR:
JD GOODRUM, LLC,
18339F Old Statesville Road
Cornelius, NC 28031

PROJECT: **Rosedale Nature Park**
PROJECT **9519 Rosewood Meadows Lane**
ADDRESS: **Huntersville, NC 28078**

PROJECT LANDSCAPE ARCHITECT: Dan Dodd, PLA
314 Tom Hall Street
Fort Mill, SC 29715
803.981.4330

This Construction Contract, and all exhibits, (collectively this "Contract") is entered into this 1st day of February, 2021 by and between, the Town of Huntersville, a municipal corporation of the State of North Carolina, (the "Town") and, JD GOODRUM, LLC, a North Carolina limited liability company (the "Contractor") having a principal business address of 18339F Old Statesville Road, Cornelius, NC 28031.

WITNESSETH:

That for and in consideration of the mutual promises set forth in this Contract, the sufficiency of which is acknowledged by the parties hereto, the parties agree as follows:

1. Scope of Services. The Contractor agrees to provide the professional construction services needed to complete the Project in accordance with the Project Drawings and Specifications and the Contract Documents for the price stated in the Contractors Proposal Form, plus or minus the bid alternates accepted by the Town, plus the unit price per quantity of unit price work performed, and plus or minus the substitutions listed on the Substitution Listing which are accepted by the Town.
2. Contract Documents. The Contract Documents consist of, in addition to this Contract, the Notice of Award, the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing, all Addenda issued, the Contract Drawings, Technical Specifications and the General Conditions of the Construction Contract, all of the foregoing being incorporated herein by reference as if fully set forth herein, and all parties agree to be bound thereby. To the extent that there are discrepancies between the Contract documents, the order of priority shall be the Notice of Award, this Construction Contract with Exhibit A, Addenda in reverse order of issuance (i.e. last addendum has the highest priority among the addenda), the Non-collusion Affidavit, the Instructions to Bidders, Contract Drawings, Technical Specifications, the Bid Proposal submitted by the Contractor, and the General Conditions of the Contract.
3. Time for Performance of the Work. The Work shall be completed within two hundred and ten (210) days of receipt of the Notice to Proceed from the Town.
4. Base Bid and Alternates Accepted. The Town accepts the following base bid and alternates contained within the Contractor's Bid Proposal:

- Base Bid consisting of:

1. Construction of the Park \$1,299,996.00 (lump sum)

Total Base Bid: **\$1,299,996.00**

- Add Alternate #1, Asphalt trail in lieu of gravel trail: \$17,940.00 (lump sum)
- Accept Substitution Deduct- Playground Fencing (\$14,000)

Total Bid Amount: \$1,303,936.00

5. Payment for Services. For the performance of the Work Contractor shall be paid the lump sum of One Million Three Hundred and Three Thousand Nine Hundred Thirty Six Dollars and no/100s (\$1,303,936.00) plus applicable unit prices per quantity of unit price work actually performed, plus reimbursables, all in accordance with the terms and conditions stated in the Contract Documents.

In witness thereof, the contracting parties, by their authorized agents, affix their signatures this _____ day of _____, 20_____.

CONTRACTOR

TOWN OF HUNTERSVILLE

BY: _____

Print Name:

Print Title:

BY: _____

Print Name:

Print Title:

This instrument has been pre-audited in that manner required by the North Carolina Budget and Fiscal Control Act.

Pattie McGinnis, Finance Director

GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

1. DEFINITIONS

Owner: "Owner" shall mean, The Town of Huntersville, NC

Contractor: "Contractor" shall mean the entity that will provide the services for the Owner.

Designer: The designer(s) are those referred to within the Contract documents, or their authorized representatives. The Designer(s), as referred to herein, shall mean landscape architect and/or engineer responsible for preparing the Project plans and specifications. They will be referred to hereinafter as if each were of the singular number, masculine gender.

2. Scope of Services. The Contractor agrees to perform for the Town the following services according to the following requirements:

The Contractor agrees to complete the construction of the Project in accordance with the Contract Documents. Such construction of the Project shall constitute the "Work." The Contractor agrees to provide all of the personnel, contract personnel, subcontractors, financial resources, materials, supplies, and equipment necessary to complete the Work in a timely and professional manner in accordance with the standards of the profession for similar work in the Mecklenburg County area at the time of the performance of the Work.

3. Contract Documents. The Contract Documents consist of the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing, all Addenda issued, the Contract Drawings, the Town's Standard Form Contract, and the General Conditions of the Construction Contract. The drawings and specifications are complementary, one to the other. That which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a complete job. In case of discrepancy or disagreement in the Contract Documents, the order of precedence shall be the Construction Contract, the Bid Proposal Form, the Substitution Listing (only those items accepted by the Town), Addenda, the Contract Drawings, the Instructions to Bidders, the General Conditions of the Contract, the Invitation to Bid, and the Non-collusion Affidavit.
4. Licensure Required. The Contractor must be a licensed General Contractor as required by North Carolina General Statutes Section 87-1, and must have a good ethical and professional standing with the North Carolina General Contractor's Licensing Board. The Contractor will be responsible for providing properly qualified, licensed (if required) personnel to complete the Work in accordance with the standard of care ordinarily used by members of the Contractor's profession practicing under similar circumstances and at the same time in Mecklenburg County.
5. Coordination With Others. The Contractor agrees to coordinate its Work with the work of any other unaffiliated contractors or with the work of the Town's own forces to avoid delaying or interfering with their work.
6. Contract Insurance. Contractor shall be required to purchase and maintain during its performance under this Contract insurance coverage as shown on the Insurance Requirements as stated in Exhibit A, which is incorporated herein by reference. With the exception of Worker's Compensation and Professional Liability policies, all insurance purchased shall have a specific endorsement, copy of which shall be provided to the Town, naming the Town as an additional insured and for all insurance purchased, an endorsement providing that such insurance will not be cancelled without providing thirty (30) days advance written notice to the Town.
7. Time for Performance of the Work. The Work will begin within ten (10) days of receipt of the Notice to Proceed from the Town. The Contractor will have 210 consecutive calendar days to complete the Work from the date of Contractor's receipt of the Notice to Proceed.
8. Payment for Services. In consideration of the above services, the Town will pay the Contractor, in accordance with the Contractor's, plus reimbursable expenses at the Contractor's actual cost (without

markup). Contractor will submit monthly Requests for Payment for Work performed to the Project Manager who will forward them to the Project Landscape Architect for Review. The Request for payment shall be based upon the Contractor's estimate of the percentage of the total Work completed during the period represented on the Request for Payment. The Project Landscape Architect must certify that the Work represented in the Contractor's Request for Payment has been completed in accordance with the Contract Documents, and certify that the Request for Payment is appropriate for payment before the Town shall be obligated to make such payment to the Contractor. If any Request for Payment is disputed by the Town, in whole or in part, the Town shall provide a written explanation for such dispute to Contractor within five days of receipt of the certified Request for Payment from the Architect and shall pay all undisputed amounts therein.

a. The designer with the approval of the Owner may withhold payment for the following reasons:

- (1) Faulty work not corrected.
- (2) The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
- (3) To provide for sufficient contract balance to cover liquidated damages that will be assessed.
- (4) The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
- (5) Claims filed against the Contractor or evidence that a claim will be filed.
- (6) Evidence that subcontractors have not been paid.
- (7) When grounds for withholding payments have been removed, payment will be released. Delay of payment due the Contractor without cause will make owner liable for payment of interest to the Contractor as provided in G.S. 143 134.1. As provided in G.S. 143-134.1(e), the owner shall not be liable for interest on payments withheld by the owner for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the owner or reasonable evidence that a third-party claim will be filed.

b. Final payment will be made within forty-five (45) consecutive days after acceptance of the work, receipt of marked-up "as-built" drawings and specifications and the submission both of notarized Contractor's affidavit and final pay request. All pay requests shall be submitted to the Designer/Owner for approval.

THE CONTRACTOR'S FINAL PAYMENT AFFIDAVIT SHALL STATE: "THIS IS TO CERTIFY THAT ALL COSTS OF MATERIALS, EQUIPMENT, LABOR, SUBCONTRACTED WORK, AND ALL ELSE ENTERING INTO THE ACCOMPLISHMENT OF THIS CONTRACT, INCLUDING PAYROLLS, HAVE BEEN PAID IN FULL."

9. Acceptance. Execution of the Contract constitutes an agreement to the terms contained within the Contract Documents. The terms and provisions set forth in the Contract Documents shall constitute the entire agreement between Contractor and the Town with respect to the performance of the Work as described in the Contract Documents. The agreements set forth in the Contract Documents are sometimes referred to herein as the "Contract." Except as provided herein, no additional or supplemental provision or provisions in variance with the Contract Documents that may appear in Contractor's proposal, acknowledgment, Requests for Payment, or in any other communication from Contractor to the Town shall be deemed accepted by or binding on the Town. The Town hereby expressly rejects all such provisions which supplement, modify or otherwise vary from the terms of the Contract Documents, and such provisions are superseded by the terms and conditions stated in the Contract Documents, unless and until the Town's authorized representatives expressly assent, in writing, to such provisions. Stenographic and clerical errors and omissions by the Town are subject to correction.

10. Working Drawings And Specifications At The Job Site. The Contractor shall maintain, in readable condition at his job site one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the owner, designer or his authorized representative. The Contractor shall also maintain at the job site, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on Project drawings by the Contractor and submitted to the designer upon Project completion and no later than 30 days after acceptance of the Project.
11. Materials, Equipment, Employees. The Contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, fuel, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.
 - a. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.
 - b. Upon notice, the Contractor shall furnish evidence as to quality of materials.
 - c. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the Contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; the designer prior to the opening of bids shall make such approval or disapproval. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.
 - d. The designer is the judge of equality for proposed substitution of products, materials or equipment.
 - e. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the Contractor shall order such parties removed immediately from grounds.
 - f. The Contractor shall cooperate with the designer and the owner in coordinating construction activities.
 - g. The Contractor shall maintain qualified personnel and effective supervision at the site at all times during the Project, and exercise the appropriate quality control program to ensure compliance with the Project drawings and specifications. The designer is responsible for determining compliance with the drawings and specifications.
12. Cleaning Up And Restoration Of Site. The Contractor shall keep the sites and surrounding area reasonably free from rubbish at all times and shall remove debris from the site from time to time or when directed to do so by the Owner. Before final inspection and acceptance of the Project, the Contractor shall thoroughly clean the sites, and completely prepare the Project and site for use by the Owner. At the end of construction, the Contractor shall oversee and implement the restoration of the construction site to its original state. Restoration includes but not limited to walks, drives, lawns, trees and shrubs, corridors, stairs and other elements shall be repaired, cleaned or otherwise restored to their original state.
13. Codes, Permits And Inspections. The Contractor shall obtain the required permits, if required, give all notices, and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the Contractor observes that the drawings and specifications are at variance therewith, he shall

promptly notify the Designer in writing. All work under this contract shall conform to the current North Carolina Building Code and other state and national codes as are applicable. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the Owner, he shall bear all cost arising there from.

All fire alarm work shall be in accordance with the latest State Construction Office (SCO) Guidelines for Fire Alarm Installation (NFPA72). Where the contract documents are in conflict with the SCO guidelines, the SCO guidelines shall govern. The Contractor shall be responsible for all the costs for the correction of the work where he installs it in conflict with the latest edition of the SCO Guidelines for Fire Alarm Installation.

14. Protection Of Work, Property, The Public And Safety. The Contractor shall be solely responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. The Contractor shall be responsible for any damage to the owner's property or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. The Contractor shall be responsible for and pay for any damages caused to the owner. Contractor shall have access to the Project at all times.
- a. The Contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other materials necessary to protect all the work on the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.
 - b. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.
 - c. The Contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around it. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
 - d. The Contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. Accident Prevention Manual in Construction, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.
 - e. The Contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, Federal Register), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
 - f. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the Contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage. Any compensation claimed by the Contractor on account of such action shall be determined as provided for under Article 13(b).

Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the Contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

15. As-Built Marked-Up Construction Documents. Contractor shall provide one complete set of legible "as-built" marked-up construction drawings and specifications recording any and all changes made to the original design during the course of construction. In the event no changes occurred, submit construction drawings and specifications set with notation "No Changes." The Designer/Owner must receive "As-built" marked-up construction drawings and specifications before the final pay request can be processed.

16. Entire Agreement. The Contract Documents constitute and represent the complete and entire agreement between the Town and Contractor and supersede all previous communications, either written or verbal with respect to the subject matter of this Contract.
17. Changes, Additions, Deletions. No changes, additions, deletions or modifications (other than substitutions accepted by the Town at the time the contract is awarded) of the scope of work, specifications, terms and conditions, quantity, unit of issue, delivery date, delivery charges or price will be permitted unless the same are incorporated into a written Change Order, signed by the Town and the Contractor. However, the Contractor will not be liable for delays caused by circumstances beyond its control including without limitation, delays caused by acts of God, the Town or its other consultants/contractors, federal, state, and local government authorities, strikes, riots, civil unrest, war, or unknown or concealed conditions, and if such delays occur, the Contractor will be entitled to an equitable adjustment in the time for the performance of the Work and compensation.
18. Change Orders. Change orders shall be submitted by the Contractor in writing to the owner/designer for review and approval. The Contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the Contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within five (5) days after receipt of the Contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the Contractor for his signature or otherwise respond, in writing, to the Contractor's proposal. Within five (5) days after receipt of the change order executed by the Contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's approval. The owner shall execute the change order, within five (5) days of receipt, unless such change order is not approved by the owner. If the change order requires a formal budget amendment, or the owner elects to submit a change order to the Town Board of Commissioners for approval, the owner will execute the change order within five (5) days of such approval by the Town Board.
 - a. A change order, when approved, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the Project as a result of the change in the work.
 - b. If, during the progress of the work, the owner requests a change order and the Contractor's terms are unacceptable, the owner, may require the Contractor to perform such work on a time and material basis whereupon the Contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph e. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.
19. Relationship of the Parties. The Contractor is an independent Contractor and not an affiliate of the Town. The conduct and control of the work will lie solely with the Contractor. The Contract shall not be construed as establishing a joint venture, partnership or any principal-agent relationship for any purpose between the Contractor and the Town. Employees of the Contractor shall remain subject to the exclusive control and supervision of the Contractor, which is solely responsible for their compensation.
20. Sales Taxes. Any applicable sales taxes shall be invoiced as a separate item.
21. Substitutions. Substitutions proposed by the Contractor on the Substitution Listing Form, submitted with the Contractor's Bid Proposal, which are accepted by the Town shall be considered a modification to the Contract Documents. No other substitutions shall be made by the Contractor unless the same is put into a Change Order, signed by the Owner and Contractor.
22. Indemnification. To the greatest extent allowed by the law the Contractor shall indemnify and hold harmless the Town, its officers, agents, employees and assigns from and against all claims, losses, costs, damages, expenses, attorneys' fees ("Claims"), but only to the extent the fault of the Consultant or its derivative parties (as defined in N.C.G.S §22B-1) is a proximate cause of the Claim. In the event that any portion of the Work performed under the Contract shall be defective in any respect whatsoever, the Contractor shall indemnify and save harmless the Town, its officers, agents, employees and assigns from all loss or the payment of all sums of

money, but only to the extent the fault of the Consultant or its derivative parties (as defined in N.C.G.S §22B-1) is a proximate cause of the Claim.

23. Anti-Discrimination. During the performance of the Contract, the Contractor shall not discriminate against or deny the Contract's benefits to any person on the basis of sexual orientation, national origin, race, ethnic background, color, religion, gender, age or disability.
24. Insurance. The Contractor shall provide the insurance coverages shown on Exhibit A, attached hereto and incorporated herein by reference. The Contractor shall provide the Town with a North Carolina Certificate of Insurance and such endorsements as may be required by the Contract Documents PRIOR to the commencement of any work under the Contract and agrees to maintain such insurance until the completion of the Contract. Such certificates of insurance shall be considered part of the Contract.
25. Ethics in Public Contracting. By submitting their prices and acceptance of this Contract, the Contractor certifies that their proposal was made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other supplier, manufacturer or subcontractor in connection with their proposal, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.
26. Applicable Laws and Courts. This Contract shall be governed in all respects by the laws of the State of North Carolina. All matters, whether sounding in contract or tort relating to the validity, construction, interpretation and enforcement of the Contract, shall be governed in all respects by the laws of the State of North Carolina and venue shall be proper only in a court of competent jurisdiction located in Mecklenburg County, North Carolina. The Contractor represents and warrants that it shall comply with all applicable federal, state and local laws, regulations and orders.
27. Strict Compliance. The Town may at any time insist upon strict compliance with these terms and conditions notwithstanding any previous course of dealing or course of performance between the parties to the contrary.
28. Assignment. The Contractor shall not assign, subcontract or otherwise transfer any interest in the Contract without the prior written approval of the Town.
29. General Provisions. The Town's remedies as set forth herein are not exclusive. Any delay or omission by the Town in exercising any right hereunder, or any waiver by the Town of any single breach or default hereunder, shall not be deemed to be a waiver of such right or of any other right, breach, or default.
30. Risk of Loss. Risk of Loss for all supplies, materials, the Work performed, and the Project as it is being constructed, shall be on the Contractor until such time as substantial completion is achieved, certified by the Architect, and approved by the Town.
31. Warranties. The Contractor warrants it shall adhere to all applicable laws, codes, ordinances, and regulations of the United States, the State of North Carolina, the County of Mecklenburg, and the Town of Huntersville in the performance of the Work outlined in this Contract and any attached specifications. The Contractor warrants that any finished Work completed hereunder shall also adhere to all applicable laws, codes, ordinances, and regulations of the United States, the State of North Carolina, the County of Mecklenburg, and the Town of Huntersville. The Contractor warrants that all Work will be performed in accordance with this Contract and the standard of care ordinarily used by members of the Contractor's engineering profession practicing under similar circumstances and at the same time in Mecklenburg County. The Contractor makes no additional warranties, express or implied, in connection with the Work. In addition to any other rights available at law or in equity, the Town shall be entitled to consequential and incidental damages.
32. Default. In the event of a breach by the Contractor, addition to any other remedies available to the Town in law or equity, the Town may procure upon such terms as the Town shall deem appropriate, construction services substantially similar to those so terminated, in which case the Contractor shall be liable to the Town for any excess costs for such similar services and any expenses incurred in connection therewith. This Contract shall not terminate if the alleged default is cured within a ten (10) day notice period. In the event this Contract is terminated by the Town for the default of the Contractor, the Town shall be entitled to keep and use Work, including materials and supplies on site provided by the Contractor in finishing the construction of the Project.

33. Termination for Convenience. The Town shall have the right, without assigning any reason therefore, to terminate any Work under the Contract, in whole or in part, at any time at its complete discretion by providing ten (10) day notice in writing from the Town to the Contractor. If the Contract is terminated by the Town in accordance with this paragraph, the Contractor will be paid for all Work performed and reimbursable expenses incurred up to the effective date of the termination. The Town will not be liable to the Contractor for any costs for materials acquired or contracted for, if such costs were incurred prior to the date of this Contract.
34. Assignment. Contractor may not assign, pledge, or in any manner encumber the Contractor's rights under this Contract, or delegate the performance of any of its obligations hereunder, without the Town's prior, express written consent. Hiring a subcontractor to perform any portion of the Work shall be at the Contractor's discretion; however Contractor shall remain liable and responsible to the Town for all such Work completed by subcontractors.
35. No Third Party Beneficiaries. There shall be no intended nor incidental third party beneficiaries of this Contract. The Contractor shall include in all contracts, subcontracts or other agreements relating to the Contract an acknowledgment by the contracting parties that the Contract creates no third party beneficiaries.
36. Valid Contract. In order for this Contract to be valid, it must be executed by the Town Manager or his or her authorized designee, and must be preaudited in that manner required by the Local Government Budget and Fiscal Control Act, as the same may be amended.
37. Verification of Work Authorization. The Contractor shall comply with, and require all contractors and subcontractors to comply with, the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, "Verification of Work Authorization," sometimes known as E-verify for all contractors and subcontractors.
38. Iran Divestment List. With the execution hereof, Contractor, certifies that they are not on the Iran Final Divestment List created by the N.C. State Treasurer pursuant to N.C.G.S. § 147-86.58, and will not contract with anyone on such List in performance of the work hereunder.
39. Companies that Boycott Israel. With the execution hereof, Contractor, certifies that they are not on the Companies that Boycott Israel List created by the N.C. State Treasurer pursuant to N.C.G.S. § 147-86.80, and will not contract with anyone on such List in performance of the work hereunder.
40. Severability. If any provision of this Contract is found to be invalid or unlawful, then remainder of this Agreement shall not be affected thereby, and each remaining provision shall be valid and enforced to the fullest extent permitted by law.
41. Dispute Resolution. As a precondition for filing a lawsuit related to a dispute under this Agreement, a party must comply with the Town of Huntersville Rules Implementing Mediated Settlement Conferences for Town of Huntersville Construction Projects, the "Dispute Resolution Procedure."

EXHIBIT A
MINIMUM INSURANCE REQUIREMENTS

The Work under this Contract shall not commence until the Firm has obtained all required insurance and verifying certificates of insurance have been approved in writing by the Town. The Town shall be named as additional insured on all policies, except Worker's Compensation and Professional Liability policies. These certificates shall document that coverages afforded under the policies will not be cancelled until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the Town of such cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

a. Worker's Compensation and Employer's Liability

The Firm shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

b. Comprehensive General Liability Insurance

The Firm shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the Firm or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury: \$1,000,000 per occurrence / \$2,000,000 aggregate

Property Damage: \$100,000 per occurrence / \$300,000 aggregate

Or,

Bodily Injury and Property Damage, combined single limit (CSL): \$1,000,000 per occurrence / \$2,000,000 aggregate

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the Work performed under the contract.

c. Deductible

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the Firm.

d. Other Insurance

The Firm shall obtain such additional insurance as may be required by the Town or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

e. Proof of Carriage

The Firm shall furnish the Town with satisfactory proof of carriage of the insurance required before written approval is granted by the Town

**SINGLE PRIME GENERAL CONSTRUCTION CONTRACT
BID PROPOSAL**

ROSEDALE NATURE PARK

ALTERING THE FACE OF THIS FORM IN ANY MANNER, OR PROVIDING INFORMATION NOT SPECIFICALLY REQUESTED
SHALL RENDER THIS BID PROPOSAL NON-RESPONSIVE AND INELIGIBLE FOR CONSIDERATION BY THE TOWN

Date: 01.14.21

**TO: Town of Huntersville
North Carolina**

The undersigned Bidder, having examined carefully the site, the Invitation to Bid, Instructions to Bidders, Construction Drawings, the form Construction Agreement, Supplementary Documents (if any) and subsequent Addenda (as acknowledged herein) for the Construction of Rosedale Nature Park, hereby proposes to furnish all labor, materials, equipment and services necessary to perform the work required in the aforementioned documents for the sum of:

Total Base Bid: \$ 1,299,996.00 (LS)

Town reserves the right to award contract based on Base Bid only, or combination of Base Bid and any/all of the Alternate Bid Items below. The Bidder shall indicate if the Alternate is an add or deduct for the overall bid. If the Alternate is left blank, then the Alternate will not change the Base Bid if accepted. The Bidder agrees to provide the Alternates as described in the Contract Documents for the following prices:

Alternate #1: Provide asphalt trail paving in lieu of gravel trail paving as shown per plans.

Add \$ 17,940.00 (LS)

Alternate #2: Provide the dog park shelter and supporting concrete pad as shown per plans.

Add \$ 86,996.00 (LS)

UNIT PRICES

The bidding contractor shall provide unit prices for the following items. Unit prices are subject to owner review and consideration as part of the overall bid. All unit prices shall remain firm through the initial contract period.

Price decreases are acceptable at any time, need not be verifiable, and are required should the contractor/producer/processor/manufacture experience a decrease in costs associated with the execution of the contract.

All unit prices are to be fully inclusive of all expenses including travel, materials and all fees and be the final cost to the owner

Should the awarded vendor, at any time during the life of the contract, sell materials of similar quality to another customer, or advertise special discounts or sales, at a price below those quoted within the contract, the lowest discounted prices shall be offered to the owner

Unit Price No.1 – Provide Lime Stabilization (assume 12" amendment depth)

Dollars per Square Yard \$ \$ 15.00

Unit Price No.2 – Provide Cement Stabilization (assume 12" amendment depth)

Dollars per Square Yard \$ \$ 24.00

Unit Price No. 3 - Undercut and Dispose of Unsuitable Soils On Site (As determined by the Third-Party Geotechnical Engineer)

Dollars per Cubic Yard \$ \$ 18.00

Unit Price No. 4 - Undercut and Dispose of Unsuitable Soils Off Site (As determined by the Third-Party Geotechnical Engineer)

Dollars per Cubic Yard \$ \$ 28.00

Unit Price No. 5 - Haul in and place structural fill (Contents of Fill to be Approved by the Third-Party Geotechnical Engineer)

Dollars per Cubic Yard \$ \$ 28.50

Unit Price No. 6 - Provide type 2 geogrid soil reinforcement for subgrade stabilization (For areas determined by the Third-Party Geotechnical Engineer)

Dollars per Square Yard \$ \$ 7.00

The undersigned further agrees that this Bid Proposal shall be valid for a period of sixty (60) days from the date of receipt of the Bid Proposal and that if this Bid Proposal is accepted by the Town within this period, the Bidder will execute the Construction Agreement provided as part of the Contract Documents.

The undersigned further agrees to begin the work promptly upon receipt of the Notice to Proceed and to pursue the work with an adequate work force to complete the work within 210 calendar days from receipt of the Notice to Proceed. Liquidated Damages of \$500.00 per calendar day are hereby agreed upon as an assessment from the Contractor for failure to complete the work within the time period stated herein.

The undersigned Bidder further proposes and agrees to commence the work promptly upon notice, with an adequate force to satisfactorily complete the Project.

The undersigned acknowledges receipt of the following addenda which will be considered as part of the Contract Documents.

Addendum No. #1 Dated 01.06.21

Addendum No. _____ Dated _____

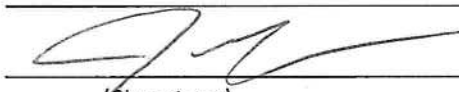
Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

CONTRACTOR: J.D. Goodrum Company, Inc.
(Company)

Contractor ☐ is or ☐ is not a historically underutilized business, registered with the North Carolina Office of Historically Underutilized Businesses. (Must be completed by all Bidders.)

ADDRESS: 18339-F Old Statesville Road
Cornelius, NC 28031

BY:  Jamie Yoxtheimer
(Signature) (Typed Name)

TITLE: President

NC General Contractor's License No. 19284

NC State Sales and Use Tax Registration 56-1506393

☒ Non-collusion Affidavit has been completed and is attached to this Bid Proposal Form (Required)

(Note: Inclusion of the non-collusion affidavit is mandatory. A bid will be rejected as non-responsive if not included in the bid submission.)

Select One (One or the other must be chosen by the Bidder):

☒ Substitution Listing (if substitutions are being proposed) is attached to this Bid Proposal Form.

(Note: Failure to include the Substitution Listing with this Bid Proposal will render the substitutions ineligible for consideration by the Town.) OR

☐ Substitution Listing is not attached to this Bid Proposal Form (No substitutions are proposed.)

SUBSTITUTION LISTING

TO: Town of Huntersville, North Carolina
Hereinafter called "Owner"

1. A Bidder requesting a substitution must submit this form to the Project Manager and Project Landscape Architect at least five (5) days prior to the time stated for Bid Opening.
2. Pursuant to bidding requirements for the Work titled:

ROSEDALE NATURE PARK FOR
HUNTERSVILLE PARKS AND RECREATION

The Contract Sum proposed by the under signed on the Bid Proposal form is for the Work as shown on the Drawings, and otherwise defined in the Contract Documents. However, the undersigned proposes the following substitutions for the Owner's consideration. Should the Owner accept any or all of the proposed substitutions, the Bidder's proposed contract sum will be reduced by the amount shown.

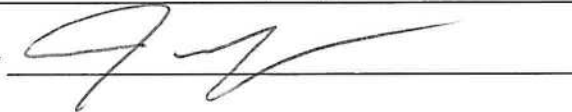
3.	Specified Product Or Material	Drawing Number	Proposed Substitution	Proposed Reduction in Contract Sum
	American Montage II	D102	Iron World Industrial Grade Ornamental Fence	(\$ 14,000.00) Deduct
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

PROVIDE SIGNATURE
IDENTICAL TO THAT
SHOWN ON THE BID FORM

BIDDER:

J.D. Goodrum Company, Inc.

By



END OF SUBSTITUTION LISTING

Standard Form Contract



101 Huntersville-Concord Rd
 Huntersville, NC 28078
 (704) 875-6541

CONSTRUCTION CONTRACT

CONTRACTOR:

PROJECT: Rosedale Nature Park
 PROJECT 9519 Rosewood Meadow Lane
 ADDRESS: Huntersville, NC 28078

PROJECT LANDSCAPE ARCHITECT:

Daniel Dodd, PLA
 314 Tom Hall Street
 Fort Mill, SC 29715
 803.981.4330

This Construction Contract, and all exhibits, (collectively this "Contract") is entered into this _____ day of _____, 20____ by and between, the Town of Huntersville, a municipal corporation of the State of North Carolina, (the "Town") and, _____ (the "Contractor") having an address of _____.

WITNESSETH:

That for and in consideration of the mutual promises set forth in this Contract, the sufficiency of which is acknowledged by the parties hereto, the parties agree as follows:

1. Scope of Services. The Contractor agrees to provide the professional construction services needed to complete the Project in accordance with the Project Drawings and Specifications and the Contract Documents for the price stated in the Contractors Proposal Form, plus or minus the substitutions listed on the Substitution Listing which are accepted by the Town.
2. Contract Documents. The Contract Documents consist of, in addition to this Contract, the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing, all Addenda issued, the Contract Drawings, and the General Conditions of the Construction Contract, all of the foregoing being incorporated herein by reference as if fully set forth herein, and all parties agree to be bound thereby.
3. Time for Performance of the Work. The Work shall be completed within two-hundred and ten (210) days of receipt of the Notice to Proceed from the Town.
4. Payment for Services. For the performance of the Work Contractor shall be paid the lump sum of _____ Dollars (\$_____) in accordance with the terms and conditions provided in the General Conditions of the Construction Contract.

In witness thereof, the contracting parties, by their authorized agents, affix their signatures this _____ day of _____, 20____.

CONTRACTOR

TOWN OF HUNTERSVILLE

BY: _____
 Print Name:
 Print Title:

BY: _____
 Print Name:
 Print Title:

This instrument has been pre-audited in that manner required by the North Carolina Budget and Fiscal Control Act.

Pattie McGinnis, Finance Director

NON-COLLUSION AFFIDAVIT

I, on behalf of the Bidder, being first duly sworn or as the Contractor, do hereby represent on behalf of the Bidder that the Bid Proposal submitted was made without collusion or fraud and that neither I, nor anyone else affiliated with the Bidder to my knowledge, have offered or received any kickbacks or inducements from any other supplier, manufacturer or subcontractor in connection with their Bid Proposal, and neither I, nor anyone else affiliated with the Bidder to my knowledge, have conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

This the 14 day of January, 2021.

BIDDER: J.D. Goodrum Company, Inc.


Print Name: Jamie Yoxtheimer

Print Title: President

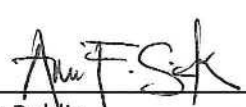
State of NORTH CAROLINA

County of MECKLENBURG

Sworn to or subscribed before me this the 14th day of JANUARY, 2021.

(Official Seal)




Notary Public

Print Name: Ann F. Sisk

Identification of HUB Certified/ Minority Business Participation

I, J.D. Goodrum Company, Inc.

(Name of Bidder)

do hereby certify that on this project, we will use the following HUB Certified/minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #

Work Type

*Minority Category

**HUB
Certified
(Y/N)

[illegible]

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

The total value of minority business contracting will be (\$) 150,000.00.

AFFIDAVIT A – Listing of Good Faith Efforts

Town of Huntersville

(Name of Bidder)

Affidavit of J.D. Goodrum Company, Inc.

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ☒ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ☒ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ☐ **3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ☐ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☒ **5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- ☐ **6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ☒ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ☐ **8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ **9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ☒ **10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: 01.14.21 Name of Authorized Officer: Jamie Yoxtheimer

Signature: _____

Title: President



State of NORTH CAROLINA, County of MECKLENBURG
Subscribed and sworn to before me this 14th day of JANUARY 2021
Notary Public Ann F. Sisk
My commission expires April 5, 2025

**CERTIFICATION OF
NON-DISCRIMINATION IN EMPLOYMENT**

We, being a licensed Contractor in North Carolina, do hereby certify that we will not discriminate against employee or applicant for employment because of race, color, religion, sex, or national origin. We will take affirmative action to ensure that applicants are employed, and that employees are treated equal during employment without regard to race, color, or religion, or handicap. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer' recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation' and selection for training, including apprenticeship. We will agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Local Public Agency setting forth the provisions of this non-discrimination clause.



Signed

Jamie Yoxtheimer
Print or Type Name of Signing Official

President
Title

J.D. Goodrum Company, Inc.
Firm

18339-F Old Statesville Road
Address

_____ Cornelius	_____ NC	_____ 28031
City	State	Zip

01.14.21
Date

STATE OF North Carolina**CONTRACTOR E-VERIFY DECLARATION**TOWN OF Huntersville

I, Jamie Yoxtheimer (the individual attesting below), being duly authorized by and on behalf of
J.D. Goodrum Company, Inc. (the entity contracting with the Town, hereinafter "Employer/Contractor")

AFFIRMS AND DECLARES as follows:

1. Employer/Contractor understands that E-Verify is a federal program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).
2. Pursuant to NCGS §153A-449(b) and NCGS § 64-26(a), any Employer/Contractor that transacts business in this State and employs 25 or more employees in this State, entering into a contract with the Town, is required to verify the work eligibility status of all newly hired employees through the E-verify program.
3. Employer/Contractor is a person, business entity, or other organization that transacts business in this State and employs 25 or more employees in this State. (check Yes or No)
 - a. YES X, or
 - b. NO _____
4. For Employers/Contractors who employ 25 or more employees in the State, and are therefore subject to E-Verify, the undersigned verifies the Employer's/Contractor's compliance with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes.
5. Employer's subcontractors on this Town project, that employ 25 or more employees in this State, must also comply with E-Verify, and if Employer is the successful contractor on this Project, Employer agrees that it will ensure compliance with E-Verify by any subcontractors used by Employer/Contractor on this County Project.
6. I hereby declare under penalty of perjury that the foregoing is true and correct.

This 14 day of January, 20 21.

Signature of DeclarantPrint or Type Name: Jamie Yoxtheimer

CERTIFICATION OF

COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT

The undersign, being a licensed Contractor in North Carolina, do hereby agree to comply with all applicable requirements of the Americans With Disabilities Act throughout the duration of this contract.


Signed _____

Print or Type Name of Signing Official

Title

Firm

Address

_____ City	_____ State	_____ Zip
Cornelius	N.C.	28031

Date

**CERTIFICATION OF
NON-DISCRIMINATION IN EMPLOYMENT**

We, being a licensed Contractor in North Carolina, do hereby certify that we will not discriminate against employee or applicant for employment because of race, color, religion, sex, or national origin. We will take affirmative action to ensure that applicants are employed, and that employees are treated equal during employment without regard to race, color, or religion, or handicap. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. We will agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Local Public Agency setting forth the provisions of this non-discrimination clause.


Signed __________
Jamie Yoxtheimer_____
Print or Type Name of Signing Official_____
President_____
Title_____
J.D. Goodrum Company, Inc._____
Firm_____
18339-F Old Statesville Road_____
Address

_____ Cornelius	_____ NC	_____ 28031
City	State	Zip

01.14.21
Date

STATE OF North Carolina

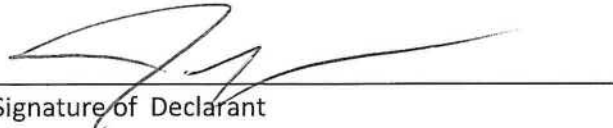
CONTRACTOR E-VERIFY DECLARATION

TOWN OF Huntersville

I, Jamie Yoxtheimer (the individual attesting below), being duly authorized by and on behalf of
J.D. Goodrum Company, Inc. (the entity contracting with the Town, hereinafter "Employer/Contractor")

AFFIRMS AND DECLARES as follows:

1. Employer/Contractor understands that E-Verify is a federal program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).
2. Pursuant to NCGS §153A-449(b) and NCGS § 64-26(a), any Employer/Contractor that transacts business in this State and employs 25 or more employees in this State, entering into a contract with the Town, is required to verify the work eligibility status of all newly hired employees through the E-verify program.
3. Employer/Contractor is a person, business entity, or other organization that transacts business in this State and employs 25 or more employees in this State. (check Yes or No)
 - a. YES X, or
 - b. NO _____
4. For Employers/Contractors who employ 25 or more employees in the State, and are therefore subject to E-Verify, the undersigned verifies the Employer's/Contractor's compliance with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes.
5. Employer's subcontractors on this Town project, that employ 25 or more employees in this State, must also comply with E-Verify, and if Employer is the successful contractor on this Project, Employer agrees that it will ensure compliance with E-Verify by any subcontractors used by Employer/Contractor on this County Project.
6. I hereby declare under penalty of perjury that the foregoing is true and correct.

This 14 day of January, 20 21.
Signature of DeclarantPrint or Type Name: Jamie Yoxtheimer

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____

J.D. Goodrum Co., Inc. as
principal, and Fidelity and Deposit Company of Maryland, as surety, who is
duly licensed to act as surety in North Carolina, are held and firmly bound unto
Town of Huntersville as obligee,
in the penal sum of Five Percent of Amount Bid 5% DOLLARS, lawful money of
the United States of America, for the payment of which, well and truly to be made, we bind
ourselves, our heirs, executors, administrators, successors and assigns, jointly and
severally, firmly by these presents.

Signed, sealed and dated this 14th day of January, 2021

WHEREAS, the said principal is herewith submitting proposal for

Rosedale Nature Park
and the principal desires to file this bid bond in lieu of making the cash deposit as required
by G.S. 143-129.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION is such, that
if the principal shall be awarded the contract for which the bid is submitted and shall
execute the contract and give bond for the faithful performance thereof within ten days after
the award of same to the principal, then this obligation shall be null and void; but if the
principal fails to so execute such contract and give performance bond as required by G.S.
143-129, the surety shall, upon demand, forthwith pay to the obligee the amount set forth in
the first paragraph hereof. Provided further, that the bid may be withdrawn as provided by
G.S. 143-129.1

J.D. Goodrum Co., Inc. (SEAL)

By: [Signature] (SEAL)

(SEAL)

Fidelity and Deposit Company of Maryland (SEAL)

By: [Signature] (SEAL)

Wendy E Lahm, Attorney-in-Fact



Bond Number Bid Bond

Obligee Town of Huntersville

**ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND
POWER OF ATTORNEY**

KNOW ALL MEN BY THESE PRESENTS: That the ZURICH AMERICAN INSURANCE COMPANY, a corporation of the State of New York, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, a corporation of the State of Illinois, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND a corporation of the State of Illinois (herein collectively called the "Companies"), by **Robert D. Murray, Vice President**, in pursuance of authority granted by Article V, Section 8, of the By-Laws of said Companies, which are set forth on the reverse side hereof and are hereby certified to be in full force and effect on the date hereof, do hereby nominate, constitute, and appoint Wendy E Lahm, its true and lawful agent and Attorney-in-Fact, to make, execute, seal and deliver, for, and on its behalf as surety, and as its act and deed: **any and all bonds and undertakings**, and the execution of such bonds or undertakings in pursuance of these presents, shall be as binding upon said Companies, as fully and amply, to all intents and purposes, as if they had been duly executed and acknowledged by the regularly elected officers of the ZURICH AMERICAN INSURANCE COMPANY at its office in New York, New York., the regularly elected officers of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at its office in Owings Mills, Maryland., and the regularly elected officers of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at its office in Owings Mills, Maryland., in their own proper persons.

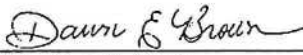
The said Vice President does hereby certify that the extract set forth on the reverse side hereof is a true copy of Article V, Section 8, of the By-Laws of said Companies, and is now in force.

IN WITNESS WHEREOF, the said Vice-President has hereunto subscribed his/her names and affixed the Corporate Seals of the said ZURICH AMERICAN INSURANCE COMPANY, COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and FIDELITY AND DEPOSIT COMPANY OF MARYLAND, this 19th day of June, A.D. 2019.

ATTEST:
ZURICH AMERICAN INSURANCE COMPANY
COLONIAL AMERICAN CASUALTY AND SURETY COMPANY
FIDELITY AND DEPOSIT COMPANY OF MARYLAND


By: Robert D. Murray
Vice President



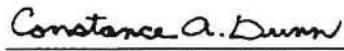

By: Dawn E. Brown
Secretary

State of Maryland
County of Baltimore

On this 19th day of June, A.D. 2019, before the subscriber, a Notary Public of the State of Maryland, duly commissioned and qualified, **Robert D. Murray, Vice President and Dawn E. Brown, Secretary** of the Companies, to me personally known to be the individuals and officers described in and who executed the preceding instrument, and acknowledged the execution of same, and being by me duly sworn, depose and saith, that he/she is the said officer of the Company aforesaid, and that the seals affixed to the preceding instrument are the Corporate Seals of said Companies, and that the said Corporate Seals and the signature as such officer were duly affixed and subscribed to the said instrument by the authority and direction of the said Corporations.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed my Official Seal the day and year first above written.




Constance A. Dunn, Notary Public
My Commission Expires: July 9, 2023

EXTRACT FROM BY-LAWS OF THE COMPANIES

"Article V, Section 8, Attorneys-in-Fact. The Chief Executive Officer, the President, or any Executive Vice President or Vice President may, by written instrument under the attested corporate seal, appoint attorneys-in-fact with authority to execute bonds, policies, recognizances, stipulations, undertakings, or other like instruments on behalf of the Company, and may authorize any officer or any such attorney-in-fact to affix the corporate seal thereto; and may with or without cause modify or revoke any such appointment or authority at any time."

CERTIFICATE

I, the undersigned, Vice President of the ZURICH AMERICAN INSURANCE COMPANY, the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY, and the FIDELITY AND DEPOSIT COMPANY OF MARYLAND, do hereby certify that the foregoing Power of Attorney is still in full force and effect on the date of this certificate; and I do further certify that Article V, Section 8, of the By-Laws of the Companies is still in force.

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the ZURICH AMERICAN INSURANCE COMPANY at a meeting duly called and held on the 15th day of December 1998.

RESOLVED: "That the signature of the President or a Vice President and the attesting signature of a Secretary or an Assistant Secretary and the Seal of the Company may be affixed by facsimile on any Power of Attorney...Any such Power or any certificate thereof bearing such facsimile signature and seal shall be valid and binding on the Company."

This Power of Attorney and Certificate may be signed by facsimile under and by authority of the following resolution of the Board of Directors of the COLONIAL AMERICAN CASUALTY AND SURETY COMPANY at a meeting duly called and held on the 5th day of May, 1994, and the following resolution of the Board of Directors of the FIDELITY AND DEPOSIT COMPANY OF MARYLAND at a meeting duly called and held on the 10th day of May, 1990.

RESOLVED: "That the facsimile or mechanically reproduced seal of the company and facsimile or mechanically reproduced signature of any Vice-President, Secretary, or Assistant Secretary of the Company, whether made heretofore or hereafter, wherever appearing upon a certified copy of any power of attorney issued by the Company, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

IN TESTIMONY WHEREOF, I have hereunto subscribed my name and affixed the corporate seals of the said Companies, this 14th day of January, 2021.



Brian M. Hodges, Vice President

TO REPORT A CLAIM WITH REGARD TO A SURETY BOND, PLEASE SUBMIT A COMPLETE DESCRIPTION OF THE CLAIM INCLUDING THE PRINCIPAL ON THE BOND, THE BOND NUMBER, AND YOUR CONTACT INFORMATION TO:

Zurich Surety Claims
1299 Zurich Way
Schaumburg, IL 60196-1056
www.reportsfclaims@zurichna.com
800-626-4577



Bid Title:	Ranson Nature Park Invitation to Bid
Category:	Parks and Recreation
Status:	Open

Description:

INVITATION TO BID

FOR THE CONSTRUCTION OF RANSON ROSEDALE PARK

Town of Huntersville, North Carolina

Sealed, single prime bids for the construction of a dog park with large dog and small dog areas, accessible play area, natural play area, restroom, lawn, fitness stations, two parking lots, concrete sidewalk and gravel trail system with associated grading, stormwater infrastructure, utilities, erosion control, and plantings at Ranson Rosedale Park will be received by the Town of Huntersville Parks and Recreation Department, 105 Gilead Road, 3rd Floor, P.O. Box 2879, Huntersville, NC, 28070 until 2:00 PM, local time, Thursday, January 14, 2021, and there at said office, at said time, publicly opened and read aloud. Bid Proposals will be received for

THE CONSTRUCTION OF RANSON ROSDEALE PARK FOR HUNTERSVILLE PARKS AND RECREATION

This Project includes, but is not limited to the construction of a dog park with large dog and small dog areas, accessible play area, natural play area, restroom, lawn, fitness stations, two parking lots, concrete sidewalk and gravel trail system with associated grading, stormwater infrastructure, utilities, erosion control, and plantings.

The Bid Package, consisting of the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing Form, General Conditions of the Contract, and Contract Drawings may be obtained from the Huntersville Parks and Recreation Department, 105 Gilead Road, 3rd Floor, Huntersville, NC, or may be accessed at the following web address: www.huntersville.org. Contract documents will not be mailed to Bidders.

Copies of the Contract Documents may be examined at the Huntersville Department of Recreation, Huntersville, North Carolina 28078.

Each Bid must be accompanied by cash, cashier's check, certified check on a bank or trust company insured by the Federal Deposit Insurance Corporation, or Bid Bond in the amount not less than five percent (5%) of the amount of the Bid in the form and subject to the conditions provided in the Information for Bidders.

1. The Contract Drawings for this Project were provided to the Town by The Dodd Studio, LLC. If awarded, the Project will be awarded to the lowest responsive, responsible Bidder, taking into account quality, performance and time specified in the Contract Documents. The lowest, responsive, responsible bid will be determined based upon the lowest cost to the Town.

A pre-bid meeting shall be held on Monday, December 21, 2020 at 2:00 PM, at the park site located at 9519 Rosewood Meadow Lane, Huntersville, NC 28078. Any questions regarding this meeting should be directed to Michael Jaycocks, Director of Parks and Recreation at 704-766-2228.

The Town reserves the right to waive any informalities in the Bid Proposal and to reject any or all Bid Proposals.

Publication Date/Time:

12/14/2020 4:15 PM

Closing Date/Time:

1/14/2021 2:00 PM

Pre-bid Meeting:

12/21/2020 @ 2:00 p.m.

Contact Person:

Michael Jaycocks
mjaycocks@huntersville.org
704.766.2228

Related Documents:

[Rosedale Nature Park Project Manual 12.14.2020 \(1\)](#)
[Rosedale Nature Park _bid set 12.14.20 \(1\)](#)

[Return To Main Bid Postings Page](#)

Government Websites by [CivicPlus®](#)

ROSEDALE NATURE PARK BID TAB**1.14.21**

	J.D. Goodrum Company Inc.
Bid Form	Yes
Bid Bond	Yes
Base Bid	\$1,299,996.00
Alt #1 - Asphalt Trail in lieu of gravel trail	\$17,940.00
Alt #2 - Dog Park Shelter and Conc. Pad	\$86,996.00
Unit Price #1 - Lime Stabilization	\$15.00
Unit Price #2 - Cement Stabilization	\$24.00
Unit Price #3 - Undercut/Dispose Unsuitable Soils On Site	\$18.00
Unit Price #4 - Undercut/Dispose Unsuitable Soils Off Site	\$28.00
Unit Price #5 - Haul/Place Structural Fill	\$28.50
Unit Price #6 - Geogrid soil reinforcement	\$7.00
Addendum 1	Yes
Substitution Listing	American Montage II - Proposed \$14,000 Deduct
Non Collusion	Yes
HUB/Minority Business Participation	Pressley Site Work LLC (Sitework) Mid Atlantic Erosion Control (Silt Fence) \$150,000.00
Listing of Good Faith Efforts	65 pts
Non Discrimination	Yes
E Verify	Yes
ADA	Yes

Ike's Construction, Inc.

Yes

Yes

\$1,625,000.00

\$30,000.00

\$109,000.00

\$20.00

\$15.00

\$10.00

\$25.00

\$25.00

\$5.00

Yes

None

Yes

James Seals and Stripes (Pavement Markings)

Mid Atlantic Erosion Control (Erosion Control)

\$13,000.00

80 pts

Yes

Yes

Yes

Miles McClellan Construction Company

Yes

Yes

\$1,739,000.00

\$28,250.00

\$160,000.00

\$75.00

\$75.00

\$18.00

\$35.00

\$40.00

\$6.00

Yes

None

Yes

Painting the Carolinas (Painting)

Faith Cleaning (Cleaning)

Houston's Pressure Washing (Cleaning)

G & Y Masonry (Masonry)

\$22,000.00

60 pts

Yes

Yes

Yes

PROJECT MANUAL

ROSEDALE NATURE PARK



SITE ADDRESS: 9519 ROSEWOOD MEADOW LANE
HUNTERSVILLE, NC 28078

PROJECT MANAGER:
Town of Huntersville
Michael Jaycocks
704-766-2228
mjaycocks@huntersville.org

PROJECT LANDSCAPE ARCHITECT:
Daniel Dodd, PLA
The Dodd Studio, LLC
314 Tom Hall Street
Fort Mill, SC 29715
#C-389
dan@thedoddstudio.com

OWNER:
Town of Huntersville
ATTN: Parks and Recreation Department
105 Gilead Road, Third Floor
Huntersville, NC 28078
December 11, 2020

TOWN OF HUNTERSVILLE
ROSEDALE NATURE PARK

100% CONSTRUCTION DOCUMENTS
December 11, 2020

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INVITATION TO BID

**FOR THE CONSTRUCTION OF
ROSEDALE NATURE PARK**

Town of Huntersville, North Carolina

Sealed, single prime bids for the construction of a dog park with large dog and small dog areas, accessible play area, natural play area, restroom, lawn, fitness stations, two parking lots, concrete sidewalk and gravel trail system with associated grading, stormwater infrastructure, utilities, erosion control, and plantings at Rosedale Nature Park will be received by the Town of Huntersville Parks and Recreation Department, 105 Gilead Road, 3rd Floor, P.O. Box 2879, Huntersville, NC, 28070 until **2:00 PM, local time, Thursday, January 14, 2021**, and there at said office, at said time, publicly opened and read aloud. Bid Proposals will be received for

**THE CONSTRUCTION OF ROSDEALE NATURE PARK FOR
HUNTERSVILLE PARKS AND RECREATION**

This Project includes, but is not limited to, the construction of a dog park with large dog and small dog areas, accessible play area, natural play area, restroom, lawn, fitness stations, two parking lots, concrete sidewalk and gravel trail system with associated grading, stormwater infrastructure, utilities, erosion control, and plantings.

The Bid Package, consisting of the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing Form, General Conditions of the Contract, and Contract Drawings may be obtained from the Huntersville Parks and Recreation Department, 105 Gilead Road, 3rd Floor, Huntersville, NC, or may be accessed at the following web address: www.huntersville.org. Contract documents will not be mailed to Bidders.

Copies of the Contract Documents may be examined at the Huntersville Department of Recreation, Huntersville, North Carolina 28078.

Each Bid must be accompanied by cash, cashier's check, certified check on a bank or trust company insured by the Federal Deposit Insurance Corporation, or Bid Bond in the amount not less than five percent (5%) of the amount of the Bid in the form and subject to the conditions provided in the Information for Bidders.

1. The Contract Drawings for this Project were provided to the Town by The Dodd Studio, LLC. If awarded, the Project will be awarded to the lowest responsive, responsible Bidder, taking into account quality, performance and time specified in the Contract Documents. The lowest, responsive, responsible bid will be determined based upon the lowest cost to the Town.

A pre-bid meeting shall be held on **Monday, December 21, 2020 at 2:00 PM**, at the park site located at 9519 Rosewood Meadow Lane, Huntersville, NC 28078. Any questions regarding this meeting should be directed to Michael Jaycocks, Director of Parks and Recreation at 704-766-2228.

The Town reserves the right to waive any informalities in the Bid Proposal and to reject any or all Bid Proposals.

Town of Huntersville
End of Invitation to Bid

INSTRUCTIONS TO BIDDERS:**Project Landscape Architect:**

Daniel Dodd, PLA
 The Dodd Studio, LLC
 314 Tom Hall Street
 Fort Mill, SC 29715
 dan@thedoddstudio.com

PLEASE NOTE: ALL QUESTIONS REGARDING THE CONTRACT DRAWINGS, AND THE CONSTRUCTION SPECIFICATIONS INDICATED ON SAID DRAWINGS SHOULD BE DIRECTED TO THE PROJECT LANDSCAPE ARCHITECT. ALL QUESTIONS AND ANSWERS PROVIDED WILL BE POSTED ON THE TOWN'S WEBSITE AS AN ADDENDUM TO THE CONTRACT DOCUMENTS. BIDDERS WILL BE RESPONSIBLE FOR ENSURING THAT THEY HAVE RECEIVED AND RELIED UPON ALL ADDENDA FOR THE PROJECT IN SUBMITTING THEIR BIDS.

1. **FAMILIARITY WITH WORK AND CONDITIONS:** Before preparing Bid Proposals, Bidders are urged to visit the site of the Project to inform and familiarize themselves with all conditions involved and under which the Project is to be constructed or apparatus erected or installed. The Town of Huntersville will not be responsible to the Contractor for payments other than as set out in the contract price, should conditions be different than those assumed or contemplated by the Contractor. The Contractor is required to satisfy himself, before bidding, as to the correctness of the site as indicated by the plans.
2. **FAMILIARITY WITH LAWS, ETC.:** The Bidder is assumed to have made himself familiar with all Federal, State, and Local Laws, ordinances and regulations which may in any manner affect those engaged or employed in work or the materials or equipment in or upon the work, or in any way affect the conduct of the work, and no pleas of misunderstanding will be considered on account of the ignorance thereof. If the Bidder or Contractor shall discover any provisions in the plans, specifications, or contract which are contrary or inconsistent with any such law, ordinance, or regulation, he shall forthwith report it to the Project Engineer in writing before the bid opening.
3. **INTERPRETATIONS OF PLANS:** If any prospective Bidder is in doubt as to the true meaning of any part of the plans, or other proposed contract documents, he may submit to the Project Landscape Architect, a written request for an interpretation thereof, who will either answer or secure an answer based upon their relative expertise. The person submitting such request will be responsible for its prompt delivery. Note, requests for clarification or interpretation must be submitted no later than 12:00 pm on January 6, 2021. Any interpretation of the proposed documents will be made only by addendum duly issued and posted on the Town's website. The Project Landscape Architect will not be responsible for any other explanations or interpretations of the proposed document. The Contractor shall acknowledge receipt of all addenda in the space provided in the Bid Proposal.
4. **CONTRACT DOCUMENTS:** The Contract Documents consist of the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing, all Addenda issued, the Contract Drawings, the Town's Standard Form Contract, and the General Conditions of the Construction Contract.
5. **BID PROPOSAL FORM:** Each Bidder must submit a Bid Proposal on the blank forms herewith provided. Each Bidder must include both the Bid Proposal Form and the Noncollusion Affidavit with their Bid Proposal, otherwise the Bid Proposal will not be considered. Each Bidder shall sign his Bid Proposal correctly by one duly authorized, and Bid Proposals may be rejected if they show any omissions, alterations of form, additions not called for, or other irregularities of any kind. Conditioning and unbalancing of bids will not be permitted.

6. **BID PROPOSAL REPRESENTATIONS:** Submission of a Bid Proposal Form shall be a representation of the Bidder of all of the following:
- a. The Bidder has carefully examined the **CONTRACT DOCUMENTS** and fully understands them.
 - b. The Bidder has carefully examined the site or sites of the Project and is familiar with the conditions under which the Work, or any part of it, is to be done, and the conditions which must be fulfilled in the furnishing and/or erection or construction of any or all items of the Project.
 - c. The Bidder has the financial means and stability to provide all materials and all necessary tools, machinery, and all means necessary to do all the Work in the manner prescribed in the Contract Documents and according to the Plans and the requirements of the Town of Huntersville, in a workmanlike manner, consistent with the standards of the profession in and around Huntersville.
 - d. The Bid has been made without connection with any other person, company, or parties making a similar Bid Proposal, and that it is in all respects fair and in good faith, without collusion or fraud.
 - e. The Bidder understands that it is the intention of the Town of Huntersville, North Carolina, to award the Contract on the basis of Bid Proposals received at this letting, however, the Town reserves the right to reject any or all bids.
 - f. If the Bid Proposal is made by a Corporation or Contractor, the Bid Proposal Form has been signed by its proper officers or members, as applicable, in a legal manner and its official address stated therein.
 - g. The Bidder will enter into the Town's Construction Agreement, included as part of the Contract Documents, and will perform all of the work necessary for the construction of facilities outlined in the **CONTRACT DOCUMENTS** for the Town of Huntersville, North Carolina, for the bid price stated in the Bid Proposal Form.
 - h. The Bidder has received and completely understood the Addenda and the bid price stated in the Bid Proposal Form reflects all Addenda.
7. **SUBMISSION OF BID PROPOSALS:** It is the responsibility of each Bidder, without excuse, to ensure that their Bid Proposal is submitted at the right place by the deadline. Each Bid Proposal must be submitted in a sealed envelope, to indicate its contents without being opened. The name of the Bidder, his address and his license number must be marked on the outside of the envelope. **This envelope shall be placed in another one** addressed to the attention of Michael Jaycocks, Town of Huntersville Recreation Department, 105 Gilead Road, P.O. Box 2879, Huntersville, North Carolina, 28070, and if forwarded otherwise than by mail, must be delivered to Mr. Michael Jaycocks at the above address. If the mail is delayed beyond the date and hour set for the Bid Proposal opening, proposals thus delayed will not be considered. The outer envelope must also state the Project Name and the name of the Bidder. Bid Proposals will be accepted until 2:00 PM on the date of the Bid Proposal Opening. Bid Proposals submitted after this time cannot be accepted.
8. **OPENING OF BID PROPOSALS:** Bid Proposals will be opened publicly and read promptly at the time, on the date, and at the place set forth in the "Invitation to Bid". Bidders or their authorized agents and other interested parties are invited to be present. The Bid Proposal shall be deemed valid for a period of sixty (60) calendar days after the opening thereof. The Bidder may request to withdraw their Bid Proposal in writing, received prior to the time for opening of the Bid Proposals, directed to the Town of Huntersville. Bid Proposals may be withdrawn after the opening of the Bid Proposals **for clerical errors or math computational errors only**

(not for mistakes in judgment) if the request is made in writing to and received by Michael Jaycocks, Huntersville Parks and Recreation Director, within seventy-two hours after the time for opening Bid Proposals. Such written request of withdrawal must include sufficient documentation of the clerical error or math computational error.

9. **AWARDING OF CONTRACT:** If awarded, the Town of Huntersville, North Carolina will award the contract conditioned upon funds being made available for such construction. If awarded, the contract will be awarded to the lowest responsive responsible Bidder taking into account quality, performance, and time specified in the Contract Documents. The lowest, responsive, responsible Bid Proposal will be determined based upon the lowest cost to the Town. Consideration will be given only to Bid Proposals of contractors who are experienced in the class of work proposed and who can refer to projects of similar magnitude and/or character as have been completed by them. The Town also reserves to itself the right to reject any or all Bid Proposals and to waive informalities or technicalities, as it may deem to be in the Town's best interest.
10. **EXECUTION OF CONTRACT:** The successful Bidder will be required to enter into the Town's Standard Form Contract, included as part of this Project Manual, and must execute the Contract no later than ten (10) consecutive calendar days following receipt of the Notice of Award from the Town. Failure of a Bidder to execute the Contract within said ten (10) day period shall give the Town the right to reject the Bid Proposal and award the contract to the next lowest responsive, responsible Bidder.
11. **CHECKS, CASH, OR BID BOND:** Each proposal must be accompanied by a Bid Bond executed by a corporate surety licensed under the laws of North Carolina to execute such bonds, conditioned that the surety will, upon demand forthwith make payment to the Owner if the bidder fails to execute the Contract. The Bid Bond shall be in the amount of five percent (5%) of the total bid plus all of the alternates. The Bid Bond shall be valid for a minimum of ninety (90) calendar days. In lieu of a Bid Bond, a deposit equal to five percent (5%) of the total bid plus all alternates in the form of a Cashier's Check or Certified Check on some bank or trust company insured by the Federal Deposit Insurance Corporation and payable to the Town of Huntersville may be provided. The purpose of the Bid Deposit or Bid Bond is to ensure that the bidder will enter into a Contract with the Owner with the terms stipulated in the Bid Proposal and the bidder guarantees that a Performance, Labor and Material will be executed. If the Contractor fails to execute a Contract, the Bid Bond or Bid Deposit shall be seized. Bid security shall be submitted separately for each project bid.
12. **PERFORMANCE BOND:** The successful Bidder shall provide a performance bond equal to 100% of the contract sum, and shall conform to the Owner's requirements. Bond/surety shall be provided in a form as noted in item 11 above.
13. **PAYMENT BOND:** The successful Bidder shall provide a payment bond equal to 100% of the contract sum, and shall conform to the Owner's requirements. Bond/surety shall be provided in a form as noted in item 11 above.
14. **COORDINATION OF WORK:** During the performance of the contract it shall be the responsibility of the successful Bidder to pursue the orderly progress of all work stages throughout the Project and to assure that all work is completed within the time period stipulated herein as the Contract Period. In executing the duties incurred by these responsibilities, the successful Bidder shall provide sufficient executive and supervisory staff in the field to enable efficient and expeditious progress of the work. The Owner relies upon the organization, management, skill, cooperation, and efficiency of the successful Bidder to supervise, direct, control and manage the work and the efforts of the sub-contractors so as to deliver the intended construction to the Contract Documents and within the scheduled time.

15. LIQUIDATED DAMAGES: The successful Bidder is required to complete the Project as outlined in the Project progress schedule and as defined by the Contract Period. Should the successful Bidder fail to assure the completion of the total Project satisfactorily within the time period specified in the contract, the successful Bidder shall be charged with liquidated damages at a rate of **Five Hundred Dollars (\$500.00) per calendar day** until the total Project is successfully completed.

If in the event the successful Bidder is granted substantial completion by the Project Landscape Architect and fails to complete and/or correct all of the remaining list of items to be corrected within **30** days of the date of substantial completion, the successful Bidder shall be charged with **liquidated damages at a rate of Five Hundred Dollars (\$500.00) per calendar day** until all of the remaining items on the list are completed and corrected and approved by the Project Manager or Landscape Architect.

The successful Bidder shall indemnify the Owner for any claim or legal action against the Owner by any subcontractor or supplier as a result of injury or damages caused by that Contractor to others, including paying judgements against the Owner, all costs and expenses, legal or otherwise, incurred by the Owner in defending the suit.

16. CONTRACT REDUCTION: The Town of Huntersville retains the exclusive right to reduce any or all of the scope of work within the Contract Documents after award of the contract for budgetary or other reasons. Should the Town of Huntersville choose to reduce any or all of said scope of work, the successful Bidder shall not be allowed any claims for anticipated profit or overhead on such deleted work.

17. CONTRACTORS LICENSE: All Bidders must possess an up to date North Carolina General Contractors License to do work in North Carolina as required by N.C.G.S. Chapter 87, plus any other applicable licenses. A copy of these requirements is included in the bid documentation.

18. TIME OF CONSTRUCTION: The Successful Bidder shall begin work on the date specified in the Notice to Proceed and shall pursue all necessary phases of construction in order to substantially complete the base bid work within **210 consecutive calendar days**. This time of construction shall be defined as the Contract Period.

19. TECHNICAL SPECIFICATIONS. Technical specifications are included both on the Contract Drawings themselves, and within the Project Manual and are included in the bid documents. It is up to each Bidder to satisfy themselves that these technical specifications are sufficient to enable them to perform the Work. If a Bidder determines that the technical specifications are not sufficient, the Bidder should pose appropriate questions to the Project Engineer who will secure answers from the Project Landscape Architect. All such inquiries and answers will be put out in the form of an Addendum prior to the time for opening bids.

20. SUBSTITUTIONS: Requests for approval of substitutions for specified products or “or equal” or “equivalent” submittals other than those listed as acceptable products will be considered only upon submission of samples and manufacturers’ data, in triplicate, of both the product specified and the product intended for substitution. All such requests for substitutions must be received for consideration by the Engineer no later than 5 days prior to the Bid Proposal opening. All substitutions approved will be put into an Addendum. The Town reserves the right to consider and accept any and all substitutions proposed in determining the lowest responsible bidder.

21. MINORITY BUSINESS PARTICIPATION: The Town of Huntersville has defined a 10% verifiable goal for participation by minority businesses pursuant to N.C. Gen. Stat. 143-128.2(a) for vertical building components only (Restroom and Shelter). Please see attached Identification of HUB Certified/ Minority Business Participation form that shall be submitted at time of bid.

22. ANTIDISCRIMINATION AND HISTORICALLY UNDERUTILIZED BUSINESS (HUB): During the performance of the Contract, Contractor shall not discriminate against or deny the Contract's benefits without regard to race, religion, color, creed, national origin, sex, age, or handicapping condition.". The Town of Huntersville is committed to providing opportunity for HUB and encourages bids from The Minority Business Enterprises (MBE) and Women Businesses Enterprises (WBE).

END OF INSTRUCTIONS TO BIDDERS

**SINGLE PRIME GENERAL CONSTRUCTION CONTRACT
BID PROPOSAL**

ROSEDALE NATURE PARK

ALTERING THE FACE OF THIS FORM IN ANY MANNER, OR PROVIDING INFORMATION NOT SPECIFICALLY REQUESTED
SHALL RENDER THIS BID PROPOSAL NON-RESPONSIVE AND INELIGIBLE FOR CONSIDERATION BY THE TOWN

Date: _____

**TO: Town of Huntersville
North Carolina**

The undersigned Bidder, having examined carefully the site, the Invitation to Bid, Instructions to Bidders, Construction Drawings, the form Construction Agreement, Supplementary Documents (if any) and subsequent Addenda (as acknowledged herein) for the Construction of Rosedale Nature Park, hereby proposes to furnish all labor, materials, equipment and services necessary to perform the work required in the aforementioned documents for the sum of:

Total Base Bid: \$ _____ (LS)

Town reserves the right to award contract based on Base Bid only, or combination of Base Bid and any/all of the Alternate Bid Items below. The Bidder shall indicate if the Alternate is an add or deduct for the overall bid. If the Alternate is left blank, then the Alternate will not change the Base Bid if accepted. The Bidder agrees to provide the Alternates as described in the Contract Documents for the following prices:

Alternate #1: Provide asphalt trail paving in lieu of gravel trail paving as shown per plans.

Add \$ _____ (LS)

Alternate #2: Provide the dog park shelter and supporting concrete pad as shown per plans.

Add \$ _____ (LS)

UNIT PRICES

The bidding contractor shall provide unit prices for the following items. Unit prices are subject to owner review and consideration as part of the overall bid. All unit prices shall remain firm through the initial contract period.

Price decreases are acceptable at any time, need not be verifiable, and are required should the contractor/producer/processor/manufacture experience a decrease in costs associated with the execution of the contract.

All unit prices are to be fully inclusive of all expenses including travel, materials and all fees and be the final cost to the owner

Should the awarded vendor, at any time during the life of the contract, sell materials of similar quality to another customer, or advertise special discounts or sales, at a price below those quoted within the contract, the lowest discounted prices shall be offered to the owner

Unit Price No.1 – Provide Lime Stabilization (assume 12” amendment depth)

Dollars per Square Yard \$ _____

Unit Price No.2 – Provide Cement Stabilization (assume 12” amendment depth)

Dollars per Square Yard \$ _____

Unit Price No. 3 - Undercut and Dispose of Unsuitable Soils On Site (As determined by the Third-Party Geotechnical Engineer)

Dollars per Cubic Yard \$ _____

Unit Price No. 4 - Undercut and Dispose of Unsuitable Soils Off Site (As determined by the Third-Party Geotechnical Engineer)

Dollars per Cubic Yard \$ _____

Unit Price No. 5 - Haul in and place structural fill (Contents of Fill to be Approved by the Third-Party Geotechnical Engineer)

Dollars per Cubic Yard \$ _____

Unit Price No. 6 - Provide type 2 geogrid soil reinforcement for subgrade stabilization (For areas determined by the Third-Party Geotechnical Engineer)

Dollars per Square Yard \$ _____

The undersigned further agrees that this Bid Proposal shall be valid for a period of sixty (60) days from the date of receipt of the Bid Proposal and that if this Bid Proposal is accepted by the Town within this period, the Bidder will execute the Construction Agreement provided as part of the Contract Documents.

The undersigned further agrees to begin the work promptly upon receipt of the Notice to Proceed and to pursue the work with an adequate work force to complete the work within 210 calendar days from receipt of the Notice to Proceed. Liquidated Damages of \$500.00 per calendar day are hereby agreed upon as an assessment from the Contractor for failure to complete the work within the time period stated herein.

The undersigned Bidder further proposes and agrees to commence the work promptly upon notice, with an adequate force to satisfactorily complete the Project.

The undersigned acknowledges receipt of the following addenda which will be considered as part of the Contract Documents.

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

Addendum No. _____ Dated _____

CONTRACTOR:

(Company)

Contractor ☐ is or ☐ is not a historically underutilized business, registered with the North Carolina Office of Historically Underutilized Businesses. (Must be completed by all Bidders.)

ADDRESS:

BY:

(Signature) (Typed Name)

TITLE:

NC General Contractor's License No. _____

NC State Sales and Use Tax Registration _____

☐ Non-collusion Affidavit has been completed and is attached to this Bid Proposal Form (Required)

(Note: Inclusion of the non-collusion affidavit is mandatory. A bid will be rejected as non-responsive if not included in the bid submission.)

Select One (One or the other must be chosen by the Bidder):

☐ Substitution Listing (if substitutions are being proposed) is attached to this Bid Proposal Form.

(Note: Failure to include the Substitution Listing with this Bid Proposal will render the substitutions ineligible for consideration by the Town.) OR

☐ Substitution Listing is not attached to this Bid Proposal Form (No substitutions are proposed.)

SUBSTITUTION LISTING

TO: Town of Huntersville, North Carolina
Hereinafter called "Owner"

1. A Bidder requesting a substitution must submit this form to the Project Manager and Project Landscape Architect at least five (5) days prior to the time stated for Bid Opening.
2. Pursuant to bidding requirements for the Work titled:

ROSEDALE NATURE PARK FOR
HUNTERSVILLE PARKS AND RECREATION

The Contract Sum proposed by the under signed on the Bid Proposal form is for the Work as shown on the Drawings, and otherwise defined in the Contract Documents. However, the undersigned proposes the following substitutions for the Owner's consideration. Should the Owner accept any or all of the proposed substitutions, the Bidder's proposed contract sum will be reduced by the amount shown.

3.	Specified Product Or Material	Drawing Number	Proposed Substitution	Proposed Reduction in Contract Sum
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

PROVIDE SIGNATURE
IDENTICAL TO THAT
SHOWN ON THE BID FORM

BIDDER:

By _____

END OF SUBSTITUTION LISTING

Standard Form Contract



101 Huntersville-Concord Rd
 Huntersville, NC 28078
 (704) 875-6541

CONSTRUCTION CONTRACT

CONTRACTOR:**PROJECT:****Rosedale Nature Park****PROJECT****9519 Rosewood Meadow Lane****ADDRESS:****Huntersville, NC 28078****PROJECT LANDSCAPE ARCHITECT:**

Daniel Dodd, PLA
 314 Tom Hall Street
 Fort Mill, SC 29715
 803.981.4330

This Construction Contract, and all exhibits, (collectively this "Contract") is entered into this ____ day of _____, 20____ by and between, the Town of Huntersville, a municipal corporation of the State of North Carolina, (the "Town") and, _____ (the "Contractor") having an address of _____.

WITNESSETH:

That for and in consideration of the mutual promises set forth in this Contract, the sufficiency of which is acknowledged by the parties hereto, the parties agree as follows:

1. Scope of Services. The Contractor agrees to provide the professional construction services needed to complete the Project in accordance with the Project Drawings and Specifications and the Contract Documents for the price stated in the Contractors Proposal Form, plus or minus the substitutions listed on the Substitution Listing which are accepted by the Town.
2. Contract Documents. The Contract Documents consist of, in addition to this Contract, the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing, all Addenda issued, the Contract Drawings, and the General Conditions of the Construction Contract, all of the foregoing being incorporated herein by reference as if fully set forth herein, and all parties agree to be bound thereby.
3. Time for Performance of the Work. The Work shall be completed within two-hundred and ten (210) days of receipt of the Notice to Proceed from the Town.
4. Payment for Services. For the performance of the Work Contractor shall be paid the lump sum of _____ Dollars (\$_____) in accordance with the terms and conditions provided in the General Conditions of the Construction Contract.

In witness thereof, the contracting parties, by their authorized agents, affix their signatures this ____ day of _____, 20____.

CONTRACTOR**TOWN OF HUNTERSVILLE**

BY: _____

Print Name:

Print Title:

BY: _____

Print Name:

Print Title:

This instrument has been pre-audited in that manner required by the North Carolina Budget and Fiscal Control Act.

Pattie McGinnis, Finance Director

NON-COLLUSION AFFIDAVIT

I, on behalf of the Bidder, being first duly sworn or as the Contractor, do hereby represent on behalf of the Bidder that the Bid Proposal submitted was made without collusion or fraud and that neither I, nor anyone else affiliated with the Bidder to my knowledge, have offered or received any kickbacks or inducements from any other supplier, manufacturer or subcontractor in connection with their Bid Proposal, and neither I, nor anyone else affiliated with the Bidder to my knowledge, have conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.

This the _____ day of _____, 2021.

BIDDER: _____

Print Name:

Print Title:

State of _____

County of _____

Sworn to or subscribed before me this the _____ day of _____, 2021.

(Official Seal)

Notary Public

Print Name: _____

GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

1. DEFINITIONS

Owner: "Owner" shall mean, The State of North Carolina through (Mecklenburg County)

Contractor: "Contractor" shall mean the entity that will provide the services for the Owner.

Designer: The designer(s) are those referred to within the Contract documents, or their authorized representatives. The Designer(s), as referred to herein, shall mean landscape architect and/or engineer responsible for preparing the Project plans and specifications. They will be referred to hereinafter as if each were of the singular number, masculine gender.

2. Scope of Services. The Contractor agrees to perform for the Town the following services according to the following requirements:

The Contractor agrees to complete the construction of the Project in accordance with the Contract Documents. Such construction of the Project shall constitute the "Work." The Contractor agrees to provide all of the personnel, contract personnel, subcontractors, financial resources, materials, supplies, and equipment necessary to complete the Work in a timely and professional manner in accordance with the standards of the profession for similar work in the Mecklenburg County area at the time of the performance of the Work.

3. Contract Documents. The Contract Documents consist of the Invitation to Bid, Instructions to Bidders, Bid Proposal Form, Non-collusion Affidavit, Substitution Listing, all Addenda issued, the Contract Drawings, the Town's Standard Form Contract, and the General Conditions of the Construction Contract. The drawings and specifications are complementary, one to the other. That which is shown on the drawings or called for in the specifications shall be as binding as if it were both called for and shown. The intent of the drawings and specifications is to establish the scope of all labor, materials, transportation, equipment, and any and all other things necessary to provide a complete job. In case of discrepancy or disagreement in the Contract Documents, the order of precedence shall be the Construction Contract, the Bid Proposal Form, the Substitution Listing (only those items accepted by the Town), Addenda, the Contract Drawings, the Instructions to Bidders, the General Conditions of the Contract, the Invitation to Bid, and the Non-collusion Affidavit.
4. Licensure Required. The Contractor must be a licensed General Contractor as required by North Carolina General Statutes Section 87-1, and must have a good ethical and professional standing with the North Carolina General Contractor's Licensing Board. The Contractor will be responsible for providing properly qualified, licensed (if required) personnel to complete the Work in accordance with the standard of care ordinarily used by members of the Contractor's profession practicing under similar circumstances and at the same time in Mecklenburg County.
5. Coordination With Others. The Contractor agrees to coordinate its Work with the work of any other unaffiliated contractors or with the work of the Town's own forces to avoid delaying or interfering with their work.
6. Contract Insurance. Contractor shall be required to purchase and maintain during its performance under this Contract insurance coverage as shown on the Insurance Requirements as stated in Exhibit A, which is incorporated herein by reference. With the exception of Worker's Compensation and Professional Liability policies, all insurance purchased shall have a specific endorsement, copy of which shall be provided to the Town, naming the Town as an additional insured and for all insurance purchased, an endorsement providing that such insurance will not be cancelled without providing thirty (30) days advance written notice to the Town.
7. Time for Performance of the Work. The Work will begin within ten (10) days of receipt of the Notice to Proceed from the Town. The Contractor will have 210 consecutive calendar days to complete the Work from the date of Contractor's receipt of the Notice to Proceed.
8. Payment for Services. In consideration of the above services, the Town will pay the Contractor, in accordance with the Contractor's, plus reimbursable expenses at the Contractor's actual cost (without markup). Contractor will submit monthly Requests for Payment for Work performed to the Project Manager who will forward them to the Project Landscape Architect for Review. The Request for payment shall be based upon the Contractor's estimate of the percentage of the total Work completed during the period represented on the Request for Payment. The Project Landscape Architect must certify that the Work represented in the Contractor's Request for Payment has been

completed in accordance with the Contract Documents, and certify that the Request for Payment is appropriate for payment before the Town shall be obligated to make such payment to the Contractor. If any Request for Payment is disputed by the Town, in whole or in part, the Town shall provide a written explanation for such dispute to Contractor within five days of receipt of the certified Request for Payment from the Architect and shall pay all undisputed amounts therein.

- a. The designer with the approval of the Owner may withhold payment for the following reasons:
 - (1) Faulty work not corrected.
 - (2) The unpaid balance on the contract is insufficient to complete the work in the judgment of the designer.
 - (3) To provide for sufficient contract balance to cover liquidated damages that will be assessed.
 - (4) The secretary of the Department of Administration may authorize the withholding of payment for the following reasons:
 - (5) Claims filed against the Contractor or evidence that a claim will be filed.
 - (6) Evidence that subcontractors have not been paid.
 - (7) When grounds for withholding payments have been removed, payment will be released. Delay of payment due the Contractor without cause will make owner liable for payment of interest to the Contractor as provided in G.S. 143 134.1. As provided in G.S. 143-134.1(e), the owner shall not be liable for interest on payments withheld by the owner for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the owner or reasonable evidence that a third-party claim will be filed.
- b. Final payment will be made within forty-five (45) consecutive days after acceptance of the work, receipt of marked-up "as-built" drawings and specifications and the submission both of notarized Contractor's affidavit and final pay request. All pay requests shall be submitted to the Designer/Owner for approval.

THE CONTRACTOR'S FINAL PAYMENT AFFIDAVIT SHALL STATE: "THIS IS TO CERTIFY THAT ALL COSTS OF MATERIALS, EQUIPMENT, LABOR, SUBCONTRACTED WORK, AND ALL ELSE ENTERING INTO THE ACCOMPLISHMENT OF THIS CONTRACT, INCLUDING PAYROLLS, HAVE BEEN PAID IN FULL."

9. Acceptance. Execution of the Contract constitutes an agreement to the terms contained within the Contract Documents. The terms and provisions set forth in the Contract Documents shall constitute the entire agreement between Contractor and the Town with respect to the performance of the Work as described in the Contract Documents. The agreements set forth in the Contract Documents are sometimes referred to herein as the "Contract." Except as provided herein, no additional or supplemental provision or provisions in variance with the Contract Documents that may appear in Contractor's proposal, acknowledgment, Requests for Payment, or in any other communication from Contractor to the Town shall be deemed accepted by or binding on the Town. The Town hereby expressly rejects all such provisions which supplement, modify or otherwise vary from the terms of the Contract Documents, and such provisions are superseded by the terms and conditions stated in the Contract Documents, unless and until the Town's authorized representatives expressly assent, in writing, to such provisions. Stenographic and clerical errors and omissions by the Town are subject to correction.
10. Working Drawings And Specifications At The Job Site. The Contractor shall maintain, in readable condition at his job site one complete set of working drawings and specifications for his work including all shop drawings. Such drawings and specifications shall be available for use by the owner, designer or his authorized representative. The Contractor shall also maintain at the job site, a day-to-day record of work-in-place that is at variance with the contract documents. Such variations shall be fully noted on Project drawings by the Contractor and submitted to the designer upon Project completion and no later than 30 days after acceptance of the Project.
11. Materials, Equipment, Employees. The Contractor shall, unless otherwise specified, supply and pay for all labor, transportation, materials, tools, apparatus, lights, power, fuel, heat, sanitary facilities, water, scaffolding and incidentals necessary for the completion of his work, and shall install, maintain and remove all equipment of the construction, other utensils or things, and be responsible for the safe, proper and lawful construction, maintenance and use of same, and shall construct in the best and most

workmanlike manner, a complete job and everything incidental thereto, as shown on the plans, stated in the specifications, or reasonably implied therefrom, all in accordance with the contract documents.

- a. All materials shall be new and of quality specified, except where reclaimed material is authorized herein and approved for use. Workmanship shall at all times be of a grade accepted as the best practice of the particular trade involved, and as stipulated in written standards of recognized organizations or institutes of the respective trades except as exceeded or qualified by the specifications.
- b. Upon notice, the Contractor shall furnish evidence as to quality of materials.
- c. Products are generally specified by ASTM or other reference standard and/or by manufacturer's name and model number or trade name. When specified only by reference standard, the Contractor may select any product meeting this standard, by any manufacturer. When several products or manufacturers are specified as being equally acceptable, the Contractor has the option of using any product and manufacturer combination listed. However, the Contractor shall be aware that the cited examples are used only to denote the quality standard of product desired and that they do not restrict bidders to a specific brand, make, manufacturer or specific name; that they are used only to set forth and convey to bidders the general style, type, character and quality of product desired; and that equivalent products will be acceptable. Request for substitution of materials, items, or equipment shall be submitted to the designer for approval or disapproval; the designer prior to the opening of bids shall make such approval or disapproval. Alternate materials may be requested after the award if it can clearly be demonstrated that it is an added benefit to the owner and the designer and owner approves.
- d. The designer is the judge of equality for proposed substitution of products, materials or equipment.
- e. If at any time during the construction and completion of the work covered by these contract documents, the language, conduct, or attire of any workman of the various crafts be adjudged a nuisance to the owner or designer, or if any workman be considered detrimental to the work, the Contractor shall order such parties removed immediately from grounds.
- f. The Contractor shall cooperate with the designer and the owner in coordinating construction activities.
- g. The Contractor shall maintain qualified personnel and effective supervision at the site at all times during the Project, and exercise the appropriate quality control program to ensure compliance with the Project drawings and specifications. The designer is responsible for determining compliance with the drawings and specifications.

12. Cleaning Up And Restoration Of Site. The Contractor shall keep the sites and surrounding area reasonably free from rubbish at all times and shall remove debris from the site from time to time or when directed to do so by the Owner. Before final inspection and acceptance of the Project, the Contractor shall thoroughly clean the sites, and completely prepare the Project and site for use by the Owner. At the end of construction, the Contractor shall oversee and implement the restoration of the construction site to its original state. Restoration includes but not limited to walks, drives, lawns, trees and shrubs, corridors, stairs and other elements shall be repaired, cleaned or otherwise restored to their original state.

13. Codes, Permits And Inspections. The Contractor shall obtain the required permits, if required, give all notices, and comply with all laws, ordinances, codes, rules and regulations bearing on the conduct of the work under this contract. If the Contractor observes that the drawings and specifications are at variance therewith, he shall promptly notify the Designer in writing. All work under this contract shall conform to the current North Carolina Building Code and other state and national codes as are applicable. If the Contractor performs any work knowing it to be contrary to such laws, ordinances, codes, rules and regulations, and without such notice to the Owner, he shall bear all cost arising there from.

All fire alarm work shall be in accordance with the latest State Construction Office (SCO) Guidelines for Fire Alarm Installation (NFPA72). Where the contract documents are in conflict with the SCO guidelines, the SCO guidelines shall govern. The Contractor shall be responsible for all the costs for the correction of the work where he installs it in conflict with the latest edition of the SCO Guidelines for Fire Alarm Installation.

14. Protection Of Work, Property, The Public And Safety. The Contractor shall be solely responsible for the entire site and the building or construction of the same and provide all the necessary protections, as required by the owner or designer, and by laws or ordinances governing such conditions. The Contractor shall be responsible for any damage to the owner's property or of that of others on the job, by them, their personnel, or their subcontractors, and shall make good such damages. The Contractor shall be responsible for and pay for any damages caused to the owner. Contractor shall have access to the Project at all times.

- a. The Contractor shall provide cover and protect all portions of the structure when the work is not in progress, provide and set all temporary roofs, covers for doorways, sash and windows, and all other materials necessary to protect all the work on

the building, whether set by him, or any of the subcontractors. Any work damaged through the lack of proper protection or from any other cause, shall be repaired or replaced without extra cost to the owner.

- b. No fires of any kind will be allowed inside or around the operations during the course of construction without special permission from the designer and owner.
- c. The Contractor shall protect all trees and shrubs designated to remain in the vicinity of the operations by building substantial boxes around it. He shall barricade all walks, roads, etc., as directed by the designer to keep the public away from the construction. All trenches, excavations or other hazards in the vicinity of the work shall be well barricaded and properly lighted at night.
- d. The Contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the A.G.C. Accident Prevention Manual in Construction, as amended, and shall fully comply with all state laws or regulations and North Carolina State Building Code requirements to prevent accident or injury to persons on or about the location of the work. He shall clearly mark or post signs warning of hazards existing, and shall barricade excavations, elevator shafts, stairwells and similar hazards. He shall protect against damage or injury resulting from falling materials and he shall maintain all protective devices and signs throughout the progress of the work.
- e. The Contractor shall adhere to the rules, regulations and interpretations of the North Carolina Department of Labor relating to Occupational Safety and Health Standards for the Construction Industry (Title 29, Code of Federal Regulations, Part 1926, published in Volume 39, Number 122, Part II, June 24, 1974, Federal Register), and revisions thereto as adopted by General Statutes of North Carolina 95-126 through 155.
- f. In the event of emergency affecting the safety of life, the protection of work, or the safety of adjoining properties, the Contractor is hereby authorized to act at his own discretion, without further authorization from anyone, to prevent such threatened injury or damage. Any compensation claimed by the Contractor on account of such action shall be determined as provided for under Article 13(b).

Any and all costs associated with correcting damage caused to adjacent properties of the construction site or staging area shall be borne by the Contractor. These costs shall include but not be limited to flooding, mud, sand, stone, debris, and discharging of waste products.

- 15. As-Built Marked-Up Construction Documents. Contractor shall provide one complete set of legible "as-built" marked-up construction drawings and specifications recording any and all changes made to the original design during the course of construction. In the event no changes occurred, submit construction drawings and specifications set with notation "No Changes." The Designer/Owner must receive "As-built" marked-up construction drawings and specifications before the final pay request can be processed.
- 16. Entire Agreement. The Contract Documents constitute and represent the complete and entire agreement between the Town and Contractor and supersede all previous communications, either written or verbal with respect to the subject matter of this Contract.
- 17. Changes, Additions, Deletions. No changes, additions, deletions or modifications (other than substitutions accepted by the Town at the time the contract is awarded) of the scope of work, specifications, terms and conditions, quantity, unit of issue, delivery date, delivery charges or price will be permitted unless the same are incorporated into a written Change Order, signed by the Town and the Contractor. However, the Contractor will not be liable for delays caused by circumstances beyond its control including without limitation, delays caused by acts of God, the Town or its other consultants/contractors, federal, state, and local government authorities, strikes, riots, civil unrest, war, or unknown or concealed conditions, and if such delays occur, the Contractor will be entitled to an equitable adjustment in the time for the performance of the Work and compensation.
- 18. Change Orders. Change orders shall be submitted by the Contractor in writing to the owner/designer for review and approval. The Contractor will provide such proposal and supporting data in suitable format. The designer shall verify correctness. Delay in the processing of the change order due to lack of proper submittal by the Contractor of all required supporting data shall not constitute grounds for a time extension or basis of a claim. Within five (5) days after receipt of the Contractor's accepted proposal including all supporting documentation required by the designer, the designer shall prepare the change order and forward to the Contractor for his signature or otherwise respond, in writing, to the Contractor's proposal. Within five (5) days after receipt of the change order executed by the Contractor, the designer shall, certify the change order by his signature, and forward the change order and all supporting data to the owner for the owner's signature. The owner shall execute the change order, within five (5) days of receipt.

- a. A change order, when issued, shall be full compensation, or credit, for the work included, omitted or substituted. It shall show on its face the adjustment in time for completion of the Project as a result of the change in the work.
 - b. If, during the progress of the work, the owner requests a change order and the Contractor's terms are unacceptable, the owner, may require the Contractor to perform such work on a time and material basis whereupon the Contractor shall proceed and keep accurately on such form as specified by the Designer or owner, a correct account of cost together with all proper invoices, payrolls and supporting data. Upon completion of the work a change order will be prepared with allowances for overhead and profit per paragraph d. above and "net cost" and "cost" per paragraph e. above. Without prejudice, nothing in this paragraph shall preclude the owner from performing or to have performed that portion of the work requested in the change order.
19. Relationship of the Parties. The Contractor is an independent Contractor and not an affiliate of the Town. The conduct and control of the work will lie solely with the Contractor. The Contract shall not be construed as establishing a joint venture, partnership or any principal-agent relationship for any purpose between the Contractor and the Town. Employees of the Contractor shall remain subject to the exclusive control and supervision of the Contractor, which is solely responsible for their compensation.
 20. Sales Taxes. Any applicable sales taxes shall be invoiced as a separate item.
 21. Substitutions. Substitutions proposed by the Contractor on the Substitution Listing Form, submitted with the Contractor's Bid Proposal, which are accepted by the Town shall be considered a modification to the Contract Documents. No other substitutions shall be made by the Contractor unless the same is put into a Change Order, signed by the Owner and Contractor.
 22. Indemnification. To the greatest extent allowed by the law the Contractor shall indemnify and hold harmless the Town, its officers, agents, employees and assigns from and against all claims, losses, costs, damages, expenses, attorneys' fees ("Claims"), but only to the extent the fault of the Consultant or its derivative parties (as defined in N.C.G.S §22B-1) is a proximate cause of the Claim. In the event that any portion of the Work performed under the Contract shall be defective in any respect whatsoever, the Contractor shall indemnify and save harmless the Town, its officers, agents, employees and assigns from all loss or the payment of all sums of money, but only to the extent the fault of the Consultant or its derivative parties (as defined in N.C.G.S §22B-1) is a proximate cause of the Claim.
 23. Anti-Discrimination. During the performance of the Contract, the Contractor shall not discriminate against or deny the Contract's benefits to any person on the basis of sexual orientation, national origin, race, ethnic background, color, religion, gender, age or disability.
 24. Insurance. The Contractor shall provide the insurance coverages shown on Exhibit A, attached hereto and incorporated herein by reference. The Contractor shall provide the Town with a North Carolina Certificate of Insurance and such endorsements as may be required by the Contract Documents PRIOR to the commencement of any work under the Contract and agrees to maintain such insurance until the completion of the Contract. Such certificates of insurance shall be considered part of the Contract.
 25. Ethics in Public Contracting. By submitting their prices and acceptance of this Contract, the Contractor certifies that their proposal was made without collusion or fraud and that they have not offered or received any kickbacks or inducements from any other supplier, manufacturer or subcontractor in connection with their proposal, and that they have not conferred on any public employee having official responsibility for this procurement transaction any payment, loan, subscription, deposit of money, services or anything of more than nominal value, present or promised, unless consideration of substantially equal or greater value was exchanged.
 26. Applicable Laws and Courts. This Contract shall be governed in all respects by the laws of the State of North Carolina. All matters, whether sounding in contract or tort relating to the validity, construction, interpretation and enforcement of the Contract, shall be governed in all respects by the laws of the State of North Carolina and venue shall be proper only in a court of competent jurisdiction located in Mecklenburg County, North Carolina. The Contractor represents and warrants that it shall comply with all applicable federal, state and local laws, regulations and orders.
 27. Strict Compliance. The Town may at any time insist upon strict compliance with these terms and conditions notwithstanding any previous course of dealing or course of performance between the parties to the contrary.
 28. Assignment. The Contractor shall not assign, subcontract or otherwise transfer any interest in the Contract without the prior written approval of the Town.

29. General Provisions. The Town's remedies as set forth herein are not exclusive. Any delay or omission by the Town in exercising any right hereunder, or any waiver by the Town of any single breach or default hereunder, shall not be deemed to be a waiver of such right or of any other right, breach, or default.
30. Risk of Loss. Risk of Loss for all supplies, materials, the Work performed, and the Project as it is being constructed, shall be on the Contractor until such time as substantial completion is achieved, certified by the Architect, and approved by the Town.
31. Warranties. The Contractor warrants it shall adhere to all applicable laws, codes, ordinances, and regulations of the United States, the State of North Carolina, the County of Mecklenburg, and the Town of Huntersville in the performance of the Work outlined in this Contract and any attached specifications. The Contractor warrants that any finished Work completed hereunder shall also adhere to all applicable laws, codes, ordinances, and regulations of the United States, the State of North Carolina, the County of Mecklenburg, and the Town of Huntersville. The Contractor warrants that all Work will be performed in accordance with this Contract and the standard of care ordinarily used by members of the Contractor's engineering profession practicing under similar circumstances and at the same time in Mecklenburg County. The Contractor makes no additional warranties, express or implied, in connection with the Work. In addition to any other rights available at law or in equity, the Town shall be entitled to consequential and incidental damages.
32. Default. In the event of a breach by the Contractor, addition to any other remedies available to the Town in law or equity, the Town may procure upon such terms as the Town shall deem appropriate, construction services substantially similar to those so terminated, in which case the Contractor shall be liable to the Town for any excess costs for such similar services and any expenses incurred in connection therewith. This Contract shall not terminate if the alleged default is cured within a ten (10) day notice period. In the event this Contract is terminated by the Town for the default of the Contractor, the Town shall be entitled to keep and use Work, including materials and supplies on site provided by the Contractor in finishing the construction of the Project.
33. Termination for Convenience. The Town shall have the right, without assigning any reason therefore, to terminate any Work under the Contract, in whole or in part, at any time at its complete discretion by providing ten (10) day notice in writing from the Town to the Contractor. If the Contract is terminated by the Town in accordance with this paragraph, the Contractor will be paid for all Work performed and reimbursable expenses incurred up to the effective date of the termination. The Town will not be liable to the Contractor for any costs for materials acquired or contracted for, if such costs were incurred prior to the date of this Contract.
34. Assignment. Contractor may not assign, pledge, or in any manner encumber the Contractor's rights under this Contract, or delegate the performance of any of its obligations hereunder, without the Town's prior, express written consent. Hiring a subcontractor to perform any portion of the Work shall be at the Contractor's discretion; however Contractor shall remain liable and responsible to the Town for all such Work completed by subcontractors.
35. No Third Party Beneficiaries. There shall be no intended nor incidental third party beneficiaries of this Contract. The Contractor shall include in all contracts, subcontracts or other agreements relating to the Contract an acknowledgment by the contracting parties that the Contract creates no third party beneficiaries.
36. Valid Contract. In order for this Contract to be valid, it must be executed by the Town Manager or his or her authorized designee, and must be preaudited in that manner required by the Local Government Budget and Fiscal Control Act, as the same may be amended.
37. Verification of Work Authorization. The Contractor shall comply with, and require all contractors and subcontractors to comply with, the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, "Verification of Work Authorization," sometimes known as E-verify for all contractors and subcontractors.
38. Iran Divestment List. With the execution hereof, Contractor, certifies that they are not on the Iran Final Divestment List created by the N.C. State Treasurer pursuant to N.C.G.S. § 147-86.58, and will not contract with anyone on such List in performance of the work hereunder.
39. Severability. If any provision of this Contract is found to be invalid or unlawful, then remainder of this Agreement shall not be affected thereby, and each remaining provision shall be valid and enforced to the fullest extent permitted by law.
40. Dispute Resolution. As a precondition for filing a lawsuit related to a dispute under this Agreement, a party must comply with the Town of Huntersville Rules Implementing Mediated Settlement Conferences for Town of Huntersville Construction Projects, the "Dispute Resolution Procedure."

41. Companies that Boycott Israel List. With the execution hereof, Firm, certifies that they are not on the Companies that Boycott Israel List created by the N.C. State Treasurer pursuant to N.C.G.S. § 147-86.80, and will not contract with anyone on such List in performance of the work hereunder.

EXHIBIT A

MINIMUM INSURANCE REQUIREMENTS

The Work under this Contract shall not commence until the Firm has obtained all required insurance and verifying certificates of insurance have been approved in writing by the Town. The Town shall be named as additional insured on all policies, except Worker's Compensation and Professional Liability policies. These certificates shall document that coverages afforded under the policies will not be cancelled until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the Town of such cancellation. If endorsements are needed to comply with the notification or other requirements of this article copies of the endorsements shall be submitted with the certificates.

a. Worker's Compensation and Employer's Liability

The Firm shall provide and maintain, until final acceptance, workmen's compensation insurance, as required by law, as well as employer's liability coverage with minimum limits of \$100,000.

b. Comprehensive General Liability Insurance

The Firm shall provide and maintain, until final acceptance, comprehensive general liability insurance, including coverage for premises operations, independent contractors, completed operations, products and contractual exposures, as shall protect such contractors from claims arising out of any bodily injury, including accidental death, as well as from claims for property damages which may arise from operations under this contract, whether such operations be by the Firm or by any subcontractor, or by anyone directly or indirectly employed by either of them and the minimum limits of such insurance shall be as follows:

Bodily Injury: \$1,000,000 per occurrence / \$2,000,000 aggregate

Property Damage: \$100,000 per occurrence / \$300,000 aggregate

Or,

Bodily Injury and Property Damage, combined single limit (CSL): \$1,000,000 per occurrence / \$2,000,000 aggregate

Such coverage for completed operations must be maintained for at least two (2) years following final acceptance of the Work performed under the contract.

c. Deductible

Any deductible, if applicable to loss covered by insurance provided, is to be borne by the Firm.

d. Other Insurance

The Firm shall obtain such additional insurance as may be required by the Town or by the General Statutes of North Carolina including motor vehicle insurance, in amounts not less than the statutory limits.

e. Proof of Carriage

The Firm shall furnish the Town with satisfactory proof of carriage of the insurance required before written approval is granted by the Town

SPECIAL CONDITIONS

1. The Contractor shall coordinate with the utility owners to be aware of utilities located within the project area prior to construction. The Contractor is responsible for all utility locates and protective measures.
2. The Contractor shall maintain on file at the job site, copies of all permits and approvals for the project.
3. The Contractor shall verify and/or secure all other permits required for construction activities prior to beginning construction. All final permits are the responsibility of the contractor, including but not limited to, encroachment and building permits.
4. Contractor shall develop and submit prior to beginning construction, a schedule of work, which will allow construction of the project while maintaining vehicular access to all adjacent parcels during the construction period.
5. Contractor is responsible for all erosion control measures on site.
6. Contractor shall notify Owner and Engineer/Landscape Architect prior to construction.
7. If traffic control is needed, it shall be provided by the contractor at their expense.
8. Contractor to follow all rules and regulations stated by The Town of Huntersville and Mecklenburg County
9. Minority Business Participation - The Town of Huntersville has defined a 10% verifiable goal for participation by minority businesses pursuant to N.C. Gen. Stat. 143-128.2(a) for vertical building components only (Restroom and Shelter). Please see attached Identification of HUB Certified/ Minority Business Participation form that shall be submitted at time of bid.
10. Antidiscrimination and Historically Underutilized Business (HUB) - During the performance of the Contract, Contractor shall not discriminate against or deny the Contract's benefits without regard to race, religion, color, creed, national origin, sex, age, or handicapping condition.". The Town of Huntersville is committed to providing opportunity for HUB and encourages bids from The Minority Business Enterprises (MBE) and Women Businesses Enterprises (WBE).

SECTION 011000- SUMMARY

PART 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:

1. Work covered by the Contract Documents.
2. Type of the Contract.
3. Work phases.
4. Work under other contracts.
5. Use of premises.
6. Owner's occupancy requirements.
7. Specification formats and conventions.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Rosedale Nature Park

1. Project Location: 9519 Roswood Meadow Lane, Huntersville, NC 28078

- B. Owner: Town of Huntersville

Owner's Representative: Michael Jaycocks, Park and Recreation Director
Town of Huntersville

1. The work of this contract includes but is not be limited to, site clearing, grading, erosion control, seeding, asphalt, concrete paving, storm drainage systems, installation, asphalt paving, playground surfacing, restroom building construction, fencing, landscape planting, and site furnishings.
2. Contractor shall furnish all material, labor, tools, supplies, equipment, transportation, temporary construction of every nature, insurance, taxes, contributions and all services and facilities, unless specifically excepted, and install materials, items and equipment required to complete the construction of the Project, as set forth in the Contract.
3. Coordination of owner provided and owner installed equipment. General Contractor shall coordinate with owner and install equipment. General Contractor shall coordinate with owner and install equipment.
4. The General Contractor shall act as the Project Expediter and be responsible for coordinating the work and schedules of other trades.

1.4 TYPE OF CONTRACT

- A. Project will be constructed under a single prime contract.

1.5 WORK PHASES

- 1. The Work shall be conducted in one phase. Work of this phase shall be substantially complete and ready for certification of completion within **7 months (210 days)** after the notice to proceed

1.6 USE OF PREMISES

- A. All construction activities shall be coordinated with the Town of Huntersville.
- B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 - 1. Limits: Confine construction operations to all fill and cut areas associated with the project and generally 10 feet outside of this for constructability.
 - 2. Driveways and Entrances: Keep all construction access and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.7 SPECIFICATION FORMATS AND CONVENTIONS

- A. Specification Format: The Specifications are organized into Divisions and Sections using the 50-division format and CSI/CSC's "MasterFormat" numbering system.
 - 1. 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 because all available Section numbers are not used. Consult the table of contents at the beginning of the Project Manual to determine numbers and names of Sections in the Contract Documents.
 - 2. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.
- B. 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.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011000

SECTION 011400 - WORK RESTRICTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 USE OF PREMISES

- A. Use of Site: Limit use of premises to work in areas indicated on the drawings. Do not disturb portions of site beyond areas in which the Work is indicated.
 - 1. Limits: Confine constructions operations to limits of denuded area.
 - 2. Owner Occupancy: Allow for Owner occupancy of site. This area of the park will be closed for the project's duration and use by the public is not allowed.
 - 3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
 - 4. Construction hours shall start between the hours of 8 A.M. and end at 7 P.M.
 - 5. Contractor is subject to all Town of Huntersville and Mecklenburg County Construction Rules and Regulations

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 011400

SECTION 012200 - UNIT PRICES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
 - 1. Section 012500 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
 - 2. Section 014000 "Quality Requirements" for general testing and inspecting requirements.

1.3 DEFINITIONS

- A. Unit price is an amount incorporated in the Agreement, applicable during the duration of the Work 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.

1.4 PROCEDURES

- A. The bidding contractor shall provide unit prices for the following items. Unit prices are subject to owner review and consideration as part of the overall bid. All unit prices shall remain firm through the initial contract period.
- B. Price decreases are acceptable at any time, need not be verifiable, and are required should the contractor/producer/processor/manufacture experience a decrease in costs associated with the execution of the contract.
- C. All unit prices are to be fully inclusive of all expenses including travel, materials and all fees and be the final cost to the owner
- D. Should the awarded vendor, at any time during the life of the contract, sell materials of similar quality to another customer, or advertise special discounts or sales, at a price below those quoted within the contract, the lowest discounted prices shall be offered to the owner
- E. Measurement and Payment: See individual Specification Sections for work that requires

establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.

- F. 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.
- G. 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. Unit Price No. 1
 - 1. Description: Provide Lime Stabilization (assume 12" amendment depth)
 - 2. Unit of Measurement: Dollars per Square Yard
- B. Unit Price No. 2
 - 1. Description: Provide Cement Stabilization (assume 12" amendment depth)
 - 2. Unit of Measurement: Dollars per Square Yard
- C. Unit Price No. 3
 - 1. Description: Undercut and Dispose of Unsuitable Soils On Site (As determined by the Third-Party Geotechnical Engineer)
 - 2. Unit of Measurement: Dollars per Cubic Yard
- D. Unit Price No. 4
 - 1. Description: Undercut and Dispose of Unsuitable Soils Off Site (As determined by the Third-Party Geotechnical Engineer)
 - 2. Unit of Measurement: Dollars per Cubic Yard
- E. Unit Price No. 5
 - 1. Description: Haul in and place structural fill (Contents of Fill to be Approved by the Third-Party Geotechnical Engineer)
 - 2. Unit of Measurement: Dollars per Cubic Yard
- F. Unit Price No. 6

1. Description: Provide type 2 geogrid soil reinforcement for subgrade stabilization (For areas determined by the Third-Party Geotechnical Engineer)
2. Unit of Measurement: Dollars per Square Yard

END OF SECTION 012200

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. Provide all labor, materials, necessary equipment and services to complete the Alternates work, as indicated on the drawings, as specified herein or both. Contractors are responsible for payment of all applicable fees and taxes in association with their contract.

1.2 USE OF ALTERNATES

- A. Submit alternate/base bid proposals as described herein and in the "Bid Form" stating the total difference in cost to the stipulated Lump Sum Bid for adding or deducting the following alternates to that specified and/or shown on the drawings.
 - 1. Include all applicable omissions, additions, and adjustments of all other applicable trades as required.

PART 2 - PRODUCTS

2.1 SCHEDULE OF ALTERNATES

- A. Add/Alternate No. 1: Provide asphalt trail paving in lieu of gravel trail paving as shown per plans.
- B. Add/Alternate No. 2: Provide the dog park shelter and supporting concrete pad as shown per plans.

END OF SECTION 012300

SECTION 012500 - CONTRACT MODIFICATION PROCEDURES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements for handling and processing Contract modifications whereas all parties agree to the following:
 - 1. A modification in the Work or Contract Documents.
 - 2. The amount of the adjustment in the Contract Sum, if any.
 - 3. The extent of the adjustment in the Contract Time, if any.

1.3 NOTIFICATION TO SURETY

- A. The Contractor shall notify the Surety of any modifications to the Work or provisions of the Contract Documents, including, but not limited to, the Contract Price or Contract Time.

1.4 MINOR CHANGES IN THE WORK

- A. The Consultant shall have authority to order Minor Changes in the Work not involving adjustment to the Contract Sum or extension of the Contract Time, and consistent with the intent of the Contract Documents. Such changes shall be in a form of a written order and shall be binding for both the Owner and Contractor.

1.5 CLAIMS FOR ADDITIONAL COST:

- A. If the Contractor wishes to make a Claim for an increase in the Contract Sum, written notice as provided herein shall be given before proceeding to execute the Work. Prior notice is not required for Claims relating to an emergency endangering life or property.
- B. The Contractor shall submit a claim if he believes additional cost is involved for reasons including but not limited to the following:
 - 1. A written interpretation from the Consultant,
 - 2. An order by the Owner to stop the Work where the Contractor was not at fault,
 - 3. A written order for a minor change in the Work issued by the Consultant,
 - 4. A change in the Scope of the Work by the Consultant.

1.6 PROPOSAL REQUESTS

- A. The Owner initiated Proposal Requests is generated by the Owner to modify the Work or Contract Documents. The Consultant will issue a detailed description of proposed modifications 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. The description is for information and shall be considered as a directive to automatically stop work or execute the proposed change.
1. Within ten 10 calendar days after receipt of the Proposal Request, the Contractor shall submit a Proposal Request Form with an estimate to adjust the Contract Sum and the Contract Time if necessary, to execute the change.
 - a. Include a list of quantities of (plus or minus) the materials and/or products required with unit prices, total amount of purchases, and credits to be made. If requested, furnish survey data to substantiate quantities.
 - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - c. Include costs of labor and supervision directly attributable to the change, including social security, old age and unemployment insurance, fringe benefits, and workmen's compensation insurance.
 - d. 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.
 - e. Provide any additional information related to the Proposal Request requested by the Consultant or Owner to clarify the Proposal within Seven (7) Days of the request. Failure to provide requested information will result in the Consultant researching and documenting the additional cost and assigning a cost that is the fair market value of the proposed modifications to the Work based on all information available to the Consultant.
 2. The Contractor may initiate proposals if latent or unforeseen conditions require modifications to the Contract, Contractor may propose changes by submitting a request for a change to Consultant.
 - a. 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.
 - b. Include a list of quantities of (plus or minus) the materials and/or products required with unit prices, total amount of purchases, and credits to be made. If requested, furnish survey data to substantiate quantities.

- c. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
 - d. Include costs of labor and supervision directly attributable to the change, including social security, old age and unemployment insurance, fringe benefits, and workmen's compensation insurance.
 - e. 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.
 - f. Comply with requirements in Division 1 Section, of the Technical Specifications "Product Requirements" if the proposed change requires substitution of one product or system for product or system specified.
 - g. Comply with requirements in Division I Section 01600, of the Technical Specifications "Product Requirements", if the proposed change requires substitution of one product or system for product or system specified.
- B. An alternative method to price the changes in the work is to utilize current "Mean's Cost Data".
 - C. Profit and Overhead shall not exceed ten percent (10%) of the cost of the changes to the Work.
 - D. Use Proposal Request Form provided by Owner. A "Sample is included in the Appendix. The Contractor shall prepare three copies, one for the Consultant, one for the Owner and one for himself and for all parties to sign. Each shall keep a copy.
 - E. The Contractor shall be responsible for keeping and updating a "Proposal Request Log", listing all Proposal Requests and Minor Changes. The log shall also indicate the date of the Proposal Request, approval date, action taken, running balances, and a complete description of the change.
 - F. After all parties have signed "The Proposal Request Form", it shall be the Contractor's authorization to proceed with the changes to the Work.
 - G. If the Owner and Contractor do not agree with the requested adjustment in the Contract Sum, the Contract Time or the method of determining each, the provisions for Mediation shall be utilized.

1.7 ALLOWANCES ADJUSTMENT: (Not Used)

1.8 CHANGE ORDER PROCEDURES

- A. The Consultant shall issue a Change Order for signatures once all of the Proposal Request(s) amounts exceeds \$20,0000 or at the end of the project.

- B. The Contractor shall not invoice for the Change Order until it has been executed by all parties.

1.9 CONSTRUCTION CHANGE DIRECTIVE

- A. The Consultant may issue a Construction Change Directive that has been signed by the Owner to the Contractor directing a change in the Work. Construction Change Directive instructs Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
 - 1. Work Change Directive contains a complete description of change in the Work. It also designates method to be followed to determine change in the Contract Sum or the Contract Time.
- B. Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved. And the Contractor shall advise the Consultant of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.
- C. The Contractor shall 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.

1.10 ADDITIONAL TIME

- A. Additional work does not automatically translate into additional time. The Contractor must illustrate using Critical Path Schedule in a clearly and logical sequence if additional work has extended the critical path. The consultant shall review with the Owner the time extension request and make a recommendation to the Owner to approve or reject the time extension request.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 PROCESSING CHANGE ORDERS

- A. The Change Order will be issued describing the change or changes to the Work and/or Contract Documents and will refer to the Proposal Requests.
- B. The Consultant shall issue five copies of the Change Order to the Contractor. The Contractor shall promptly sign all five copies and return all five copies to the Consultant who will sign the Change Order and forward the Change Order to the Owner to execute.
- C. Once the Change Order has been full executed, a copy shall be forwarded to the Consultant and to the Contractor for their files.

END OF SECTION 012500

SECTION 012900 - PAYMENT PROCEDURES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section specifies administrative and procedural requirements necessary to prepare and process Applications for Payment.
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Unit Prices" for administrative requirements governing use of unit prices.
 - 2. Division 1, of the Technical Specifications Section "Contract Modification Procedures" for administrative procedures for handling changes to the Contract.
 - 3. Division 1, of the Technical Specifications Section "Construction Progress Documentation" for administrative requirements governing preparation and submittal of Contractor's Construction Schedule and Submittals Schedule.

1.3 DEFINITIONS

- A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

- A. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including the following:
 - a. Application for Payment forms AIA G702.
 - b. Continuation Sheets (example of the Continuation Sheet form is in VIII Forms).

2. Submit the Schedule of Values to the **Consultant** at earliest possible date but no later than fourteen days before the date scheduled for submittal of initial Applications for Payment.
 3. Sub-schedules: Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.
- B. Format and Content: Use the Project Manual table of contents as a guide to establish line items for the Schedule of Values. Provide at least one-line item for each of the Technical Specifications Section.
1. Identification: Include the following Project information on the Schedule of Values:
 - a. Project name and location.
 - b. Name of **Consultant**.
 - c. Contract number.
 - d. Contractor's name and address.
 - e. Date of submittal.
 2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:
 - a. Related Technical Specifications Section or Division.
 - b. Description of the Work.
 - c. Name of subcontractors.
 - d. Name of manufacturer or fabricator.
 - e. Name of suppliers.
 - f. Change Orders (numbers) that affect value.
 - g. Dollar value.
 3. Group items that are "Non-Tangible & Non-Taxable and Tangible & Taxable Items" on the Schedule of Values (see VIII. Forms, Continuation Sheet).
 4. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents. Provide several line items for principal subcontract amounts, where appropriate.
 5. Round amounts to nearest whole dollar; total shall equal the Contract Sum.
 6. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include labor and materials and/or equipment purchased or fabricated and stored, but not yet installed.
 - a. Differentiate between items stored on-site and items stored off-site. Include evidence of insurance or bonded warehousing if required.

7. Provide separate line items in the Schedule of Values for initial cost of materials, for each subsequent stage of completion, and for total installed value of that part of the Work.
8. Closeout documentation: Provide a separate line item in the Schedule of Values for close out documentation as set forth in the Supplementary Conditions.
9. Each item in the Schedule of Values and Applications for Payment shall be complete. Include total cost and proportionate share of general overhead and profit for each item.
 - a. Temporary facilities and other major cost items that are not direct cost of actual work-in-place may be shown as separate line items in the Schedule of Values or distributed as general overhead expense, at Contractor's option.
10. Schedule Updating: Update and resubmit the Schedule of Values before the next Applications for Payment when Change Orders result in a change in the Contract Sum.

1.5 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications and payments as certified by the **Consultant** and paid for by Owner.
 1. Initial Application for Payment, Application for Payment at time of Substantial Completion, and final Application for Payment involves additional requirements.
- B. Such applications shall not include requests for payment of amounts the Contractor does not intend to pay to a Subcontractor or material supplier because of a dispute or other reason.
- C. Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for material and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such material and equipment or otherwise protect the Owner's interest, and shall include applicable insurance, storage and transportation to the site for such material and equipment stored off the site.

The Contractor warrants that title to all Work covered by an Application and Certificate for payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application and Certificate for payment all work for which Certificates for payment have been previously issued and payment received from the Owner shall, to the best of the Contractor's knowledge, information and belief, be free and clear of claims of liens, claims, security, interests or encumbrances in favor of the Contractor, Subcontractors, material suppliers, or other

persons or entities making a claim by reason of having provided labor, materials and equipment relating to the Work.

- D. Payment Application Times: Each Month, the Town can make a partial payment to the Contractor on the basis of a duly notarized Application and Certification for Payment approved and certified by the Consultant.
- E. Contractor shall provide Owner with lien waivers executed by all subcontractors within five (5) business days of each progress payment. Failure to provide such lien waivers may be grounds for Owner to terminate the Agreement or suspend any future payments until compliance is achieved.
- F. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. The Consultant will return incomplete applications without action.
 - 1. Entries shall match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
 - 2. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
 - 3. The Town shall retain five (5%) percent of each payment to up fifty (50%) percent completion of the Contract.
 - a. The Owner shall not retain more than five percent (5%) of any periodic payment due a prime Contractor.
 - b. When the project is fifty percent (50%) complete, the Owner, with written consent of the surety, **shall not retain any further** retainage from periodic payments due the Contractor if the Contractor continues to perform satisfactorily and any nonconforming work identified in writing prior to that time by the Consultant or Owner has been corrected by the Contractor and accepted by the Consultant and Owner. If the Consultant determines the Contractor's performance is unsatisfactory, the Owner may reinstate retainage for each subsequent periodic payment application as authorized in this subsection up to the maximum amount of five percent (5%). The project shall be deemed fifty percent (50%) complete when the Contractor's gross project invoices, excluding the value of materials stored off-site, equal or exceed fifty percent (50%) of the value of the contract, except the value of materials stored on-site shall not exceed twenty percent (20%) of the Contractor's gross project invoices for the purpose of determining whether the project is fifty percent (50%) complete.
 - c. Within 60 days after the submission of a pay request and one of the following occurs, as specified in the contract documents, the Owner with written consent of the surety shall release to the Contractor all retainage on payments held by the Owner:
 - 1) The Owner receives a certificate of substantial completion from the Consultant in charge of the project; or (ii) the Owner receives beneficial occupancy or use of the project. However, the Owner may re-

tain sufficient funds to secure completion of the project or corrections on any work. If the Owner retains funds, the amount retained shall not exceed two and one-half times the estimated value of the work to be completed or corrected. Any reduction in the amount of the retainage on payments shall be with the consent of the Contractor's surety.

- d. The existence of any third-party claims against the Contractor or any additive change orders to the construction contract shall not be a basis for delaying the release of any retainage on payments.
 - 1) Full payment, less authorized deductions, shall also be made for those trades that have reached one hundred percent (100%) completion of their contract by or before the project is fifty percent (50%) complete if the Contractor has performed satisfactorily. However, payment to the early finishing trades is contingent upon the Owner's receipt of an approval or certification from the Consultant of record or applicable engineer that the work performed by the subcontractor is acceptable and in accordance with the contract documents. At that time, the Owner shall reduce the retainage for such trades to **five-tenths percent (0.5%)** of the contract. Payments under this subsection shall be made no later than 60 days following receipt of the subcontractor's request or immediately upon receipt of the surety's consent, whichever occurs later. Early finishing trades under this subsection shall include structural steel, piling, caisson, and demolition. The early finishing trades for which line-item release of retained funds is required shall not be construed to prevent an Owner or an Owner's representative from identifying any other trades not listed in this subsection that are also allowed line-item release of retained funds. Should the Owner or Owner's representative identify any other trades to be afforded line-item release of retainage, the trade shall be listed in the original bid documents. Each bid document shall list the inspections required by the Owner before accepting the work, and any financial information required by the Owner to release payment to the trades, except the failure of the bid documents to contain this information shall not obligate the Owner to release the retainage if it has not received the required certification from the Consultant of record or applicable engineer.
 - 2) Notwithstanding 3-a & b of this section, following fifty percent (50%) completion of the project, the Owner shall be authorized to withhold additional retainage from a subsequent periodic payment, not to exceed five percent (5%) as set forth in 3-a of this section, in order to allow the Owner to retain two and one-half percent (2.5%) total retainage through the completion of the project. In the event that the Owner elects to withhold additional retainage on any periodic payment subsequent to release of retainage pursuant to 3-d-i of this section, the General Contractor may also withhold from the subcontractors remaining on the project sufficient retainage to offset the additional retainage held by the Owner, notwithstanding the

actual percentage of retainage withheld by the Owner of the project as a whole.

- 3) Neither the Owner's nor Contractor's release of retainage on payments as part of a payment in full on a line-item of work under 3-d-i of this section shall affect any applicable warranties on work done by the Contractor or subcontractor, and the warranties shall not begin to run any earlier than either the Owner's receipt of a certificate of substantial completion from the Consultant in charge of the project or the Owner receives beneficial occupancy.
 - e. Nothing in this section shall prevent the prime Contractor at the time of application and certification to the Owner from withholding application and certification to the Owner for payment to the subcontractor for unsatisfactory job progress; defective construction not remedied; disputed work; third party claims filed or reasonable evidence that claim will be filed; failure of subcontractor to make timely payments for labor, equipment, and materials; damage to prime Contractor or another subcontractor; reasonable evidence that subcontract cannot be completed for the unpaid balance of the subcontract sum; or a reasonable amount for retainage not to exceed the initial percentage retained by the Owner.
 - f. Nothing in this section shall prevent the Owner from withholding payment to the Contractor in addition to the amounts authorized by this section for unsatisfactory job progress, defective construction not remedied, disputed work, or third-party claims filed against the Owner or reasonable evidence that a third-party claim will be filed.
4. Provide a separate line item in the Schedule of values for close out documentation as set forth in the Supplementary Conditions.
- G. Transmittal: Submit five (5) signed and notarized original copies of each Application for Payment to the Consultant.
 1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.
- H. With each Application and Certification for payment, the Contractor must furnish for themselves, as well as for all Subcontractors, certified statements stating the cost of the property purchased from each vendor and the amount of sales and/or use taxes paid. See General Conditions, Sales and Use Tax for additional information.
- I. Application for Payment at Substantial Completion: After issuing the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.
- J. Neither Final payment nor any remaining retained percentage shall become due until the Contractor submits the following to the Consultant for approval:
 1. An affidavit that payrolls, bills for material and other indebtedness connected with the Work has been paid or otherwise satisfied,

2. A certificate evidencing that insurance required by the Contract Document to remain in force after Final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to the Owner,
 3. Consent of surety to Final payment and
 4. If required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of claim of liens, claims security interests or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If the Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such claim of lien. If such claim of lien remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging such claim, including all costs and reasonable attorneys' fees.
 5. Provide MWSBE form VI.
 6. A list of all suppliers and subcontractors that were involved with the project. As part of the list, the Contractor shall include the address, phone number, what they supplied or Work preformed, and a contact name.
 7. "As-Builts" Drawings and all other specified closeout documents.
 8. Maintenance and Operation instructions and guarantees.
- K. Final Payment Application: Submit three originals with the final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
1. Warranties and Test results required by the Contract Documents.
 2. Updated final statement, accounting for final changes to the Contract Sum.
 3. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 4. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 5. AIA Document G707, "Consent of Surety to Final Payment."
 6. Additional Evidence that claims has been settled if required by the Owner. An example of the evidence could be a letter from a subcontractor indicating that he has been paid in full for the work that he has preformed.
 7. Certificates from all local and State Governing Agencies as required by Law.
 8. Final liquidated damages settlement statement.

9. List of Subcontractors and Suppliers that has contributed to the completion of the Work. The list shall include:
 - a. Material they supplied or type of construction they performed.
 - b. Address
 - c. Contact person
 - d. Phone number
10. M/WSBE Form VI
11. Final Sales Tax Form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012900

SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. To enable orderly review during progress of the Work, and to provide for systematic discussion of problems, the Consultant will chair and conduct project meetings and compile an agenda for each meeting throughout the construction period.
- B. This Section includes administrative provisions for coordinating construction operations on the Project including, but not limited to, the following:
 - 1. General project coordination procedures.
 - 2. Conservation.
 - 3. Coordination Drawings.
 - 4. Administrative and supervisory personnel.
 - 5. Project meetings.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
 - 1. Division 1, of the Technical Specifications Section "Construction Progress Documentation" for preparing and submitting the Contractor's Construction Schedule.
 - 2. Division 1, of the Technical Specifications Section "Execution Requirements" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.
 - 3. Division 1, of the Technical Specifications Section "Closeout Procedures" for coordinating Contract closeout.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in various Sections of the Technical Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.

3. Make adequate provisions to accommodate items scheduled for later installation.
- B. If necessary, the Consultant shall prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Contractor's Construction Schedule.
 2. Preparation of the Schedule of Values.
 3. Installation and removal of temporary facilities and controls.
 4. Delivery and processing of submittals.
 5. Progress meetings.
 6. Pre-installation conferences.
 7. Project closeout activities.
- D. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.
1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work.

1.4 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
1. Indicate relationship of components shown on separate Shop Drawings.
 2. Indicate required installation sequences.
- B. Staff Names: Fourteen days prior to the Pre-Construction conference, submit a list of principal staff assignments, including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers, including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.
1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone.

1.5 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting.
 2. Agenda: The Consultant shall prepare the meeting agenda. Distribute the agenda to all invited attendees.
 3. Minutes:
 - a. The Consultant will compile minutes of each project meeting, and will distribute copies to the Contractor and required copies to the Owner.
 - b. Recipients of copies may make and distribute such other copies as they wish.
 4. Attendance:
 - a. To the maximum extent practical, assign the same person or persons to represent the Contractor at the project meetings throughout progress of the Work.
 - b. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspect of the Work is involved.
 5. Minimum agenda:
 - a. Review, revise as necessary, and approve minutes of previous meetings.
 - b. Review progress of the Work since last meeting, including status of submittals for approval.
 - c. Identify problems which impede planned progress.
 - d. Develop corrective measures and procedures to regain planned schedule.
 - e. Complete other current business.

- B. Pre-construction Conference: Schedule a pre-construction conference before starting construction, at a time convenient to Owner and Consultant, but no later than 14 days after execution of the Construction Contract. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
 1. Attendees: Authorized representatives of Owner, Consultant, and their consultants; Contractor and its superintendent; major subcontractors and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing.
 - d. Designation of responsible personnel.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for processing Applications for Payment.
 - g. Distribution of the Contract Documents.

- h. Submittal procedures.
 - i. Preparation of Record Documents.
 - j. Use of the premises.
 - k. Responsibility for temporary facilities and controls.
 - l. Parking availability.
 - m. Office, work, and storage areas.
 - n. Equipment deliveries and priorities.
 - o. Security.
 - p. Working hours.
- C. Pre-installation Conferences: Conduct a pre-installation conference at Project site before each construction activity that requires coordination with other construction.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Consultant of scheduled meeting dates.
 - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. Contract Documents.
 - b. Options.
 - c. Related Change Orders.
 - d. Purchases.
 - e. Deliveries.
 - f. Submittals.
 - g. Review of mockups.
 - h. Possible conflicts.
 - i. Time schedules.
 - j. Weather limitations.
 - k. Manufacturer's written recommendations.
 - l. Temporary facilities and controls.
 - m. Space and access limitations.
 - n. Regulations of authorities having jurisdiction.
 - o. Testing and inspecting requirements.
 - p. Required performance results.
 - q. Protection of construction and personnel.

Record significant conference discussions, agreements, and disagreements.

Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

- D. Progress Meetings: Conduct progress meetings at a minimum of once every two weeks. Coordinate dates of meetings with preparation of payment requests.
- 1. Attendees: Representatives at the meeting shall be the Owner, Consultant, Subcontractors, and other entity concerned with current progress or involved in

planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Access.
 - 6) Work hours.
 - 7) Hazards and risks.
 - 8) Review of Record Drawings
 - 9) Review of construction defects that has been identified by the Consultant
3. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013200 - CONSTRUCTION PROGRESS DOCUMENTATION**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for documenting the progress of construction during performance of the Work, including the following:
 - 1. Preliminary Construction Schedule.
 - 2. Contractor's Construction Schedule.
 - 3. Submittals Schedule.
 - 4. Daily construction reports.
 - 5. CPM Reports
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Payment Procedures" for submitting the Schedule of Values.
 - 2. Division 1, of the Technical Specifications Section "Project Management and Coordination" for submitting and distributing meeting and conference minutes.
 - 3. Division 1, of the Technical Specifications Section "Submittal Procedures" for submitting schedules and reports.
 - 4. Division 1, of the Technical Specifications Section "Quality Requirements" for submitting a schedule of tests and inspections.
 - 5. Division 1, of the Technical Specifications Section "Closeout Procedures" for Project Record Documents at Project closeout.

1.3 SUBMITTALS

- A. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Consultants and owners, and other information specified. The date shall be submitted for any change of construction personnel.
- B. Preliminary Construction Schedule: Submit three printed copies; one a single sheet, of the Preliminary Construction Schedule.

- C. Contractor's Construction Schedule: Submit three printed copies of initial schedule, large enough to show entire schedule for entire construction period.
 - 1. If required, submit an electronic copy of schedule, using software indicated, on a CD and labeled to comply with requirements for submittals. Include type of schedule (Initial or Updated) and date on label.
- D. Daily Construction Reports: Submit two copies at monthly intervals.
- E. Submittals Schedule: Submit three copies of schedule. Arrange the following information in a tabular format:
 - 1. Scheduled date for first submittal.
 - 2. Of the Technical Specifications Section number and title.
 - 3. Submittal category (action or informational).
 - 4. Name of subcontractor.
 - 5. Description of the Work covered.
 - 6. Scheduled date for Consultant's final release or approval.

1.4 COORDINATION

- A. Coordinate preparation and processing of schedules and daily construction reports with performance of construction activities and with scheduling and reporting of separate contractors.
- B. Coordinate Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, payment requests, and other required schedules and reports.
 - 1. Secure time commitments for performing critical elements of the Work from parties involved.
 - 2. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

PART 2 - PRODUCTS

2.1 SUBMITTALS SCHEDULE

- A. Preparation: Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrication, and delivery when establishing dates.
 - 1. Coordinate Submittals Schedule with list of subcontracts, the Schedule of Values, and Contractor's Construction Schedule.
 - 2. Initial Submittal: Submit concurrently with preliminary bar-chart schedule. Include submittals required during the first 60 days of construction. List those required to maintain orderly progress of the Work and those required early because of long lead time for manufacture or fabrication.

- a. At Contractor's option, show submittals on the Preliminary Construction Schedule, instead of tabulating them separately.
3. Final Submittal: Submit concurrently with the first complete submittal of Contractor's Construction Schedule.

2.2 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Time Frame: Extend schedule from date established for the Notice to Proceed, through the date of Substantial Completion and Final Completion.
 1. Contract completion date shall not be changed, unless specifically authorized by Change Order.
- B. Activities: Treat as a separate numbered activity for each principal element of the Work. Comply with the following:
 1. Activity Duration: Define activities by number of days to complete.
 2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
 3. Submittal Review Time: Include review and re-submittal times indicated in Division 1 Section "Submittal Procedures" in schedule. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
 4. Startup and Testing Time: Include number of days for startup and testing.
 5. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Consultant's administrative procedures necessary for certification of Substantial Completion.
- C. Constraints: Include constraints and work restrictions indicated in the Contract Documents and as follows in the schedule, and show how the sequence of the Work is affected.
 1. Phasing: Arrange list of activities on schedule by phase.
 2. Work Restrictions: Show the effect of the following items on the schedule:
 - a. Coordination with existing construction.
 - b. Limitations of continued occupancies.
 - c. Uninterruptible services.
 - d. Partial occupancy before Substantial Completion.
 - e. Use of premises restrictions.
 - f. Environmental control.

3. Work Stages: Indicate important stages of construction for each major portion of the Work, including, but not limited to, the following:
 - a. Submittals.
 - b. Purchases.
 - c. Mockups.
 - d. Fabrication.
 - e. Sample testing.
 - f. Deliveries.
 - g. Installation.
 - h. Tests and inspections.
 - i. Startup and placement into final use and operation.
- D. Milestones: If not included in the Construction Documents, milestones shall be indicated in the Construction Schedule for the Consultant's and Owner's approval and shall be reference points of the construction progress.
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis using fragments to demonstrate the effect of the proposed change on the overall project schedule.

2.3 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Submit preliminary horizontal bar-chart-type construction schedule within seven (7) days of date established for the Notice to Proceed
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for first 60 days of construction. Include skeleton diagram for the remainder of the Work.

2.4 REPORTS

- A. Daily Construction Reports: Prepare a daily construction report recording the following information concerning events at Project site:
 1. List of subcontractors at Project site.
 2. List of separate contractors at Project site.
 3. Approximate count of personnel at Project site.
 4. High and low temperatures and general weather conditions.
 5. Accidents.
 6. Meetings and significant decisions.
 7. Unusual events (refer to special reports).
 8. Stoppages, delays, shortages, and losses.
 9. Services connected and disconnected.
 10. Equipment or system tests and startups.
 11. Visitors to the site
 12. Activities accomplished that day

PART 3 - EXECUTION

3.1 CONTRACTOR'S CONSTRUCTION SCHEDULE

- A. Contractor's Construction Schedule Updating: At monthly intervals, update schedule to reflect actual construction progress and activities. Issue schedule one week before each regularly scheduled progress meeting.
1. Revise schedule immediately after each meeting or other activity where revisions have been recognized or made. Issue updated schedule concurrently with the report of each such meeting.
 2. Include a report with updated schedule that indicates every change, including, but not limited to, changes in logic, durations, actual starts and finishes, and activity durations.
 3. As the Work progresses, indicate Actual Completion percentage for each activity.
- B. Distribution: Distribute copies of approved schedule to Consultant, Owner, separate contractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. Post copies in Project meeting rooms and temporary field offices.
 2. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.

END OF SECTION 013200

SECTION 013300 - SUBMITTAL PROCEDURES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, 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. Division 1, of the Technical Specifications Section "Payment Procedures" for submitting Applications for Payment.
 - 2. Division 1, of the Technical Specifications Section "Project Management and Coordination" for submitting Coordination Drawings.
 - 3. Division 1, of the Technical Specifications Section "Construction Progress Documentation" for submitting schedules and reports, including Contractor's Construction Schedule and the Submittals Schedule.
 - 4. Division 1, of the Technical Specifications Section "Photographic Documentation" for submitting periodic construction photographs.
 - 5. Division 1, of the Technical Specifications Section "Quality Requirements" for test and inspection reports and Delegated-Design Submittals and for erecting mockups.
 - 6. Division 1, of the Technical Specifications Section "Closeout Procedures" for submitting warranties Project Record Documents and operation and maintenance manuals.
 - 7. Division 1, of the Technical Specifications Section "Project Record Documents" for submitting Record Drawings, Record Specifications, and Record Product Data.
 - 8. Division 1, of the Technical Specifications Section "Operation and Maintenance Data" for operation and maintenance manual requirements.

1.3 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Consultant's responsive action.
- B. Informational Submittals: Written information that does not require Consultant's approval. Submittals may be rejected for not complying with requirements.

1.4 SUBMITTAL PROCEDURES

- A. The Contractor shall provide the submittals as required by the Consultant's Submittal Log and the Contract Documents.

- B. General: Electronic copies of CAD Drawings of the Contract Drawings will be provided by Consultant for Contractor's use in preparing submittals.
- C. 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. Consultant reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- D. Submittals Schedule: Comply with requirements in Division 1, of the Technical Specifications Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities. (Submittal Log)
- E. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Consultant's 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. Consultant will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Concurrent Review: Where concurrent review of submittals by Consultant's consultants, Owner, or other parties is required, allow twenty-one (21) days for initial review of each submittal.
 - 3. If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 4. Allow seven (7) days for processing each re-submittal.
 - 5. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.
- F. 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 Consultant.
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Consultant.
 - 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 Technical Specifications Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Other necessary identification.
- G. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.
- H. Additional Copies: Unless additional copies are required for final submittal, and unless Consultant observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.
 - 1. Submit one copy of submittal to concurrent reviewer in addition to specified number of copies to Consultant.
 - 2. Additional copies submitted for maintenance manuals will be marked with action taken and will be returned.
- I. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Consultant will return submittals, without review, received from sources other than Contractor.
 - 1. On an attached separate sheet, prepared on Contractor's letterhead, record relevant information, requests for data, revisions other than those requested by Consultant on previous submittals, and deviations from requirements of the Contract Documents, including minor variations and limitations. Include the same label information as the related submittal.
 - 2. Include Contractor's certification stating that information submitted complies with requirements of the Contract Documents.
 - 3. Transmittal Form: Use on form to be defined by the Consultant.
- J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- K. Use for Construction: Use only final submittals with mark indicating action taken by Consultant in 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 6 copies of each submittal, unless otherwise indicated. Consultant will return 5 copies. Mark up and retain three returned copy as a Project Record Document.
- 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. Standard color charts.
 - e. Manufacturer's catalog cuts.
 - f. Wiring diagrams showing factory-installed wiring.
 - g. Printed performance curves.
 - h. Operational range diagrams.
 - i. Mill reports.
 - j. Standard product operating and maintenance manuals.
 - k. Compliance with recognized trade association standards.
 - l. Compliance with recognized testing agency standards.
 - m. Application of testing agency labels and seals.
 - n. Notation of coordination requirements.
 - o. Manufacturer's location.
- 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. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams and existing conditions.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Design calculations.
 - j. Compliance with specified standards.
 - k. Notation of coordination requirements.
 - l. Notation of dimensions established by field measurement.
 2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 3. 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 30 by 40 inches .
 4. Number of Copies: Submit 6 blue- or black-line prints of each submittal, print will be required for operation and maintenance manuals. Consultant will retain two prints; remainder will be returned.

- D. Coordination Drawings: Comply with requirements in Division 1 Section "Project Management and Coordination."
- E. Samples: Prepare physical units of materials or products, including the following:
 - 1. Comply with requirements in Division 1 Section "Quality Requirements" for mockups. Verify the samples are true presentation of the materials to be used.
 - 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. Preparation: Mount, display, or package Samples in manner specified to facilitate review of qualities indicated. Prepare Samples to match Consultant's sample where so indicated. Attach label on unexposed side that includes the following:
 - a. Generic description of Sample.
 - b. Product name or name of manufacturer.
 - c. Sample source.
 - 4. Additional Information: On an attached separate sheet, prepared on Contractor's letterhead, provide the following:
 - a. Size limitations.
 - b. Compliance with recognized standards.
 - c. Availability.
 - d. Delivery time.
 - 5. Submit Samples for review of kind, color, pattern, 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.
 - a. If variation in color, pattern, texture, or other characteristic is inherent in the product represented by a Sample, submit at least three sets of paired units that show approximate limits of the variations. The consultant will return submittal with the option selected.
 - b. Refer to individual Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
 - 6. 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.
 - a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.
 - b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.
- F. Product Schedule or List: Prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

1. Type of product. Include unique identifier for each product.
 2. Number and name of room or space.
 3. Location within room or space.
- G. Delegated-Design Submittal: Comply with requirements in Division 1 Section "Quality Requirements."
- H. Submittals Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."
- I. Application for Payment: Comply with requirements in Division 1 Section "Payment Procedures."
- J. Schedule of Values: Comply with requirements in Division 1 Section "Payment Procedures."
- K. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design. Include the following information in tabular form:
1. Name, address, and telephone number of entity performing subcontract or supplying products.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
1. Number of Copies: Submit two copies of each submittal, unless otherwise indicated. Consultant 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.
- B. Contractor's Construction Schedule: Comply with requirements in Division 1 Section "Construction Progress Documentation."
- C. Qualification Data: If requested, 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 Consultants and owners, and other information specified.
- D. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.

- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements and, where required, is authorized for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements. Include evidence of manufacturing experience where required.
- H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements.
- I. 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 for the application.
- J. 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.
- K. Coordinate individual Specification Sections with paragraph below by including specific model code organization in that Section. If all are same, insert name below.
Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements in Division 1 Section "Closeout Procedures Operation and Maintenance Data."
- L. 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 or erection.
 - 4. Required installation tolerances.
 - 5. Required adjustments.
 - 6. Recommendations for cleaning and protection.
- M. 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.
- N. Material Safety Data Sheets: Submit two copies for the Consultant and the Owner and keep a copy at the job site. Post warning signs when appropriate.

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 Consultant.
- 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 CONSULTANT'S ACTION

- A. General: Consultant will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Consultant will review each submittal, make marks to indicate corrections or modifications required, and return it. Consultant will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
 1. Reviewed
 2. Corrected
 3. Revised and Resubmitted
 4. Rejected
- C. Informational Submittals: Consultant will review each submittal and will not return it, or will reject and return it if it does not comply with requirements. Consultant will forward each submittal to appropriate party.
- D. Submittals not required by the Contract Documents will not be reviewed and may be discarded unless a justification is also submitted.

END OF SECTION 013300

SECTION 014000 - QUALITY REQUIREMENTS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, 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. Requirements in those Sections may also cover production of standard products.
 - 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 Consultant, Owner, or authorities having jurisdiction are not limited by provisions of this Section
- C. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Construction Progress Documentation" for developing a schedule of required tests and inspections.
 - 2. Division 1, of the Technical Specifications Section "Cutting and Patching" for repair and restoration of construction disturbed by testing and inspecting activities.
 - 3. Divisions 2 through 16, of the Technical Specifications Sections for specific test and inspection requirements.

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 comply with requirements. Services do not include contract enforcement activities performed by Consultant.
- C. Mockups: Full-size, physical example assemblies to illustrate finishes and materials. Mockups are used to verify selections made under Sample submittals, to demonstrate aesthetic effects

and, where indicated, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mockups establish the standard by which the Work will be judged.

- D. 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. Schedule of Tests and Inspections: Prepare in tabular form and include the following:
 1. Technical Specifications 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.

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 experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance.
- E. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar to those indicated for this Project in material, design, and extent for a second option.
- 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.

- G. Mockups: Before installing portions of the Work requiring mockups as indicated in of the Technical Specifications Sections 2-16 of the Construction Documents., build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed Work:
1. Build mockups in location and of size indicated or, if not indicated, as directed by Consultant.
 2. Notify Consultant seven (7) days in advance of dates and times when mockups will be constructed.
 3. Demonstrate the proposed range of aesthetic effects and workmanship.
 4. Obtain Consultant's approval of mockups before starting work, fabrication, or construction.
 5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed Work.
 6. Demolish and remove mockups when directed, unless otherwise indicated.

1.6 QUALITY CONTROL

- A. Owner 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. Costs 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. Contractor Responsibilities: Unless otherwise indicated, provide quality-control services specified and required by authorities having jurisdiction.
1. Where services are indicated as Contractor's responsibility, engage a qualified testing agency to perform these quality-control services.
 - a. Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.
 2. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspecting will be performed.
 3. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
 4. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
 5. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.
- C. Special Tests and Inspections: Owner will engage a testing agency to conduct special tests and inspections required by authorities having jurisdiction as the responsibility of Owner.

1. Testing agency will notify Consultant and Contractor promptly of irregularities and deficiencies observed in the Work during performance of its services.
 2. Testing agency will submit a certified written report of each test, inspection, and similar quality-control service to Consultant with copy to Contractor and to authorities having jurisdiction.
 3. Testing agency will submit a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.
 4. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
 5. Testing agency will retest and re-inspect corrected work.
- D. 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.
- E. Retesting/Re-inspecting: Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services as requested by the Consultant at the Contractor's expense, including retesting and re-inspecting, for construction that revised or replaced Work, at the Contractor's expense, that failed to comply with requirements established by the Contract Documents.
- F. Testing Agency Responsibilities: Cooperate with Consultant and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
1. In the event there is a need for the Contractor to have testing performed.
 2. Notify Consultant and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
 3. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
 4. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
 5. Do not release, revoke, alter, or increase requirements of the Contract Documents or approve or accept any portion of the Work.
 6. Do not perform any duties of Contractor.
- G. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
1. Access to the Work.
 2. Incidental labor and facilities necessary to facilitate tests and inspections.
 3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
 4. Facilities for storage and field-curing of test samples.
 5. Delivery of samples to testing agencies.
 6. Preliminary design mix proposed for use for material mixes that require control by testing agency.

- 7. Security and protection for samples and for testing and inspecting equipment at Project site.
- H. 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.
- I. Schedule of Tests and Inspections: Prepare a schedule of tests, inspections, and similar quality-control services required by the Contract Documents. Submit schedule within 30 days of date established for the Notice to Proceed.
 - 1. Distribution: Distribute schedule to Owner, Consultant, testing agencies, and each party involved in performance of portions of the Work where tests and inspections are required.

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.
 - 2. Comply with the Contract Document requirements for Division 1, of the Technical Specifications Section "Cutting and 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 014000

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section

1.2 SUMMARY

- A. This Section includes requirements for temporary facilities and controls, including temporary utilities, support facilities, and security and protection facilities
- B. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- C. Temporary utilities include, but are not limited to, the following:
 - 1. Sewers and drainage.
 - 2. Water service and distribution.
 - 3. Sanitary facilities, including toilets, wash facilities, and drinking-water facilities.
 - 4. Heating and cooling facilities.
 - 5. Ventilation.
 - 6. Electric power service.
 - 7. Lighting.
 - 8. Telephone service.
- D. Support facilities include, but are not limited to, the following:
 - 1. Temporary roads and paving.
 - 2. Dewatering facilities and drains.
 - 3. Project identification and temporary signs.
 - 4. Waste disposal facilities.
 - 5. Field offices as required.
 - 6. Storage and fabrication sheds.
 - 7. Lifts and hoists.
 - 8. Temporary elevator usage.
 - 9. Temporary stairs.
 - 10. Construction aids and miscellaneous services and facilities.
- E. Security and protection facilities include, but are not limited to, the following:
 - 1. Environmental protection.
 - 2. Stormwater control.
 - 3. Tree and plant protection.
 - 4. Pest control.

5. Site enclosure fence.
6. Security enclosure and lockup.
7. Barricades, warning signs, and lights.
8. Temporary enclosures.
9. Temporary partitions.
10. Fire protection.

F. Related Sections include the following:

1. Division 1, of the Technical Specifications Section "Submittal Procedures" for procedures for submitting copies of implementation and termination schedule and utility reports.
2. Division 1, of the Technical Specifications Section "Execution Requirements" for progress cleaning requirements.

1.3 DEFINITIONS

- A. Permanent Enclosure: As determined by Consultant, permanent or temporary roofing is complete, insulated, and weather tight; exterior walls are insulated and weather tight; and all openings are closed with permanent construction or substantial temporary enclosures.

1.4 USE CHARGES

- A. General: Cost or use charges for temporary facilities are not chargeable to Owner or Consultant 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 forces.
 2. Consultant.
 3. Testing agencies.
 4. Personnel of authorities having jurisdiction.
 5. Occupants of Project
- B. Sewer Service: Pay sewer service use charges for sewer usage, by all parties engaged in construction, at Project site.
- C. Water Service: Pay water service use charges, whether metered or otherwise, for water used by all entities engaged in construction activities at Project site.
- D. Electric Power Service: Pay electric power service use charges, whether metered or otherwise, for electricity used by all entities engaged in construction activities at Project site.
- E. Communications: Pay all charge associated with communications.
- F. Streets, Sidewalks, and Temporary Easements: Pay all charges associated with the Work where charges will occur.

1.5 SUBMITTALS

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

1.6 QUALITY ASSURANCE

- A. Standards: Comply with ANSI A10.6, NECA's "Temporary Electrical Facilities," and NFPA 241.
 - 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.

1.7 PROJECT CONDITIONS

- A. Temporary Utilities: At earliest feasible time, when acceptable to Owner, change over from use of temporary service to use of permanent service.
 - 1. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.
- B. 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 - PRODUCTS**2.1 MATERIALS**

- A. General: Provide new materials. Undamaged, previously used materials in serviceable condition may be used if indicated on the plans and/or specifications. Provide materials suitable for use intended.
- B. Chain-Link Fencing: Minimum 2-inch , 0.148-inch- thick, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top rails.
- C. Portable Chain-Link Fencing: Minimum 2-inch 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line

posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts.

- D. Water: Potable.

2.2 EQUIPMENT

- A. General: Provide equipment suitable for use intended.
- B. Field Offices: Prefabricated or Mobile units with lockable entrances, operable windows, and serviceable finishes; heated and air conditioned; on foundations adequate for normal loading.
- C. Fire Extinguishers: Hand carried, portable, UL rated. Provide class and extinguishing agent as indicated or a combination of extinguishers of NFPA-recommended classes for exposures.
 - 1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure and the requirements of the local Governing agency.
- D. Self-Contained Toilet Units: Single-occupant units of chemical or aerated recirculation or combustion type; vented; fully enclosed with a glass-fiber-reinforced polyester shell or similar nonabsorbent material.
- E. Drinking-Water Fixtures: Containerized, tap-dispenser, bottled-water drinking-water units, including paper cup supply.
- F. Heating Equipment: Unless Owner authorizes use of permanent heating system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use for type of fuel being consumed.
- G. Electrical Outlets: Properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-V plugs into higher-voltage outlets; equipped with ground-fault circuit interrupters, reset button, and pilot light.
- H. Power Distribution System Circuits: Where permitted and overhead and exposed for surveillance, wiring circuits, not exceeding 125-V ac, 20-A rating, and lighting circuits may be nonmetallic sheathed cable.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

- B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Engage appropriate local utility company to install temporary service or connect to existing service. Where utility company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with utility company recommendations.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
 - 2. Provide adequate capacity at each stage of construction. Before temporary utility is available, provide trucked-in services.
 - 3. If existing easements can not be used, the Contractor shall consult and coordinate with the Consultant and Owner to secure as necessary to obtain the temporary easement. Add provisions for work not in the Contract but served by temporary facilities if required.
- B. Sewers and Drainage: If sewers are available, provide temporary connections to remove effluent that can be discharged lawfully. If neither sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off-site in a lawful manner.
 - 1. Filter out excessive soil, construction debris, chemicals, oils, and similar contaminants that might clog sewers or pollute waterways before discharge.
 - 2. Connect temporary sewers to municipal system or private system indicated as directed by sewer department officials.
 - 3. Maintain temporary sewers and drainage facilities in a clean, sanitary condition. After heavy use, restore normal conditions promptly.
 - 4. Provide temporary filter beds, settlement tanks, separators, and similar devices to purify effluent to levels acceptable to authorities having jurisdiction.
- C. Water Service: Install water service and distribution piping in sizes and pressures adequate for construction until permanent water service is in use. Sterilize temporary water piping before use.
- D. Sanitary Facilities: Provide temporary toilets, wash facilities, and drinking-water fixtures. Comply with regulations and health codes for type, number, location, operation, and maintenance of fixtures and facilities.
 - 1. Disposable Supplies: Provide toilet tissue, paper towels, paper cups, and similar disposable materials for each facility. Maintain adequate supply. Provide covered waste containers for disposal of used material.
 - 2. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Subparagraph below may be excessive for small- and medium-size projects.

3. Wash Facilities: Install wash facilities supplied with potable water at convenient locations as required. Dispose of drainage properly. Supply cleaning compounds appropriate for each type of material handled.
 4. Drinking-Water Facilities: Provide drinking-water.
- E. Heating and Cooling: Provide temporary heating and cooling as required by construction activities.
- F. Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnecting means, automatic ground-fault interrupters, and main distribution switchgear as required.
- G. Electric Distribution: Provide receptacle outlets adequate for connection of power tools and equipment.
1. Provide waterproof connectors to connect separate lengths of electrical power cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.
- H. Telephone Service: Provide temporary telephone service throughout construction period for common-use facilities used by all personnel engaged in construction activities.
1. At each telephone, post a list of important telephone numbers in Spanish and English.
 - a. Police and fire departments.
 - b. Ambulance service.
 - c. Contractor's home office.
 - d. Consultant's office.
 - e. Engineers' offices.
 - f. Owner Representative's office.
 - g. Principal subcontractors' field and home offices.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: If required, Comply with the following:
1. Locate field offices, storage sheds, sanitary facilities, and other temporary construction and support facilities for easy access.
 2. Maintain support facilities until approved by the Consultant to be removed.
- B. Temporary Roads and Paved Areas: If applicable/as needed, construct and maintain temporary roads and paved areas to avoid damage to the site. Locate temporary roads and paved areas in same location as permanent roads and paved areas. If applicable, extend temporary roads and paved areas, within construction limits indicated, as necessary for construction operations.

- C. Traffic Controls: Provide temporary traffic controls at junction of temporary roads with public roads. Include warning signs for public traffic and "STOP" signs for entrance onto public roads. Comply with requirements of authorities having jurisdiction.
- D. 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. The General Contractor shall provide one construction sign. The construction sign shall be installed within the first two weeks of construction and shall be removed when the project is substantially complete. The sign shall be as follows:
 - a. Project Name
 - b. Town of Huntersville Parks and Recreation Department
 - c. Name of Contractor
 - d. *Plans and Specifications prepared by:* The Dodd Studio, LLC Landscape Architects
 - e. *In case of Emergency, call:* John Doe at 888-888-8888
 - f. Letter sizes to be as shown on the detail. All lettering shall be Optima Semi-Bold type-face.
 - g. Location shall be approved by Consultant.
 - h. Sign shall be constructed of marine grade ¾ inch plywood, size per detail, 4x4 post(s). The sign shall be single-sided with the plywood on one side.
 - i. The colors:
 - Top Panel/Border-Pratt & Lambert Yale Blue
 - Middle Panel- Pratt & Lambert Silver Mink #2291
 - Bottom Panel- Pratt & Lambert Old Mystic #2286
 - All other letters- 3M White #7216
- E. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Containerize and clearly label hazardous, dangerous, or unsanitary waste materials separately from other waste. Comply with "Construction and Demolition Waste Management Recycling.
- F. Common-Use Field Office: If required, provide an insulated, weather tight, air-conditioned and heated field office for use as a common facility by all personnel engaged in construction activities; of sufficient size to accommodate required office personnel and meetings.
- G. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment involved.

3.4 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.
- B. Storm water Control: Comply as indicated on the erosion control plan/measures before any earth disturbing activities start.

- C. Tree and Plant Protection: Comply with the plans and specifications for protection.
- D. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- E. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erecting structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and public of possible hazard. Where appropriate and needed, provide lighting, including flashing red or amber lights.
- F. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weather tight enclosure for building exterior.
- G. Temporary Partitions: Erect and maintain dustproof partitions and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
- H. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage caused by freezing temperatures and similar elements.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
 - 2. Prevent water-filled piping from freezing. Maintain markers for underground lines. Protect from damage during excavation operations.
- B. Temporary Facility Changeover: Except for using permanent fire protection as soon as available. Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- C. 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.
 - 1. Materials and facilities that constitute temporary facilities are the property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements in Division 1, of the Technical Specifications Section "Closeout Procedures."

END OF SECTION 015000

SECTION 015050 CONSTRUCTION WASTE MANAGEMENT**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. The Owner has established that this Project shall include proactive measures for waste management participation by all parties to the contract.
 - 1. The purpose of this program is to ensure that during the course of the Project all diligent means are employed to pursue practical and economically feasible waste management and recycling options.
 - 2. Upon award, each subcontractor shall be required to furnish documentation from suppliers or manufacturers regarding waste management and recycling options for those products and procedures furnished.
 - 3. Waste disposal to landfills shall be minimized.
- B. Definitions:
 - 1. Waste: Any material that has reached the end of its intended use. Waste includes salvageable, returnable, recyclable and reusable material.
 - 2. Construction waste: Solid wastes including, but not limited to, building materials, packaging materials, debris and trash resulting from construction operations.
 - 3. Salvage: To remove a waste material from the Project site to another site for resale or reuse by others.
 - 4. Hazardous waste: Any material or byproduct of construction that is regulated by the Environmental Protection Agency and that may not be disposed in any landfill or other waste end-source without adherence to applicable laws.
 - 5. Trash: Any product or material unable to be returned, reused, recycled or salvaged.
 - 6. Landfill: Any public or private business involved in the practice of trash disposal.
 - 7. Waste Management Plan: A Project-related plan for the collection, transportation, and disposal of the waste generated at the construction site.

1.2 SUBMITTALS:

- A. Project Information:
 - 1. Contractor's Construction Waste Management Plan.

1.3 CONSTRUCTION WASTE MANAGEMENT PLAN

- A. Waste Management Plan shall include the following:
 - 1. Solid Waste Disposal and Diversion document.
 - a. Identification of materials recycled.
 - b. Identification of materials landfill.
 - c. Identification of hazardous wastes and disposal.

2. Locations of sorting and waste storage facilities on Site Plan of project.
 3. Final documentation of subcontractor/supplier waste management/recycling data.
 4. Final documentation of hazardous waste disposal plan.
- B. Construction Waste Management Plan Implementation:
1. The Contractor shall designate an on-site party (or parties) responsible for instructing workers and overseeing and documenting the Waste Management Plan.
 2. The "Summary of Construction Waste/Recycling" shall be completed each month and submitted as part of Application for Payment.
 - a. All materials identified in the Summary shall be reported by weight.
 - b. Where weight is not applicable, Contractor shall report materials by units applicable to material recipient.
 - c. Contractor shall procure receipts or other validation of waste management procedures and include them as part of the submittal.
 3. The Contractor shall distribute copies of the "Summary of Construction Waste/Recycling" to the Consultant, Owner and each subcontractor involved in the plan.
 4. The Contractor shall provide on-site instruction of appropriate separation, handling, and recycling, salvage, reuse and return methods to be used by all parties at appropriate stages of the Work.
 5. Separation facilities:
 - a. Contractor shall define specific areas to facilitate separation of materials for recycling, salvage, re-use or return.
 - b. Recycle and waste bin areas are to be maintained in an orderly manner and clearly marked to avoid contamination of materials.
 - c. Do not mix recyclable materials.
 - d. Store hazardous wastes in secure areas.
 6. Hazardous wastes:
 - a. Hazardous wastes shall be separated, stored and disposed of in accordance with local and EPA regulations and additional criteria listed below:
 - 1) Building products manufactured with PVC or containing chlorinated compounds shall not be incinerated.
 - 2) Disposal of fluorescent tubes to open containers is not permitted.
 - 3) Unused fertilizers shall not be co-mingled with construction waste.
- C. Program profits:
1. All profits from recycling of construction waste shall be granted to the Contractor.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION - NOT USED

END OF SECTION 015050

SECTION 016000 - PRODUCT REQUIREMENTS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Alternates" for products selected under an alternate.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
 - 1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation, shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.
 - 2. New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

1.4 SUBMITTALS

- A. Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.
 - 1. Coordinate product list with Contractor's Construction Schedule and the Submittals Schedule.
 - 2. Form: Tabulate information for each product under the following column headings:
 - a. Specification Section number and title.
 - b. Generic name used in the Contract Documents.
 - c. Proprietary name, model number, and similar designations.

- d. Manufacturer's name and address.
 - e. Supplier's name and address.
 - f. Installer's name and address.
 - g. Projected delivery date or time span of delivery period.
 - h. Identification of items that require early submittal approval for scheduled delivery date.
- 3. Initial Submittal: Within 30 days after date of commencement of the work, submit 3 copies of initial product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - 4. Completed List: Within 60 days after date of commencement of the Work, submit 3 copies of completed product list. Include a written explanation for omissions of data and for variations from Contract requirements.
 - 5. Consultant's Action: Consultant will respond in writing to Contractor within 15 days of receipt of completed product list. Consultant's response will include a list of unacceptable product selections and a brief explanation of reasons for this action. Consultant's response, or lack of response, does not constitute a waiver of requirement that products comply with the Contract Documents.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
 - 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
 - 5. Store products to allow for inspection and measurement of quantity or counting of units.
 - 6. Store materials in a manner that will not endanger Project structure.
 - 7. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
 - 8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 - 9. Protect stored products from damage.
- B. Storage: Provide a secure location and enclosure at Project site for storage of materials and equipment by Owner's construction forces. Coordinate location with Owner.

PART 2 - PRODUCTS – (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 016000

SECTION 017000 - EXECUTION REQUIREMENTS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, 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:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. Progress cleaning.
 - 4. Starting and adjusting.
 - 5. Protection of installed construction.
 - 6. Correction of the Work.
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Project Management and Coordination" for procedures for coordinating field engineering with other construction activities.
 - 2. Division 1, of the Technical Specifications Section "Submittal Procedures" for submitting surveys.
 - 3. Division 1, of the Technical Specifications Section "Cutting and Patching" for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.
 - 4. Division 1, of the Technical Specifications Section "Closeout Procedures" for submitting final property survey with Project Record Documents, recording of Owner-accepted deviations from indicated lines and levels, and final cleaning.
 - 5. Division 1, of the Technical Specifications Section "Construction Waste Management" method of disposal of construction waste.

1.3 SUBMITTALS

- A. Qualification Data: For land surveyor to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Consultants and owners, and other information specified.
- B. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

- C. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- D. Certified Surveys: Submit two copies signed by land surveyor or professional engineer as required.

1.4 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A licensed 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 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 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 connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, 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.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility, Owner, and Consultant that is 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. Notify Consultant, Owner, adjacent property owners not less than **two** days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Consultant's and 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.
- E. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Consultant. Include a detailed description of problem encountered, together with recommendations for modifications of the Contract Documents.

3.3 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 Consultant promptly.
- 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 story 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 Consultant 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.
 7. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
 8. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
 9. 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 Consultant.

3.4 FIELD ENGINEERING

- A. 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 Consultant. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to Consultant before proceeding.
 - 2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.
- B. Benchmarks: Establish and maintain a minimum of two 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.
- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and site work.

3.5 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.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations. Dispose of material accordance to Division 1, Section "Construction Waste Management".
- 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 surfaces and similar features before applying paint or other finishing materials.
- 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 until 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.

3.6 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 a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 1 Section "Quality Requirements."

3.7 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.

3.8 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 1 Section "Cutting and Patching."
 - 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.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 017000

SECTION 017310 - CUTTING AND PATCHING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section includes procedural requirements for cutting and patching.
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Selective Demolition" for demolition of selected portions of the building for alterations.
 - 2. Divisions 2 through 16, of the Technical Specifications Sections for specific requirements and limitations applicable to cutting and patching individual parts of the Work.
 - a. Requirements in this Section apply to mechanical and electrical installations. Refer to Divisions 15 and 16 Sections for other requirements and limitations applicable to cutting and patching mechanical and electrical installations.

1.3 DEFINITIONS

- A. Cutting: Removal of existing construction necessary to permit installation or performance of other Work.
- B. Patching: Fitting and repair work required to restore surfaces to original conditions after installation of other Work.

1.4 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
- C. Miscellaneous Elements: Do not cut and patch the following elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or those results in increased maintenance or decreased operational life or safety.
 - 1. Water, moisture, or vapor barriers.
 - 2. Membranes and flashings.

3. Exterior curtain-wall construction.
 4. Equipment supports.
 5. Piping, ductwork, vessels, and equipment.
 6. Noise- and vibration-control elements and systems.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.
1. If possible, retain original Installer or fabricator to cut and patch exposed Work listed below. If it is impossible to engage original Installer or fabricator, engage another recognized, experienced, and specified firm.
 - a. Processed concrete finishes.
 - b. Stonework and stone masonry.
 - c. Ornamental metal.
 - d. Roofing.
 - e. HVAC enclosures, cabinets, or covers.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of the Technical Specifications.
- B. Existing Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.
 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of existing materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.

- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.
 - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 - 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of the Technical Specifications.
 - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 - 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and

wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

- a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
4. Ceilings: Patch, repair, or re-hang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.

END OF SECTION 017310

SECTION 017700 - CLOSEOUT PROCEDURES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, 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 As-Builts 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, of the Technical Specifications Section "Payment Procedures" for requirements for Applications for Payment for Substantial and Final Completion.
 - 2. Division 1, of the Technical Specifications Section "Construction Progress Documentation" for submitting Final Completion construction photographs and negatives.
 - 3. Division 1, of the Technical Specifications Section "Construction Waste Management" method of disposal of construction waste.
 - 4. Division 1, of the Technical Specifications Section "Execution Requirements" for progress cleaning of Project site.
 - 5. Division 1, of the Technical Specifications Section "Project Record Documents".
 - 6. Division 1, of the Technical Specifications Section "Operation and Maintenance Data".
 - 7. Divisions 2 through 16, of the Technical Specifications Sections for specific closeout and special cleaning requirements for products of those Sections.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: The Contractor shall, 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 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 Project Record Documents, "As-Built" drawings operation and maintenance manuals, Final Completion construction photographs and photographic negatives if required, 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. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. Submit test/adjust/balance records.
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Advise Owner of changeover in heat and other utilities.
 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 13. Complete final cleaning requirements, including touchup painting.
 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Consultant will either proceed with inspection or notify Contractor of unfulfilled requirements. Consultant 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 Consultant, that must be completed or corrected before certificate will be issued. The Consultant's Substantial Completion list is composed by verification of the punch list submitted by the Contractor and any additional defects in the work observed by the Consultant.
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 a final Application for Payment according to Division 1, of the Technical Specifications Section "Payment Procedures."
 2. Submit certified copy of Consultant's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Consultant. The certified

- copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report and warranty.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training videotapes if required.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Consultant will either proceed with inspection or notify Contractor of unfulfilled requirements. Consultant will prepare a final Certificate for Payment after inspection or will notify Contractor of construction 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. The Contractor shall take immediate steps to correct the stated deficiencies, and send a written notice to the Consultant, certifying the Project is complete, at which time the Consultant will re-inspect the Work. This review and additional reviews by the Consultant where the Work is not considered Substantial Completion or Final Completion will be considered an additional service from the Consultant. The Contractor will be charged for these additional services incurred by such failure including travel time, observation time, and administrative time at the Consultant's hourly rate, as well as all expenses associated with the distribution of a written notice stating the reasons for failure to reach final completion.
 3. In the event the Contractor is granted Substantial Completion by the Consultant and the Contractor fails to complete and/or correct all of the items listed in the Substantial Completion within **30** calendar days of the date of Substantial Completion, the liquidated damages shall start to accrue until all of the items on the Substantial Completion list are completed and/or corrected and have been approved by the Consultant.
 4. If the Consultant is required to make more than two inspections for the project to achieve Substantial Completion, the Contractor shall pay for the Consultant's time and expense.

1.5 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit 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. Organize list of spaces in sequential order, use the room number as indicated on the drawings and on the exterior areas include a location diagram indicating the defects.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
 3. Include the following information at the top of each page:

- a. Project name.
- b. Date.
- c. Name of Consultant.
- d. Name of Contractor.
- e. Page number.

1.6 PROJECT RECORD DOCUMENTS

- A. The Contractor shall provide Project Record Documents, O&M, "As-Built" Drawings, and Warranties as indicated in Division 1, of the Technical Specifications Section Project Record Documents. Use Division 1, of the Technical Specifications Section "Project Record Documents".

1.7 OPERATION AND MAINTENANCE MANUALS

- A. See Section "Operation and Maintenance Manuals" for additional Information.

1.8 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Consultant for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Partial Occupancy: Submit properly executed warranties within 15 days of completion of designated portions of the Work that are completed and occupied or used by Owner during construction period.
- C. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- D. Provide 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 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. 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.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior 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.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - j. Remove labels that are not permanent.
 - k. 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.
 - l. Wipe surfaces of mechanical and electrical equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - m. Replace parts subject to unusual operating conditions.
 - n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - p. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - q. Leave Project clean and ready for occupancy.

- C. 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.

END OF SECTION 017700

SECTION 017810 - PROJECT RECORD DOCUMENTS**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for Project Record Documents, including the following:
 - 1. As-Built Drawings in Auto CAD.
 - 2. Record Specifications.
 - 3. Record Product Data.
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications, Section "Closeout Procedures" for general closeout procedures.
 - 2. Division 1, of the Technical Specifications, Section "Operation and Maintenance Data" for operation and maintenance manual requirements.
 - 3. Divisions 2 through 16, of the Technical Specifications, Sections for specific requirements for Project Record Documents of products in those Sections.

1.3 SUBMITTALS

- A. As-Built Drawings: Comply with the following:
 - 1. Number of Copies: Submit two sets of marked-up As-Built Drawings to the Consultant for the Consultant to prepare the Record Drawings.
- B. Record Specifications: Submit two copies of Project's marked up Specifications, including addenda and contract modifications.
- C. Record Product Data: Submit two copies of each Product Data submittal.
 - 1. Where Record Product Data is required as part of operation and maintenance manuals, submit marked-up Product Data as an insert in the manual instead of submittal as Record Product Data.

PART 2 - PRODUCTS**2.1 AS-BUILT DRAWINGS**

- A. As-Built Drawings: Maintain one set of black-line white prints of the Contract Drawings and Shop Drawings.
1. Preparation: Mark As-Built Drawings 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 As-Built Drawings.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record 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.
 2. Content: Types of items requiring marking include, but are not limited to, the following:
 - a. Dimensional changes to Drawings.
 - b. Revisions to details shown on Drawings.
 - c. Depths of foundations below first floor.
 - d. Locations and depths of underground utilities.
 - e. Revisions to routing of piping and conduits.
 - f. Revisions to electrical circuitry.
 - g. Actual equipment locations.
 - h. Duct size and routing.
 - i. Locations of concealed internal utilities.
 - j. Changes made by Change Order or Construction Change Directive.
 - k. Changes made following Consultant's written orders.
 - l. Details not on the original Contract Drawings.
 - m. Field records for variable and concealed conditions.
 - n. Record information on the Work that is shown only schematically.
 - o. Clarification Drawings.
 3. Mark the Contract Drawings or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Contract Drawings.
 4. 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.
 5. Mark important additional information that was either shown schematically or omitted from original Drawings.
 6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
 7. Identify and date each As-Built Drawing; include the designation "PROJECT AS-BUILTS DRAWING" in a prominent location. Organize into manageable sets; bind each set with durable paper cover sheets. Include identification on cover sheets.
- B. Newly Prepared As-Built Drawings: Prepare new Drawings instead of preparing As-Built Drawings where Consultant determines that neither the original Contract Drawings nor Shop Drawings are suitable to show actual installation.

1. New Drawings may be required when a Change Order is issued as a result of accepting a substitution or other modification.
2. Consult with Consultant for proper scale and scope of detailing and notations required to record the actual physical installation and its relation to other construction. Integrate newly prepared As-Built Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications 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. Record the name of the manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. For each principal product, indicate whether Record Product Data has been submitted in operation and maintenance manuals instead of submitted as Record Product Data.
 5. Note related Change Orders, As-Built Drawings, and Product Data where applicable.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
 1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, As-Built Drawings, and Product Data where applicable.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other of the Technical Specifications 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.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur; do not wait until the end of Project.

- B. Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the Contract Documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for Consultant's reference during normal working hours.

END OF SECTION 017810

SECTION 017820 - OPERATION AND MAINTENANCE DATA**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
 - 1. Operation and maintenance documentation directory.
 - 2. Operation and Maintenance manuals for the care and maintenance systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Submittal Procedures" for submitting copies of submittals for operation and maintenance manuals.
 - 2. Division 1, of the Technical Specifications Section "Construction Waste Management" method of disposal of construction waste.
 - 3. Division 1, of the Technical Specifications Section "Closeout Procedures" for submitting operation and maintenance manuals.
 - 4. Divisions 2 through 50, of the Technical Specifications Sections for specific operation and maintenance manual requirements for products in those Sections.

1.3 DEFINITIONS

- A. System: An organized collection of parts, equipment, or subsystems united by regular interaction.
- B. Subsystem: A portion of a system with characteristics similar to a system.

1.4 SUBMITTALS

- A. Final Submittal: Submit four copies of each manual in final form at least 15 days before final inspection. Consultant will return copy with comments within 15 days after final inspection.
 - 1. Correct or modify each manual to comply with Consultant's comments. Submit 3 copies of each corrected manual within 15 days of receipt of Consultant's comments.

1.5 COORDINATION

- A. Where operation and maintenance documentation include information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

- A. Operations and Maintenance Manuals shall be organized in CSI format.
- B. Organization: Include a section in the directory for each of the following:
 - 1. List of documents.
 - 2. List of systems.
 - 3. List of equipment.
 - 4. Table of contents.
- C. List of Systems and Subsystems: List systems alphabetically.
- D. List of Equipment: List equipment for each system, organized alphabetically by system.
- E. Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.
- F. Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with the same designation used in the Contract Documents.

2.2 MANUALS, GENERAL

- A. Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:
 - 1. Title page.
 - 2. Table of contents.
 - 3. Manual contents.
- B. Title Page: Enclose title page to Include the following information:
 - 1. Name and address of Project.
 - 2. Name and address of Owner.
 - 3. Date of submittal.
 - 4. Name, address, and telephone number of Contractor and Subcontractors.
 - 5. Name and address of Consultant.
 - 6. Cross-reference to related systems in other operation and maintenance manuals.

- C. Table of Contents: List each product included in manual, identified by product name, model number, and serial number indexed to the content of the volume, and cross-referenced to of the Technical Specifications Section number in Project Manual.
 - 1. If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.
- D. Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

Provide both hard copy and digital PDF copy.

- 1. Binders: Heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
 - a. If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary, to provide essential information for proper operation or maintenance of equipment or system.
 - b. Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL," Project title or name, and indicate volume number for multiple-volume sets.
- 2. Dividers: Heavy-paper dividers with reinforced tabs for each section. Mark each tab to indicate contents.
- 3. If provided with the equipment, provide a Protective Plastic Sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.
- 4. Supplementary Text: Prepared on 8-1/2-by-11-inch, white bond paper.
- 5. Drawings: Attach reinforced, punched on drawings and bind in manual with associated text.
 - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
 - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.3 OPERATION AND MAINTENANCE MANUALS

- A. Content: In addition to requirements in this section, include operation and maintenance data required in individual specification sections include including source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list & source information, maintenance service contracts, warranty, and bond information and the following information:

1. System, subsystem, and equipment descriptions.
 2. Performance and design criteria if Contractor is delegated design responsibility.
 3. Operating standards.
 4. Operating procedures.
 5. Operating logs.
 6. Wiring diagrams.
 7. Control diagrams.
 8. Piped system diagrams.
 9. Precautions against improper use.
 10. Re-ordering information for parts.
 11. Standard printed maintenance instructions and bulletins.
 12. Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.
 13. Identification and nomenclature of parts and components.
 14. List of items recommended to be stocked as spare parts.
- B. Descriptions: Include the following:
1. Product name and model number.
 2. Manufacturer's name.
 3. Equipment identification with serial number of each component.
 4. Equipment function.
 5. Operating characteristics.
 6. Limiting conditions.
 7. Performance curves.
 8. Engineering data and tests.
 9. Complete nomenclature and number of replacement parts.
- C. Operating Procedures: Include the following, as applicable:
1. Startup procedures.
 2. Routine and normal operating instructions.
 3. Regulation and control procedures.
 4. Instructions on stopping.
 5. Normal shutdown instructions.
 6. Seasonal and weekend operating instructions.
 7. Required sequences for electric or electronic systems.
 8. Special operating instructions and procedures.
- D. Warranties and Bonds: Include copies of warranties and bonds for each piece of equipment and lists of circumstances and conditions that would affect validity of warranties or bonds. Also, include the Contractor's Warranty for the project.
1. Include procedures required for notifications for warranty claims.

PART 3 - EXECUTION**3.1 MANUAL PREPARATION**

- A. Product Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.
- B. Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.
- C. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.
 - 1. Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

END OF SECTION 017820

SECTION 018200 - DEMONSTRATION AND TRAINING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and all Divisions of the Technical Specifications, apply to this Section.

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:
 - 1. Demonstration of operation of systems, subsystems, and equipment.
 - 2. Training in operation and maintenance of systems, subsystems, and equipment.
- B. Related Sections include the following:
 - 1. Division 1, of the Technical Specifications Section "Project Management and Coordination" for requirements for pre-instruction conferences.
 - 2. Division 1, of the Technical Specifications Section "Photographic Documentation" for preparing and submitting demonstration and training videotapes.

1.3 SUBMITTALS

- A. Instruction Program: Submit two copies of outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.
- B. Instructor Qualifications: A factory-authorized service representative, complying with requirements in Division 1 Section "Quality Requirements," experienced in operation and maintenance procedures and training.

1.5 COORDINATION

- A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations.
- B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Consultant.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment.
 - 1. Emergencies: Include the following, as applicable:
 - a. Instructions on meaning of warnings, trouble indications, and error messages.
 - b. Instructions on stopping.
 - c. Shutdown instructions for each type of emergency.
 - d. Operating instructions for conditions outside of normal operating limits.
 - e. Sequences for electric or electronic systems.
 - f. Special operating instructions and procedures.
 - 2. Operations: Include the following, as applicable:
 - a. Startup procedures.
 - b. Equipment or system break-in procedures.
 - c. Routine and normal operating instructions.
 - d. Regulation and control procedures.
 - e. Control sequences.
 - f. Safety procedures.
 - g. Instructions on stopping.
 - h. Normal shutdown instructions.
 - i. Operating procedures for emergencies.
 - j. Operating procedures for system, subsystem, or equipment failure.
 - k. Seasonal and weekend operating instructions.
 - l. Required sequences for electric or electronic systems.
 - m. Special operating instructions and procedures.
 - 3. Adjustments: Include the following:
 - a. Alignments.
 - b. Checking adjustments.
 - c. Noise and vibration adjustments.

- d. Economy and efficiency adjustments.
- 4. Troubleshooting: Include the following:
 - a. Diagnostic instructions.
 - b. Test and inspection procedures.
- 5. Maintenance: Include the following:
 - a. Inspection procedures.
 - b. Types of cleaning agents to be used and methods of cleaning.
 - c. List of cleaning agents and methods of cleaning detrimental to product.
 - d. Procedures for routine cleaning
 - e. Procedures for preventive maintenance.
 - f. Procedures for routine maintenance.
 - g. Instruction on use of special tools.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.
- B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

- A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Owner will furnish Contractor with names and positions of participants.
- B. Scheduling: Provide instruction at mutually agreed on times.
 - 1. Schedule training with Owner, through Consultant, with at least seven days' advance notice.
- C. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

END OF SECTION 018200

SECTION 023200 – GEOTECHNICAL INVESTIGATIONS

PART 1 - GENERAL

1.1 SUMMARY

- A. This bid documents includes the following geotechnical report prepared by as an appendix to the Project Manual:
 - 1. Subsurface Exploration report prepared by ECS Southeast, LLP

Report of Subsurface Exploration

Ranson Rosedale Park

Huntersville, Mecklenburg County, North Carolina

ECS Project Number 08:14150-A

August 7, 2020

1.2 REPORT AND ANALYSIS

- A. All reports are made part of this section enabling the Contractor and all parties in the construction to have the same information available to the Owner and Consultants regarding the subsurface conditions.
- B. This information shall not be a substitute for the Contractor's personal investigation or judgment of actual conditions found on site. If the Contractor requires additional subsurface information, it may be obtained at the Contractor's expense with Owner's approval.
- C. Variations
 - 1. The nature of variations may not become evident until construction begins. Should subsurface conditions differ significantly from the information in the reports included at the end of this section, the Contractor shall immediately notify the Engineer verbally, followed by a written notification.
 - 2. No charge in the Contract Time or Contract Sum will be considered without an executed Change Order.
- D. Regardless of the thoroughness of the geotechnical explorations, possibilities exist that subsurface conditions will differ from those at the boring locations or will not be as anticipated by the design professionals. Therefore, the Owner and the Consulting Engineers assume no responsibility for the accuracy of the information in the geotechnical reports and shall be held harmless for any claims by the Contractor, or others, because of errors in the reports.

END OF SECTION 023200

SECTION 033000 - CAST-IN-PLACE CONCRETE**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes, for the following storm water related structures:
 - 1. Outlet structure anti-flotation blocks.
 - 2. Pipe cradles.
 - 3. Pipe collars.

1.3 DEFINITIONS

- A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
 - 1. Indicate amounts of mixing water to be withheld for later addition at Project site.
- C. Steel Reinforcement Shop Drawings: Placing drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.
- D. Material Certificates: For each of the following, signed by manufacturers:
 - 1. Cementitious materials.
 - 2. Admixtures.
 - 3. Form materials and form-release agents.
 - 4. Steel reinforcement and accessories.
 - 5. Waterstops.
 - 6. Curing compounds.

7. Floor and slab treatments.
8. Bonding agents.
9. Adhesives.
10. Semirigid joint filler.
11. Joint-filler strips.
12. Repair materials.

1.5 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
- C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from one source, and obtain admixtures through one source from a single manufacturer.
- D. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:
 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."
- E. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.
- F. Mockups: Cast concrete wall panels to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.
 1. Build panel approximately 15 sq. ft. in the location indicated or, if not indicated, as directed by Architect.
 2. Approved panels may become part of the completed Work if undisturbed at time of Substantial Completion.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
- B. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2.2 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
 - 1. Plywood, metal, or other approved panel materials.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.
- C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.
- D. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.
 - 1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
- E. Form Ties: Factory-fabricated, removable or snap-off metal or glass-fiber-reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

2.3 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, deformed.

2.4 REINFORCEMENT ACCESSORIES

- A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:
 - 1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.

2.5 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
 - 1. Portland Cement: ASTM C 150, Type I gray. Supplement with the following:
 - a. Fly Ash: ASTM C 618, Class C or F.
- B. Normal-Weight Aggregates: ASTM C 33, Class 3M coarse aggregate or better, graded. Provide aggregates from a single source.
 - 1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
 - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M[and potable.

2.6 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C 260.
- B. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
 - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
 - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
 - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
 - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
 - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
 - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

2.7 WATERSTOPS

- A. Self-Expanding Butyl Strip Waterstops: Manufactured rectangular or trapezoidal strip, butyl rubber with sodium bentonite or other hydrophilic polymers, for adhesive bonding to concrete, 3/4 by 1 inch.
 - 1. Products:
 - a. Colloid Environmental Technologies Company; Volclay Waterstop-RX.
 - b. Concrete Sealants Inc.; Conseal CS-231.
 - c. Greenstreak; Swellstop.
 - d. Henry Company, Sealants Division; Hydro-Flex.
 - e. JP Specialties, Inc.; Earthshield Type 20.
 - f. Progress Unlimited, Inc.; Superstop.
 - g. TCMiraDRI; Mirastop.

2.8 CURING MATERIALS

- A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.
 - 1. Products:
 - a. Axim Concrete Technologies; Cimfilm.
 - b. Burke by Edoco; BurkeFilm.
 - c. ChemMasters; Spray-Film.
 - d. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Aquafilm.
 - e. Dayton Superior Corporation; Sure Film.
 - f. Euclid Chemical Company (The); Eucobar.
 - g. Kaufman Products, Inc.; Vapor Aid.
 - h. Lambert Corporation; Lambco Skin.
 - i. L&M Construction Chemicals, Inc.; E-Con.
 - j. MBT Protection and Repair, Div. of ChemRex; Confilm.
 - k. Meadows, W. R., Inc.; Sealtight Evapre.
 - l. Metalcrete Industries; Waterhold.
 - m. Nox-Crete Products Group, Kinsman Corporation; Monofilm.
 - n. Sika Corporation, Inc.; SikaFilm.
 - o. Symons Corporation, a Dayton Superior Company; Finishing Aid.
 - p. Unitex; Pro-Film.
 - q. US Mix Products Company; US Spec Monofilm ER.
 - r. Vexcon Chemicals, Inc.; Certi-Vex EnvioAssist.
- B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd when dry.
- C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- D. Water: Potable.
- E. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.
 - 1. Products:
 - a. Burke by Edoco; Cureseal 1315 WB.
 - b. ChemMasters; Polyseal WB.
 - c. Conspec Marketing & Manufacturing Co., Inc., a Dayton Superior Company; Sealcure 1315 WB.
 - d. Euclid Chemical Company (The); Super Diamond Clear VOX.
 - e. Kaufman Products, Inc.; Sure Cure 25 Emulsion.
 - f. Lambert Corporation; UV Safe Seal.
 - g. L&M Construction Chemicals, Inc.; Lumiseal WB Plus.
 - h. Meadows, W. R., Inc.; Vocomp-30.
 - i. Metalcrete Industries; Metcure 30.

- j. Symons Corporation, a Dayton Superior Company; Cure & Seal 31 Percent E.
- k. Tamms Industries, Inc.; LusterSeal WB 300.
- l. Unitex; Hydro Seal 25.
- m. US Mix Products Company; US Spec Radiance UV-25.
- n. Vexcon Chemicals, Inc.; Vexcon Starseal 1315.

2.9 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork.
- B. Bonding Agent: ASTM C 1059, Type II, non-redispersible, acrylic emulsion or styrene butadiene.
- C. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:
 - 1. Types I and II, non-load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.
- D. Dovetail Anchor Slots: Hot-dip galvanized steel sheet, not less than 0.0336 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

2.10 REPAIR MATERIALS

- A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
 - 3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by underlayment manufacturer.
 - 4. Compressive Strength: Not less than 3600 psi at 28 days when tested according to ASTM C 109/C 109M.
- B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.
 - 1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.
 - 2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C 109/C 109M.

2.11 CONCRETE MIXTURES, GENERAL

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
 1. Use a qualified independent testing agency for preparing and reporting proposed mixture designs based on laboratory trial mixtures.
- B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
 1. Fly Ash: 25 percent, for concrete exposed to weather.
- C. Limit water-soluble, chloride-ion content in hardened concrete to 0.30 percent by weight of cement.
- D. Admixtures: Use admixtures according to manufacturer's written instructions.
 1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
 2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
 3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.
 4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.

2.12 CONCRETE MIXTURES FOR BUILDING ELEMENTS

- A. All concrete: Proportion normal-weight concrete mixture as follows:
 1. Minimum Compressive Strength: 3600 psi at 28 days.
 2. Slump Limit: 4 inches, plus or minus 1 inch.
 3. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1-inch 3/4-inch nominal maximum aggregate size.

2.13 FABRICATING REINFORCEMENT

- A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.14 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
 1. Class A, 1/8 inch for smooth-formed finished surfaces.
 2. Class C, 1/2 inch for rough-formed finished surfaces permanently concealed.
 3. Class D, 1 inch for rough-formed finished surfaces permanently concealed.
- D. Construct forms tight enough to prevent loss of concrete mortar.
- E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
 1. Install keyways, reglets, recesses, and the like, for easy removal.
 2. Do not use rust-stained steel form-facing material.
- F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds.
- G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.
- H. Chamfer exterior corners and edges of permanently exposed concrete.
- I. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.
- J. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

- K. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.
- L. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 EMBEDDED ITEMS

- A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
 - 1. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC's "Code of Standard Practice for Steel Buildings and Bridges."

3.3 REMOVING AND REUSING FORMS

- A. General: Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete, if concrete is hard enough to not be damaged by form-removal operations and curing and protection operations are maintained.
 - 1. Leave formwork for beam soffits, joists, slabs, and other structural elements that supports weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
 - 2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.
- B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.
- C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
 - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that would reduce bond to concrete.

- C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
 - 1. Weld reinforcing bars according to AWS D1.4, where indicated.
- D. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

3.5 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
 - 1. Place joints perpendicular to main reinforcement. Continue reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of strip placements of floors and slabs.
 - 2. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.
 - 3. Locate joints for beams, slabs, joists, and girders in the middle third of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
 - 4. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
 - 5. Space vertical joints in walls as indicated. Locate joints beside piers integral with walls, near corners, and in concealed locations where possible.
 - 6. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

3.6 WATERSTOPS

- A. Flexible Waterstops: Install in construction joints and at other joints indicated to form a continuous diaphragm. Install in longest lengths practicable. Support and protect exposed waterstops during progress of the Work. Field fabricate joints in waterstops according to manufacturer's written instructions.

3.7 CONCRETE PLACEMENT

- A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect.
- C. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301.
 - 1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.
 - 1. Deposit concrete in horizontal layers of depth to not exceed formwork design pressures and in a manner to avoid inclined construction joints.
 - 2. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.
 - 3. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.
- E. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
 - 2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.
- F. Hot-Weather Placement: Comply with ACI 301 and as follows:
 - 1. Maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

3.8 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.
 - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view, to be covered with a coating or covering material applied directly to concrete.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.9 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.
- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for the remainder of the curing period.
- D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces.
- E. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
 - a. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
 - b. Moisture cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.

- c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer certifies will not interfere with bonding of floor covering used on Project..
- 3. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.10 CONCRETE SURFACE REPAIRS

- A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.
- B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16 (1.18-mm) sieve, using only enough water for handling and placing.
- C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
 - 1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete, but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.
 - 2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.
 - 3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Architect.
- D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
 - 1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
 - 2. After concrete has cured at least 14 days, correct high areas by grinding.
 - 3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.
 5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
 6. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least a 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mixture as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
 7. Repair random cracks and single holes 1 inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.
- E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.
- F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.11 FIELD QUALITY CONTROL

- A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Inspections:
1. Steel reinforcement placement.
 2. Headed bolts and studs.
 3. Verification of use of required design mixture.
 4. Concrete placement, including conveying and depositing.
 5. Curing procedures and maintenance of curing temperature.
- C. Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
1. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

- a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; ASTM C 173/C 173M, volumetric method, for structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
6. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other

requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.

12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

END OF SECTION 033000

SECTION 311000 - SITE CLEARING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Protecting existing trees and grass remain.
 - 2. Removing existing trees and grass as noted
 - 3. Clearing and grubbing.
 - 4. Stripping and stockpiling topsoil.
 - 5. Removing above- and below-grade site improvements.
 - 6. Disconnecting, capping or sealing, and abandoning site utilities in place removing site utilities.
 - 7. Temporary erosion and sedimentation control measures.
- B. Related Sections include the following:
 - 1. Division 01 Section "Temporary Facilities and Controls" for temporary construction and support facilities, and temporary erosion and sedimentation control procedures.
 - 2. Division 01 Section "Execution" for verifying utility locations and for recording field measurements.
 - 3. Division 31 Section "Earth Moving" for soil materials, excavating, backfilling, and site grading.
 - 4. Division 23 Section "Turf and Grasses" for finish grading including preparing and placing planting soil mixes and testing of topsoil material.

1.3 DEFINITIONS

- A. Topsoil: Natural or cultivated surface-soil layer containing organic matter and sand, silt, and clay particles; friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects more than 2 inches in diameter; and free of subsoil and weeds, roots, toxic materials, or other nonsoil materials.
- B. Tree Protection Zone: Area surrounding individual trees or groups of trees to be protected 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 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 01 Section "Project Management and Coordination."

1.5 PROJECT CONDITIONS

- A. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
- B. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- C. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

PART 2 - PRODUCTS**2.1 SOIL MATERIALS**

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 31 Section "Earth Moving."
 - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

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.
- 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, according to sediment and erosion control Drawings.
- 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 TREE PROTECTION

- A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
 - 1. Do not store construction materials, debris, or excavated material within fenced area.
 - 2. Do not permit vehicles, equipment, or foot traffic within fenced area.
 - 3. Maintain fenced area free of weeds and trash.
- 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, comb soil to expose roots, and cleanly cut roots as close to excavation as possible.
 - 1. Cover exposed roots with burlap and water regularly.
 - 2. Temporarily support and protect roots from damage until they are permanently redirected and covered with soil.
 - 3. Coat cut faces of roots more than 1-1/2 inches in diameter with an emulsified asphalt or other approved coating formulated for use on damaged plant tissues.
 - 4. Backfill with soil as soon as possible.
- D. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Engineer.
 - 1. Employ an arborist, licensed in jurisdiction where Project is located, to submit details of proposed repairs and to repair damage to trees and shrubs.
 - 2. Replace trees that cannot be repaired and restored to full-growth status, as determined by Engineer.

3.4 UTILITIES

- A. Owner will arrange for disconnecting and sealing indicated utilities that serve existing structures before site clearing, when requested by Contractor.
 - 1. Verify that utilities have been disconnected and capped before proceeding with site clearing.
- B. Locate, identify, disconnect, and seal or cap off utilities indicated to be removed.
 - 1. Arrange with utility companies to shut off indicated utilities.
 - 2. Owner will arrange to shut off indicated utilities when requested by Contractor.
- C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted and then only after arranging to provide temporary utility services according to requirements indicated:

- D. Excavate for and remove underground utilities indicated to be removed.

3.5 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, grass, and other vegetation to permit installation of new construction.
 - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
 - 2. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
 - 3. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below exposed subgrade.
 - 4. Use only hand methods for grubbing within tree protection zone.
 - 5. Chip removed tree branches.
- B. 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.

3.6 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.
 - 1. Remove subsoil and nonsoil materials from topsoil, including trash, debris, weeds, roots, and 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.
 - 1. Limit height of topsoil stockpiles to 72 inches.
 - 2. Do not stockpile topsoil within tree protection zones.
 - 3. Dispose of excess topsoil as specified for waste material disposal.
 - 4. Stockpile surplus topsoil to allow for resspreading deeper topsoil.

3.7 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and as necessary to facilitate new construction.
- B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut length of existing pavement to remain before removing existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain to prevent corrosion.

3.8 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

SECTION 312000 - EARTH MOVING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Earth Moving: The extent of earth moving is indicated on the drawings. The work, in general, includes the following:
 - 1. Preparation of subgrade for dam embankment, riser structure, headwall, and spillway.
 - 2. Controlling surface water and groundwater.
 - 3. Excavation of cut-off trench for embankment.
 - 4. Fill placement and compaction for dam embankment.
 - 5. Installation of drains.
 - 6. Rough and finish grading of slopes.
 - 7. Furnishing Unit Prices for additional earthwork.
- B. Related Sections include the following:
 - 1. Division 01 Section Construction Progress Documentation for recording preexcavation and earthwork progress.
 - 2. Division 01 Section "Temporary Facilities and Controls" for temporary controls, utilities, and support facilities.
 - 3. Division 31 Section "Site Clearing" for temporary erosion and sedimentation control measures, site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
 - 4. Division 31 Section "Dewatering" for lowering and disposing of ground water during construction.
 - 5. Division 32 Section "Turf and Grasses" for finish grading, including preparing and placing topsoil and planting soil for dam embankment.
- C. Excavation Definition: "Excavation" consists of removal of all material encountered to required subgrade elevations indicated and subsequent disposal of all materials removed.

1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
- B. Excavation: Removal of all material encountered to required subgrade elevations indicated and subsequent disposal of all materials removed.
- C. Fill: Soil materials used to raise existing grades.

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

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Washed stone (No. 67)
 - 2. Filtration geotextile
- B. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:
 - 1. Classification according to ASTM D 2487 of each on-site and borrow soil material proposed for fill and backfill.
 - 2. Laboratory compaction curve according to ASTM D 698 for each on-site and borrow soil material proposed for fill and backfill.

1.5 QUALITY ASSURANCE

- A. Inspections, Laboratory, and Field-Testing Services:
 - 1. Geotechnical Engineer: The owner will engage a Geotechnical Engineer for soil inspections, laboratory testing, and field-testing services for quality control testing during earthwork operations and foundation construction.
 - 2. Test classification and compaction of soils. Tests will be performed at the following locations and frequencies:
 - a. Dam Embankment and Key: Perform one test per compacted lift, per 2,000 square feet or less of embankment area, per day, but in no case fewer than three tests.
 - b. Perform Gradation, Atterberg Limits, and Triaxial Shear testing as required to verify the intent of the Subsurface Exploration Report in accordance with ASTM D-422 and D-4318 and D-4767.
 - 3. Allow Geotechnical Engineer to inspect and test subgrade and each fill or backfill layer: Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
 - 4. When subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.
- B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
- C. Additional testing performed to determine compliance of corrected work with specified requirements shall be at Contractor's expense.
- D. Preinstallation Conference:

1. Before commencing dam embankment earthwork or construction, meet with representatives of governing authorities, Owner, Architect/Engineer, Civil Engineer, Geotechnical Engineer, and other concerned entities. Review earthwork procedures and responsibilities including testing and inspection procedures and requirements. Notify participants at least 3 working days prior to convening conference. Record discussions and agreements and furnish a copy to each participant.
- E. Codes and Standards: Perform excavation work in compliance with all applicable requirements of governing authorities having jurisdiction.
- F. Depth of Bearing Strata: It is to be understood that site soil conditions are variable across the site. Headwall foundation design dimensions and bearing elevations shown are minimums. The design of the footings is based on the assumed strata bearing capacity at the elevation shown on the drawings and as indicated in the General Notes. If the indicated depth of footing excavation is reached without developing the required strata bearing capacity, the Geotechnical Engineer will immediately advise the contractor for additional excavation to reach the required bearing elevation for each individual footing. Revisions will be paid for in accordance with the Contract condition relative to changes in the Work.

1.6 PROJECT CONDITIONS

- A. Site Information:
1. The Contractor, by careful examination, shall inform himself as to the nature and location of the Work; the conformation of the ground, the nature of subsurface conditions; the locations of the groundwater table; the character, quality, and quantity of the materials to be encountered; the character of the equipment and facilities needed preliminary to and during the execution of the work; and all other matters which can be in any way affect the Work.
 2. The Contractor shall examine the site, available drawings, records of existing utilities and construction, record of test borings, and the subsurface exploration reports and the soil and rock samples to determine conditions under which the Work will be performed.
 3. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. The Owner will not be held responsible for interpretations or conclusions drawn by the Contractor. Additional test borings and other exploratory operations may be made by the Contractor at no cost to the Owner.
- B. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth moving operations.
- C. Existing Utilities:
1. Locate all existing underground utilizes in areas of work before proceeding. Provide adequate support and protection during earthwork operations of utilizes that are to remain in place. Demolish existing utilities as indicated and completely remove from the project site. Coordinate with utility companies, or governing entity, for proper shut-off of services for active lines.

2. If any active utility not indicated in the drawings is encountered, notify the Engineer and protect from damage until instructions for proper disposition of the utility are given by the Engineer. Perform the requested work in compliance with the rules and regulations of authority having jurisdiction.
 3. Repair active utilities schedule to remain that are damaged by earthwork operations to the satisfaction of the utility owner.
 4. If any inactive utility not indicated on the drawings is encountered, remove, plug, or cap as directed by the Engineer. Obtain any necessary data relative to proposed abandonment of existing utility service from authority having jurisdiction.
 5. Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by the Construction Manager and then only after acceptable temporary utility services have been provided. Provide minimum of 48-hour notice to Construction Manager, and receive written notice to proceed before interrupting any utility.
- D. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soils: ASTM D 2487 Soil Classification Groups SM, ML, SC, and CL, or a combination of these groups; free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- B. Unsatisfactory Soils: Soil Classification Groups MH, CH, GW, GP, GM, GC, SW, SP, OL, OH, and PT according to ASTM D 2487, or a combination of these groups.
 1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- C. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below topsoil or alluvium.
- D. Approved Fill Material: All soil materials used for the project shall be approved by the Geotechnical Engineer prior to hauling and placement. Soil materials used for fill or backfill shall be retested and reapproved each time the source or properties of the material changes. The Select Granular Fill should be compacted to no more than 95 percent of the soil's standard Proctor maximum dry unit weight (ASTM D698). Select Granular Fill should be free from ice and snow, roots, sod, rubbish, debris, or other deleterious or organic matter. It should consist of durable, hard, non-carbonaceous soil particles conforming to the following requirements:

Table 3 – Select Granular Fill (k-min = 1.4 in/hr)

U.S. Seive Size	% Passing No. 200 Sieve)
2-in.	100
½-in.	100
No. 4	85-100
No. 10	70-100
No. 20	0-100
No. 40	0-95
No. 60	0-75
No. 100	0-40
No. 200	0-12

PART 3 - EXECUTION**3.1 CLEARING AND GRUBBING**

- A. Remove all existing trash, rubbish, debris, trees, roots, stumps, underbrush, shrubs, plants, and other vegetation from within the mass embankment limits.

3.2 PREPARATION

- A. Survey Work, Grades, and Elevations:
1. Survey Work: Lay out dam centerline and headwall foundations after clearing but before excavation. Record actual measurements centerline location, deviation from specified tolerances, and all other pertinent data as required.
 2. Grades and Elevations: Finished grades indicated by spot elevations and normal contour line elevations denote finished top surface elevations. Report conflicts, errors and inconsistencies in grades and elevations to the Engineer for resolution. Do not proceed with the work in questionable areas until conflicts are resolved by the Engineer.

3. Maintain all benchmarks and other reference points.
4. Set required lines and levels as required to accurately perform the excavation work.

B. Protection of Work:

1. Protect the surface of the embankment fill during construction by sealing off with a smooth drum roller prior to prolonged delay such as the end of the work week or before a forecasted storm. Scarify the smooth surface before placing the next lift.
2. Protect any existing structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth moving operations.
3. Protect and maintain erosion and sedimentation controls during earth moving operations.
4. Protect subgrades soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.
5. Do not commence earth moving operations until temporary erosion and sedimentation control measures in place.
6. Do not commence earth moving operations until plant protection measures are in place.
7. The following practices are prohibited within protection zones:
 - a. Storage of construction materials, debris, or excavated material.
 - b. Parking vehicles or equipment.
 - c. Erection of sheds or structures.
 - d. Impoundment of water.
 - e. Excavation or other digging unless otherwise indicated.
 - f. Attachment of signs or wrapping materials around trees or plants unless otherwise indicated.
8. Do not direct vehicle or equipment exhaust towards protection zones.
9. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

3.3 DEWATERING

- A. Excavations should be kept dry at all times by means of cofferdams, trenches, sumps, pumps, and whatever equipment or arrangements are required.
- B. Prevent surface water and subsurface or groundwater from flowing into excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation and/or subsurface seepage.
- D. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavation as temporary drainage ditches. Do not use excavated trenches as temporary drainage ditches.

3.4 EXCAVATION, GENERAL

- A. Excavation shall be unclassified and shall comprise and include the satisfactory removal and disposal of all materials encountered regardless of the nature of the materials and shall be understood to potentially include rock, boulders, fill and debris.
- B. All excavation shall extend to the depths of the form and size required for the installation of the work as indicated on the Drawings. When excavations have reached the required depths, the Geotechnical Engineer shall make an inspection of the conditions.
- C. Materials that in the opinion of the Geotechnical Engineer are not suitable for fill, any surplus earth, and rock shall be removed from the site and legally disposed of off-site.
- D. The bottom of excavations shall be leveled off and graded to receive new compacted fill, outlet pipes, intake structure, etc.
- E. Excavations made below the elevations shown or specified, unless authorized, shall be filled and compacted as hereinafter specified, at no additional cost.

3.5 EXCAVATION FOR STRUCTURE FOUNDATIONS

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus **1**. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
- B. Subgrades shall be approved by the Geotechnical Engineer before proceeding with fill placement or installation of any structure or piping.
- C. The top 12 inches of subgrade resulting from excavation shall be free of unsuitable material (fill, organics, debris, etc.) as judged by the Geotechnical Engineer.
- D. Cut areas shall be excavated and graded to subgrade elevation per the Contract Drawings. The subgrade should be proof rolled with 10-ton roller compactor (vibration mode off). Any soft or wet areas, areas exhibiting pumping or areas that are otherwise unsuitable soils, as deemed by the Geotechnical Engineer, shall be removed and replaced.

3.6 EXCAVATION FOR UTILITY TRENCHES

- A. Trenches for underground piping, where necessary, shall be excavated to the required depth and bell holes shall be provided where necessary to insure uniform bearing. Trench excavation lines shall provide sufficient clearance for proper execution of underground work.
- B. Trenches shall be by open cut from the surface. No tunneling will be allowed. Irregularities at bottom of trench, or where excavation is below required depth, shall be refilled to required grade with compacted soil.
- C. Where trenches are in wet or soft ground that in the opinion of the Geotechnical Engineer is unsuitable for supporting the pipe, concrete cradles or approved equivalent, shall be installed as directed by the Engineer.

- D. Where necessary and per OSHA standards, the sides of trenches and excavations shall be properly sloped or supported by adequate sheeting and bracing to insure proper construction and safety of the workers. The Contractor will be held responsible for the sufficiency of sheeting and bracing and for all damages to property or injury to persons resulting from improper quality, strength, placing, maintaining and removing of same.
- E. Backfill trenches with suitable fill. Scarify sides of excavation to facilitate bonding of soil. Do not backfill trenches until tests and inspections have been made and backfilling is authorized by Geotechnical Engineer or other authorized Owner's representative. Use care in backfilling to avoid damage or displacement of pipe system.
- F. Immediately after piping has been installed, tested, inspected, and accepted, piping shall be filled around with special care to solidly fill voids without causing injury to piping. Up to 2 feet above, 4-inch layers shall be hand filled. For remainder of trench, 12-inch layers shall be filled in. Each layer shall be tamped before placing next layer. No stones larger than 2 inches in diameter shall be allowed in fill up to 2 feet above pipe and no stones larger than 4 inches in diameter shall be allowed in fill above. Backfill shall be in such a manner so as to prevent future settlement.
- G. Existing utility lines to be retained that are shown on the drawings or the locations of which are made known to the Contractor prior to excavation operations, shall be protected from damage during excavation and backfilling, and if damaged, shall be repaired by the Contractor, at own expense.
- H. As backfilling proceeds, all sheeting and shoring shall be removed in such a manner as to prevent the sides of the excavation from caving in or cracking. No backfilling of utility lines shall be done until any testing and inspection of the system or portion of the system has been completed and accepted.
- I. Unless otherwise shown or specified, make trenches for piping and utilities not less than 16 inches no more than 24 inches wider than the outside width of the piping or utilities. Accurately grade bottoms of trenches with bell holes scooped out to provide uniform bearing and support of pipe and utilities on undisturbed soil throughout its entire length, except where other means of supporting pipe are indicated.

3.7 PLACING AND BACKFILL

- A. General: Place fill or backfill on subgrades free of mud, frost, snow, or ice. It is to be understood that some selective reconnaissance and excavation will be required to obtain Embankment Fill Material.
- B. Place Embankment Fill material in compacted, uniform, continuous layers. The more fine grained soils shall be placed in the central portion of the dam and in the cut-off trench areas.
- C. Ground surface preparation:
 - 1. Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to fill placement. Plow, strip, or break-up slope

surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

D. Grading:

1. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.
2. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within plus or minus 1 inch.
3. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

3.8 COMPACTION

- A. General: Control all soil compaction during construction, providing minimum percentage of density specified for each area classification indicated below. Place backfill and fill materials in layers not more than 8.0 inches in loose depth for material compacted by heavy compaction equipment, and not more than 3.0 inches in loose depth for material compacted by hand-operated compaction equipment.
- B. Density Requirements: Compact fill to not less than the following percentages of maximum density for soils in accordance with [ASTM D 698]:
 1. Embankment: Compact each lift of fill material to at least 95% of the material's maximum dry density while maintaining the soil moisture content within 2% below to 3% above optimum moisture content.
- C. Moisture Control:
 1. Where subgrade or layer of soil material must be moisture conditioned before compaction, apply water as needed.
 2. Remove and replace, or scarify and air dry, soil material that is too wet to compact to specified unit weight.
 3. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing or harrowing.

3.9 DRAINS

- A. Construct subsurface drainage during grading operations at locations and dimensions shown on the approved drawings.

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.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding.

3.11 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. The Geotechnical Engineer shall review all laboratory test results and submit reports specified in this Section. Geotechnical Engineer will also observe, in the field, all earthwork related operations.
- C. The Geotechnical Engineer will interpret the tests, state in each report whether or not the test specimens comply with all requirements of the Contract Documents and note any deviations therefrom.
- D. The Geotechnical Engineer will identify when and where samples are to be obtained. Contractor shall collect samples and forward them to the Testing Laboratory for testing. As necessary, the Geotechnical Engineer will submit the following laboratory test reports on each type of borrow and fill material:
 1. Gradation Analysis – ASTM D 422.
 2. Atterberg Limits – ASTM D 4318.
 3. Standard Moisture-Density Relationship – ASTM D 698.
- E. The Geotechnical Engineer will determine the conformance of material to be used for fills.
- F. Field Testing of Fill Areas: Prepared fill lifts will be tested and approved by the Geotechnical Engineer before construction of any further work thereon. Inspection and test of subgrades and fill layers will be taken as follows:
 1. For each compacted fill layer, make a minimum of 2 field density tests for every lift. Perform field density tests in accordance with ASTM D 1556 or D 6938. Each lift shall meet the compaction requirement of Part 3.8 of this Section.
- G. Footing Subgrades: Geotechnical Engineer shall inspect bearing surfaces and monitor proof rolling operations at foundation subgrade locations.
- H. Contractor shall cooperate with Geotechnical Engineer in the performance of the required tests and inspections.
- I. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained. Additional compaction and testing shall be at the expense of the Contractor.

3.12 MAINTENANCE

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades in eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions. Scarify surface, reshape, and compact to required density prior to further construction.
- C. Where settling is measurable or observable at excavated areas, add backfill material and compact. 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. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Contractor. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 312000

SECTION 312319 - DEWATERING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section includes construction dewatering.
- B. Related Sections:
 - 1. Division 01 Section Construction Progress Documentation for recording preexisting conditions and dewatering system progress.
 - 2. Division 31 Section "Earth Moving" for excavating, backfilling, site grading, and for site utilities.
 - 3. Division 33 Section "Subdrainage" for permanent dam embankment drainage.

1.3 PERFORMANCE REQUIREMENTS

- A. Dewatering Performance: Design, furnish, install, test, operate, monitor, and maintain dewatering system of sufficient scope, size, and capacity to control hydrostatic pressures and to lower, control, remove, and dispose of ground water and permit excavation and construction to proceed on dry, stable subgrades.
 - 1. Delegated Design: Design dewatering system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
 - 2. Continuously monitor and maintain dewatering operations to ensure erosion control, stability of excavations and constructed slopes, that excavation does not flood, and that damage to subgrades and permanent structures is prevented.
 - 3. Prevent surface water from entering excavations by grading, dikes, or other means.
 - 4. Accomplish dewatering without damaging existing buildings, structures, and site improvements adjacent to excavation.
 - 5. Remove dewatering system when no longer required for construction.

1.4 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site.
 - 1. Review methods and procedures related to dewatering including, but not limited to, the following:

- a. Inspection and discussion of condition of site to be dewatered including coordination with temporary erosion control measures and temporary controls and protections.
- b. Geotechnical report.
- c. Proposed site clearing and excavations.

1.5 PROJECT CONDITIONS

- A. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner will not be responsible for interpretations or conclusions drawn from this data.
 - 1. Make additional test borings and conduct other exploratory operations necessary for dewatering.
 - 2. The geotechnical report is included in the bid documents
- B. Survey Work: Engage a qualified land surveyor or professional engineer to survey adjacent structures and site improvements, establishing exact elevations at fixed points to act as benchmarks. Clearly identify benchmarks and record existing elevations.
 - 1. During dewatering, regularly resurvey benchmarks, maintaining an accurate log of surveyed elevations for comparison with original elevations. Promptly notify Engineer if changes in elevations occur or if any damage is evident in adjacent construction.

PART 2 - PRODUCTS (Not Used)

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 dewatering operations.
 - 1. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared subgrades, and from flooding site and surrounding area.
 - 2. Protect subgrades and foundation soils from softening and damage by rain or water accumulation.
- B. Install dewatering system to ensure minimum interference with roads, streets, walks, and other adjacent occupied and used facilities.
- C. Provide temporary grading to facilitate dewatering and control of surface water.
- D. Monitor dewatering systems continuously.

- E. Promptly repair damages to adjacent facilities caused by dewatering.
- F. Protect and maintain temporary erosion and sedimentation controls, which are specified in Division 01 Section "Temporary Facilities and Controls Division 31 Section Site Clearing during dewatering operations.

3.2 INSTALLATION

- A. Contractor shall furnish, install, operate, and maintain any pumping equipment, etc. needed for removal of water from various parts of the stormwater facility.
- B. Contractor shall coordinate with Geotechnical Engineer as needed.

3.3 FIELD QUALITY CONTROL

- A. Provide continual observation to ensure that subsurface soils are not being removed by the dewatering operation.

END OF SECTION 312319

SECTION 31 25 00 – EROSION CONTROL**PART 1 - GENERAL****1.1 INTENT**

- A. The main concern associated with erosion on a construction site is the movement of soil off the site and its impact on water quality. It is the Owner's intent that the Contractor install and maintain sufficient erosion control practices to retain sediment within the boundaries of the site in addition to complying with regulatory authorities having jurisdiction and local erosion and sedimentation control laws and ordinances. All erosion control methods and devices used shall conform to the latest requirements imposed by federal, state and local authorities. The Contractor shall be responsible for repair of any damage caused and shall be financially responsible for any penalties imposed.
- B. If an erosion control drawing has been included in the drawings prepared by the landscape architect/engineer, it shall be the Contractor's responsibility to review the drawing prior to implementation. If an erosion control drawing is not included in the project documents, the Contractor shall submit, for approval, a proposed sequence of operations and a compatible method of preventing erosion.

1.2 SUMMARY

- A. Work under this section shall include but not be limited to, installation and maintenance of both temporary and permanent soil erosion control measures, slope protection and stabilization measures, protection of all surface water and property both on and off site. This work shall include all labor, materials, and equipment necessary to meet all applicable requirements and as specified in the contract documents.

1.3 REFERENCE STANDARDS

- A. All applicable standards and requirements of all regulatory authorities having jurisdiction, including local soil conservation agencies

1.4 QUALITY ASSURANCE

- A. Soil erosion and sediment control measures shall be implemented in accordance with the requirements and procedures outlined in this specification, contract drawings and documents, the state standards or guidelines for soil erosion and sediment control, and all regulatory authorities having jurisdiction. Where conflict between requirements exist, the more restrictive rules shall govern.
- B. The Contractor shall provide all temporary control measures shown on the drawings, or as directed by the Owner, Owner's representative, or soil conservation district for the duration of the contract. Erosion control drawings are intended to be a guide to address the stages of work shown. Additional erosion control measures not specified on the drawings may be necessary and shall be implemented to address intermediary stages of work and any conditions that may develop during construction at no cost to the Owner.

- C. Temporary control provisions shall be coordinated with permanent erosion control features to the extent practical to assure economical, effective and continuous erosion control throughout the construction and post-construction period.
- D. Soil erosion and sediment control measures shall at all times be satisfactory to the Owner's Representative. Owner's Representative will inform the Contractor of unsatisfactory construction procedures and operations if observed. If the unsatisfactory construction procedures and operations are not responded to and corrected within 48 hours, the Owner's Representative may suspend the performance of any or all other construction until the unsatisfactory condition has been corrected. Such suspension shall not be the basis of any claim by the Contractor for additional compensation nor for an extension of time to complete the work. Any complaints, fines, etc. relating to ineffective erosion control, shall be the sole responsibility of the Contractor.
- E. The Contractor shall inspect all soil erosion and sediment control measures at least at the beginning and end of each day to ascertain that all devices are functioning properly during construction. Maintenance of all soil erosion and sediment control measures on the project site shall be the responsibility of the Contractor until the project is 100% complete, and until the permanent soil erosion controls are established and in proper working condition.
- F. The Contractor shall protect adjacent properties and watercourses from soil erosion and sediment damage throughout construction.

1.5 SEQUENCE OF CONSTRUCTION

- A. The approved construction sequence, as permitted/approved shall be adhered to during the execution of work under this section. All soil erosion and sediment control measures shall be installed in accordance with the phasing sequence shown on the contract documents.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Contractor shall provide all materials necessary to perform the work.

PART 3 - EXECUTION

3.1 GENERAL REQUIREMENTS

- A. The Contractor shall comply with and implement the Erosion and Sedimentation Control Plans provided in the contract documents.
- B. Review the soil erosion and sediment control drawings as they apply to current site conditions. Any deviation from the drawings must be submitted for approval to the owner/landscape architect in writing at least 72 hours prior to commencing that work.
- C. All soil sediment and erosion control devices shall be in place prior to any earthwork construction, in their proper sequence, and maintained until permanent protection is established.

- D. The limit of the area of any earthwork operations in progress shall be commensurate with the Contractor's capability and progress in keeping the finished grading, mulching, seeding and other such permanent control measures current and in accordance with the accepted schedule for construction phasing. Should seasonal limitations make such coordination unrealistic, as determined by the Owner's Representative, temporary erosion control measures shall be provided immediately by the Contractor at no expense to the Owner.
- E. Temporary erosion control measures shall be used to correct conditions which develop during construction that are needed prior to installation of permanent control features, or that are temporarily needed to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.
- F. The Contractor shall incorporate all permanent erosion control features into the project at the earliest practical time to minimize the need for temporary controls.
- G. A temporary construction entrance pad shall be installed and maintained at any point where construction vehicles enter a public right-of-way, street or parking area. The pad shall be used to eliminate mud from the construction area onto public right-of-way. The pad shall be constructed as shown on the drawings. Any mud or debris tracked on streets shall be cleaned up immediately.
- H. Any disturbed or stockpiled areas that will be left exposed more than 14 days, and not subject to construction traffic, shall immediately receive a temporary seeding. Mulch/straw shall be used if the season prevents the establishment of a temporary cover. Disturbed areas shall be limed and fertilized prior to temporary seeding.
- I. Permanent vegetation shall be established as specified on all exposed areas within 14 days after final grading, unless otherwise directed by the Owner and permitted by appropriate regulations. Mulch as necessary for seed protection and establishment. Lime and fertilize seedbed prior to permanent seeding.
- J. Cut slopes shall be permanently seeded and mulched as the excavation proceeds to the extent considered desirable and practical. Slopes that erode easily shall be temporarily seeded and mulched.
- K. All storm drainage outlets must be stabilized, as specified, before the discharge points become operational. Equip all inlets with inlet protection immediately upon construction.
- L. Discharge from de-watering operations for the excavated areas shall not be directed to surface waters without first properly removing the suspended sediment through filtration and/or settlement. The Contractor shall obtain any required permits associated with dewatering activities.
- M. The quantity of silt fence to be installed will be affected by the actual conditions that occur during the construction of the project. Silt fence shall be installed at locations shown on the drawings and any additional locations necessary for proper erosion control. The Contractor shall maintain the silt fence until the project is accepted and shall remove and dispose of the silt fence and silt accumulations.

- N. Soil erosion and sediment control shall include but not be limited to the approved measures. The Contractor shall be responsible for providing all additional measures that may be necessary to accomplish the intent of the drawings.
- O. Comply with all other requirements of authorities having jurisdiction.

END OF SECTION 31 25 00

SECTION 321216 – ASPHALTIC CONCRETE PAVING**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. Work included: Provide asphaltic concrete paving where shown on the Drawings, as specified herein, and as needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 321218 - Stone Base Course.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of the specifications
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Certificates, signed by the materials producer and the asphalt paving Subcontractor, stating that materials meet or exceed the specified requirements.

1.4 PRODUCT HANDLING

- A. Comply with pertinent specification provisions.

PART 2 - PRODUCTS**2.1 GENERAL**

- A. All materials and products used shall comply with pertinent sections of the North Carolina Department of Transportation's (NCDOT) Standard Specifications for Highway Construction and latest revisions and supplements and Town of Huntersville standards for asphalt paving.

2.2 ASPHALTIC CONCRETE MIXTURE (BINDER COURSE)

- A. Materials and composition of mixture shall comply with NCDOT standard asphalt specifications, latest revisions and supplements.
- B. Provide hot plant mixed asphaltic concrete paving materials.
 - 1. Temperature leaving the plant: 290°F minimum, 320°F maximum.
 - 2. Temperature at time of placing: 280°F minimum.

2.3 ASPHALTIC CONCRETE MIXTURE (SURFACE COURSE)

- A. Materials and composition of mixture shall comply with NCDOT and Town of Huntersville standard asphalt specifications, latest revisions and supplements.
- B. Provide hot plant mixed asphaltic concrete paving materials.
 - 1. Temperature leaving the plant: 290°F minimum, 320°F maximum.
 - 2. Temperature at time of placing: 280°F minimum.

2.4 EQUIPMENT

- A. Comply with requirements of NCDOT and Town of Huntersville standard specifications and latest revisions and supplements.

PART 3 - EXECUTION**3.1 SURFACE CONDITIONS**

- A. Examine the areas and conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work. Do not proceed until unsatisfactory conditions are corrected.
 - 1. Sweep primed surfaces if needed.
 - 2. Adjust frames and covers if needed.

3.2 WEATHER RESTRICTIONS

- A. Do not apply asphalt mixtures to a wet or frozen surface or when air temperature is below 40°F in the shade and falling, or below 35°F in the shade and rising.

3.3 SPREADING AND FINISHING

- A. On arrival at point of use, dump directly into mechanical spreader.

- B. Immediately spread and strike off true to the line, grade and cross section indicated, to such loose depth that when work is completed, the indicated thickness or weight per square yard will be secured.
- C. Correct irregularities while the mixture is still hot.
- D. At locations not readily accessible to mechanical spreaders, acceptable hand spreading methods may be used.
- E. Finished surfaces placed adjacent to curbs, gutters, manholes, etc., shall be approximately 1/4" above the edges of these structures.

3.4 COMPACTION

- A. Perform initial rolling with 3-wheel steel roller or a steel wheel 2-axle tandem roller.
- B. Follow initial rolling with at least four complete coverages by a pneumatic tired roller.
- C. Complete rolling with steel wheel 2-axle tandem roller.
- D. Rolling shall start longitudinally at the sides and proceed gradually toward the center of the pavement, overlapping on successive trips approximately 1/2 the width of the roller.
- E. Use hand or mechanical tampers in areas not accessible to powered rollers.
- F. Surface mixture after compaction shall be smooth and true to the established crown and grade.
- G. Finished paving smoothness tolerance:
 - 1. Free from birdbaths.
 - 2. No deviations greater than 1/8" in 6'.

3.5 PROTECTION OF SURFACE

- A. Allow no traffic on surface until the mixture has hardened sufficiently to prevent distortion.

3.6 FLOOD TEST

- A. Flood the entire asphaltic concrete paved area with water by use of a tank truck or hoses.
- B. If a depression is found where water ponds to a depth of more than 1/8" in 6', fill or otherwise correct to provide proper drainage.
- C. Feather and smooth the edges of fill so that the joint between fill and original surface is invisible.

3.7 MEASUREMENT AND PAYMENT

- A. Measurement of length and width of paved areas will be made.
- B. Payment will be made at the unit price per square yard as stated in the Bid Form.

END OF SECTION 321216

SECTION 321218 – STONE BASE COURSE**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. Work included: Provide crushed stone base constructed on the compacted subgrade for all asphalt parking, driveways and trail areas where shown on the Drawings, as specified herein, and as needed for a complete and proper installation. This specification does not apply to the gravel trail section.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.
 - 2. Section 02513 - Asphaltic Concrete Paving.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.3 SUBMITTALS

- A. Comply with all pertinent specification provisions.
- B. Certificates, signed by materials producer, stating that materials meet the specified requirements.

1.4 PRODUCT HANDLING

- A. Comply with all pertinent specification provisions.

PART 2 - PRODUCTS**2.1 COARSE AGGREGATE**

- A. Furnish a coarse aggregate (retained on No. 4 sieve) consisting of hard, durable particles of stone, reasonably free from soft, thin, elongated or laminated pieces and deleterious substances.

- B. Furnish aggregate with an abrasion loss of less than 65% as measured by the Los Angeles Abrasion Test.
- C. Aggregate stone must meet NCDOT and Town of Huntersville specifications for asphalt paving.

2.2 FINE AGGREGATE

- A. Furnish a fine aggregate consisting of material produced by stone crushing operations.
- B. Liquid limit shall not exceed 25 and the plasticity index shall not exceed 6 when tested in accordance with AASHTO T-89 and T-90, respectively.
- C. Aggregate stone must meet NCDOT and Town of Huntersville specifications for asphalt paving.

2.3 COMPOSITE MIXTURE

- A. Produce in one crushing operation or by blending the fine and coarse aggregate in proper proportions.
- B. After the materials have been mixed, laid down, and initial compaction operations begun, the composite mixture shall conform to the following:

Sieve Designation	Percent by Weight Passing
2"	100
1-1/2"	95-100
1"	70-100
1/2"	48-75
No. 4	30-50
No. 30	11-30
No. 200	0-12
Liquid Limit	25 max.
Plasticity Index	6 max.

- C. Aggregate stone must meet NCDOT and Town of Huntersville specifications for asphalt paving.

PART 3 - EXECUTION

3.1 PREPARATION OF SUBGRADE

- A. Proofroll all areas to receive crushed stone paving.

1. Make not less than three passes over the full area, using a 35 to 50 ton rubber tired roller.
- B. Remove all soft, unstable or unsuitable material that will not compact readily.
 1. Remove to full depth of unsuitable material, or to a depth of 30", whichever is less.
 2. Replace with satisfactory materials.
- C. Fill all holes, ruts or depressions which develop in the subgrade with approved on-site material, bringing subgrade to indicated line and grades.
- D. Compact subgrade using suitable construction procedures to provide not less than 95% Standard Proctor Maximum Dry Density.
- E. Seal roll the subgrade surface with a steel wheel roller, sealing the surface against excessive water infiltration.

3.2 PLACING AND MIXING OF PAVING MATERIAL

- A. Place aggregates using spreader boxes or other approved spreaders uniformly on one operation.
- B. Take care to avoid segregation of the fine from the coarse aggregate during handling, spreading or shaping operations.
- C. Mix, while at proper moisture, with motor grader or other equipment and maintain to required section and grade until thoroughly compacted.

3.3 ROLLING AND COMPACTING

- A. Perform using 3-wheel steel wheel roller weighing not less than 10 tons, tandem roller weighing at least 8 tons, or other rollers approved by the Engineer.
- B. Start rolling at edges and proceed toward the center, continue rolling until aggregates are firmly keyed or set.
- C. When initial compaction is completed, should voids remain, place fine aggregates on the surface in an amount only sufficient to fill the voids.
- D. Broom, wet and roll until coarse aggregate is set, bonded and thoroughly compacted for full width and depth.

3.4 ALLOWABLE TOLERANCES

- A. Thickness tolerance: Provide the compacted thicknesses shown on the Drawings within a tolerance of minus 1/2".
 - 1. Depth measurements will be made by digging through the base at intervals no closer than 250', nor greater than 500' apart.
 - 2. Where thickness is less than depth specified minus 1/2", it shall be corrected as directed by the Engineer.
- B. Smoothness tolerance: Provide the lines and grades shown on the Drawings within a tolerance of 3/8" in 10', parallel to the center line of the roadway nor more than 1/2" from a template conforming to the cross sections shown on the plans.
- C. Deviations: Correct by removing materials, replacing with new materials, and reworking or recompacting as required.

3.5 PLACING PRIME COAT

- A. Allow base course to season sufficiently to permit uniform penetration.
- B. Do not apply to wet surfaces or when the temperature is below 60°F in the shade and falling, or below 55°F in the shade and rising.
- C. Clean surfaces of all dust, dirt, clay, etc. using mechanical brooms, etc.
- D. Apply prime material, using pneumatic mounted distributors, at a rate of 0.25 to 0.30 gallon per square yard.
- E. Permit no traffic on primed surfaces until bituminous material has penetrated and dried sufficiently that it does not pick up under traffic.

3.6 MEASUREMENT AND PAYMENT

- A. No separate measurement or direct payment will be made for this work and all costs for same shall be included in the price bid for the work to which it pertains.

END OF SECTION 321218

SECTION 32 13 73 – PAVEMENT JOINT SEALANTS**PART 1 - GENERAL****1.1 SUMMARY**

- A. This Section includes the following:
 - 1. Expansion and contraction joints within cement concrete pavement.
 - 2. Joints between cement concrete and asphalt pavement.

1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each type and color of joint sealant required.
- C. Product certification and test reports.
- D. Compatibility and Adhesion Test Reports: From sealant manufacturer.

1.3 QUALITY ASSURANCE

- A. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact or affect joint sealants to joint-sealant manufacturers for testing according to AASHTO M153 for Type I, II, or III; or be a bituminous type that meets AASHTO M213 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 32 articles.
- B. Products: Subject to compliance with requirements, provide one of the products listed in other Part 32 articles.

2.2 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
 - 1. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

- B. Colors of Exposed Joint Sealants: As indicated by manufacturer's designations and coordination with architect.

2.3 COLD-APPLIED JOINT SEALANTS

- A. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.
 - 1. Available Products:
 - a. Crafcro Inc.; RoadSaver Silicone.
 - b. Dow Corning Corporation; 888.
 - c. NCDOT approved equal
- B. Type SL Silicone Sealant for Concrete and Asphalt: Single-component, low-modulus, neutral-curing, self-leveling silicone sealant complying with ASTM D 5893 for Type SL.
 - 1. Available Products:
 - a. Crafcro Inc.; RoadSaver Silicone SL.
 - b. Dow Corning Corporation; 890-SL.
 - c. NCDOT approved equal.

2.4 HOT-APPLIED JOINT SEALANTS

- A. Sealant for Concrete and Asphalt: Single-component formulation complying with ASTM D 6690.
 - 1. Available Products:
 - a. Koch Materials Company; Product No. 9005.
 - b. Koch Materials Company; Product No. 9030.
 - c. Meadows, W. R., Inc.; Sealtight Hi-Spec.
 - d. NCDOT approved equal.

2.5 JOINT-SEALANT BACKER MATERIALS

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Type L – A closed-cell expanded polyethylene foam backer rod. Use in roadway and bridge joints with Type NS silicone only.
- C. Type M – A closed-cell polyolefin foam backer rod which has closed-cell skin over an open-cell core. Use in roadway and bridge joints with both silicon sealant types
- D. Backer Rods for Cold-Applied Sealants: ASTM D 1622, 2lbs/cf minimum; ASTM D 1623 25 psi minimum; ASTM C 509 0.5% by volume maximum.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience.
- C. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- D. Install backer materials to support sealants during application and at position required to produce optimum sealant movement capability. Do not leave gaps between ends of backer materials. Do not stretch, twist, puncture, or tear backer materials. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- E. Install sealants at the same time backings are installed to completely fill recesses provided for each joint configuration and to produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
- G. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION 32 13 73

SECTION 32 18 16 – PLAYGROUND PROTECTIVE SURFACING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Unitary synthetic poured in place rubber seamless surface.
 - 2. Engineered Wood Fiber surface.
- A. Related Sections:
 - 1. 31 20 00-Earth Moving
 - 2. 31 23 19-Dewatering
 - 3. 03 30 00-Cast-in-Place Concrete

1.3 DEFINITIONS

- A. CPSC: U.S. Consumer Products Safety Commission
- B. Critical Height: Standard measure of shock attenuation. According to Consumer Products Safety Commission (CPSC) No. 325, this means "the fall height below which a life-threatening head injury would not be expected to occur."
- C. SBR: Styrene-butadiene rubber.
- D. EPDM: Ethylene propylene diene terpolymer rubber.
- E. EWF: Engineered Wood Fiber; natural processed wood product manufactured expressly for use as a playground surface.
- F. IPEMA: International Play Equipment Manufacturer's Association.

1.4 PERFORMANCE REQUIREMENTS

- A. Impact Attenuation: According to ASTM F 1292.
- B. Accessibility of Surface Systems: According to ASTM F 1951.
- C. Minimum Characteristics for EWF Surfaces: According to ASTM F 2075.

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Shop Drawings: For each playground surface system, include materials, , cross sections, drainage, installation, and edge termination that are different from the plans.
 - 1. Include similar samples of playground surface system and accessories involving color selection.
 - 2. Owner to provide final color selections. Five (5) different colors to be selected by the owner.
- C. Samples for Verification: For each type of playground surface system indicated.
 - 1. Minimum 1-quart loose-fill surface sealed in a container.
 - 2. Minimum six-inch (6") by six-inch (6") Sample of synthetic rubber seamless surface.
 - 3. Twelve-inch (12") long by full-size cross section of border edging.
 - 4. Minimum twelve-inch (12") by- twelve-inch (12") Sample of geosynthetic fabric.
 - 5. Minimum six-inch (6") by six-inch (6") Sample of geosynthetic, molded-sheet drainage panel.
 - 6. Subdrainage materials as required by the plans.
- D. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from Installers of the items involved:
 - 1. Extent of surface systems and use zones for equipment.
 - 2. Critical heights for playground surfaces and fall heights for equipment.
 - 3. It is the responsibility of the contractor to confirm all fall heights and depth of PIP surface with the owner, designer and manufacturer prior to installation.
- E. Material Certificates: For each type of playground surface system, from manufacturer.
- F. Material Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each playground surface system.
- G. Product Certificates: For each type of unitary synthetic playground surface system, from manufacturer, including IPEMA
- H. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each unitary synthetic playground surface system.
- I. Warranty: Sample of special warranty.
- J. Maintenance Data: Maintenance manuals to include manufacturer's data on maintenance of playground surface system.

1.6 QUALITY CONTROL

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer. Installer's Site Superintendent is to have a minimum of five (5) years of experience installing similar materials on similarly scaled projects.
- B. Source Limitations: Obtain playground surface system materials, including primers and binders, from single source from single manufacturer.

1. Provide secondary materials including adhesives, primers, and geosynthetics, and repair materials of type and from source recommended by manufacturer of playground surface system materials.
- C. Standards and Guidelines: Comply with CPSC No. 325, "Handbook for Public Playground Safety"; IPEMA-certified product, ASTM F 1292; and ASTM F 1487.
- D. Color: All colors of surfacing shall be as specified in the Contract Documents. Colors shall be uniform in appearance. In the case of color percentages of material, the mixtures of color shall be uniform and consistent.

1.7 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit playground surface system installation to be performed according to manufacturers' written instructions and warranty requirements.

1.8 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of playground surface system that fail in materials or workmanship within the specified warranty period.
 1. Failures include, but are not limited to, the following:
 - a. Reduction in impact attenuation.
 - b. Deterioration of surface and other materials beyond normal weathering.
 - c. Warranty Period: Five (5) years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 UNITARY SYNTHETIC DUAL-DENSITY SEAMLESS SURFACE

- A. Surface System: Poured-in-place, two-layer system with wearing course over cushion course. Provide manufacturer's standard thickness for each layer as required for overall thickness indicated, IPEMA- certified product or tested for impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.
 1. Products: Subject to compliance with requirements, provide one of the following or approved equal.
 - a. Child Safe Products, Inc.; Everguard.
 - b. Fibar Group LLC (The); FibarPIP Poured-in-Place Surfacing.
 - c. No Fault Sport Group, LLC; Safety Surface.
 - d. Play Safe Surfacing, Inc.; EPDM Pour-N-Place.
 - e. Safe Guard Surfacing Corp.; Poured-in-Place.
 - f. SpectraTurf, Inc.; SpectraPour.
 - g. Surface America Incorporated; Play Bound Poured-in-Place.
 - h. Approved Equal
 2. Wearing Course: Formulation of EPDM rubber particles, with minimum of twenty percent (20%) and maximum of twenty six percent (26%) of ethylene propylene-diene-

saturated polymethylene main chain along with other organic and inorganic components.

3. Cushion Course: Manufacturer's standard formulation of particles and polyurethane, site mixed and applied.
 4. Binder: Aromatic urethane binder.
 5. Critical Height: As indicated on Contract Drawings.
 6. Overall Thickness: Not less than as indicated on Contract Drawings.
 7. Primer/Adhesive: Manufacturer's standard primer and weather-resistant, moisture-cured polyurethane adhesive suitable for unit, substrate, and location indicated.
 8. Wearing Course Color(s): As indicated on Contract Drawings.
 - a. Color: As indicated on Contract Drawings.
- B. Leveling and Patching Material for Use on Concrete Substrate Below Synthetic Play Surface: Portland cement-based grout or epoxy- or polyurethane-based formulation suitable for exterior use and approved by playground surface system manufacturer.

2.2 ENGINEERED WOOD FIBER SURFACE

- A. Engineered Wood Fiber:
1. Wood fibers containing no bark, leaves, twigs, or foreign or toxic materials according to ASTM F 2075-15.
 2. Certified to be in conformance with IPEMA materials standards for EWF.
 3. Products: Subject to compliance with requirements, provide one of the following or an approved equal.
 - a. Fibar Group LLC (The); Fibar System 100
 - b. GameTime, a PlayCore, Inc. company; GT Impax Fiber.
 - c. Sof'Solutions Inc.; Sof'Fall.
 - d. Zeager Bros., Inc.; Wood Carpet.
 - e. Approved Equal
 4. Product Sieve Analysis:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/4 inch	100
3/8 inch	91.2
No. 16	7.8

5. Critical Height: As per Contract Drawings.
6. Uncompressed Material Depth: Not less than as indicated on the Contract Drawings.

2.3 ACCESSORIES

- A. Stabilizing Mats: Manufacturer's standard, water-permeable PVC or rubber mats tested for impact attenuation according to ASTM F 1292, and rated for use in the following locations, with anchoring system designed to anchor mat securely to subgrade through engineered wood:
1. Under an in front of slide exits and under swings.
 2. Size: 48"x48" Mats

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine substrates and conditions, with Installer present, for compliance with requirements for maximum moisture content, subgrade and substrate conditions, drainage, and other conditions affecting performance of the Work.
- B. Surface Substrates: Verify that substrates are satisfactory for unitary playground surface system installation and that substrate surfaces are dry, cured, and uniformly level or sloped to drain within recommended tolerances according to playground surface system manufacturer's written requirements for cross-section profile.
 - 1. Concrete Substrates: Verify that substrates are dry, free from surface defects, and free of laitance, glaze, efflorescence, curing compounds, form-release agents, hardeners, dust, dirt, loose particles, grease, oil, and other contaminants incompatible with playground surface system or that may interfere with adhesive bond. Determine adhesion, dryness, and acidity characteristics by performing procedures recommended in writing by playground surface system manufacturer.
 - 2. Gravel Substrate: Three quarter-inch (3/4") angular gravel drainage stone, clean and washed; depth as indicated on Contract Drawings.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. General: Prepare substrates to receive surfacing products according to playground surface system manufacturer's written instructions. Verify that substrates are sound and without high spots, ridges, holes, and depressions.
- B. Concrete Substrates: Provide sound supportive surface for playground surface system.
 - 1. Repair unsatisfactory surfaces and fill holes and depressions.
 - 2. Mechanically scarify or otherwise prepare concrete substrates to achieve recommended degree of roughness.
 - 3. Saw cut concrete for terminal edges of playground surface systems as indicated.
 - 4. Treat control joints and other nonmoving substrate cracks to prevent telegraphing through playground surface system.
- C. Gravel Substrates: Provide sound supportive surface for playground surface system.
 - 1. Gravel substrate is to be an approved substrate as stated by the manufacturer of the final play surface. Provide documentation from manufacturer prior to construction of play surface.
 - 2. Edge boundary structures and drainage systems are to be installed prior to placement of gravel substrate.
 - 3. Place and consolidate gravel substrate within edge boundary structures shown on Contract Drawings. Depth as shown on Contract Drawings.
 - 4. Smooth gravel surface by raking. Obtain Project Manager's approval prior to placing surface.
 - 5. Repair any damage to gravel surface from foot traffic prior to placing final surface.

3.3 INSTALLATION, GENERAL

- A. General: Comply with playground surface system manufacturer's written installation instructions. Install playground surface system over area and in thickness indicated.

3.4 DRAINAGE SYSTEMS

- A. Install drainage systems as indicated on Contract Drawings, Details, and per Division 33 Section "Subdrainage Systems".

3.5 INSTALLATION OF SEAMLESS PLAYGROUND SURFACE SYSTEMS

- A. Seamless Surface: Mix and apply components of playground surface system according to manufacturer's written instructions to produce a uniform, monolithic wearing surface and impact-attenuating system of total thickness indicated.
 - 1. Substrate Primer: Apply over prepared substrate at manufacturer's standard spreading rate for type of substrate.
 - 2. Poured Cushion Course: Spread evenly over primed substrate to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation, with a minimum of cold joints.
 - 3. Wearing Course: Spread over primed base course to form a uniform layer applied at manufacturer's standard spreading rate in one continuous operation and, except where color changes, with minimal cold joints. Finish surface to produce manufacturer's standard wearing-surface texture.
 - a. Where colored patterns or graphics are indicated, place adjacent colored material as soon as placed colored material is sufficiently cured, using primer or adhesive if required by manufacturer's written instructions.
 - 4. Edge Treatment: Fully adhere surface system to edges and substrate while maintaining full thickness of surface system to comply with safety performance and accessibility requirements, as indicated on Contract Drawings.

3.6 INSTALLATION OF ENGINEERED WOOD FIBER PLAYGROUND SURFACE SYSTEMS

- A. Engineered Wood Fiber: Place playground surface system materials including manufacturer's standard amount of excess material for compacting naturally with time to required depths after installation of playground equipment support posts and foundations. in conformance with ASTM F 1292.
 - 1. Stabilizing Mats: Coordinate installation of mats and mat anchoring system with placement of Engineered Wood Fiber. Under and in front of slide exits, and under swings.
- B. Finish Grading: Hand rake to a smooth finished surface and to required elevations, graded according to manufacturer's standard specification for material consistency for playground surfaces and for accessibility according to ASTM F 1951.

3.7 CLEANING

- A. Perform cleaning during installation of the Work and upon completion of the Work. Remove all excess materials, debris, and equipment from site. Repair any damage resulting from installation of surfacing.

3.8 PROTECTION

- A. Prevent vehicular traffic in total and pedestrian traffic over play surfacing for not less than forty-eight (48) hours after installation or per manufacturer's recommendations, whichever is longer.
- B. Protect play areas from construction debris, including dust, dirt, runoff, trash and equipment following installation for the duration of construction.

END OF SECTION 32 18 16

SECTION 32 31 13 – BLACK VINYL CHAIN LINK FENCING AND GATES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Vinyl Chain-link fences and gates
- B. Related Sections:
 - 1. Division 03 Section "Cast-in-Place Concrete" for cast-in-place concrete post footings.
 - 2. Division 01 Section "Temporary Facilities and Controls".

1.3 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Chain-link fence shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7:
 - 1. Minimum Post Size: Determine according to ASTM F 1043 for framework up to 8 feet high, and post spacing not to exceed 10 feet.
 - 2. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified and on the following:
 - a. Wind Loads: 105 mph.
 - b. Exposure Category: B.
 - c. Fence Height: Varies
 - d. Material Group: IA, ASTM F 1043, Schedule 40 steel pipe or stronger if warranted to meet wind load requirements. Contractor to verify prior pipe material prior to bid and installation.
- B. Fence posts, footers and fabric not structurally designed for wind/privacy screen applications. Any wind/privacy screens installed after construction will be at the owner's discretion and risk.
- C. Fence system shall meet all applicable ASTM standards. Including but not limited to
 - 1. F 668 - Specification for Poly (Vinyl Chloride)/(PVC) - Coated Steel Chain Link Fabric
 - 2. F 567 - Practice for Installation of Chain Link Fence
 - 3. F 669 - Specification for Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence
 - 4. F 900 - Specification for Industrial and Commercial Swing Gates
 - 5. F 934 - Standard Colors for Polymer-Coated Chain Link Fence Materials
 - 6. F 1083 - Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded,

for Fence Structures

7. F 1234 - Specification for Protective Coatings in Steel Framework for Fences

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components, and finishes for chain-link fences and gates.
 - 1. Fence, rails, and fittings.
 - 2. Chain-link fabric, reinforcements, and attachments.
 - 3. Lighting Protection
- B. Samples for Initial Selection: For components with factory-applied color finishes.
- C. Product Certificates: For each type of chain-link fence from manufacturer.
- D. Product Test Reports: For framing strength, according to ASTM F 1043.
- E. Field quality-control reports.
- F. Operation and Maintenance Data: For the following to include in emergency, operation, and maintenance manuals:
 - 1. Polymer finishes.
- G. Warranty: Sample of special warranty.
- H. Other Informational Submittals:
 - 1. Record drawings.

1.5 QUALITY ASSURANCE

- A. Emergency Access Requirements: Comply with requirements of authorities having jurisdiction for gates with automatic gate operators serving as a required means of access.
- B. Preinstallation Conference: Conduct conference at Project site.
 - 1. Inspect and discuss work specified.
 - 2. Review required testing, inspecting, and certifying procedures.

1.6 PROJECT CONDITIONS

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

1.7 WARRANTY – 1 year all parts and labor

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements.

2.2 VINYL CHAIN-LINK FENCE FABRIC

- A. General: Height indicated on Drawings. Provide fabric in one-piece heights measured between top and bottom of outer edge of selvage knuckle or twist. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
 - 1. 2 B Fused and Pondered Black PVC coated wire Fabric: ASTM F 1183 ASTM F 668
 - a. Mesh Size: 2 inches x 2 inches 9 Gauge core
 - b. Thermally bonded polyvinyl chloride (PV), plastic resin finish over galvanize steel wire. Comply with ASTM F668, Class 2, not less than 10 mils (0.10") thick.
 - c. All fabric shall be commercial grade
 - d. Color: Black
 - 2. Bracing Members:
 - a. Tubular Aluminum:

2.3 FITTINGS

- A. General: Comply with ASTM F 626.
- B. Post and Line Caps: Provide for each post.
 - 1. Line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: Attach rails securely to each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
 - 1. Top Rail Sleeves: round-steel tubing not less than 6 inches long.
 - 2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails in the fence line-to-line posts.
- E. Tension and Brace Bands: Aluminum Alloy 6063.
- F. Tension Bars: Aluminum Fiberglass, length not less than 2 inches shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: Mill-finished aluminum rod and turnbuckle or other means of adjustment.
- H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
 - 1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, complying with the following:
 - a. Aluminum: ASTM B 211; Alloy 1350-H19; 0.148-inch- diameter, mill-finished wire.
- I. Finish:
 - 1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz. /sq. ft. zinc.
 - 2. Aluminum: Mill finish.

2.4 POLYMER FINISHES

- A. Supplemental Color Coating: In addition to specified metallic coatings for steel, provide

fence components with polymer coating.

- B. Metallic-Coated Steel Tension Wire: PVC-coated wire complying with ASTM F 1664, Class 1.
- C. Metallic-Coated Steel Framing and Fittings: Comply with ASTM F 626 and ASTM F 1043 for polymer coating applied to exterior surfaces and, except inside cap shapes, to exposed interior surfaces.
 - 1. Polymer Coating: Not less than 10-mil thick PVC polyester finish.
- D. Color: Black, complying with ASTM F 934.

2.5 COLOR

- A. All fence and gate accessories and components to be Black in color.

2.6 CAST-IN-PLACE CONCRETE

- A. Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water for ready-mixed concrete complying with ASTM C 94/C 94M. Measure, batch, and mix Project-site-mixed concrete according to ASTM C 94/C 94M.
 - 1. Concrete Mixes: Normal-weight concrete with not less than 3600-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.
- B. Materials: Dry-packaged concrete mix complying with ASTM C 387 for normal-weight concrete mixed with potable water according to manufacturer's written instructions.

2.7 GATES

- A. Contractor to provide full shop drawings and specifications for approval of all gates and all components.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for a verified survey of property lines and legal boundaries, site clearing, earthwork, pavement work, and other conditions affecting performance of the Work.
 - 1. Do not begin installation before final grading is completed unless otherwise permitted by owner's representative.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.

3.3 INSTALLATION, GENERAL

- A. Install chain-link fencing to comply with ASTM F 567 and more stringent requirements indicated.
 - 1. Install fencing on established project boundary lines inside property line as shown on Drawings.

3.4 CHAIN-LINK FENCE INSTALLATION

- A. Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- B. Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil.
 - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
 - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
 - a. Exposed Concrete: Extend 2 inches above grade; shape and smooth to shed water.
 - b. Concealed Concrete: Top 2 inches below grade to allow covering with surface material.
 - c. Posts Set into Concrete in Sleeves: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts have been inserted into sleeves, fill annular space between post and sleeve with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
 - d. Posts Set into Voids in Concrete: Form or core drill holes not less than 5 inches deep and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with non-shrink, nonmetallic grout, mixed and placed to comply with anchoring material manufacturer's written instructions, and finished sloped to drain water away from post.
 - 3. Mechanically Driven Posts: Drive into soil to depth of 30 inches. Protect post top to prevent distortion.
- C. Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 30 degrees or more.
- D. Line Posts: Space line posts uniformly on center per detail.
- E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
 - 1. Locate horizontal braces at mid-height of fabric on fences with top rail and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.

- F. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fencing. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- G. Intermediate and Bottom Rails: Install and secure to posts with fittings.
- H. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 2 inches between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- I. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts with tension bands spaced not more than 15 inches o.c.
- J. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
 - 1. Maximum Spacing: Tie fabric to line posts at 12 inches o.c. and to braces at 24 inches o.c.
- K. Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

3.5 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing per manufacturer requirements. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.
- B. See Electrical Specifications and Drawings for all gate locations that will have key pad access.

3.6 ADJUSTING

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

END OF SECTION 323113

SECTION 329200 - TURF AND GRASSES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. Section Includes:
 - 1. Seeding.
 - 2. Sodding.
 - 3. Hydroseeding.
- B. Related Sections:
 - 1. Division 31 Section "Site Clearing" for topsoil stripping and stockpiling.
 - 2. Division 31 Section "Earth Moving" for excavation, filling and backfilling, and rough grading.
 - 3. Division 33 Section "Subdrainage" for subsurface drainage.

1.3 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. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- D. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- E. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

- F. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.
- G. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- H. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.4 REFERENCES

- A. Comply with applicable requirements for the following standards. Where these standards conflict with other specified requirements, the most restrictive requirements shall govern.
 - 1. American Society for Testing and Materials (ASTM)
 - C 136 Sieve Analysis of Fine and Course Aggregates
 - D 422 Particle-Size Analysis of Soils
 - E 11 Wire-Cloth Sieves for Testing Purposes

1.5 SUBMITTALS

- A. Product Data: For each type of product indicated.
 - 1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.
- B. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod and native seed mix. Include identification of source and name and telephone number of suppliers.
- C. Qualification Data: For qualified landscape Installer.
- D. Product Certificates: For soil amendments and fertilizers from manufacturer.
- E. Material Test Reports: For standardized ASTM D 5268 topsoil existing native surface topsoil existing in-place surface soil and imported or manufactured topsoil.
- F. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required initial maintenance periods.

1.6 QUALITY ASSURANCE

- A. Installer Qualifications: A North Carolina Board of Landscape Contractors certified Landscape Contractor whose work has resulted in successful turn establishment. The Contractor's company and Field Supervisor must be Board certified.
 - 1. Experience: Five years minimum experience in turf installation.
 - a. Installer to show a minimum of 5 project examples and owner point of contacts for project similar in scope and quality completed in the last 5 years.
 - 2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 3. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.
 - 4. Pesticide Applicator: State licensed, commercial.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.
- C. Soil Analysis: For each unamended soil type, furnish soil analysis and a written report by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of the soil.
 - 1. Testing methods and written recommendations shall comply with USDA's Handbook No. 60.
 - 2. The soil-testing laboratory shall oversee soil sampling, with depth, location, and number of samples to be taken per instructions from Architect. A minimum of three representative samples shall be taken from varied locations for each soil to be used or amended for planting purposes.
 - 3. Report suitability of tested soil for turf growth.
 - a. Based on the test results, state recommendations for soil treatments and soil amendments to be incorporated. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory planting soil suitable for healthy, viable plants.
 - b. Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional recommendations for corrective action.
- D. Preinstallation Conference: Conduct conference at Project site.
- E. Provide appropriate treatment for fire ant infestation on plant material prior to shipment from nursery as required by the North Carolina Department of Agricultural and Consumer Services Guidelines.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Packaged Materials: 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. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod in time for planting within 24 hours of harvesting. Protect sod from breakage and drying.
- C. Seed: Deliver seed in original, sealed, labeled, and undamaged containers
- D. Bulk Materials:
 - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
 - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
 - 3. Accompany each delivery of bulk fertilizers, lime, and soil amendments with appropriate certificates.

1.8 PROJECT CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
 - 1. Spring Planting: <Feb - Apr 15>.
 - 2. Fall Planting: <Aug 25 – Nov 1>.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions.

1.9 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established.
- B. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS**2.1 TURFGRASS SOD**

- A. Turfgrass Sod: **Certified**, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted.
- B. Turfgrass Sod Species: **Zoyisa Palisades or El Toro Cultivars**

2.2 GRASS SEED

- A. Provide fresh, clean, new crop lawn seed mixture. Furnish to Owner dealers guaranteed statement of composition of mixture and percentage of purity and germination of each variety.
- B. Seed Mixture: Provide seed of grass species and varieties, proportions by weight and minimum percentages of purity, germination, and maximum percentage of weed seed. Reference Plans for Seed mixture. Below is the general seed recommendation by pound per acres. Substitution mixes may be submitted for review and approval.

March 1 - August 31

50#	Tall Fescue
10#	Centipede
25#	Bermudagrass (hulled)

September 1 - February 28

50#	Tall Fescue
10#	Centipede
35#	Bermudagrass (unhulled)

2.3 ORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
 - 1. Class: T, with a minimum of 99 percent passing through No. 8 sieve and a minimum of 75 percent passing through No. 60 sieve.
 - 2. Class: O, with a minimum of 95 percent passing through No. 8 sieve and a minimum of 55 percent passing through No. 60 sieve.
 - 3. Provide lime in form of ground dolomitic limestone.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No. 6 sieve and a maximum of 10 percent passing through No. 40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.

- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No. 50 sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.4 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through [1-inch] sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
 - 1. Organic Matter Content: 50 to 60 percent of dry weight.
 - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

2.5 FERTILIZERS

- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 1 to 4 percent nitrogen and 10 to 20 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. 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. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
 - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.6 PLANTING SOILS

- A. Planting Soil: Existing, in-place surface soil. Verify suitability of existing surface soil to produce viable planting soil. Remove stones, roots, plants, sod, clods, clay lumps, pockets of coarse sand, concrete slurry, concrete layers or chunks, cement, plaster, building debris, and other extraneous materials harmful to plant growth. Verify suitability of native surface topsoil to produce viable planting soil. Clean soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth. Mix soil amendments as necessary per Landscaper recommendations.

2.7 MULCHES

- A. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
- B. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
- C. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.

2.8 PESTICIDES

- A. General: Pesticide, registered and approved by EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

2.9 FIRE ANT TREATMENT / PREVENTION

- A. Bait Applications of AMDRO per acre or approved equal.
- B. Drench Applications of Orthene on each active hill or approved equal.

PART 3 - EXECUTION**3.1 EXAMINATION**

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
 - 1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
 - 2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
 - 3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
 - 4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. Protect grade stakes set by others until directed to remove them.
- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 TURF AREA PREPARATION

- A. Limit turf subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 6 inches to 8 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.
 - 1. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil.
 - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.
 - b. Mix lime with dry soil before mixing fertilizer.

- C. Unchanged Subgrades: If turf is to be planted in areas unaltered or undisturbed by excavating, grading, or surface-soil stripping operations, prepare surface soil as follows:
 - 1. Remove existing grass, vegetation, and turf. Do not mix into surface soil.
 - 2. Loosen surface soil to a depth of at least 6 inches to 8 inches. Apply soil amendments and fertilizers according to planting soil mix proportions and mix thoroughly into top 4 inches to 6 inches of soil. Till soil to a homogeneous mixture of fine texture.
 - a. Apply fertilizer directly to surface soil before loosening.
 - 3. Remove stones larger than 1 inch in any dimension and sticks, roots, trash, and other extraneous matter.
 - 4. Legally dispose of waste material, including grass, vegetation, and turf, off Owner's property.
- D. 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 finish grading to areas that can be planted in the immediate future.
- E. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- F. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- B. Sow seed at a total rate indicated on plans.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with slopes exceeding 1:4 per erosion control plans.
- E. Protect seeded areas with erosion-control mats where shown on Drawings; install and anchor according to manufacturer's written instructions.
- F. 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.

1. Anchor straw mulch by crimping into soil with suitable mechanical equipment.
 2. Bond straw mulch by spraying with asphalt emulsion at a rate of 10 to 13 gal./1000 sq. ft. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas. Immediately clean damaged or stained areas.
- G. Protect seeded areas from hot, dry weather or drying winds by applying compost mulch peat mulch planting soil within 24 hours after completing seeding operations. Soak areas, scatter mulch uniformly to a thickness of 3/16 inch, and roll surface smooth.

3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
1. Mix slurry with fiber-mulch manufacturer's recommended tackifier.
 2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre] dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
 3. Apply slurry uniformly to all areas to be seeded in a two-step process. Apply first slurry coat at a rate so that mulch component is deposited at not less than 500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate. Apply slurry cover coat of fiber mulch (hydromulching) at a rate of [1000 lb/acre].

3.6 SODDING

- A. Lay sod within 24 hours of harvesting unless a suitable preservation method is accepted by Landscape Architect prior to delivery time. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
1. Lay sod across angle of slopes exceeding 1:3.
 2. Anchor sod on slopes exceeding 1:6 with wood pegs [**or steel staples**] spaced as recommended by sod manufacturer but not less than 2 anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.
- D. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.

3.7 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
 3. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
 3. The Contractor is responsible for watering all seeded and sodded areas for a period of 90 days. Method of water to be determined by the contractor at their expense.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:
 1. Mow zoysia to a height to 1.4 inches.
 2. Mow bluegrass and other cool season grasses to a height of 1-1/2 to 2-1/2 inches.
 3. Native Grasses:
 - a. Initiate mowing of turf grass areas when grass has attained height of 3 feet and roots are firmly established. Maintain turf grass height at 3 feet. Mow in fall after grass turns brown (becomes dormant) and in spring for early season weed control (once weeds/grasses get to about 18 inches high – can be cut back to 6 – 8 inches). Mow native grass areas no more than 3 times per year.
- D. If lawn or grass is established in the fall and maintenance is required to continue into the spring months, lawn and grass shall receive an application of lime and fertilizer in the spring. Lime and fertilizer shall be spread in a uniform layer over the entire lawn surface, at the following rates.
 1. Lime: 100 lb. / 1000 sq. ft.
 2. Fertilizer: 20 lb. / 1000 sq. ft.

3.8 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
 - 1. 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.
 - 2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

3.9 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents in accordance with requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.
- B. Post-Emergent Herbicides (Selective and Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

3.10 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.
- C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- D. Remove nondegradable erosion-control measures after grass establishment period.

3.11 MAINTENANCE SERVICE

- A. Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in "Turf Maintenance" Article. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:
 - 1. Seeded Turf: 90 days from date of planting completion.

- a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
2. Sodded Turf: 90 days from date of planting completion.

END OF SECTION 329200

SECTION 32 93 00 - LANDSCAPING**PART 1 - GENERAL****1.1 SUMMARY**

- A. The Contractor shall furnish all materials and perform all work in accordance with these specifications, drawings, and instructions provided by the Owner, so that the intended vegetative cover, plants, trees, etc., flourish beyond the time limits set by their guarantee.
- B. The work shall include everything shown on the drawings and required by the specifications and everything to which in the judgment of the Owner is incidental to what is shown on the drawings or required by the specifications.

1.2 REFERENCE STANDARDS

- A. Plant material shall, as a minimum, in all cases conform with requirements of the American Standard for Nursery Stock latest versions of rules and grading adopted by the American Association of Nurserymen, Inc., unless upgraded as to meet the additional requirements as presented in these specifications and on the drawings.

1.3 SUBMITTALS

- A. Owner shall pre-approve all trees prior to being moved on-site.
- B. Submit list of plant material citing source and location of plant material to be installed.
- C. Mulch to be approved by Owner prior to installation.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Registered Landscape Contractors who have 5 years experience are skilled in installing plant material similar and to the extent of that indicated for this Project and whose projects have a record of successful performance.
- B. Registered Landscape Contractors shall submit project references for projects completed similar to the extent of this Project.
- C. All work completed and materials furnished and installed shall be of the best quality and shall be in strict accordance with the intention of the drawings, specifications and samples. The Contractor shall cooperate with the Owner so that no error or discrepancy in the drawings or specifications shall cause defective or inappropriate materials to be used or poor workmanship to be allowed and so that the work may proceed in the most efficient and effective manner. If there is a discrepancy between the graphic count of plants and the drawing list count of plants on the landscape drawing, the graphic count shall govern.
- D. Work must be carried out only during weather conditions favorable to landscape construction and to the health and welfare of plants.

- E. Before commencing work, all trees and shrubs which are to be saved must be protected from damage by the placement of fencing flagged for visibility or some other suitable protective procedure approved by the Owner. No work may begin until this requirement is fulfilled.
- F. In order to avoid damage to roots, bark or lower branches, no truck or other equipment shall be driven or parked within the drip line of any tree, unless the tree overspreads a paved way.
- G. The Contractor shall use any and all precautionary measures when performing work around trees, walks, pavements, utilities, and any other features either existing or previously installed under this contract.
- H. The Contractor shall adjust depth of earthwork and topsoil when working immediately adjacent to any of the aforementioned features in order to prevent disturbing tree roots, undermining walks and pavements, and damage in general to any existing or newly incorporated item.
- I. Plants transported to the project in open vehicles shall be covered with tarpaulins or other suitable covers securely fastened to the body of the vehicle to prevent injury to the plants. Closed vehicles shall be adequately ventilated to prevent overheating of the plants. Evidence of inadequate protection following digging, carelessness while in transit, or improper handling or storage shall be cause for rejection. All plants shall be kept moist, fresh, and protected. Such protection shall encompass the entire period during which the plants are in transit, being handled, or are in temporary storage.
- J. Where excavating, fill, or grading is required within the drip line of trees that are to remain, the work shall be performed as follows:
 - 1. TRENCHING: When trenching occurs around trees to remain, the tree roots shall not be cut but the trench shall be tunneled under or around the roots by careful hand digging and without injury to the roots;
 - 2. RAISING GRADES: When the existing grade at tree is below the new finished grade, and fill not exceeding 16 inches is required, clean, washed gravel graded from 1 to 2 inches in size shall be placed directly around the tree trunk. The gravel shall extend out from trunk on all sides a minimum of 18 inches and finish approximately 2 inches above the finished grade at tree. Install gravel before any earth fill is placed. New earth fill shall not be left in contact with the trunks of any trees requiring fill. Where fill exceeding 16 inches is required, a dry laid tree well shall be constructed around the trunk of the tree. The tree well shall extend out from the trunk on all sides a minimum of 3 feet and to 3 inches above finish grade. Coarse grade rock shall be placed directly around the tree well extending out to the drip line of the tree. Clean, washed gravel graded from 1 to 2 inches in size shall be placed directly over the coarse rock to a depth of 3 inches. Approved backfill material shall be placed directly over the washed gravel to desired finished grade;
 - 3. LOWERING GRADES: Existing trees in areas where the new finished grade is to be lowered shall have regrading work done by hand to elevation as indicated. Roots as required shall be cut cleanly 3 inches below finished grade and scars covered with tree paint; and,
 - 4. Trees marked for preservation that are located more than 6 inches above proposed grades shall stand on broad rounded mounds and be graded smoothly into the lower level. Trees

located more than 16 inches above proposed grades shall have a dry laid stone wall, or other retaining structure as detailed on the drawings, constructed a minimum of 5 feet from the trunk. Exposed or broken roots shall be cut clean and covered with topsoil.

- K. The Owner reserves the right to inspect and reject plants at any time and at any place.
- L. The Owner shall have the final approval for acceptance of the landscaping.

1.5 QUALITY OF PLANTS

- A. Plants shall in all cases conform to requirements of the American Standard for Nursery Stock latest versions of rules and grading adopted by the American Association of Nurserymen, Inc., but upgraded to meet the additional requirements herein.
- B. Unless specifically noted otherwise, all plants shall be of selected specimen quality, exceptionally heavy, symmetrical, tightly knit, so trained or favored in their development and appearance as to be superior in form, number of branches, compactness and symmetry. All plants shall have a normal habit or sound, healthy, vigorous plants with well-developed root system.
- C. Plants shall be free of disease, insect pests, eggs or larvae.
- D. Plants shall not be pruned before delivery.
- E. Trees with abrasion of the bark, sunscalds, disfiguring knots or fresh cuts of limbs over 1¼ inches, which have not completely calloused, shall be rejected.
- F. All plants shall be typical of their species or variety and shall have a normal habit of growth and be legibly tagged with the proper name. All plants shall have been grown under climatic conditions similar to those in the locality of the site of the project under construction or have been acclimated to such condition for at least 2 years.
- G. The root system of each shall be well provided with fibrous roots. All parts shall be sound, healthy, vigorous, well branched and densely foliated when in leaf.
- H. All plants designated ball and burlap (B&B) must be moved with the root systems as solid units with balls of earth firmly wrapped with burlap. The diameter and depth of the balls of earth must be sufficient to encompass the fibrous root feeding systems necessary for the healthy development of the plant. No plant shall be accepted when the ball of earth surrounding its roots has been badly cracked or broken preparatory to or during the process of planting. The balls shall remain intact during all operations. All plants that cannot be planted at once must be heeled-in by setting in the ground and covering the balls with soil or mulch and then watering. Hemp burlap and twine is preferable to treated. If treated burlap is used, all twine is to be cut from around trunk and all burlap is to be removed.
- I. The trunk of each tree shall be a single trunk growing from a single unmutilated crown of roots. No part of the trunk shall be conspicuously crooked as compared with normal trees of the same variety.

- J. The thickness of each shrub shall correspond to the trade classification No. 1. Single stemmed or thin plants shall not be accepted. The side branches must be generous, well twigged, and the plant as a whole well branched to the ground. The plants must be in moist condition, free from dead wood, bruises or other root or branch injuries.

1.6 PLANT SIZES

- A. Plants shall be measured when branches are in their normal position.
- B. Shrubs shall meet the requirements for spread, height or container size stated in the plant list. The measurements are to be taken from the ground level to the average height of the shrub and not to the longest branch. Height and spread dimensions specified refer to the main body of the trees (measured from the crown of the roots to the tip of the top branch) shall be not less than the minimum size designated.
- C. Caliper measurements shall be taken at a point on the trunk 6 inches above natural ground line for trees up to 4 inches in caliper, and at a point 12 inches above the natural ground line for trees exceeding 4 inches in caliper.
- D. If a range of size is given, no plant shall be less than the minimum size, and not less than 50% of the plants shall be as large as the upper half of the range specified.
- E. The measurements specified are the minimum size acceptable and, where pruning is required, are the measurements after pruning.

1.7 MAINTENANCE OPERATIONS BEFORE APPROVAL

- A. Plant care shall begin immediately after each plant is satisfactorily installed and shall continue throughout the life of the contract until final acceptance of the project.
- B. Care shall include, but not be limited to, replacing mulch that has been displaced by erosion or other means, repairing and reshaping water rings or saucers, maintaining stakes and guys as originally installed, watering when needed or directed, and performing any other work required to keep the plants in a healthy condition.
- C. Contractor shall remove and replace all dead, defective and/or rejected plants as required before final acceptance.
- D. Grassed areas damaged during the process of the work shall be the responsibility of the Contractor, who shall restore the disturbed areas to a condition satisfactory to the Owner. This may include filling to grade, fertilizing, seeding and mulching.

1.8 GUARANTEE

- A. The condition of all new plant materials is the responsibility of the Contractor and shall be approved by the Owner.
- B. Until final approval, any replacement of plant materials that may be necessary shall be at the expense of the Contractor.

- C. Plants shall be guaranteed for a period of 1 year after final acceptance.
- D. In addition to other standard provisions, the Contractor's bid amount shall also provide for the following:
 - 1. Maintenance necessary during establishment period;
 - 2. Replacement in kind of all plant materials not in a healthy growing condition or that have died back to the crown or beyond normal pruning limits; and,
 - 3. The Contractor shall also be responsible for any damage caused by his operations and shall dispose of all rubbish and excess soil as directed.

PART 2 - PLANTING MATERIALS

2.1 PLANTING MIX

- A. Planting mix may be developed by amending the existing soil or removing the existing soil and replacing with new planting mix. It shall be uniform composition throughout, with a mixture of subsoil. It shall be free of stones, lumps, live plants and their roots, sticks, and other extraneous matter. It shall contain no man-made materials unless otherwise specified. Planting mix shall not be used while in a frozen or muddy condition.

Unless otherwise specified in the contract documents the planting mix shall contain the following specified percentages of constituents:

CLAY	Minimum 10% - Maximum 30%
SAND	Minimum 10% - Maximum 20%
SILT	Minimum 20% - Maximum 30%
ORGANIC MATERIAL	Minimum 5% - Maximum 20%

Organic Material is defined as compost/humus such as sawdust or leaf mold that has completed the decomposition process. Percentage of organic matter shall be determined by loss on ignition, of moisture free samples dried at 65 degrees.

Planting mix shall have an acidity range of pH 5.5 to 7.0.

A sample of the proposed planting mix shall be submitted to the Engineer 30 calendar days prior to installation and be approved prior to installation.

A list of per approved soil suppliers is available to the contractor upon request.

2.2 TOPSOIL

- A. Work Included - Place topsoil in areas designated on the drawings or as specified herein.
- B. Areas - All exterior ground within the limit of contract, except surfaces occupied and except areas indicated to be undisturbed, shall be topsoiled.

- C. Preparation - Disk, drag, harrow or hand rake subgrade to a depth of 3 inches to provide bond for topsoil. Topsoil, which must be transported across finished walks, shall be delivered in such a manner that no damage will be done to the walks. The Contractor shall be responsible for the repair of such damage.
- D. Placement of Topsoil - Before placing topsoil, rake subsoil surface clear of stones larger than 1½ inches, debris, and roots. Compact topsoil to form a layer with minimum depth of 4 inches in lawn areas and 12 inches in shrub beds. Topsoil shall be placed so that after final settlement there will be good drainage (and conforming to elevations shown on drawings). Contractor is to maintain surfaces and place any additional topsoil necessary to replace that which may have eroded before acceptance.
- E. Topsoil: Natural, friable, fertile, fine loamy soil possessing the characteristics of representative topsoils in the vicinity which produces a heavy growth; free from subsoil, objectionable weeds, litter, sods, stiff clay, stones larger than 1 inch in diameter, stumps, roots, trash, toxic substances, or any other material which may be harmful to plant growth or hinder planting operations. Contractor is to verify amount stockpiled and supply any additional as needed.
 - 1. Topsoil shall contain not less than 15% nor more than 25% organic matter as determined by the wet combustion method (chronic acid reduction); topsoil shall have a pH value of not less than 5.5 nor more than 7.0;
 - 2. Topsoil shall meet the following mechanical analysis:

<u>Size of Screen</u>	<u>% of Soil Retained</u>	<u>% of Soil Passing</u>
0.025mm	0	100
0.006mm	3	97
No. 100	40-60	40-60

Imported topsoil in which more than 60% of the material passing a No. 100 sieve (clayey) shall be rejected. All percentages are to be based on the dry weight of the samples; and,

- 3. Laboratory tests of the topsoil shall be performed by a certified testing laboratory, and shall perform tests for the following:
 - a. Sieve analysis and percentage of clay
 - b. Hydrogen ion concentration
 - c. Percentage of organic matter
 - d. Amount of the following nutrients:
 - 1) Ammonium nitrogen
 - 2) Nitrate nitrogen
 - 3) Available phosphorous

4) Available potassium

- e. Recommended fertilizer and rate of application for low and medium level nutrient soils.

2.3 FERTILIZER

- A. Fertilizer shall be delivered to the site, mixed as specified, in the original unopened standard size bags showing weight, analysis and name of manufacturer. Store fertilizer in a weatherproof place and in such a manner that it shall be kept dry and its effectiveness shall not be impaired.
- B. Percentages of nitrogen, phosphorus and potash shall be based on laboratory test recommendations. For the purpose of bidding, assume 10% nitrogen, 6% phosphorus and 4% potash by weight. At least 50% of the total nitrogen shall contain no less than 3% water-insoluble nitrogen. At least 60% of the nitrogen content shall be derived from super-phosphate containing not less than 18% phosphoric acid or bone meal containing 25% - 30% phosphoric acid and 2% - 3% nitrogen. Potash shall be derived from muriate of potash containing 55% - 60% potash.
- C. Grass or sodded areas shall have fertilizer applied with a thorough watering immediately following application at the rate of 35 pounds per 1,000 square feet harrowed into the top 2 inches of seedbed.

2.4 PEAT MOSS

- A. Peat moss shall be Michigan peat moss or approved equal by the Owner in color and consistency, to be used for planting soil mixture only.
- B. Peat moss shall be finely shredded to pass a ½ inch mesh and shall be no less than 90% organic material by weight, with an ash content by ignition of no more than 10%.
- C. Material shall contain no less than 35% and no more than 66% moisture by weight, but shall have a water-holding capacity of 150% - 200%.
- D. Material shall have a pH value between 4 and 5.
- E. Material may be imported (supplied in bales) or domestic (furnished in bulk).
- F. Peat moss shall not be used as mulch, except on ground cover.

2.5 DOUBLE SHREDDED HARDWOOD MULCH

- A. Shredded pine bark mulch or approved equal shall be used as a 3 inch, after settlement, top dressing in all plant beds and around all trees planted by the Contractor. Single trees or shrubs shall be mulched to the outside edge of the saucer. Mulch shall be of sufficient character as not to be easily displaced by wind or water runoff.

2.6 STAKING MATERIAL

- A. Stakes shall be 2" x 2" x 8' pressure treated wood. 3 stakes per tree.

- B. Wire tree staking shall be pliable No. 12 galvanized soft steel wire.
- C. Hose shall be two-ply fiber-bearing rubber garden hose, not less than ½ inch inside diameter, black or green, and of suitable length.

2.7 WATERING

- A. Owner will provide water, if available on-site, however if water is not available the Contractor shall furnish all necessary water. The Contractor shall furnish hose and other watering equipment.
- B. Contractor is responsible for watering all plant material for a period of 90 days after substantial completion.

PART 3 - PLANTING PROCEDURES AND EXECUTION

3.1 DIGGING AND HANDLING

- A. Bare rooted shrubs shall be dug with adequate fibrous roots. Roots of these plants shall be covered with a uniformly thick coating of mud by being puddled immediately after they are dug, or packed in moist straw, or moss.
- B. Balled and burlapped plants shall be dug with firm natural balls of earth of sufficient diameter and depth to include most of the fibrous roots.
- C. Roots or balls of all plants shall be adequately protected at all times from the sun and from drying winds.
- D. All balled and burlapped plants which cannot be planted immediately upon delivery shall be set on the ground and shall be well protected with soil, wet moss or other acceptable material. Bare rooted plants, which cannot be planted immediately, shall be heeled-in upon delivery. All shall be kept moist.
- E. Bundles of plants shall be opened and the plants separated before the roots are covered. Care shall be taken to prevent air pockets among the roots. During planting operations, bare roots shall be covered with canvas, hay or other suitable material. No plant shall be bound with wire or rope at any time so as to damage the bark or break the branches.

3.2 TREES AND SHRUB PLANTING OPERATIONS

- A. Planting operations shall be performed at a steady rate of work unless weather conditions make it impossible to work. No plant material shall be planted in frozen ground.
- B. The Contractor shall provide sufficient tools and equipment required to carry out the planting operation.
- C. All plants too large for two men to lift in and out of holes shall be placed with a sling. Do not rock trees in holes to raise.

- D. For soil mix for plant holes, see Article 2.01, Topsoil.
- E. If rock or other underground obstructions are encountered, the Owner may require plant pits to be relocated, the pits enlarged or the plants deleted from the contract.
- F. Locations containing unsuitable subsoil shall be treated in one of the following manners:
 - 1. Where unsuitability within the construction site is deemed by the Owner to be due to excessive compaction caused by heavy equipment or by the presence of boards, mortar, concrete or other construction materials in subgrade, and where the natural subsoil is other than A.A.S.H.T.O. classification of A6 or 7, the Contractor shall loosen such areas with spikes, discs, or other means to loosen the soil to a condition acceptable by the Owner. The Contractor shall also remove all debris and objectionable material. Soil should be loosened to a minimal depth of 12 inches with additional loosening as required to obtain adequate drainage. Contractor may introduce peat moss, sand, or organic matter into the subsoil to obtain adequate drainage should he so desire. All such remedial measures shall be considered as incidental to the work and no extra payment shall be made for this part of the work; and,
 - 2. Where subgrade is deemed by the Owner to be unsuitable because the natural subsoil falls into an AASHTO classification of A6 or 7 and contains moisture in excess of 30%, then such a condition shall be rendered suitable by installation of a subdrainage system or by other means described elsewhere in these specifications. Where such conditions have not been known or revealed prior to planting time and where they have not been recognized in the preparation of drawings and specifications, then the Owner shall issue a change order to install the proper remedial measures, all of which shall be in addition to the contract sum.
- G. Adjustments in locations and outlines shall be made as directed. In the event that pits or areas for planting are prepared and backfilled with topsoil to grade prior to commencement of lawn operations, they shall be so marked that when the work of planting proceeds, they can be readily located. In case underground obstructions such as ledges or utilities are encountered, location shall be changed under the direction of the Owner without charge.
- H. Holes for trees shall be at least 2 feet greater in diameter than the spread of the root system and at least 6 inches deeper than the root ball. Holes for shrubs and vines shall be at least 12 inches greater in diameter than the spread of the root system and at least 2 feet deep.
- I. To the topsoil in the backfilling of tree holes and shrub beds, there shall be added as the progress of the work permits, ground limestone if soil tests indicate it is needed, and commercial fertilizer at the rate of 3 pounds for trees up to 3 inches in caliper, 1 pound per 1 inch in caliper for larger trees, 6 ounces for small shrubs and 8 ounces for each shrub 4 feet or over. Ground limestone shall be omitted in the case of acid soil plants. The, limestone and fertilizer shall be thoroughly mixed with the topsoil in the planting operation.
- J. The plants shall be planted in the center of the holes and at the same depth as they previously grew. Topsoil shall be backfilled in layers of not more than 8 inches and each layer watered sufficiently to settle before the next layer is put in place. Topsoil shall be tamped under edges of balled plants. Enough topsoil shall be used to bring the surfaces to finish grade when settled.

1. A saucer shall be provided around each plant as shown on the drawings;
2. Plants shall be soaked with water twice within the first 24 hours of time of planting. Water shall be applied with low pressure so as to soak in thoroughly without dislodging the topsoil;
3. Approved weed mat shall be placed under all areas to be covered with mulch. Secure weed mat in place with a soil anchor, then cover with mulch as directed; and,
4. A 3 inch layer, after settlement, of mulch shall be applied directly on top of weed mat to the entire area of each saucer or planting bed.

3.3 MAINTENANCE DURING CONSTRUCTION

- A. Maintenance shall begin immediately after planting. Plants shall be watered, mulched, weeded, pruned, sprayed, fertilized, cultivated, and otherwise maintained and protected until 45 days after final acceptance. Settled plants shall be reset to proper grade and position, planting saucer restored and dead material removed. Stakes and wires shall be tightened and repaired. Defective work shall be corrected as soon as possible after it becomes apparent and weather and season permit.
- B. If a substantial number of plants are sickly or dead at the time of inspection, acceptance shall not be granted and the Contractor's responsibility for maintenance of all plants shall be extended until replacements are made.
- C. All replacements shall be plants of the same kind and size specified on the plant list. They shall be furnished and planted as specified above at no cost to the Owner.
- D. All plants shall be guaranteed for a period of 1 year after final acceptance.
- E. At the end of the Establishment Period, inspection shall be made again. Any plant required under this contract that is dead or unsatisfactory to the Owner shall be removed from the site. These shall be replaced during the normal planting season.

END OF SECTION 32 93 00

SECTION 330500 - COMMON WORK RESULTS FOR UTILITIES**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Piping joining materials.
 - 2. Transition fittings.
 - 3. Grout.
 - 4. Flowable fill.
 - 5. Piping system common requirements.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
- B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.

1.4 COORDINATION

- A. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
- B. Coordinate installation of identifying devices after completing covering and painting if devices are applied to surfaces.
- C. Coordinate size and location of concrete bases. Formwork, reinforcement, and concrete requirements are specified in Division 03.

PART 2 - PRODUCTS**2.1 PIPING JOINING MATERIALS**

- A. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- B. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.

2.2 TRANSITION FITTINGS

- A. Transition Fittings, General: Same size as, and with pressure rating at least equal to and with ends compatible with, piping to be joined.

2.3 GROUT

- A. Description: ASTM C 1107, Grade B, nonshrink and nonmetallic, dry hydraulic-cement grout.
 - 1. Characteristics: Post hardening, volume adjusting, nonstaining, noncorrosive, nongaseous, and recommended for interior and exterior applications.
 - 2. Design Mix: 5000-psi, 28-day compressive strength.
 - 3. Packaging: Premixed and factory packaged.

2.4 FLOWABLE FILL

- A. Description: Low-strength-concrete, flowable-slurry mix.
 - 1. Cement: ASTM C 150, Type I, portland.
 - 2. Density: 115- to 145-lb/cu. ft..
 - 3. Aggregates: ASTM C 33, natural sand, fine and crushed gravel or stone, coarse.
 - 4. Aggregates: ASTM C 33, natural sand, fine.
 - 5. Admixture: ASTM C 618, fly-ash mineral.
 - 6. Water: Comply with ASTM C 94/C 94M.
 - 7. Strength: 100 to 200 psig at 28 days.

PART 3 - EXECUTION**3.1 PIPING INSTALLATION**

- A. Install piping according to the following requirements and Division 33 Sections specifying piping systems.
- B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated unless deviations to layout are approved by the Engineer.
- C. Install piping at indicated slopes.
- D. Install piping free of sags and bends.
- E. Install fittings for changes in direction and branch connections.

3.2 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 33 Sections specifying piping systems.
- B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

- C. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- D. Grooved Joints: Assemble joints with grooved-end pipe coupling with coupling housing, gasket, lubricant, and bolts according to coupling and fitting manufacturer's written instructions.
- E. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

3.3 GROUTING

- A. Mix and install grout for equipment base bearing surfaces, pump and other equipment base plates, and anchors.
- B. Clean surfaces that will come into contact with grout.
- C. Provide forms as required for placement of grout.
- D. Avoid air entrapment during placement of grout.
- E. Cure placed grout.

END OF SECTION 330500

SECTION 331100 – WATER DISTRIBUTION SYSTEM**PART 1 - GENERAL****1.1 DESCRIPTION**

- A. Work included: Provide water distribution system as shown on the Drawings, specified herein, and needed for a complete and proper installation.
- B. Related work:
 - 1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these specifications.
 - 2. Section 02221 - Trenching, Backfilling for Utilities.
 - 3. Section 02516 - Disinfection of Potable Water Lines.

1.2 QUALITY ASSURANCE

- A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.
- B. All materials in this Section are to be 100% manufactured in the United States.

1.3 SUBMITTALS

- A. Comply with pertinent provisions of Section 01340.
- B. Product data: Within 30 calendar days after the Contractor has received the Owner's Notice to Proceed, submit:
 - 1. Materials list of items proposed to be provided under this Section.
 - 2. Manufacturer's specifications and other data needed to prove compliance with the specified requirements.

1.4 PRODUCT HANDLING

- A. Comply with pertinent provisions of Section 01640.
- B. Shipment of pipe: Protect pipe with tarp or other means during shipment to prevent truck exhaust from damaging pipe.
- C. Storage of PVC pipe:
 - 1. Store in unit packages as received from manufacturer until just prior to use.
 - 2. Stack units in such manner as to prevent deformation to pipe barrel and bells.

3. Protect from direct sunlight by covering with opaque material if storage period will exceed six weeks.
- D. Avoid severe impact blows, gouging or cutting by metal surfaces or rocks.

PART 2 - PRODUCTS

2.1 GENERAL

- A. Use any pipe material and associated fittings as specified herein, except where use of a particular material is indicated on the plans, or specified herein.

2.2 PIPE AND FITTINGS

- A. General:
1. Pipe sizes 3" and larger: Use ductile iron or plastic pipes unless otherwise indicated. No asbestos cement pipe allowed.
 2. Pipe less than 3" size: Use plastic pipe.
 3. Any pipe, solder, or flux used shall be lead free (lead free is defined as less than 0.2% lead in solder or flux and less than 8.0% lead in pipes and fittings).
 4. Gaskets are to be factory-installed and integral with the pipe.
 5. All pipe 4" and larger shall be National Sanitary Foundation (NSF) approved and shall be third party certified as meeting the specifications of ANSI/NSF Standard 61.
 6. All materials and products that contact potable water shall be third party certified as meeting the specifications of ANSI/NSF Standard 61.
 7. All chemical or products added to the public water supply must be third party certified as meeting the specifications of ANSI/NSF Standard 60.
 8. For valves cast all markings integral on the valve body with the size of valve, year of manufacture and the class working pressure.
 - a. Certifications to rate a 150B valve body to a Class 250 valve will not be acceptable.
 9. For valves spray coat all interior wetted ferrous surfaces with two-component epoxy applied to a nominal thickness of 3 to 4 mils.
 - a. Coating material to be AWWA and U.S. Food and Drug Administration approved for use with potable water.
 10. Exterior Coatings: For ductile iron pipe
 - a. For buried service provide bituminous coating.
 - b. For exposed locations comply with Section 09900.
- B. Pipe:
1. Ductile iron pipe (DIP):
 - a. Comply with ANSI/AWWA C150/A21.50 or AWWA C151/A21.51, latest revision.
 - b. The class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the

manufacturer's mark, country where cast, year in which the pipe was produced, and the letters "DI" or "Ductile" shall be cast or stamped on the pipe.

- c. Wall thickness in accordance with Table 50.5 of ANSI/AWWA C150/A21.50, depth of cover indicated and Type 3 bedding conditions, minimum Pressure Class as follows: 4" - 12" Pressure Class 350
- d. Use cement mortar lining complying with ANSI/AWWA C104/A21.4, standard thickness.

2. Plastic pipe (PVC):

- a. General:
 - 1) Marked with National Sanitation Foundation approval; date pipe was produced, type, and size at 18" intervals.
 - 2) Minimum wall thickness for 8" diameter pipe is 0.410 inches.
 - 3) Gaskets to comply with ASTM F 477.
 - a) Natural rubber gaskets are not acceptable.
- b. 4" - 12": Comply with ANSI/AWWA C900, Table 2, Pressure Class 150 (DR18).
- c. 14" and above: Comply with ANSI/AWWA C905, Table 2, Pressure Class 165 (DR 25).
- d. Plastic pipe 3" and smaller: Comply with ASTM D 2241 for PVC 1120, SDR 21. 3" and below.
- e. Color of pipe to be blue.

C. Joints:

1. Ductile iron pipe:

- a. Use mechanical or push-on joints complying with ANSI/AWWA C111/A21.11 as modified by ANSI/AWWA C151/A21.51.
- b. Use gaskets and lubricant complying with ANSI/AWWA C111/A21.11. Natural rubber gaskets are not acceptable.
- c. Lubricants shall be compatible with pipe and gasket materials, shall not support bacteria growth and shall not adversely affect potable quality of line contents. Vegetable shortening shall not be used to lubricate joints.
 - 1) NSF approved.
- d. Exposed pipe:
 - 1) Class 53 minimum.
 - 2) Use flanged joints complying with ANSI/AWWA C115/A21.11, latest revision and:
 - a) Provide solid type flanges with country where cast stamped or cast into the flange.
 - b) Use full face, red rubber, factory cut, 1/16" thick for pipe up to 10" diameter and 1/8" thick for larger sizes.
 - c) Bolts and nuts shall be standard carbon steel machine bolts, hex head complying with ANSI A21.11/AWWA C111.

2. Plastic pipe:

- a. Use integral bell or coupling type with elastomeric gaskets.

- b. Integral bells to comply with ASTM D2672.
- c. Couplings to comply with ANSI/AWWA C900.
- d. Gaskets to comply with ASTM F477.
 - 1) Natural rubber gaskets are not acceptable.
- e. Lubricants shall be compatible with pipe and gasket materials, shall not support bacteria growth and shall not adversely affect potable quality of line contents. Vegetable shortening shall not be used to lubricate joints.
 - 1) NSF approved.

D. Fittings and specials:

1. Ductile iron pipe:

- a. Provide 250 psi rated ductile iron fittings or specials unless otherwise indicated, complying with ANSI/AWWA C110/A21.10 and in accordance with ANSI/AWWA C111/A21.11.
- b. Clearly cast the manufacturer's mark, country where cast, year in which the fitting was produced, and the letters "DI" or "Ductile" on the fitting."
- c. Compact fittings for piping 3" - 16" may be provided in accordance with ANSI/AWWA C153/A21.53.88.b.
- d. Fittings for use with push-on joint pipe, comply with ANSI/AWWA C111/A21.11.
- e. Use cement mortar lining complying with ANSI/AWWA C104/A21.4, standard thickness.
- f. The maximum phosphorous level in the casting will be 0.08%.
- g. The fitting surface finish will conform to MSS SP-112 Quality Standard for Evaluation of Cast Surface Finishes.
- h. The manufacturer shall be ISO 9000 certified.
- i. Markings: Each fitting shall have the following markings cast integrally to the fitting:
 - 1) Manufacturer's Name or Logo
 - 2) "MJ"
 - 3) Country of origin
 - 4) Manufacturer's Foundry Mark
 - 5) AWWA C-153 or C110
 - 6) Pressure Rating
 - 7) Nominal Diameter (each leg)
 - 8) "DI" or "Ductile"
 - 9) No. of Degrees (bends)

2. Plastic pipe 4" and larger:

- a. Use 250 psi pressure rated ductile iron fittings or specials unless otherwise indicated, complying with ANSI/AWWA C110/A21.10.
- b. Compact fittings for piping 3" - 16" may be provided in accordance with ANSI/AWWA C153/A21.53.88.b.
- c. Fittings for use with push-on joint pipe, comply with ANSI/AWWA C111/A21.11.

- d. Provide adapter glands, gaskets, etc. as required to accommodate any differences in pipe and fitting dimensions.
- e. Use cement mortar lining complying with ANSI/AWWA C104/A21.4, standard thickness.
- f. The maximum phosphorous level in the casting will be 0.08%.
- g. The fitting surface finish will conform to MSS SP-112 Quality Standard for Evaluation of Cast Surface Finishes.
- h. The manufacturer shall be ISO 9000 certified.
- i. Markings: Each fitting shall have the following markings cast integrally to the fitting:
 - 1) Manufacturer's Name or Logo
 - 2) "MJ"
 - 3) Country of origin
 - 4) Manufacturer's Foundry Mark
 - 5) AWWA C-153 or C110
 - 6) Pressure Rating
 - 7) Nominal Diameter (each leg)
 - 8) "DI" or "Ductile"
 - 9) No. of Degrees (bends)
- 3. Plastic pipe 3" and smaller: Use PVC fittings, 160 psi at 73°F pressure rating, joint design to conform to pipe joints.

E. Couplings:

- 1. Provide couplings where needed to make piping connections and where located on the plans.
- 2. Provide mechanical joint ductile iron sleeve, full length, minimum 12".
- 3. Provide cutting-in sleeve where installing fittings in an existing line.
 - a. Provide ductile iron with mechanical joint.
- 4. Provide restrained joint couplings where restrained joints are indicated on the plans.

F. Restrained joint pipe and fittings:

- 1. Provide restrained joint pipe and fittings on all piping at each fitting, including valve and fire hydrant connections, and on the pipe joints to a distance of 18' each side of the fitting for 12" piping and smaller and to a distance of 36' each side of the fitting for piping over 12".
 - a. Provide one of the following:
 - 1) Snap-Lok by Griffin Pipe.
 - 2) American Cast Iron Pipe Company.
 - a) Flex-Ring (4" - 36").
 - b) Lok-Ring (42" - 64").
 - 3) TR-Flex by U. S. Pipe.
 - 4) Super-Lock by Clow (4" - 30").
 - 5) Fast Grip Gasket by American Cast Iron Pipe Company.
 - 6) Field Lok by U.S. Pipe.
 - b. Ductile iron pipe:

- 1) Provide retainer glands for use with mechanical joint pipe and fittings.
 - 2) Provide wedge type.
 - 3) Provide ductile iron gland conforming to ASTM A 536-80. Provide split gland where standard gland cannot be installed.
 - 4) Provide ductile iron set screws, heat-treated to a minimum hardness of 370 BHN with twist-off nuts and permanent standard hex head remaining.
 - 5) Provide for the following rated pressure with minimum 2 to 1 safety factor; 3" - 16" 350 psi, 18" - 48" 250 psi.
 - 6) Provide tee-head bolts conforming to ANSI/AWWA C111/A21.11 latest revision.
 - 7) Provide "MEGALUG" series 1100 or series 1200 as manufactured by EBAA Iron, Inc., of Eastland, Texas, or approved equal.
- c. Provide restraint for C900 PVC by mechanical means separate from the mechanical joint gasket sealing gland.
- 1) Provide wide, supportive contact around full pipe circumference as follows:

<u>Size</u>	<u>Restraint Width</u>
4", 6"	1-1/2"
8", 10", 12"	1-3/4"

- 2) Provide means of restraint by machined serrations on inside surface of restraint device designed to provide circumferential loading over the entire restrainer.
 - a) Design to be such that restraint increases with increased in-line pressure.
 - b) Provide a minimum of 8 serrations per inch of restraint width.
 - 3) Restraint device to be pressure rated at 350 psi, or equal to the pipe on which it is used and capable of withstanding test pressures of 2 times pressured rating.
 - 4) Fusion applied epoxy coating finish per AWWA C-213.
 - 5) Provide series 1600 as manufactured by EBAA Iron, Inc. of Eastland, Texas, or approved equal.
- d. Provide restraint for C905 PVC pipe 14" and larger by mechanical means separate from the mechanical joint sealing gland.
- 1) Restraint device to be a two-piece configuration with plurality of individually actuating gripping services.
 - 2) Restraint device body to be manufactured from ductile iron conforming with ASTM A536.
 - 3) Comply with AWWA C111, ANSI 21.11.
 - 4) Pressure rating to match PVC pipe on which it is used with capability to withstand test pressure of 2 times rated pressure.
 - 5) Fusion applied epoxy coating finish per AWWA C-213.
 - 6) Provide series 2800 as manufactured by EBAA Iron, Inc. of Eastland, Texas, or approved equal.

- e. Provide restraint for PVC pipe (PVC 1120, SDR 21) 12" and smaller by split serrated ring.
 - 1) Restraint device to be a two-piece configuration with plurality of individually actuating gripping services.
 - 2) Restraint device body to be manufactured from ductile iron conforming with ASTM A536.
 - 4) Pressure rating to match PVC pipe on which it is used with capability to withstand test pressure of 2 times rated pressure.
 - 5) Fusion applied epoxy coating finish per AWWA C-213.
 - 6) Provide series 6500 as manufactured by EBAA Iron, Inc., of Eastland, Texas, or approved equal.
- f. Provide restraint between PVC and mechanical joint ductile iron fitting and/or valves where indicated on the plans.
 - 1) Provide device consisting of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C111/A21.11.
 - 2) The device will have a working pressure rating equal to the pipe on which it is used and include a minimum design pressure safety factor of 2:1.
 - 3) Gland body, wedges and wedge actuating components will be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536.
 - 4) An identification number consisting of year, day, plant and shift will be cast into each gland body.
 - 5) Proper actuation of the gripping wedges shall be ensured with torque limiting twist off nuts.
 - 6) Provide series 2000 PV by EBBA Iron, Inc. or equal.
- G. Tee head bolts: Provide Cor-Ten or engineer approved equal steel tee head bolts for use on mechanical joints complying with ASTM A242.
- H. Plugs or caps:
 - 1. Provide at all pipe ends and unused branches of fittings.
 - 2. All plugs and caps shall be tapped 2" and provided with 2" plug.
 - 3. Plugs and caps to be restrained joint.
- I. Polyethylene encasement:
 - 1. Provide polyethylene encasement of pipe and fittings where indicated on the plans.
 - 2. Minimum nominal thickness of 8 mils. $\pm 10\%$.
 - 3. Conform to AWWA C105.

2.3 COPPER TRACER WIRE

- A. Provide a continuous 12 gauge blue insulated copper tracer wire when PVC or polyethylene pipe is used.

- B. Approved for direct burial by the manufacturer.
- C. Locate tracer wire a minimum of 6" above top of water main.
- D. Terminate tracer wire at each valve and meter and make provisions to allow for connection of testing apparatus without interfering with the proper operation of valves and meters.
- E. Connect to the water line with duct tape at every bell connection or every 20'-0" to ensure that the wire is directly over the top of the pipe.
- F. Place in the trench with all service lines.
- G. Splice at each service lateral and tee connection with an approved copper compression lug.
- H. Test all tracer wire for conductivity in accordance with Part 3.

2.4 VALVES

- A. General:
 - 1. 1-1/2" and smaller: Use gate valves or ball valves.
 - 2. 2" through 12": Use gate valves.
 - 3. Open by turning counterclockwise.
 - 4. End connections as required for the piping in which they are installed.
 - 5. 2" metal operating nut with arrow indicating direction of opening.
 - 6. Use valves designed for a working pressure of not less than 200 psi.
 - 7. Provide stem extensions on all valves where the top of the operator nut is located greater than 36" below the top of the valve box.
 - 8. Fully coat all internal ferrous metal surfaces with two-part thermosetting epoxy.
 - 9. Design for external stem failure when excessive closing torque is applied with no failure of the pressure retaining parts.
 - 10. Provide double disc gate valves with bevel gears, grease case, and other necessary appurtenances for horizontal installation.
- B. Gate valves 1-1/2" and smaller:
 - 1. Use all bronze ball valves, 1/4 turn with stop, 2" square nut operator.
 - 2. Provide Ford Model B11-QT67 or equal.
- C. Gate valves 2" through 12":
 - 1. Use resilient seated wedge valves complying with ANSI/AWWA C509.
 - 2. Provide integrally cast bronze stem nut on resilient seated wedge valves.
 - 3. Suitable for working pressure of not less than 250 psi.
 - 4. Design for external stem failure outside of the valve body or bonnet when excessive closing torque is applied with no failure of the pressure retaining parts per AWWA Section 3.2.
 - a. Factory test with no leakage from either side of the disc.

- b. Test shell to 500 psig.
- 5. Provide certified to NSF 61.
- 6. Resilient wedge valves:
 - a. Completely encapsulate resilient iron wedge by an elastomer, without thin spots or voids.
 - b. Provide polymer wedge guide bearing caps bearing surface between the encapsulated wedge and the interior epoxy coating, lowering operation torque and extending service life of the valve.
 - c. The manufacturing plant to have ISO 9001 certification.
- 7. Acceptable Manufacturer: Mueller.
- D. Valve operator:
 - 1. Provide one T-handle operator for each ten buried valves with nut operator.
 - 2. Provide one stainless steel T-handle operator for each four buried valves with "T" head.

2.5 VALVE BOXES

- A. Provide at each buried valve.
- B. Cast iron extension type, suitable for minimum cover of 3'-6" over the pipe.
- C. Minimum inside diameter at the top of 5", minimum riser wall thickness 1/4" and thickness at the top of 11/16".
- D. Have the word "WATER", "SEWER", "SLUDGE", etc., as applicable, cast into the cover.
- E. Provide Tyler Series 6850.
- F. Where depth requires more than a two-piece box use adjustable cast iron extensions.
- G. Coat box and cover with two (2) shop coats of bitumastic paint.

2.6 VALVE BOX PROTECTION RING

- A. Provide at each valve box a precast concrete protection ring.
- B. Provide two rings of No. 3 reinforcing steel, one 14" in diameter, and one 23" in diameter.
- C. Inside dimensions to be 9-1/4".
- D. Outside diameter to be 27".
- E. Provide 5" thickness at interior with a continuous slope to 2" thickness at the outside.
- F. Minimum weight of 110 lbs.

2.7 SERVICE SADDLE

A. Provide of the following materials:

Body	Type 304 Stainless Steel
Bales and Strips	Type 304 Stainless Steel
Studs	Type 304 Stainless Steel
Hardware	Type 304 Stainless Steel

B. Provide plastic lubricating washers.

C. Coat all stainless steel fasteners to prevent galling.

D. Provide for maximum working pressure of 150 psi.

E. Provide Romac Model 306 for up to 10" and Model 305 for 10" to 24" or engineer approved equal.

F. Connect to pipeline using a 6" stainless steel nipple.

1. Do not use a threaded PVC connection.

2.8 AIR RELEASE VALVES

A. Provide air release valves where indicated on the drawings.

B. Provide cast iron body with stainless steel internal trim and float.

C. Provide stainless steel seat with BUNA-N rubber valve.

D. Provide 1" NPT inlet.

E. Provide Crispin Model PL10 or engineer approved equal.

F. Provide a heavy-duty cast iron meter box to house valve.

1. USF 7634 heavy duty meter box with FM cover or equal.

2. Coat with two (2) shop coats of bitumastic paint.

2.9 MISCELLANEOUS PARTS AND ACCESSORIES

A. Use standard commercial grade suitable for the type of installation or system involved, and conforming to the applicable standards and specifications of the AWWA.

PART 3 - EXECUTION**3.1 HANDLING**

- A. Handle pipe accessories so as to ensure delivery to the trench in sound, undamaged condition:
 - 1. Carry pipe into position. Do not drag.
 - 2. Use pinch bars or tongs for aligning or turning the pipe only on the bare end of the pipe.
 - 3. Use care not to injure pipe linings.
 - 4. Do not damage pipe with chokers or lifting equipment.
- B. Thoroughly clean interior of pipe and accessories before lowering pipe into trench. Keep clean during laying operations by plugging or other method approved by the Engineer.
- C. Before installation, inspect each piece of pipe and each fitting for defects.
 - 1. Material found to be defective before or after laying: Replace with sound material meeting the specified requirements, and without additional cost to the Owner.
- D. Gaskets: Store in a cool dark place until just prior to time of installation.

3.2 PIPE CUTTING

- A. Cut pipe neatly and without damage to the pipe.
- B. Unless otherwise recommended by the pipe manufacturer, and authorized by the Engineer, cut pipe with mechanical cutter only.
 - 1. Use wheel cutters when practicable.
 - 2. Cut plastic pipe square, remove all burrs, and grind bevel on end.

3.3 LOCATING

- A. Water mains shall be laid at least 10'-0" edge-to-edge horizontally distanced from any existing or proposed sewer pipes.
- B. Should a 10'-0" separation not be practical, then the water main may be located closer with North Carolina Department of Environmental Quality (DEQ) approval provided:
 - 1. It is laid in a separate trench.
 - 2. It is laid in the same trench with the water main located at one side on a bench of undisturbed earth.
 - 3. In either of the above cases, crown elevation of the sewer shall be at least 18" below invert elevation of water line.
- C. Where water lines cross over sewers, maintain 18" vertical separation between the outside of the sewer and the outside of the water line.
- D. Where water lines cross under sewers, each line shall be cast iron or ductile iron.

1. A full length of water line shall be located over an existing sewer so that joints of each line will be as far from each other as possible.
 2. Where a new water main crosses a new sewer line, a full length of pipe shall be used for both the water main and sewer line and the crossing shall be arranged so that the joints of each line will be as far as possible from the point of crossing and each other.
- E. No water pipe shall pass through or come in contact with any part of a sewer manhole.
 - F. Water lines shall not be laid within 25'-0" horizontally from any portion of a wastewater tile or spray field.
 - G. Water lines shall be located outside all contaminated areas, unless using pipe materials that will protect the water supply.
 - H. No flushing device or drain directly connected to any type of sewer is allowed.
 - I. No cross connections between water lines and any pipes, valves, tanks or pumps that are not part of the potable water system are allowed.
 - J. Water lines may come in contact with storm sewers or catch basins if there are no other practical alternatives provided that ductile iron is used and no joints of the water line are within the storm sewer or catch basin, and, provided that the joints are located as far as possible from the storm sewer or catch basin.
 - K. Structures containing valves, blowoffs, meters, air release valves, etc., shall not be connected directly to any storm drainage or sewer system.

3.4 EXCAVATION AND BACKFILLING

- A. Comply with pertinent provisions of Section 02221 and Section 02615 of these Specifications.
- B. For PE Pipe, comply with manufacturer's recommendations.

3.5 ALIGNMENT OF PIPE

- A. Pipelines intended to be straight shall be so laid.
- B. Where vertical or horizontal alignment requires deflection from straight line or grade, such deflection shall not exceed maximum deflection recommended by the pipe manufacturer.
- C. If alignment requires deflection exceeding recommended limits, furnish special bends or a sufficient number of shorter lengths of pipe to provide angular deflections within the allowable limits.

3.6 PLACING AND LAYING

A. General:

1. Lower pipe and accessories into trench by means of derrick, ropes, belt slings, or other equipment approved by the Engineer.
2. Do not dump or drop any of the materials of this Section into the trench.
3. Except where necessary in making connections to other lines, lay pipe with the bells facing in the direction of laying.
4. Rest the full length of each section of pipe solidly on the pipe bed, with recesses excavated to accommodate bells, couplings, and joints.
5. Take up and relay pipe that has the grade or joint disturbed after laying.
6. Do not lay pipe in water, or when trench conditions are unsuitable for the work; keep water out of the trench until jointing is completed.
7. Securely close open ends of pipe, fittings, and valves when work is not in progress.
8. Where any part of coating or lining is damaged, repair to the approval of the Engineer and at no additional cost to the Owner.
9. Structures containing valves, blowoffs, meters, air release valves, etc., shall not be connected to any storm drain or sewer system.

B. Ductile iron pipe:

1. Mechanical, push on and flanged joints, install in accordance with ANSI/AWWA C600.
2. Gaskets: Handle, lubricate where necessary and install in strict accordance with manufacturer's recommendations.

C. Plastic pipe:

1. Clean gasket, bell or coupling interior, especially groove area.
2. Lubricate and insert gasket as recommended by manufacturer.
3. Align spigot to bell, insert spigot into bell until it contacts gasket uniformly.
4. Bell pipe using manufacturer's approved leverage bar.
 - a. Do not use machinery to push pipe "home".
5. Push pipe "home" until reference mark is at proper location and clearly visible.
6. Follow all pipe manufacturers installation instructions.

D. Flanged joints:

1. Provide true face flanges, field clean and fit with one full face gasket and make bolts up finger tight.
2. Use torque wrench to alternately tighten bolts 180 degrees apart until full gasket flow and seal are secured.
3. Bias cut or unusual refacing of any flange will not be acceptable.

E. Restrained joints:

1. Install in accordance with manufacturer's instructions.

2. Tighten set screws to the manufacturer's rated torque using a torque wrench. If twist-off nuts are provided, tighten screws until nut breaks loose.

F. Polyethylene encasement: Comply with AWWA C105.

3.7 TRACER WIRE TESTING

A. General:

1. Utilize an approved magnetic locating device, M Scope or Equal.
2. Connect a cable conductively from the transmitter to a metal ground rod and to the tracer wire.
3. Locate the line following the instructions of the magnetic locating device.
4. If interference is encountered from adjacent utilities or if the depth of bury or line length interferes with the signal, install a dummy valve box with access to the tracer wire at no additional cost to the owner.
5. Where there is a break in the tracer wire, repair with 3M DBY or ILSCO #IK-8 repair kit and wrap with poly wrap for cathodic protection.

B. Creek crossing and wetland areas:

1. Send a prescribed frequency with a shore line base signal ejector between 25 and 1024 HZ down a metal medium and read by a receiver.
2. Select a frequency based on the depth and the amount of linear feet of the line.
3. If the tracer wire has a break, reinstall the cable and repeat the conductivity test at no additional cost to the owner.

C. Notify in advance and conduct all testing in the presence of the Engineer.

3.8 SETTING VALVES AND VALVE BOXES

A. General:

1. Center valve boxes on the valves, setting plumb.
2. Tamp earth fill around each valve box to a distance of 4'-0" on all sides, or to the undisturbed trench face if less than 4'-0".
3. Install shaft extensions plumb without any binding.
4. Fully open and close each valve to assure that all parts are in working condition.
5. Place valve box protection ring around top of valve box as indicated on the plans.
 - a. Install ring level with top 1" above finished grade.
 - b. Top of ring to be level with or no more than 1" above the top of the valve box.

3.9 HYDROSTATIC TESTING

A. General:

1. Pressure and leakage testing must be conducted in accordance with AWWA Standards C600.
2. Clean and flush line of air, dirt and foreign material.
3. Do not perform hydrostatic tests until at least five days after installation of concrete thrust blocking.
4. Test pump, pipe connection, pressure gauges, measuring devices and all other necessary appurtenances to conduct tests are to be provided by the Contractor.
5. Install brass corporation cocks at all high points that do not have permanent air vents. Corporation cocks are to be left in place and all costs for providing such cocks are to be borne by the Contractor.
6. Conduct tests on each line or valved section of line.
7. Test pressures to be 150 psi, or 1.5 times the maximum working pressure, whichever is greater, based on the elevation of the lowest point of the section under test and corrected to the elevation of the test gauge.
8. Do not test pipe at pressures exceeding manufacturer's recommendations.
9. The Contractor must provide documentation of the pressure and leakage tests. Documentation must include length of lines, diameter of pipe(s), amount of water required to fill line after test was performed, and amount of allowable leakage.
10. The witness to the hydrostatic testing is to be someone other than the Contractor or the utility installing the lines.

B. Pressure tests:

1. After the pipe is laid, the joints completed, and the trench backfilled, subject the newly laid piping and valved sections of the piping to the test pressure specified in Part A above.
2. Open and close each valve within the section being tested several times during the test period.
3. Conduct the pressure test using a 4" diameter glycerin filled gauge with a snubber attached prior to the gauge to remove pulsations.
 - a. Obtain prior approval of the testing gauge approved by the Engineer prior to its use.
 - b. Provide a range of no greater than twice the test pressure and not less than 50% greater than the test pressure.
 - c. Calibrate with cal sticker on gauge face or provide appropriate supporting paperwork.
4. Replace or remake joints showing leakage.
 - a. Remove cracked pipe, defective pipe, and cracked or defective joints, fittings and valves. Replace with sound material and repeat the test until results are satisfactory.
 - b. Make repair and replacement without additional cost to the Owner.

C. Leakage test:

1. Conduct leakage test after the pressure test has been completed satisfactorily.
2. Duration of each leakage test: At least two hours.
3. During the test, subject water lines to the test pressure specified in Part A above.

4. Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valved or approved section thereof, necessary to maintain the specified leakage test pressure after the pipe has been filled with water and the air expelled.
 - a. No piping installation will be accepted until the leakage is less than the number of gallons per hour as determined by the formula(s):

$$L = S \times D \times \sqrt{P} / 148,000; \text{ where}$$

L = allowable leakage in gallons per hour;

S = length of pipe tested in feet;

D = nominal diameter of pipe in inches; and

P = average test pressure psi gauge.

- b. When testing against closed metal-seated valves, an additional leakage per closed valve of 0.0078 gallons per hour per inch of nominal valve size will be allowed.
 - 1) Should any test of pipe disclose leakage greater than that specified above, locate and repair the defective joint or joints until the leakage is within the specified allowance, and at no additional cost to the Owner.
 - 2) Repair all visible leaks regardless of test results.

3.10 STERILIZATION

- A. Sterilize in accordance with Section 02516 - Disinfection of Potable Water Lines.

3.11 DECHLORINATION OF CHLORINATED STERILIZATION WATER

- A. Dechlorinate in accordance with Section 02516 – Disinfection of Potable Water Lines.

3.12 MEASUREMENT AND PAYMENT

- A. All work under this Section will be measured and paid for as follows:
- B. Pipe will be paid for at the unit prices per linear foot as stated in the Bid Form and shall include cost of excavation, backfilling, copper tracer wire, cleanup, testing, sterilizing, dechlorinating, etc. Measurement will be from center to center of fittings; no deduction will be made for the space occupied by valves or fittings.
- C. Ductile iron fittings will be paid at the unit price per each as stated on the bid form. The unit price will include all cost of fitting, accessories, retrained joint accessories, excavation, testing, etc., for a complete installation.
- D. Fittings other than ductile iron: No measurement will be made and cost for these fittings shall be included in the price bid per linear foot of the pipe with which they are used. No extra payment will be made for these fittings.

- E. Valves will be paid for at the price for "each" as stated in the Bid Form. This payment shall include valve, stem extensions, valve box, valve box protection ring, and installation.
- F. Restrained joint pipe will be paid for at the unit price per linear foot as stated in the Bid Form and include all items described in "B" above and the cost of all restrained joint accessories.
- G. Hydrants will be paid for at the unit price for "each" as stated in the Bid Form. This payment shall include hydrant, reflector and offset fitting. Piping and valve to the hydrant will be paid for under paragraphs B. and E. above.
- H. Tie-ins to existing lines: Where connection to an existing main is made by removing an existing plug, no payment will be made for this work.
- I. Air release valves: Payment will be made at the cost per each as stated in the Bid Form. This payment will include air release valve, corporation and curb stops, piping from main to valve and box.

END OF SECTION 331100

SECTION 334100 - STORM UTILITY DRAINAGE PIPING**PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

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

1.2 SUMMARY

- A. This Section includes gravity-flow, nonpressure storm drainage associated with the stormwater management facilities, with the following components:
 - 1. Special fittings for expansion and deflection.
 - 2. Precast concrete and Cast-in-place concrete structures.
- B. Related Sections include the following:
 - 1. Division 33 Section "Subdrainage" for installation of subdrainage piping of dam embankment.

1.3 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Nonpressure, Drainage-Piping Pressure Rating: 10-foot head of water. Pipe joints shall be at least silttight, unless otherwise indicated.
- B. Pressure-Piping Pressure Rating: At least equal to system operating pressure but not less than 10 psi rated water tight joints.

1.4 SUBMITTALS

- A. Product Data: For the following:
 - 1. Special pipe fittings.
- B. Shop Drawings: For the following:
 - 1. Stormwater Structures: Include plans, elevations, sections, details, frames and covers, design calculations, and concrete design-mix report.
- C. Field quality-control test reports.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect pipe, pipe fittings, and seals from dirt and damage.
- B. Handle structures according to manufacturer's written rigging instructions.

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Storm Drainage Service: Do not interrupt service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary service according to requirements indicated:
 - 1. Notify Owner no fewer than two days in advance of proposed interruption of service.
 - 2. Do not proceed with interruption of service without Owner's written permission.

PART 2 - PRODUCTS**2.1 MANUFACTURERS**

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.
 - 2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 PIPING MATERIALS

- A. Refer to Part 3 "Piping Applications" Article for applications of pipe, fitting, and joining materials.

2.3 DUCTILE-IRON CULVERT PIPE AND FITTINGS

- A. Pipe: ASTM A 716, for push-on joints.
- B. Standard Fittings: AWWA C110, ductile or gray iron, for push-on joints.
- C. Compact Fittings: AWWA C153, for push-on joints.
- D. Gaskets: AWWA C111, rubber.

2.4 PVC PIPE AND FITTINGS

- A. PVC Pipe and Fittings: ASTM D 1785, Schedule 80 pipe, with plain ends for solvent-cemented joints with ASTM D 2467, Schedule 80, socket-type fittings.

2.5 CONCRETE PIPE AND FITTINGS

- A. Reinforced-Concrete Sewer Pipe and Fittings: ASTM C 76, with modified bell-and-spigot ends and confined O-ring gasketed joints with ASTM C 443, rubber gaskets. The pipe joints shall be Type R-4. The pipe shall be manufactured with no lift holes.
 - 1. Class III, Wall B.

2.6 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318/318R, ACI 350R, and the following:
 - 1. Cement: ASTM C 150, Type II.
 - 2. Fine Aggregate: ASTM C 33, sand.
 - 3. Coarse Aggregate: ASTM C 33, crushed gravel.
 - 4. Water: Potable.
- B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious materials ratio.
 - 1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
 - 2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

2.7 STORMWATER STRUCTURES

- A. Cast-in-Place Concrete, Stormwater Structures: Construct of reinforced-concrete bottom, walls, and top; designed according to ASTM C 890 structural loading; of depth, shape, dimensions, and appurtenances indicated.
 - 1. Anti-Flotation Block: Can either be cast-in-place or precast
 - a. If cast-in-place prior to constructing, the contractor shall insure the weight of the entire riser structures meets minimum specifications provided on Drawings, and shall submit shop drawings to the Engineer for review denoting the following:
 - 1) Steel reinforcement
 - 2) Connection mechanism to join anti-flotation block with riser section.
 - b. If precast, the anti-flotation block shall be included as part of the precast riser shop drawing submittals to the Engineer for review. It shall meet minimum specifications provided on Drawings.
 - 2. Concrete Collar: Shall connect to riser structure and anti-flotation block to form a watertight connection between outlet barrel and riser structure. It shall meet minimum specifications provided on Drawings.
- B. Steps: Provide steps as shown on the Drawings in manholes, risers, transition cones, and transition top sections in accordance with NCDOT STD 840.66. Steps shall be spaced at 16" O.C.
- C. Emergency drawdown pipe shall be a M&H style 1820 eccentric valve or approved equal. This valve is in accordance with AWWA C-540 Sec 5.5, and shall be operable from top of outlet structure via a handwheel. Refer to valve specifications at the end of this section.
- D. Trash rack: Prior to ordering, the contractor shall submit trash rack shop drawings to the Engineer for review. A minimum 2 foot x 3 foot access hatch opening is required and shall be

centered over access steps. Trash rack shall meet minimum specifications provided on Drawings.

2.8 PIPE OUTLETS

- A. Head Walls: Precast reinforced concrete in accordance with NCDOT Standard 838.80.
- B. Spillway Filter: Refer to installation procedures specified in Division 33 Section "Subdrainage".
 - 1. Stone to be fine aggregate, natural, or manufactured sand meeting the requirements of ASTM C33.
 - 2. Collector Pipe shall be smooth wall, schedule 80 PVC, 4-inch nominal diameter with minimum 0.25-inch diameter perforations.
 - 3. Cleanout and Outlet Pipes shall be smooth wall, schedule 80 PVC, 4-inch nominal diameter, solid.
 - 4. Provide elbows, connections, fittings, etc. for piping as required furnished by pipe manufacturer for type of pipe used.
- C. Energy Dissipaters: Refer to Drawings for shape and sizing; Design in accordance with NC Erosion and Sediment Control Planning and Design Manual.

PART 3 - EXECUTION

3.1 EARTHWORK

- A. Excavation, trenching, and backfilling are specified in Division 31 Section "Earth Moving."

3.2 PIPING APPLICATIONS

- A. Gravity-Flow, Nonpressure Piping: Use the following pipe materials for each size range:
 - 1. NPS 4 to NPS 6: Ductile-iron culvert pipe, ductile-iron standard or compact fittings, gaskets, and gasketed joints.
 - 2. NPS 4 and NPS 6: PVC pipe and fittings, gaskets, and gasketed joints.
 - 3. NPS 8 to NPS 12: Ductile-iron culvert pipe, ductile-iron standard or compact fittings, gaskets, and gasketed joints.
 - 4. NPS 18 to NPS 36: Reinforced-concrete pipe and fittings, gaskets, and gasketed joints.

3.3 PIPING INSTALLATION

- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of storm piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical. Where specific installation is not indicated, follow piping manufacturer's written instructions.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements.

- C. Install proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- D. Install spillway filter and toe drain per direction of Geotechnical Engineer and Plans.
- E. Install gravity-flow, nonpressure drainage piping according to the following:
 - 1. Install piping pitched down in direction of flow, at the specified slope as noted on Plans.
 - 2. Install piping with 12-inch minimum cover.
 - 3. Install piping below frost line.
 - 4. Install ductile-iron culvert piping according to ASTM A 716.
 - 5. Install ductile-iron and special fittings according to AWWA C600 or AWWA M41.
 - 6. Install PVC piping according to ASTM D 2321 and ASTM F 1668.
 - 7. Install reinforced-concrete sewer piping according to ASTM C 1479 and ACPA's "Concrete Pipe Installation Manual."

3.4 PIPE JOINT CONSTRUCTION

- A. Where specific joint construction is not indicated, follow piping manufacturer's written instructions.
- B. Join gravity-flow, nonpressure drainage piping according to the following:
 - 1. Join ductile-iron culvert piping according to AWWA C600 for push-on joints.
 - 2. Join PVC piping according to ASTM D 2321 and ASTM D 3034 for elastomeric-seal joints or ASTM D 3034 for elastomeric gasket joints.
 - 3. Join reinforced-concrete sewer piping according to ACPA's "Concrete Pipe Installation Manual" for rubber-gasket joints.
 - a. Joints shall be wrapped with a double layer of non-woven geotextile fabric (Mirafi 180N or approved equivalent) in 2-foot wide strips centered on joints.
 - 4. Join dissimilar pipe materials with nonpressure-type flexible[**or rigid**] couplings.

3.5 STORMWATER OUTLET INSTALLATION

- A. Construct inlet head walls, as indicated.
- B. Install outlets that spill onto grade, with flared end sections that match pipe, where indicated.
- C. Construct energy dissipaters at outlets, as indicated.

3.6 CONCRETE PLACEMENT

- A. Place cast-in-place concrete according to ACI 318/318R.

3.7 FIELD QUALITY CONTROL

- A. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Defects requiring correction include the following:
 - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
 - b. Crushed, broken, cracked, or otherwise damaged piping.
 - c. Infiltration: Water leakage into piping.
 - d. Exfiltration: Water leakage from or around piping.
2. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
3. Reinspect and repeat procedure until results are satisfactory.

3.8 CLEANING

- A. Clean interior of piping of dirt and superfluous materials.

END OF SECTION 334100

Identification of HUB Certified/ Minority Business Participation

I, _____
(Name of Bidder)

do hereby certify that on this project, we will use the following HUB Certified/minority business as construction subcontractors, vendors, suppliers or providers of professional services.

Firm Name, Address and Phone #

Work Type

*Minority
Category

**HUB
Certified
(Y/N)

[illegible]

*Minority categories: Black, African American (**B**), Hispanic (**H**), Asian American (**A**) American Indian (**I**), Female (**F**) Socially and Economically Disadvantaged (**D**)

**** HUB Certification with the state HUB Office required to be counted toward state participation goals.**

The total value of minority business contracting will be (\$)_____.

AFFIDAVIT A – Listing of Good Faith Efforts

Town of _____

(Name of Bidder)

Affidavit of _____

I have made a good faith effort to comply under the following areas checked:

Bidders must earn at least 50 points from the good faith efforts listed for their bid to be considered responsive. (1 NC Administrative Code 30 I.0101)

- ☐ **1 – (10 pts)** Contacted minority businesses that reasonably could have been expected to submit a quote and that were known to the contractor, or available on State or local government maintained lists, at least 10 days before the bid date and notified them of the nature and scope of the work to be performed.
- ☐ **2 --(10 pts)** Made the construction plans, specifications and requirements available for review by prospective minority businesses, or providing these documents to them at least 10 days before the bids are due.
- ☐ **3 – (15 pts)** Broken down or combined elements of work into economically feasible units to facilitate minority participation.
- ☐ **4 – (10 pts)** Worked with minority trade, community, or contractor organizations identified by the Office of Historically Underutilized Businesses and included in the bid documents that provide assistance in recruitment of minority businesses.
- ☐ **5 – (10 pts)** Attended prebid meetings scheduled by the public owner.
- ☐ **6 – (20 pts)** Provided assistance in getting required bonding or insurance or provided alternatives to bonding or insurance for subcontractors.
- ☐ **7 – (15 pts)** Negotiated in good faith with interested minority businesses and did not reject them as unqualified without sound reasons based on their capabilities. Any rejection of a minority business based on lack of qualification should have the reasons documented in writing.
- ☐ **8 – (25 pts)** Provided assistance to an otherwise qualified minority business in need of equipment, loan capital, lines of credit, or joint pay agreements to secure loans, supplies, or letters of credit, including waiving credit that is ordinarily required. Assisted minority businesses in obtaining the same unit pricing with the bidder's suppliers in order to help minority businesses in establishing credit.
- ☐ **9 – (20 pts)** Negotiated joint venture and partnership arrangements with minority businesses in order to increase opportunities for minority business participation on a public construction or repair project when possible.
- ☐ **10 - (20 pts)** Provided quick pay agreements and policies to enable minority contractors and suppliers to meet cash-flow demands.

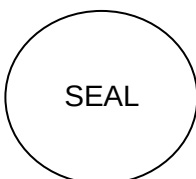
The undersigned, if apparent low bidder, will enter into a formal agreement with the firms listed in the Identification of Minority Business Participation schedule conditional upon scope of contract to be executed with the Owner. Substitution of contractors must be in accordance with GS143-128.2(d) Failure to abide by this statutory provision will constitute a breach of the contract.

The undersigned hereby certifies that he or she has read the terms of the minority business commitment and is authorized to bind the bidder to the commitment herein set forth.

Date: _____ Name of Authorized Officer: _____

Signature: _____

Title: _____



State of _____, County of _____

Subscribed and sworn to before me this _____ day of _____ 20____

Notary Public _____

My commission expires _____

**CERTIFICATION OF
COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT**

The undersign, being a licensed Contractor in North Carolina, do hereby agree to comply with all applicable requirements of the Americans With Disabilities Act throughout the duration of this contract.

Signed

Print or Type Name of Signing Official

Title

Firm

Address

City **State** **Zip**

Date

CERTIFICATION OF**NON-DISCRIMINATION IN EMPLOYMENT**

We, being a licensed Contractor in North Carolina, do hereby certify that we will not discriminate against employee or applicant for employment because of race, color, religion, sex, or national origin. We will take affirmative action to ensure that applicants are employed, and that employees are treated equal during employment without regard to race, color, or religion, or handicap. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising, layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. We will agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Local Public Agency setting forth the provisions of this non-discrimination clause.

Signed

Print or Type Name of Signing Official

Title

Firm

Address

City**State****Zip**

Date

(** Use tax percentage from county where Purchased and show percentage used.)

STATE OF _____

CONTRACTOR E-VERIFY DECLARATION

TOWN OF _____

I, _____ (the individual attesting below), being duly authorized by and on behalf of
_____ (the entity contracting with the Town, hereinafter "Employer/Contractor")

AFFIRMS AND DECLARES as follows:

1. Employer/Contractor understands that E-Verify is a federal program operated by the United States Department of Homeland Security and other federal agencies, or any successor or equivalent program used to verify the work authorization of newly hired employees pursuant to federal law in accordance with NCGS §64-25(5).
2. Pursuant to NCGS §153A-449(b) and NCGS § 64-26(a), any Employer/Contractor that transacts business in this State and employs 25 or more employees in this State, entering into a contract with the Town, is required to verify the work eligibility status of all newly hired employees through the E-verify program.
- 3 Employer/Contractor is a person, business entity, or other organization that transacts business in this State and employs 25 or more employees in this State. (check Yes or No)
a. YES _____, or
b. NO _____
4. For Employers/Contractors who employ 25 or more employees in the State, and are therefore subject to E-Verify, the undersigned verifies the Employer's/Contractor's compliance with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes.
5. Employer's subcontractors on this Town project, that employ 25 or more employees in this State, must also comply with E-Verify, and if Employer is the successful contractor on this Project, Employer agrees that it will ensure compliance with E-Verify by any subcontractors used by Employer/Contractor on this County Project.
6. I hereby declare under penalty of perjury that the foregoing is true and correct.

This ____ day of _____, 20____.

Signature of Declarant

Print or Type Name: _____



ECS Southeast, LLP

Report of Subsurface Exploration

Ranson Rosedale Park

Huntersville, Mecklenburg County, North Carolina

ECS Project Number 08:14150-A

August 7, 2020





ECS SOUTHEAST, LLP

Geotechnical • Construction Materials • Environmental • Facilities

"Setting the Standard for Service"

NC Registered Engineering Firm F-1078
NC Registered Geologists Firm C-553
SC Registered Engineering Firm 3239

August 7, 2020

Mr. Dan Dodd
The Dodd Studio
314 Tom Hall Street
Fort Mill, South Carolina 29715

Reference: Report of Subsurface Exploration
Ranson Rosedale Park
Huntersville, Mecklenburg County, North Carolina
ECS Project No. 08:14150-A

Dear Mr. Dodd:

ECS Southeast, LLP (ECS) has completed the additional subsurface exploration and geotechnical engineering analyses for the above-referenced project. Our services were performed in general accordance with our Proposal No 08:24932P, dated June 26, 2020. This report presents our understanding of the geotechnical aspects of the project, along with the results of the field and laboratory testing conducted, and our design and construction recommendations. The recommendations in this report supersede our previous report.

It has been our pleasure to be of service to you during the design phase of this project. We would appreciate the opportunity to remain involved during the continuation of the design phase, and we would like to provide our services during the construction phase operations as well to confirm the assumptions of subsurface conditions made for this report. Should you have any questions concerning the information contained in this report or if we can be of further assistance to please contact us.

Respectfully submitted,

ECS Southeast, LLP

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APPENDICES

Appendix A – Drawings & Reports

- Site Location Diagram
- Boring Location Diagram
- Test Location Diagram

Appendix B – Field Operations

- Reference Notes for Boring Logs
- Boring Logs B-1 and B-2, and P-1 through P-4
- Test Pit Observation Summaries TP-1 through TP-11

Appendix C – Laboratory Testing

- Lab Testing Summary Sheet

EXECUTIVE SUMMARY

This report contains the results of our previous and additional subsurface exploration and geotechnical engineering evaluation for the proposed park development consisting of the construction of a restroom structure, shade pavilion, various playgrounds, a dog park, a greenway trail and paved walkways, and associated paved parking/drive areas. The results of our exploration and geotechnical recommendations are summarized as follows:

- The subsurface conditions disclosed by the borings and test pits generally consisted of surficial organic laden materials underlain by fill and/or residual soils to the explored depths.
 - Existing fill soils were encountered at Borings B-1, P-1, P-2, and Test Pits TP-1, TP-3 through TP-6, TP-8, TP-10, and TP-11. The existing fill soils generally consisted of Elastic SILT (MH), Fat CLAY (CH), Lean CLAY (CL), and Silty SAND (SM) with occasional organic materials and rock fragments (i.e. organic laden soil, branches, roots, and possible shot rock ranging from cobble to boulder sized fragments) and extended to depths ranging from approximately 3 to 14 feet below existing grades. Borings B-1 and P-2 were terminated in existing fill after encountering auger refusal upon potential construction debris obstructions or shot rock materials at depths ranging from approximately 3.6 to 4.1 feet below existing grades.
 - Residual soils typically consisted of Sandy SILT (ML), Elastic SILT (MH), and Fat CLAY (CH). Each boring and test pit, except B-1 and P-2 were terminated in residual soils at depths ranging from approximately 4 to 20 feet below the existing grade.
- High plasticity soils (MH and CH) were encountered in Borings B-2, P-1 through P-3, and TP-1 through TP-11 and extended to depths ranging from approximately 3 to 15 feet below existing grade. MH soils with a Plasticity Index (PI) greater than 30 and CH soils should not be used for direct support of project foundations, slabs-on-grade, or pavements and should be undercut to a minimum depth of 2 feet below foundations and subgrade elevations within slab and pavement areas.
- Existing fill containing organic materials and rock fragments (i.e. organic laden soil, branches, roots, and possible shot rock ranging from cobble to boulder sized fragments) was encountered in Borings B-1, P-1, P-2, TP-1, TP-3, TP-4, TP-6, TP-8, TP-10, and TP-11. ECS does not recommend supporting structures or pavements on existing fill. The risk associated with the undocumented fill can be reduced by removing the existing fill from below pavement and structures or partial undercut and replacement with Structural Fill.
- Based on the subsurface exploration, the proposed shade pavilion structure can be supported on conventional shallow foundations bearing on low plasticity residual soils or newly placed Structural Fill. Provided the existing fill and/or moisture sensitive soils below the restroom structure are removed and replaced with Structural Fill, the restroom structure can be supported on conventional shallow foundations. An allowable bearing pressure of 2,500 psf is recommended provided the site and foundation subgrade preparation sections of this report are followed.
- As an alternative to removal and replacement of existing fill, the restroom structure can be relocated outside of areas containing existing fill or supported on deep foundations or a ground improvement system (i.e. aggregate piers) extending through the existing fill.

-
- Concrete slabs-on-grade supported by low-plasticity residual soils or properly prepared Structural Fill can be designed using a modulus of subgrade reaction of 90 pounds per cubic inch (pci).
 - A Seismic Site Class “D” may be assumed for the site property.

Specific information regarding the subsurface exploration procedures, the site and subsurface conditions at the time of our exploration, and our conclusions and recommendations concerning the geotechnical design and construction aspects of the project are discussed in detail in the subsequent sections of this report. Please note this Executive Summary is an important part of this report but should be considered a “summary” only. The subsequent sections of this report constitute our findings, conclusions, and recommendations in their entirety. Furthermore, ECS should review our findings and recommendations in their entirety once the final project criteria have been established.

1.0 INTRODUCTION

1.1 GENERAL

The purpose of this study was to explore the general subsurface conditions at the site and to evaluate those conditions with regard to foundation, slab, and pavement support. The recommendations developed for this report are based on the project information provided by the Client. This revised report contains the results of our subsurface exploration, site characterization, engineering analyses, and geotechnical related recommendations for the design and construction of the proposed project.

1.2 SCOPE OF SERVICES

To obtain geotechnical information for design of the proposed structures and pavement areas, six (6) soil test borings and eleven (11) test pit excavations were performed at the approximate pavilion and restroom footprints, and in the parking and drive areas. This revised report discusses our exploratory and testing procedures, presents our findings and evaluations, and includes the following:

- Information on site conditions including surface drainage, geologic information, and special site features.
- Description of the field exploration and laboratory tests performed.
- Final logs of the soil borings, test pit excavations, and records of the field exploration and laboratory tests including a Boring Location Diagram and Site Location Diagram.
- Measurement of the surficial materials at each boring location and notation of this information on the boring logs and in the text of the report.
- Recommendations regarding foundation options for the structures and settlement potential.
- Recommendations regarding slab-on-grade construction and design.
- Seismic site classification based on the average N-value method.
- Recommendations for light and heavy duty, flexible and rigid pavements sections.
- Evaluation of the on-site soil characteristics encountered in the soil borings. Specifically, we discuss the suitability of the on-site materials for reuse as Structural Fill to support ground slabs and pavements.
- Recommendations for minimum soil cover during frost heaving, compaction requirements for fill and backfill areas, and slab-on-grade construction.
- Recommendations regarding site preparation and construction observations and testing.

1.3 PREVIOUS EXPLORATION

ECS previously performed a subsurface exploration at the site which included six (6) soil test borings (B-1 through B-6) as reported in our "Report of Subsurface Exploration" (ECS Project No. 14150), dated May 11, 2020. The information and recommendations presented herein supersede our previous report.

1.4 AUTHORIZATION

Our services were provided in accordance with our Proposal No 23932P dated June 26, 2020, as authorized by Mr. Dan Dodd of The Dodd Studio and includes the Terms and Conditions of Service outlined with our Proposal.

2.0 PROJECT INFORMATION

2.1 PROJECT LOCATION

The project site is located along Rosewood Meadow Lane, west of its intersection with Ranson Park Drive in Huntersville, Mecklenburg County, North Charlotte, as shown in the Site Vicinity Map (Figure 2.1.1) below, and Site Location Diagram included in Appendix A.



Figure 2.1.1 Site Vicinity Map

2.2 PAST/CURRENT SITE HISTORY/USES

Based on the Google Earth historical imagery and our site visit, the site appears to have consisted of a mostly undeveloped wooded property since at least 1993. The site is bisected in a generally north-south direction by Torrence Creek. Sometime between 1998 and 2002 the western portion of the site was cleared and fill material was placed. Site disturbance/fill placement continued until at least 2004. The estimated horizontal limits of existing fill materials based on aerial photography and provided site topographic information is depicted on the Test Location Diagram (Figure 2) in Appendix A. The previous use discussion is not considered a comprehensive or in-depth review of the site history, rather a quick overview of available aerial imagery.

2.3 PROPOSED CONSTRUCTION

We understand that the project will include the development of a park including the construction of a restroom structure, shade pavilion, various playgrounds, a dog park, greenway trails and paved trails, and associated paved parking/drive areas. The following information explains our understanding of the structures and their loads:

Table 2.3.1.1 Design Values

SUBJECT	DESIGN INFORMATION / ASSUMPTIONS
# of Stories	One (1) Story
Usage	Restroom and Pavilion
Framing	Wood Framed/Masonry
Column Loads	50 kips
Wall Loads	3 kips per linear foot (klf) maximum

3.0 FIELD EXPLORATION

3.1 FIELD EXPLORATION PROGRAM

The field exploration was planned with the objective of characterizing the project site in general geotechnical and geological terms, and to evaluate subsequent field data to assist in the determination of geotechnical recommendations.

3.1.1 Test Borings

The subsurface conditions were explored by performing six (6) soil test borings at the site. A track-mounted Diedrich D-50 drill rig was utilized to perform the soil test borings. Borings were generally advanced to depths ranging from approximately 3.6 to 20 feet below the existing ground surface.

Boring locations were identified in the field by ECS personnel using handheld GPS technology and existing landmarks as reference prior to mobilization of our drilling equipment. The approximate as-drilled boring locations are shown on the Boring Location Diagram in Appendix A. Ground surface elevations noted on our boring logs were estimated from topographic information provided by the Client and should be considered approximate.

Standard penetration tests (SPTs) were conducted in the borings at regular intervals in general accordance with ASTM D1586. Small representative samples were obtained during these tests and were used to classify the soils encountered. The standard penetration resistances (N-values) were obtained for each sample and listed as blows per foot (bpf), which provides a general indication of soil density or consistency from which soil parameters can be correlated.

3.1.2 Test Pits

Eleven (11) test pits were excavated using a track-mounted hydraulic excavator. The purpose of the test pits was to supplement the soil test boring results and explore the extents of the existing undocumented fill. The test pits were advanced to depths ranging from approximately 4 to 15 feet below the existing ground surface at the approximate locations shown on the attached Test Location Diagram in Appendix A. Details of the subsurface conditions encountered in the test pits are shown on the Test Pit Observation Summaries in Appendix B. These logs represent our interpretation of the subsurface conditions based upon field observations and visual material classifications. Stratification lines on the summaries represent approximate boundaries between material types; however, the actual transition may be gradual.

3.2 REGIONAL/SITE GEOLOGY

The site is located in the Piedmont Physiographic Province of North Carolina. The native soils in the Piedmont Province consist mainly of residuum with underlying saprolites weathered from the

parent bedrock, which can be found in both weathered and unweathered states. Although the surficial materials normally retain the structure of the original parent bedrock, they typically have a much lower density and exhibit strengths and other engineering properties typical of soil. In a mature weathering profile of the Piedmont Province, the soils are generally found to be finer grained at the surface where more extensive weathering has occurred. The particle size of the soils generally becomes more granular with increasing depth and gradually changes first to weathered and finally to unweathered parent bedrock. The mineral composition of the parent rock and the environment in which weathering occurs largely control the resulting soil's engineering characteristics. The residual soils are the product of the weathering of the parent bedrock.

The natural geology at the site has been modified in the past by grading that included the placement of fill materials in the western portion of the site. The quality of man-made fills can vary significantly, and it is often difficult to access the engineering properties of existing tests performed in soil test borings and the degree of compaction of existing fill soils; however, a qualitative assessment of existing fills can sometimes be made based on the N-values obtained and observations of the materials sampled in the test borings.

3.3 SUBSURFACE CHARACTERIZATION

The following sections provide generalized characterizations of the soil strata encountered during our subsurface exploration. For subsurface information at a specific location, refer to the Boring Logs in Appendix B.

Table 3.3.1 Subsurface Stratigraphy

Approximate Depth Range (ft)	Stratum	Description	Ranges of SPT ⁽¹⁾ N-values (bpf)
0 to 0.3	N/A	Varying amounts of organic laden materials. ⁽²⁾	N/A
0.3 to 14	I	FILL – Lean CLAY (CL), Fat CLAY (CH), Elastic SILT (MH), and Silty SAND (SM) ⁽³⁾ with occasional organic materials and rock fragments (i.e. organic laden soil, branches, roots, and possible shot rock ranging from cobble to boulder sized fragments)	4 to 17
0.3 to 20	II	RESIDUAL – Fat CLAY (CH), Elastic SILT (MH), and Sandy SILT (ML)	5 to 15

Notes: (1) Standard Penetration Test in blows per foot.

(2) Please note that the surficial materials are driller reported and therefore, they should not be used for surficial material removal takeoffs. Since mechanical clearing was used to gain access to some of the boring locations, surficial organic laden soil may have been removed at the boring locations. Our experience indicates that organic laden soil depths in wooded areas generally range from 12 to 18 inches or greater, depending on the amount of vegetation.

(3) Existing fill soils were encountered at Borings B-1, P-1, and P-2 and Test Pits TP-1, TP-3 through TP-6, TP-8, TP-10, and TP-11. Borings B-1 and P-2 were terminated upon auger refusal in possible construction debris or shot rock materials at depths ranging from approximately 3.6 to 4.1 feet below existing grade.

3.4 GROUNDWATER OBSERVATIONS

Groundwater measurements were attempted at the termination of drilling and prior to demobilization from the site. Groundwater was encountered within Boring B-2 at a depth of approximately 14.5 feet below existing ground surface at the time of drilling. Groundwater was not encountered in the remaining borings at the time of drilling. Cave-in depths were attempted

to be measured at each of the boring locations with cave-in depths ranging from approximately 2 to 15 feet below existing ground surface. Cave-in of a soil test boring can be caused by groundwater hydrostatic pressure, weak soil layers, and/or drilling activities (i.e. drilling fluid circulation or advancement of bit).

Fluctuations in the groundwater elevation should be expected depending on precipitation, run-off, utility leaks, and other factors not evident at the time of our evaluation. Normally, highest groundwater levels occur in late winter and spring and the lowest levels occur in late summer and fall. Depending on time of construction, groundwater may be encountered at shallower depths and locations not explored during this study. If encountered during construction, engineering personnel from our office should be notified immediately.

4.0 LABORATORY SERVICES

The laboratory testing performed by ECS for this project consisted of selected tests performed on samples obtained during our field exploration operations. The following paragraphs briefly discuss the results of the completed laboratory testing program. Classification and index property tests were performed on representative soil samples obtained from the test borings in order to aid in classifying soils according to the Unified Soil Classification System and to quantify and correlate engineering properties.

4.1 SOIL CLASSIFICATION

A geotechnical staff professional visually classified each soil sample from the test borings on the basis of texture and plasticity in accordance with the Unified Soil Classification System and ASTM D2488 (Description and Identification of Soils-Visual/Manual Procedures). After classification, the various soil types were grouped into the major zones noted on the Boring Logs in Appendix B. The group symbols for each soil type are indicated in parentheses followed by the soil descriptions on the Boring Logs. The stratification lines designating the interfaces between earth materials on the Boring Logs are approximate; in situ, the transitions may be gradual.

4.2 LABORATORY TESTING

In addition to visual classification, ECS performed four (4) natural moisture content tests and two (2) Atterberg limits test on selected soil samples obtained from within the borings. The laboratory testing was performed in accordance with the applicable ASTM standards. The results of the laboratory testing are presented on the respective Boring Logs and in the Laboratory Testing Summary included in Appendix C.

5.0 DESIGN RECOMMENDATIONS

5.1 STRUCTURE DESIGN

The following sections provide recommendations for foundation design, soil supported slabs, and seismic design parameters.

5.1.1 Foundations (East Portion of Site)

Provided subgrades and Structural Fills are prepared as discussed herein, the proposed structures in the portion of the site located east of Torrence Creek can be supported by conventional shallow foundations bearing on low plasticity residual soils or newly-placed Structural Fill. The design of the foundations shall utilize the following parameters:

Table 5.1.1.1 Foundation Design

Design Parameter	Column Footing	Wall Footing
Net Allowable Bearing Pressure ⁽¹⁾	2,500 psf	
Acceptable Bearing Soil Material ⁽²⁾	Low Plasticity Residual Soils Or Newly-placed Structural Fill	
Minimum Width	24 inches	18 inches
Minimum Footing Embedment Depth (below slab or finished grade)	18 inches	18 inches
Estimated Total Settlement	1 inch, or less	1 inch, or less
Estimated Differential Settlement	½ inch, or less, between columns	½ inch, or less, over 50 feet

Notes: (1) Net allowable bearing pressure is applied pressure in excess of the surrounding overburden soils above the base of the foundation.
(2) Existing fill is not considered suitable for foundation support. See following sections for recommendations regarding existing fill materials.

5.1.2 Foundations (West Portion of Site – Existing Fill)

Existing fill soils containing organic materials and rock fragments (i.e. organic laden soil, branches, roots, and possible shot rock ranging from cobble to boulder sized fragments) were encountered at Borings B-1, P-1, and P-2 and at Test Pits TP-1, TP-3 through TP-6, TP-8, TP-10, and TP-11 and extended to depths ranging from approximately 3 to 14 feet below existing grades. As previously noted, Borings B-1 and P-2 could not be advanced through possible debris laden fill materials. Based on aerial imagery, the west portion of the site appears to have previously been used as a stockpile and/or fill area. The extents or composition of the fill material in this area are undocumented at this time. ECS does not recommend supporting the structures on undocumented fill.

The foundation design at this site requires special consideration to address the presence of the debris laden undocumented fill encountered within the proposed restroom structure footprint. Based on historic aerial imagery aerial photography and provided site topographic information, the estimated horizontal extents of the existing fill area are shown on the Boring Location Diagram in Appendix A. The following potential options may be considered for the proposed restroom structure:

- Option 1: Undercut and replace with Structural Fill.
- Option 2: Relocate/move the proposed structure footprint away from the debris laden fill area.
- Option 3: Ground Improvement System (i.e. aggregate piers or rigid inclusions).

The selection of the most appropriate foundation system solution should weigh the financial cost of the system with the intended use and settlement tolerances of the structure.

Option 1 – Undercut and Replace with Structural Fill

Based on the findings of the additional subsurface exploration and the revised location of the bathroom structure, removal of existing fill and replacement with compacted Structural Fill can be considered for the restroom structure. Excavation depths ranging from 3 to 12 feet below current site grades are anticipated to remove existing fill within the building footprint. The excavation shall extend a minimum horizontal margin equal to 1 times the depth of undercut beyond the outside edge of perimeter foundations (i.e. for a 12 foot undercut depth, the width would need to extend 12 feet outside of the building footprint limits).

Following undercut operations, ECS should observe the exposed subgrade soils for stability. Unstable areas should be remediated, as outlined in the “Site Construction Recommendations” sections of this report, prior to backfilling operations. The excavated area should be backfilled in accordance with fill placement recommendations presented in this report. Existing soil materials excavated during undercut operations may be re-used, provided they are free of deleterious materials and meet the project requirements for Structural Fill.

Option 2 - Relocate Proposed Restroom Structure Footprint

Due to the risks and potential costs associated with remediating existing fill, it may be more cost effective to relocate/move the proposed structure footprint away from the undocumented fill area. Based on the findings of the additional subsurface exploration and the revised site plan, it appears that the revised building footprint is located within the transition from existing fill to residual soils. There is approximately 12 feet of existing fill along the eastern portion of the building footprint which transitions to approximately 3 feet of existing fill along the western portion of the building footprint. Based on the test pit results, there appears to be areas along the western portion of the site where residual soils (i.e. no existing fill) were observed at the location of Test Pits TP-2, TP-7 and TP-9.

Option 3 - Ground Improvement

Aggregate piers or rigid inclusions can be considered for ground improvement at this site in lieu of removal and replacement of existing fill. After installation of the aggregate piers or rigid inclusions, traditional shallow footing foundations are constructed on the improved soil; however, a load transfer pad may be required with rigid inclusions. We anticipate an allowable bearing pressure of 2,500 to 3,000 psf will be achievable at this project site for spread footing foundations bearing on aggregate piers or rigid inclusions. Aggregate piers are typically installed by a design/build contractor. The bid documents should specify a minimum allowable bearing pressure and allowable total and differential tolerances. The total and differential settlement tolerances should be defined by the Structural Engineer based on the individual building tolerances. ECS would be pleased to work with the design team to develop a ground improvement specification for this project if desired.

The aggregate pier system should be designed by a design-build contractor and the proposed soil improvement plan should be reviewed by ECS before construction begins. The design-build contractor should also be made aware of changes in site grades required to achieve final site grades and should plan construction sequencing accordingly. Where significant site fills are required the ground improvement designer should specify if the fill should be placed before or after ground improvement installation, and should define if an waiting period is required between fill placement, ground improvement installation, and building construction.

As previously noted, construction debris or shot rock materials were encountered in the test pits. A contingency to remove potential debris laden fill materials at ground improvement locations should be included in the budget.

5.1.3 Floor Slabs

Low plasticity residual soils or newly placed Structural Fill are considered suitable for support of the floor slabs, although moisture control during earthwork operations, including the use of discing or appropriate drying equipment, may be necessary.

The following graphic depicts our soil-supported slab recommendations:

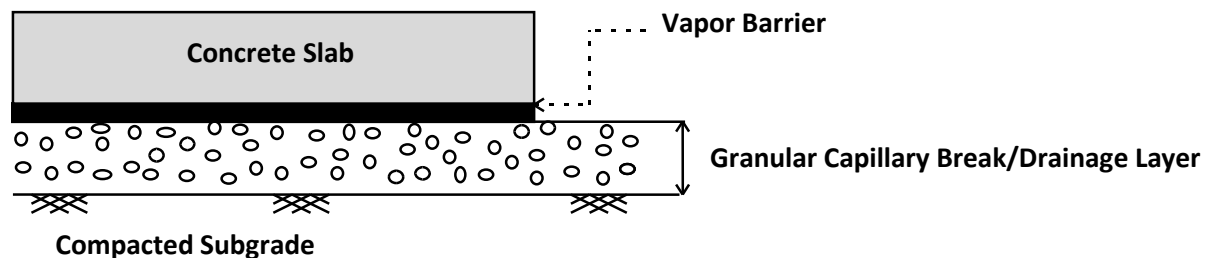


Figure 5.1.3.1

1. Drainage Layer Thickness: 4 inches
2. Drainage Layer Material: GRAVEL (GP, GW), SAND (SP, SW)
3. Subgrade compacted to **100%** maximum dry density per ASTM D698

Subgrade Modulus: Provided the placement of Structural Fill and granular drainage layer per the recommendations discussed herein, the slab may be designed assuming a modulus of subgrade reaction, k_1 of 90 pci (lbs/cubic inch). The modulus of subgrade reaction value is based on a 1 foot by 1 foot plate load test basis.

Slab Isolation: Ground-supported slabs should be isolated from the foundations and foundation-supported elements of the structure so that differential movement between the foundations and slab will not induce excessive shear and bending stresses in the floor slab. Where the structural configuration prevents the use of a free-floating slab or monolithic design is implemented, the slab should be designed with suitable reinforcement and load transfer devices to preclude overstressing of the slab.

5.1.4 Seismic Design Considerations

Seismic Site Classification: The North Carolina Building Code (NCBC) requires site classification for seismic design based on the upper 100 feet of a soil profile. Three methods are utilized in

classifying sites, namely the shear wave velocity (v_s) method; the unconfined compressive strength (s_u) method; and the Standard Penetration Resistance (SPT N-value) method. The SPT N-value method was used in classifying this site. Based on the test boring results and our experience, a default seismic site class of “D” is considered appropriate for this project.

The seismic site class definitions for the weighted average of SPT N-value in the upper 100 feet of the soil profile are shown in the following table:

Table 5.1.4.1: Seismic Site Classification

Site Class	Soil Profile Name	SPT Resistance, N-bar
A	Hard Rock	Not Applicable
B	Rock	Not Applicable
C	Very dense soil and soft rock	N-bar > 50
D	Stiff Soil Profile	$15 \leq \text{N-bar} \leq 50$
E	Soft Soil Profile	N-bar < 15

5.2 SITE DESIGN CONSIDERATIONS

5.2.1 Cut and Fill Slopes

Based on the topographic information provided and client correspondence, ECS anticipates cut/fill depths on the order of 3 feet or less. Once grading plans are available, ECS should be provided the opportunity to review the drawings and revise our recommendations, if necessary.

5.2.2 Pavement Considerations

Undisturbed low-plasticity residual soils or newly placed Structural Fill can provide adequate support for pavement structures and walkways designed for appropriate subgrade strength and traffic characteristics. Existing fill soils were encountered in Borings B-1, P-1, and P-2 and Test Pits TP-1, TP-3 through TP-6, TP-8, TP-10, and TP-11 to depths ranging from approximately 3 to 14 feet below existing grades. ECS does not recommend supporting pavements on existing fill or high plasticity MH and CH soils. The existing fill should be removed from below the pavement areas and replaced with compacted Structural Fill. The Owner may consider supporting pavements and sidewalks on the existing fill provided the risks associated with poor pavement and slab performance and increased maintenance are acceptable. However, undercutting moisture sensitive (MH and CH) existing fill and residual soils should be anticipated.

For the design and construction of pavements, the subgrades should be prepared in accordance with the recommendations in the “Site Construction Recommendations” sections of this report. The aggregate base course materials beneath the pavements and sidewalks should be compacted to at least 95% of the modified Proctor maximum dry density (ASTM D1557).

An important consideration with the design and construction of pavements is surface and subsurface drainage. Where standing water develops, either on the pavement surface or within the aggregate base course layer, softening of the subgrades and other problems related to the deterioration of the pavement can be expected. Water buildup in the base course may result in premature pavement distress and failures.

Furthermore, positive drainage should help reduce the possibility of the subgrade materials becoming saturated during the normal service period of the pavement. The subgrade and

pavement should be graded to provide effective runoff to either the outer limits of the paved area or to catch basins so that standing water will not accumulate on the subgrade or pavement.

Based on our past experience with similar facilities and subsurface conditions, we present the following design pavement sections, provided the recommendations contained in this report are implemented. We have developed the pavement sections recommended below using AASHTO guideline with a CBR value of 4, assuming the existing subgrades are unyielding prior to the placement of the aggregate base course materials. ECS has estimated the provided pavement sections based upon a 20 year life, with equivalent single axle loadings of approximately 10,000 and 85,000 ESALs for light-duty and heavy-duty pavements, respectively. We recommend that you use the heavy duty section in all drive isles and areas where buses or trash collection trucks may drive. The light duty section should be used only in areas subject to passenger vehicle traffic.

Table 5.2.2.1: Pavement Section Recommendations

Material Designation	Light Duty Asphalt Pavement⁽¹⁾	Heavy Duty Asphalt Pavement	Portland Cement Concrete (PCC) Pavement
Asphalt Surface Course (S9.5B)	2 inches	1.5 inches	-
Asphalt Intermediate Course (I19.0C)	-	2.5 inches	
Portland Cement Concrete			6 inches
Aggregate Base Course	6 inches	6 inches	6 inches

(1) Light Duty Asphalt Pavement recommendations are limited to passenger vehicle traffic loading only.

Front-loading trash dumpsters frequently impose concentrated front-wheel loads on pavements during loading. This type of loading typically results in rutting of bituminous pavements and ultimately pavement failures and costly repairs. At locations where delivery trucks, and/or buses will be turning and maneuvering, the flexible pavement section should be designed to resist the anticipated shear stress on the pavement throughout the required pavement service life. Therefore, we suggest that the areas with high anticipated shear stress utilize the aforementioned Portland Cement Concrete (PCC) pavement section. It may be prudent to use rigid pavement sections in all areas planned for heavy truck traffic. Such a PCC section would typically consist of 6 inches of 4,000 psi, air-entrained concrete over not less than 6 inches of compacted aggregate base course. Appropriate steel reinforcing and jointing should also be incorporated into the design of PCC pavements.

ECS should be allowed to review these recommendations and make appropriate revisions based upon the formulation of the final traffic design criteria for the project. It is important to note that the design sections do not account for construction traffic loading. It should be noted that these design recommendations may not satisfy the North Carolina Department of Transportation traffic guidelines. Roadways constructed for public use and to be dedicated to the State for repair and maintenance must be designed in accordance with the State requirements.

6.0 SITE CONSTRUCTION RECOMMENDATIONS

Because the western portion of the site appears to have been used as a stockpile and/or fill area, we emphasize the importance of subgrade evaluations prior to Structural Fill placement and/or other construction activities. These evaluations may include proofrolling the subgrade soils, performing hand auger borings, and excavation of test pits within previously filled areas. The mentioned observations would help in identifying areas of soft, loose, otherwise unsuitable materials, or buried debris, which would require remedial activities.

6.1 SUBGRADE PREPARATION

6.1.1 Stripping and Grubbing

The subgrade preparation should consist of stripping vegetation, rootmat, topsoil, remnants of previous construction, and any other soft or unsuitable materials from the 10-foot expanded building and 5-foot expanded pavement limits and to 5 feet beyond the toe of structural fills. Deeper topsoil or organic laden soils may be present in wet, low-lying, and poorly drained areas. ECS should be called on to observe that topsoil and unsuitable surficial materials have been removed prior to the placement of Structural Fill or construction of structures.

6.1.2 Proofrolling

After removing unsuitable surface materials, cutting to the proposed grade, and prior to the placement of Structural Fill or other construction materials, the exposed subgrade should be observed by ECS. The exposed subgrade should be thoroughly proofrolled with appropriate construction equipment having a minimum axle load of 10 tons (e.g. fully loaded tandem-axle dump truck). The areas subject to proofrolling should be traversed by the equipment in two perpendicular (orthogonal) directions with overlapping passes of the vehicle under the observation of ECS. This procedure is intended to assist in identifying any localized yielding materials. In the event that unstable or “pumping” subgrade is identified by the proofrolling, those areas should be repaired prior to the placement of subsequent structural fill or other construction materials. Methods of repair of unstable subgrade, such as undercutting or moisture conditioning or chemical stabilization, should be discussed with ECS to determine the appropriate procedure with regard to the existing conditions causing the instability. Test pit(s) may be excavated to explore the shallow subsurface materials in the area of the instability to help in determined the cause of the observed unstable materials and to assist in the evaluation of the appropriate remedial action to stabilize the subgrade.

6.1.3 Subgrade Stabilization

Subgrade Benching: Fill should not be placed on ground with a slope steeper than 5H:1V, unless the fill is confined by an opposing slope. Otherwise, where steeper slopes exist, the ground should be benched so as to allow for fill placement on a horizontal surface.

Subgrade Stabilization: In some areas, undercutting of excessively soft materials may be considered inefficient. In such areas the use of a reinforcing geotextile or geogrid might be employed, under the advisement of ECS. Suitable stabilization materials may include medium duty woven geotextile fabrics or geogrids. The suitability and employment of reinforcing or stabilization products should be determined in the field by ECS personnel, in accordance with project specifications.

6.2 EARTHWORK OPERATIONS

6.2.1 Existing Man-Placed Fill

Existing fill soils containing organic materials and rock fragments (i.e. organic laden soil, branches, roots, and possible shot rock ranging from cobble to boulder sized fragments) were encountered at Borings B-1, P-1, and P-2, and Test Pits TP-1, TP-3 through TP-6, TP-8, TP-10, and TP-11 and extended to depths ranging from approximately 3 to 14 feet below existing grades. Auger refusal was encountered in Borings B-1 and P-2 at depths ranging from approximately 3.6 to 4.1 feet below grade on possible construction debris or shot rock materials. Borings initially encountering auger refusal were offset and re-drilling was attempted; however, auger refusal at approximately equivalent depths was encountered. Auger refusal can be indicative of construction debris within the existing fill. The existing fill soil appeared to be located primarily in the western portion of the site, which appears to have previously been used as a stockpile and/or fill area. The ECS has not been provided with test records (such as proofrolling, compaction testing, etc.) at the time of this report, thus the fill should be considered undocumented.

Undocumented fill poses risks associated with undetected deleterious inclusions within the fill and/or deleterious materials at the virgin ground fill interface that are covered by the fill. Deleterious materials can consist of significant amount of organics derived from organic rich strippings, rubbish, construction or demolition debris, stumps and roots, and logs. If these materials are covered over by or are within undocumented fill, the organic materials tend to decompose slowly in the anaerobic conditions in or under the fill. Decomposition can occur over periods ranging from several years to several decades. As the organic materials decompose, a void is created which can create soft conditions and even subsidence in areas above the organics. Where these types of conditions exist under or within undocumented fill, they are sometimes in discreet pockets that can go undetected by normal subsurface exploration techniques, i.e., soil test borings and test pits.

Since we have not been provided documentation of the compaction testing records, we cannot qualify the fill soils in between our boring locations and cannot be responsible for potential settlement of the structures, slabs, or pavements if the Owner elects to support the development on these soils. If the Owner is willing to accept the risk of supporting pavement, hardscape, or floor slab areas on existing fill, they should be prepared for the possibility of poor pavement or slab performance and increased maintenance as a result of the concerns discussed above. The risk of poor pavement and slab performance can be reduced with the implementation of partial undercuts, the addition of geogrid reinforcement to pavement cross sections, and/or the use of a more robust pavement design. These alternatives may reduce the potential for poor pavement performance, but do not eliminate the risk.

6.2.2 Moisture Sensitive Soils

Near surface moisture sensitive soils (MH and CH soils) were encountered in Borings B-2 and P-3 and each of the test pits and extended to depths ranging from approximately 3 to 14 feet below existing grades. MH soils with a PI greater than 30 and CH soils should not be used for direct support of project slabs-on-grade, foundations, or pavements. MH soils with a PI greater than 30 and CH soils encountered within proposed structural areas should be undercut and replaced with low plasticity Structural Fill to a minimum depth of 2 feet below subgrade elevations in slab, foundation, and pavement areas. Therefore, undercutting or the addition of Structural Fill should be anticipated throughout the site in order to remediate existing moisture sensitive soils and/or provide the recommended separation. Alternatively, chemical stabilization can be considered in

lieu of undercutting and replacement; however, this option may prove to be economically undesirable due to the size of the project.

Structural Fills: High plasticity soils do not satisfy the specification criteria for satisfactory materials. Given the presence of high plasticity soils on this site, and to reduce the amount of import/export material to/from the site, the Owner can consider allowing soils with a maximum Liquid Limit of 65 and maximum Plasticity Index of 30 to be used as Structural Fill at depths greater than 4 feet below pavement subgrades outside the expanded building limits and within non-structural areas.

6.2.3 Below Grade Excavation

We anticipate the majority of the near surface subgrade soils at the site can be excavated with backhoes, front-end loaders or other similar equipment using conventional means and methods. However, it appears that the western portion of the site was previously utilized as a stockpile area and/or fill area. Auger refusal materials (i.e. construction debris or shot rock materials) were encountered in Borings B-1 and P-2 at depths ranging from approximately 3.6 to 4.1 feet below existing grade. Variable and/or difficult conditions should be anticipated during excavation within the western portion of the site. Additionally, as noted in the Geology section of this report, the weathering process in the Piedmont can be erratic and significant variations of the depths of the more dense materials can occur in relatively short distances. In some cases, isolated boulders or thin rock seams may be present in the soil matrix.

6.2.4 Lower Consistency Soils

Near surface, lower consistency soils (N-values ≤ 5 bpf) were encountered within existing fill materials in Boring P-1 between a depths of approximately 3 to 5.5 feet below existing grades. Depending on the final site grades and conditions observed during proofroll evaluations at the time of construction, selective undercutting and re-compaction/reworking of lower consistency soils may be necessary to stabilize the subgrade for structure construction and/or fill placement.

6.2.5 Structural Fill Materials

Product Submittals: Prior to placement of Structural Fill, representative bulk samples (about 50 pounds) of on-site and off-site borrow should be submitted to ECS for laboratory testing, which will include Atterberg limits, natural moisture content, grain-size distribution, and moisture-density relationships for compaction. Import materials should be tested prior to being hauled to the site to determine if they meet project specifications.

Satisfactory Structural Fill Materials: Materials satisfactory for use as Structural Fill should consist of inorganic soils classified as CL, ML, SM, SC, SW, SP, GM and GC, or a combination of these group symbols, per ASTM D2487. The materials should be free of organic matter, debris, and should contain no particle sizes greater than 4 inches in the largest dimension. Open graded materials and gravels (GW and GP), which contain void space in their mass should not be used in structural fills unless properly encapsulated with filter fabric. Suitable Structural Fill material should have the index properties shown in Table 6.2.5.1

Table 6.2.5.1 Structural Fill Index Properties

Location	LL	PI
Building Areas	50 max	30 max
Pavement Areas	50 max	30 max

Unsatisfactory Materials: Unsatisfactory fill materials include materials which do not satisfy the requirements for suitable materials, as well as debris laden materials, topsoil and organic materials (OH, OL), Elastic SILT (MH), and Fat CLAY (CH).

6.2.6 Compaction

Structural Fill Compaction: Structural Fill within the expanded building, pavement, and embankment limits should be placed in maximum 8-inch loose lifts, moisture conditioned as necessary to within +/- 3% of the soil's optimum moisture content, and be compacted with suitable equipment to a dry density of at least 95% of the Standard Proctor maximum dry density (ASTM D698) except within 24 inches of finished soil subgrade elevation beneath slab-on-grade and pavements. Within the top 24 inches of finished soil subgrade elevation beneath slab on grade and pavements, the approved project fill should be compacted to at least 100% of its standard Proctor maximum dry density. ECS should be called on to document that proper fill compaction has been achieved.

Fill Compaction Control: The expanded limits of the proposed construction areas should be well defined, including the limits of the fill zones for buildings, pavements, and slopes, etc., at the time of fill placement. Grade controls should be maintained throughout the filling operations. Filling operations should be observed on a full-time basis by ECS to determine that the minimum compaction requirements are being achieved.

Compaction Equipment: Compaction equipment suitable to the soil type being compacted should be used to compact the subgrades and fill materials. Sheepsfoot compaction equipment should be suitable for the fine-grained soils (Clays and Silts). A vibratory steel drum roller should be used for compaction of coarse-grained soils (Sands) as well as for sealing compacted surfaces.

Fill Placement Considerations: Fill materials should not be placed on frozen soils, on frost-heaved soils, and/or on excessively wet soils. Borrow fill materials should not contain frozen materials at the time of placement, and all frozen or frost-heaved soils should be removed prior to placement of Structural Fill or other fill soils and aggregates. Excessively wet soils or aggregates should be scarified, aerated, and moisture conditioned.

At the end of each work day, fill areas should be graded to facilitate drainage of any precipitation and the surface should be sealed by use of a smooth-drum roller to limit infiltration of surface water. During placement and compaction of new fill at the beginning of each workday, the Contractor may need to scarify existing subgrades to a depth on the order of 4 inches so that a weak plane will not be formed between the new fill and the existing subgrade soils.

Drying and compaction of wet soils is typically difficult during the cold, winter months. Accordingly, earthwork should be performed during the warmer, drier times of the year, if practical. Proper drainage should be maintained during the earthwork phases of construction to prevent ponding of water which has a tendency to degrade subgrade soils. Alternatively, if these

soils cannot be stabilized by conventional methods as previously discussed, additional modifications to the subgrade soils such as lime or cement stabilization may be utilized to adjust the moisture content. If lime or cement are utilized to control moisture contents and/or for stabilization, Quick Lime, Calciment® or regular Type 1 cement can be used. The construction testing laboratory should evaluate proposed lime or cement soil modification procedures, such as quantity of additive and mixing and curing procedures, before implementation. The Contractor should be required to minimize dusting or implement dust control measures, as required.

Where fill materials will be placed to widen existing embankment fills, or placed up against sloping ground, the soil subgrade should be scarified and the new fill benched or keyed into the existing material. Fill material should be placed in horizontal lifts. In confined areas such as utility trenches, portable compaction equipment and thin lifts of 4 inches or less may be required to achieve specified degrees of compaction.

We recommend that the grading Contractor have equipment on site during earthwork for both drying and wetting fill soils. We do not anticipate significant problems in controlling moisture within the fill during dry weather, but moisture control may be difficult during winter months or extended periods of rain. The control of moisture content of higher plasticity soils is difficult when these soils become wet. Further, such soils are easily degraded by construction traffic when the moisture content is elevated.

6.3 FOUNDATION AND SLAB OBSERVATIONS

Protection of Foundation Excavations: Exposure to the environment may weaken the soils at the footing bearing level if the foundation excavations remain open for too long a time. Therefore, foundation concrete should be placed the same day that excavations are made. If the bearing soils are softened by surface water intrusion or exposure, the softened soils must be removed from the foundation excavation bottom immediately prior to placement of concrete. If the excavation must remain open overnight, or if rainfall becomes imminent while the bearing soils are exposed, a 2 to 3-inch thick “mud mat” of “lean” concrete should be placed on the bearing soils before the placement of reinforcing steel.

Footing Subgrade Observations: Following the remediation of moisture sensitive soils, the soils at the foundation bearing elevation are anticipated to be suitable for support of the proposed structures. However, it will be important to have ECS observe the foundation subgrade prior to placing foundation concrete. If soft or unsuitable soils are observed at the footing bearing elevations at the time of construction, the unsuitable soils should be undercut and removed. Undercut areas should be backfilled with lean concrete ($f'_c \geq 1,000$ psi at 28 days) up to the original design bottom of footing elevation; the original footing shall be constructed on top of the lean concrete.

Slab Subgrade Observations: A representative of ECS should be called on to observe exposed subgrades within the expanded building limits prior to Structural Fill Placement to confirm that adequate subgrade preparation has been achieved. Proofrolling using a loaded dump truck should be performed in their presence at that time. Once subgrades have been properly prepared, subgrades should be compacted and new Structural Fill can be placed. Existing subgrades to a depth of at least 10 inches and all Structural Fill should be moisture conditioned to within +/-3 percentage points of optimum moisture content then be compacted to the required density. If there will be a significant time lag between the site grading work and final grading of concrete

slab areas prior to the placement of the subbase stone and concrete, a representative of ECS should be called on to observe the condition of the prepared subgrade. Prior to final slab construction, the subgrade may require scarification, moisture conditioning, and re-compaction to restore stable conditions.

6.4 UTILITY INSTALLATIONS

Utility Subgrades: The soils encountered in our exploration are expected to be generally suitable for support of utility pipes; however, due to shallow Auger Refusal (i.e. possible construction debris) and debris laden fill observed in the test pits, difficult excavation may be encountered during utility excavation. Construction debris encountered at utility subgrade elevations should be removed and replaced with bedding material to reduce potential point load stresses. The pipe subgrade should be observed and probed for stability by ECS to evaluate the suitability of the materials encountered. Loose or unsuitable materials encountered at the utility pipe subgrade elevation should be removed and replaced with suitable compacted Structural Fill or pipe bedding material.

Utility Backfilling: Granular bedding material should be at least 4 inches thick, but not less than that specified by the project drawings and specifications. Fill placed for support of the utilities, as well as backfill over the utilities, should satisfy the requirements for Structural Fill given in this report. Compacted backfill should be free of topsoil, roots, ice, or any other material designated by ECS as unsuitable. The backfill should be moisture conditioned, placed, and compacted in accordance with the recommendations of this report.

6.5 GENERAL CONSTRUCTION CONSIDERATIONS

Moisture Conditioning: During the cooler and wetter periods of the year, delays and additional costs should be anticipated. At these times, reduction of soil moisture may need to be accomplished by a combination of mechanical manipulation and the use of chemical additives, such as lime or cement, in order to lower moisture contents to levels appropriate for compaction. Alternatively, during the drier times of the year, such as the summer months, moisture may need to be added to the soil to provide adequate moisture for successful compaction according to the project requirements.

Subgrade Protection: Measures should also be taken to limit site disturbance, especially from rubber-tired heavy construction equipment, and to control and remove surface water from development areas, including structural and pavement areas. It would be advisable to designate a haul road and construction staging area to limit the areas of disturbance and to prevent construction traffic from excessively degrading sensitive subgrade soils and existing pavement areas. Haul roads and construction staging areas could be covered with excess depths of aggregate to protect those subgrades. The aggregate can later be removed and used in pavement areas provided it meets project specifications and is free from soil contamination.

Surface Drainage: Surface drainage conditions should be properly maintained. Surface water should be directed away from the construction area, and the work area should be sloped away from the construction area at a gradient of 1 percent or greater to reduce the potential of ponding water and the subsequent saturation of the surface soils. At the end of each work day, the subgrade soils should be sealed by rolling the surface with a smooth drum roller to minimize infiltration of surface water.

Excavation Safety: Excavations and slopes should be made and maintained in accordance with OSHA excavation safety standards. The Contractor is solely responsible for designing and constructing stable, temporary excavations and slopes and should shore, slope, or bench the sides of the excavations and slopes as required to maintain stability of both the excavation sides and bottom. The Contractor's responsible person, as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the Contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. ECS is providing this information solely as a service to our Client. ECS is not assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

Erosion Control: The surface soils may be erodible. Therefore, the Contractor should provide and maintain good site drainage during earthwork operations to maintain the integrity of the surface soils. Erosion and sedimentation controls should be in accordance with sound engineering practices and local requirements.

7.0 CLOSING

ECS has prepared this report of findings, evaluations, and recommendations to guide geotechnical-related design and construction aspects of the project.

The description of the proposed project is based on information provided to ECS. If any of this information is inaccurate, either due to our interpretation of the documents provided or site or design changes that may occur later, ECS should be contacted so that we can review the report in light of the changes and provide additional or alternate recommendations as may be required to reflect the proposed construction.

ECS be allowed to review the project's plans and specifications pertaining to our work so that we may ascertain consistency of those plans/specifications with the intent of the geotechnical report.

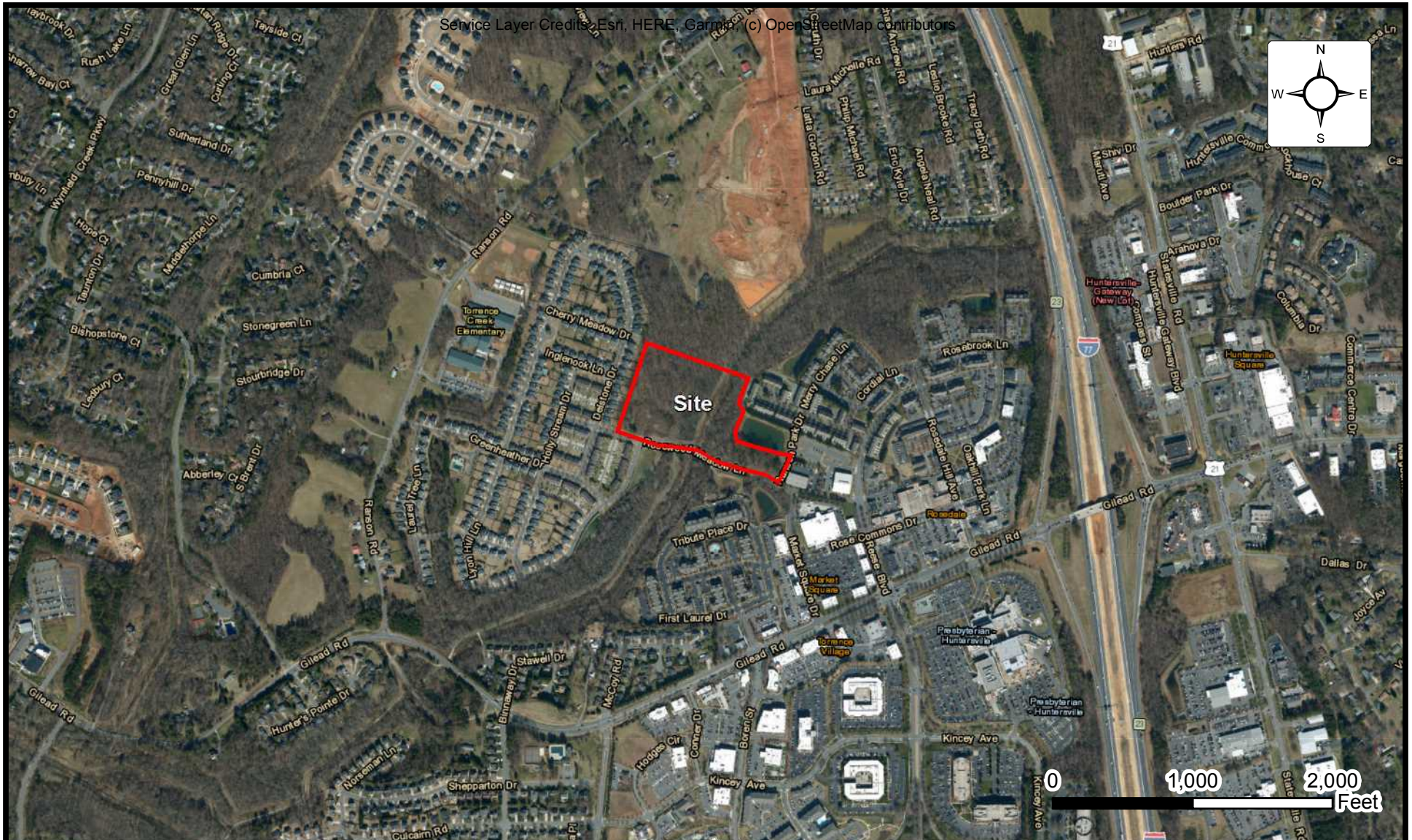
Field observations, monitoring, and quality assurance testing during earthwork and foundation installation are an extension of and integral to the geotechnical design recommendation. We recommend that the Owner retain these quality assurance services and that ECS be allowed to continue our involvement throughout these critical phases of construction to provide general consultation as issues arise. ECS is not responsible for the conclusions, opinions, or recommendations of others based on the data in this report.

APPENDIX A — Drawings & Reports

Site Location Diagram

Boring Location Diagram

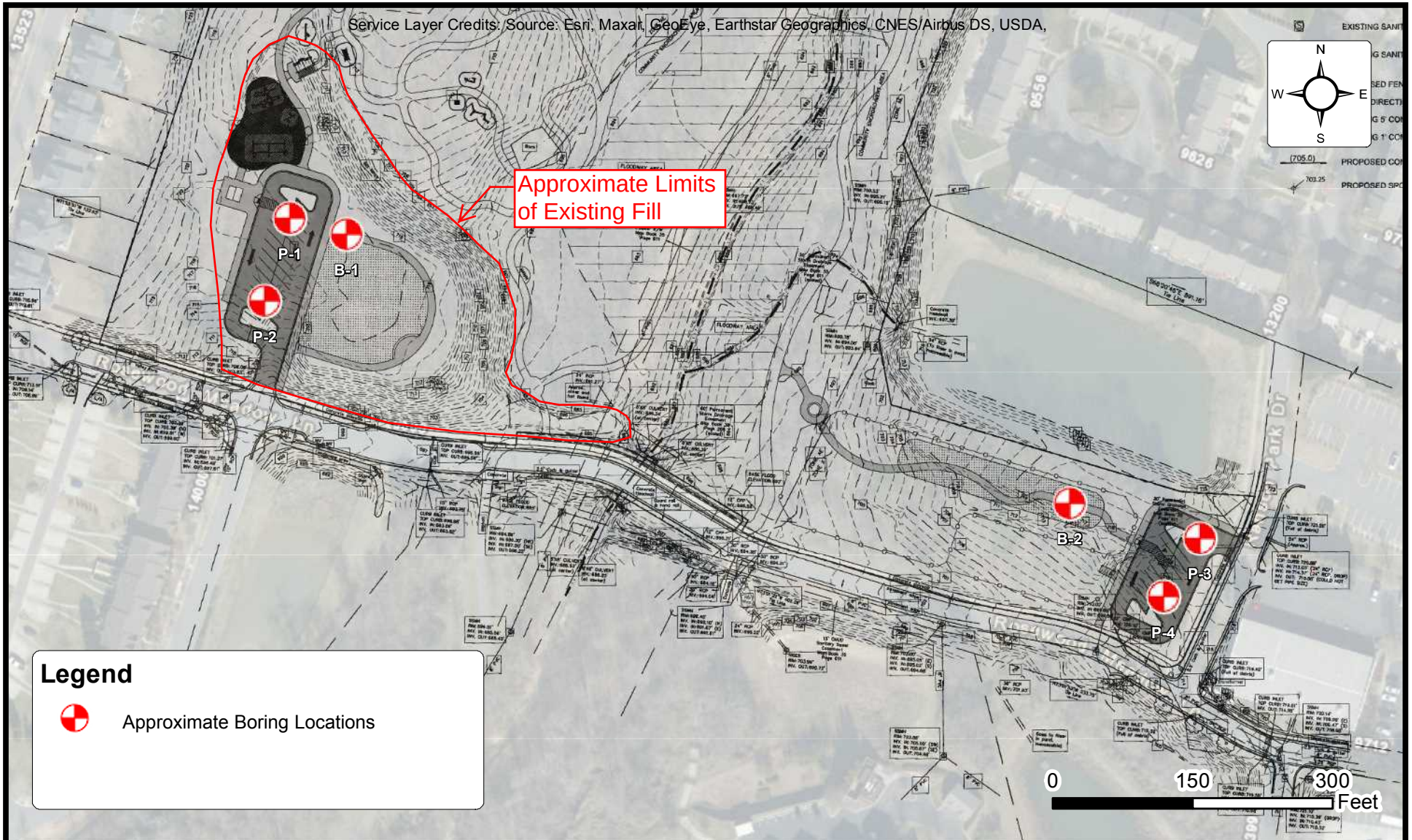
Test Location Diagram



Site Location Diagram **RANSON ROSEDALE PARK PROJECT**

HUNTERSVILLE, MECKLENBERG COUNTY, NORTH CAROLINA
THE DODD STUDIO

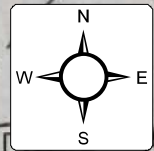
ENGINEER CJC2
SCALE AS NOTED
PROJECT NO. 08:14150
FIGURE 1
DATE 8/7/2020



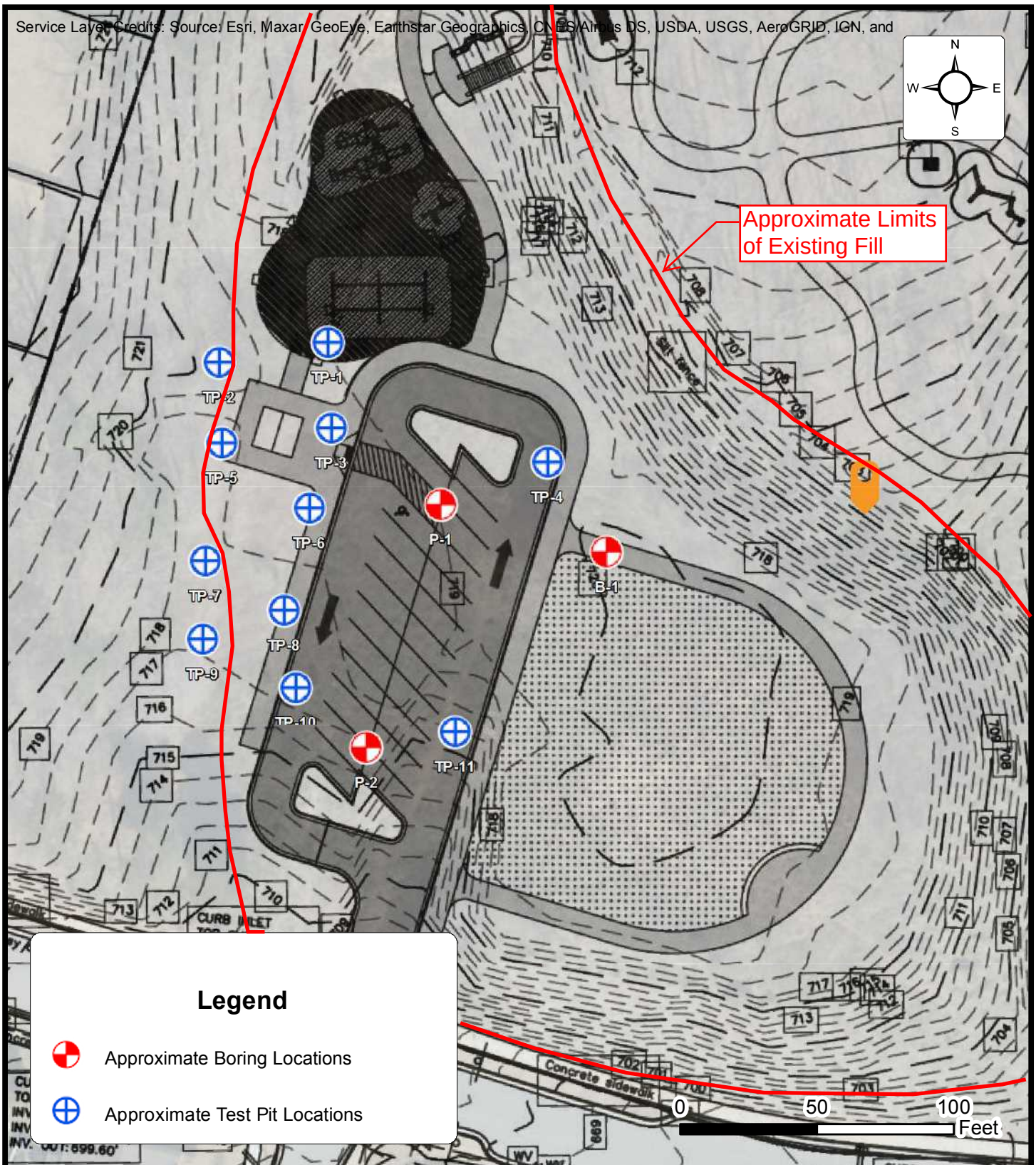
Boring Location Diagram **RANSON ROSEDALE PARK PROJECT**

HUNTERSVILLE, MECKLENBURG COUNTY, NORTH CAROLINA
THE DODD STUDIO

ENGINEER CJC2
SCALE AS NOTED
PROJECT NO. 08:14150
SHEET FIGURE 2
DATE 8/7/2020



Approximate Limits of Existing Fill



Legend



Approximate Boring Locations



Approximate Test Pit Locations



Test Location Diagram RANSON ROSEDALE PARK PROJECT

HUNTERSVILLE, MECKLENBURG COUNTY, NORTH

THE DODD STUDIO

ENGINEER
CJC2

SCALE
AS NOTED

PROJECT NO.
08:14150

SHEET
FIGURE 3

DATE
8/7/2020

APPENDIX B — Field Operations

Reference Notes for Boring Logs

Boring Logs B-1 through B-2 and P-1 through P-4

Test Pit Observation Summaries TP-1 through TP-11



REFERENCE NOTES FOR BORING LOGS

MATERIAL ^{1,2}	
	ASPHALT
	CONCRETE
	GRAVEL
	TOPSOIL
	VOID
	BRICK
	AGGREGATE BASE COURSE
	FILL³ MAN-PLACED SOILS
	GW WELL-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GP POORLY-GRADED GRAVEL gravel-sand mixtures, little or no fines
	GM SILTY GRAVEL gravel-sand-silt mixtures
	GC CLAYEY GRAVEL gravel-sand-clay mixtures
	SW WELL-GRADED SAND gravelly sand, little or no fines
	SP POORLY-GRADED SAND gravelly sand, little or no fines
	SM SILTY SAND sand-silt mixtures
	SC CLAYEY SAND sand-clay mixtures
	ML SILT non-plastic to medium plasticity
	MH ELASTIC SILT high plasticity
	CL LEAN CLAY low to medium plasticity
	CH FAT CLAY high plasticity
	OL ORGANIC SILT or CLAY non-plastic to low plasticity
	OH ORGANIC SILT or CLAY high plasticity
	PT PEAT highly organic soils

DRILLING SAMPLING SYMBOLS & ABBREVIATIONS			
SS	Split Spoon Sampler	PM	Pressuremeter Test
ST	Shelby Tube Sampler	RD	Rock Bit Drilling
WS	Wash Sample	RC	Rock Core, NX, BX, AX
BS	Bulk Sample of Cuttings	REC	Rock Sample Recovery %
PA	Power Auger (no sample)	RQD	Rock Quality Designation %
HSA	Hollow Stem Auger		

PARTICLE SIZE IDENTIFICATION		
DESIGNATION	PARTICLE SIZES	
Boulders	12 inches (300 mm) or larger	
Cobbles	3 inches to 12 inches (75 mm to 300 mm)	
Gravel:	Coarse	¾ inch to 3 inches (19 mm to 75 mm)
	Fine	4.75 mm to 19 mm (No. 4 sieve to ¾ inch)
Sand:	Coarse	2.00 mm to 4.75 mm (No. 10 to No. 4 sieve)
	Medium	0.425 mm to 2.00 mm (No. 40 to No. 10 sieve)
	Fine	0.074 mm to 0.425 mm (No. 200 to No. 40 sieve)
Silt & Clay ("Fines")	<0.074 mm (smaller than a No. 200 sieve)	

COHESIVE SILTS & CLAYS		
UNCONFINED COMPRESSIVE STRENGTH, Q_p ⁴	SPT ⁵ (BPF)	CONSISTENCY ⁷ (COHESIVE)
<0.25	<3	Very Soft
0.25 - <0.50	3 - 4	Soft
0.50 - <1.00	5 - 8	Firm
1.00 - <2.00	9 - 15	Stiff
2.00 - <4.00	16 - 30	Very Stiff
4.00 - 8.00	31 - 50	Hard
>8.00	>50	Very Hard

RELATIVE AMOUNT ⁷	COARSE GRAINED (%) ⁸	FINE GRAINED (%) ⁸
Trace	≤5	≤5
Dual Symbol (ex: SW-SM)	10	10
With	15 - 20	15 - 25
Adjective (ex: "Silty")	≥25	≥30

GRAVELS, SANDS & NON-COHESIVE SILTS	
SPT ⁵	DENSITY
<5	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
>50	Very Dense

WATER LEVELS ⁶		
	WL	Water Level (WS)(WD) (WS) While Sampling (WD) While Drilling
	SHW	Seasonal High WT
	ACR	After Casing Removal
	SWT	Stabilized Water Table
	DCI	Dry Cave-In
	WCI	Wet Cave-In

¹Classifications and symbols per ASTM D 2488-09 (Visual-Manual Procedure) unless noted otherwise.

²To be consistent with general practice, "POORLY GRADED" has been removed from GP, GP-GM, GP-GC, SP, SP-SM, SP-SC soil types on the boring logs.

³Non-ASTM designations are included in soil descriptions and symbols along with ASTM symbol [Ex: (SM-FILL)].

⁴Typically estimated via pocket penetrometer or Torvane shear test and expressed in tons per square foot (tsf).

⁵Standard Penetration Test (SPT) refers to the number of hammer blows (blow count) of a 140 lb. hammer falling 30 inches on a 2 inch OD split spoon sampler required to drive the sampler 12 inches (ASTM D 1586). "N-value" is another term for "blow count" and is expressed in blows per foot (bpf).

⁶The water levels are those levels actually measured in the borehole at the times indicated by the symbol. The measurements are relatively reliable when augering, without adding fluids, in granular soils. In clay and cohesive silts, the determination of water levels may require several days for the water level to stabilize. In such cases, additional methods of measurement are generally employed.

⁷Minor deviation from ASTM D 2488-09 Note 16.

⁸Percentages are estimated to the nearest 5% per ASTM D 2488-09.

CLIENT The Dodd Studio				Job #: 08:14150-A		BORING # B-2		SHEET 1 OF 1		
PROJECT NAME Ranson Rosedale Park Project				ARCHITECT-ENGINEER						
SITE LOCATION Huntersville, Mecklenburg County, NC										
NORTHING		EASTING		STATION						
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL		ENGLISH UNITS		WATER LEVELS ELEVATION (FT)	BLOWS/6"
					BOTTOM OF CASING LOSS OF CIRCULATION					
					SURFACE ELEVATION 717					
0					Topsoil Thickness [3.00"]					
	S-1	SS	18	15	(CH RESIDUAL) FAT CLAY, orangish gray, moist, stiff				715	3 6 7
	S-2	SS	18	17	(ML) SANDY SILT, contains mica, light grayish brown to orangish brown, moist, stiff					6 7 8
5										
	S-3	SS	18	16					710	3 4 5
	S-4	SS	18	13	(ML) SANDY SILT, contains mica, grayish brown, moist, firm					2 3 3
10										
									705	
	S-5	SS	18	15						1 2 3
15									700	
	S-6	SS	18	9						2 3 4
20										
					END OF BORING @ 20.0'				695	
									690	
25										
30										

CALIBRATED PENETROMETER TONS/FT²
 ROCK QUALITY DESIGNATION & RECOVERY
 RQD% --- REC% ---
 PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%
 STANDARD PENETRATION BLOWS/FT

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL GNE WS ☐ WD ☒	BORING STARTED 04/16/20	CAVE IN DEPTH 15.0
WL(SHW) WL(ACR) 14.5	BORING COMPLETED 04/16/20	HAMMER TYPE Auto
WL	RIG D-50 ATV FOREMAN Brian Boyce	DRILLING METHOD 2.25 HSA

CLIENT The Dodd Studio				Job #: 08:14150-A	BORING # P-2	SHEET 1 OF 1	
PROJECT NAME Ransod Rosedale Park Project				ARCHITECT-ENGINEER			
SITE LOCATION Huntersville, Mecklenburg County, NC							

NORTHING		EASTING	STATION
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DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)	BLOWS/6"	ROCK QUALITY DESIGNATION & RECOVERY
					BOTTOM OF CASING	LOSS OF CIRCULATION			PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT% STANDARD PENETRATION BLOWS/FT
					SURFACE ELEVATION 717				

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1	SS	7	0	Topsoil Thickness [1.50"] NO RECOVERY - POSSIBLE CONCRETE DEBRIS		715	1 50/1	
5	S-2	SS	1	1	(CL FILL) LEAN CLAY, contains slight mica, concrete debris, dark reddish brown, moist, very hard AUGER REFUSAL ON POSSIBLE DEBRIS OBSTRUCTION @ 3.6'		710	50/1	50/1
10							705		
15							700		
20							695		
25							690		
30									

0	S-1
---	-----

CLIENT The Dodd Studio				Job #: 08:14150-A		BORING # P-3		SHEET 1 OF 1		
PROJECT NAME Ranson Rosedale Park Project				ARCHITECT-ENGINEER						
SITE LOCATION Huntersville, Mecklenburg County, NC										
NORTHING		EASTING		STATION		○ CALIBRATED PENETROMETER TONS/FT² ROCK QUALITY DESIGNATION & RECOVERY RQD% - - - REC% - - - PLASTIC LIMIT% X ⊗ STANDARD PENETRATION BLOWS/FT WATER CONTENT% ● LIQUID LIMIT% △				
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL ENGLISH UNITS BOTTOM OF CASING LOSS OF CIRCULATION	WATER LEVELS ELEVATION (FT)	BLOWS/6"			
					SURFACE ELEVATION 720					
0					Topsoil Thickness [4.00"] (MH RESIDUAL) ELASTIC SILT, contains mica, brownish red to orangish brown, moist, firm to stiff	720				
	S-1	SS	18	17						
	S-2	SS	18	17						
5					(ML) SANDY SILT, contains slight mica, grayish brown, moist, firm	715				
	S-3	SS	18	16						
	S-4	SS	18	17						
10	END OF BORING @ 10.0'					710				
15						705				
20						700				
25						695				
30						690				

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL GNE WS ☐ WD ☒	BORING STARTED 04/16/20	CAVE IN DEPTH 6.8
WL(SHW) WL(ACR) GNE	BORING COMPLETED 04/16/20	HAMMER TYPE Auto
WL	RIG ATV FOREMAN Brian Boyce	DRILLING METHOD 2.25 HSA

CLIENT The Dodd Studio				Job #: 08:14150-A	BORING # P-4	SHEET 1 OF 1	
PROJECT NAME Ransom Rosedale Park Project				ARCHITECT-ENGINEER			
SITE LOCATION Huntersville, Mecklenburg County, NC							
NORTHING		EASTING		STATION			
DEPTH (FT)	SAMPLE NO.	SAMPLE TYPE	SAMPLE DIST. (IN)	RECOVERY (IN)	DESCRIPTION OF MATERIAL	ENGLISH UNITS	WATER LEVELS ELEVATION (FT)
					BOTTOM OF CASING LOSS OF CIRCULATION		
					SURFACE ELEVATION 714		
0					Topsoil Thickness [3.00"] (MH RESIDUAL) ELASTIC SILT, contains mica, brownish red, moist, stiff (ML) SANDY SILT, contains mica, grayish brown, moist, firm to stiff		
	S-1	SS	18	0			
	S-2	SS	18	10			
5	S-3	SS	18	18			
	S-4	SS	18	18			
10	END OF BORING @ 10.0'						
15							
20							
25							
30							

CALIBRATED PENETROMETER TONS/FT²
 ROCK QUALITY DESIGNATION & RECOVERY
 RQD% - - - REC% - - -
 PLASTIC LIMIT% WATER CONTENT% LIQUID LIMIT%
 STANDARD PENETRATION BLOWS/FT

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES. IN-SITU THE TRANSITION MAY BE GRADUAL.

WL GNE WS ☐ WD ☒	BORING STARTED 04/16/20	CAVE IN DEPTH 6.4
WL(SHW) WL(ACR) GNE	BORING COMPLETED 04/16/20	HAMMER TYPE Auto
WL	RIG D-50 ATV FOREMAN Brian Boyce	DRILLING METHOD 2.25 HSA



TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
 Project Location: Huntersville, NC Technician: Amanda Suttle
 Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
 Test Pit No.: TP-1 Test Pit Elevation: 719

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.3	TOPSOIL	—
0.3	4	(CL FILL) LEAN CLAY, contains trace gravel, dark reddish brown, moist	Easy
4	12	(CL/CH FILL) LEAN CLAY/FAT CLAY, contains organic laden soil, roots, branches, and trace mica, dark grayish brown, moist	Easy
12	14	(CH RESIDUAL) FAT CLAY, orangish brown, moist	Difficult
14	—	Test Pit Terminated	—

Water Depth: Not Encountered





TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC ECS Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-2 Test Pit Elevation: 720

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.7	TOPSOIL	—
0.7	4	(MH RESIDUAL) ELASTIC SILT, contains mica, reddish orange, dark, moist	Moderate
4	—	Test Pit Terminated	—

Water Depth: Not Encountered





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NC Registered Engineering Firm F-1078
NC Registered Geologists Firm C-553
SC Registered Engineering Firm 3239

TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-3 Test Pit Elevation: 719

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.2	TOPSOIL	—
0.2	3	(CL FILL) LEAN CLAY, dark reddish brown, moist	Easy
3	12	(CL/CH FILL) LEAN CLAY/FAT CLAY, contains organic laden soil, roots, branches, and strippings and trace mica, dark grayish brown, moist	Easy
12	15	(CH) FAT CLAY, contains trace mica, orangish gray, moist	Difficult
15	—	Test Pit Terminated	—

Water Depth: Not Encountered





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TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC ECS Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-4 Test Pit Elevation: 719

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.3	TOPSOIL	—
0.3	4	(CL FILL) LEAN CLAY, contains trace gravel, dark reddish brown, moist	Easy
4	14	(CL/CH FILL) LEAN CLAY/FAT CLAY, contains organic laden soil, roots, branches and trace mica, dark grayish brown, moist to wet	Easy
14	15	(MH RESIDUAL) ELASTIC SILT, contains trace mica, orangish brown, moist	Easy
15	—	Test Pit Terminated	—

Water Depth: _____



**TEST PIT OBSERVATION SUMMARY**

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC ECS Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-5 Test Pit Elevation: 718

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.3	TOPSOIL	—
0.3	3	(CL FILL) LEAN CLAY, dark reddish brown, dry	Easy
3	8	(MH RESIDUAL) ELASTIC SILT, contains trace mica, orangish brown, moist	Easy
8	15	(ML) SANDY SILT, contains mica, orangish brown, moist	Moderate
15	—	Test Pit Terminated	—

Water Depth: Not Encountered





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TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC ECS Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-6 Test Pit Elevation: 7189

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.3	TOPSOIL	—
0.3	3	(CL FILL) LEAN CLAY, dark reddish brown, moist	Easy
3	9	(CL/CH FILL) LEAN CLAY/FAT CLAY, contains roots, branches, and trace mica, dark grayish brown, moist	Easy
9	12	(MH RESIDUAL) ELASTIC SILT, contains trace mica, orangish brown, moist	Easy
12	16	(ML) SANDY SILT, contains mica, orangish brown, moist	Moderate
16	—	Test Pit Terminated	—

Water Depth: Not Encountered





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TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC ECS Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-7 Test Pit Elevation: 718

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.8	TOPSOIL	—
0.8	5	(MH RESIDUAL) ELASTIC SILT, contains mica, orangish red, moist	Moderate
5	—	Test Pit Terminated	—

Water Depth: Not Encountered





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TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-8 Test Pit Elevation: 718

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.25	TOPSOIL	—
0.25	2	(CL FILL) LEAN CLAY, contains trace gravel, dark reddish brown, moist	Easy
2	8	(CL/CH FILL) LEAN CLAY/FAT CLAY, contains roots and trace mica, dark grayish brown, moist	Easy
8	10	(MH RESIDUAL) ELASTIC SILT, contains trace mica, orangish brown, moist	Easy
10	13	(ML) SANDY SILT, contains mica, orangish brown, moist	Moderate
13	—	Test Pit Terminated	—

Water Depth: Not Encountered





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TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC ECS Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-9 Test Pit Elevation: 717

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160Lc

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.5	TOPSOIL	—
0.5	5	(MH RESIDUAL) ELASTIC SILT, contains mica, orangish red, moist	Moderate
5	—	Test Pit Terminated	—

Water Depth: Not Encountered





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NC Registered Geologists Firm C-553
SC Registered Engineering Firm 3239

TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC ECS Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-10 Test Pit Elevation: 717

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160Lc

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.25	TOPSOIL	—
0.25	7	(CL FILL) LEAN CLAY, contains organic laden soil, branches, cobble sized rock fragments (possible shot rock), and trace mica, dark grayish red to grayish brown, moist	Easy
7	12	(MH RESIDUAL) ELASTIC SILT, contains trace mica, orangish red, moist	Moderate
12	—	Test Pit Terminated	—

Water Depth: _____





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TEST PIT OBSERVATION SUMMARY

Project Name: Ranson Rosedale Park ECS Project Num.: 14150-A
Project Location: Huntersville, NC Technician: Amanda Suttle
Project Client: The Dodd Studio Excavation Subcontractor: Abernathy
Test Pit No.: TP-11 Test Pit Elevation: 716

EXCAVATION EQUIPMENT:

Type: ☐ Rubber Tire Backhoe ☒ Trackhoe ☐ Front End Loader ☐ Other: _____

Manufacturer: Kobelco Model No.: SK 160LC

TEST PIT SOIL CLASSIFICATION:

Depth (ft.)		Soil Description	Excavation Effort
From:	To:		
0	0.25	TOPSOIL	—
0.25	10	(CL FILL) LEAN CLAY, contains roots and boulder sized rock fragments (possible shot rock), dark reddish brown, moist	Easy
10	12	(CL/CH FILL) LEAN CLAY/FAT CLAY, contains roots, branches, and trace mica, dark grayish brown, moist	Easy
12	14	(CH RESIDUAL) FAT CLAY, orangish brown, moist	Easy
14	—	Test Pit Terminated	—

Water Depth: _____



APPENDIX C — Laboratory Testing

Laboratory Testing Summary

Laboratory Testing Summary

Page 1 of 1

[illegible]

Notes:

1. ASTM D 2216, 2. ASTM D 2487, 3. ASTM D 4318, 4. ASTM D 1140, 5. See test reports for test method, 6. See test reports for test method

Definitions:

MC: Moisture Content, Soil Type: USCS (Unified Soil Classification System), LL: Liquid Limit, PL: Plastic Limit, PI: Plasticity Index, CBR: California Bearing Ratio, OC: Organic Content (ASTM D 2974)

Project No.	14150-A
Project Name:	Rason Rosedale Park
PM:	Matt Chipko
PE:	Christopher J. Conway
Date:	August 7, 2020



Important Information about This Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. Subsurface problems that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed below, contact your GBA-member geotechnical engineer. Active involvement in the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can help you manage these risks. *EH RI JHQLQH EHQH¿W IRU HYHU¿RQH LOYROYHG ZLWK D*

Geotechnical-Engineering Services Are Performed for a Specific Purpose

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. *Those who rely on a geotechnical-engineering report prepared for a different client can be seriously misled.* No one except authorized client representatives should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one – not even you – should apply this report for any purpose or project except the one originally contemplated.*

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read it *in its entirety*. Do not rely on an executive summary. Do not read selected elements only. *Read this report in full.*

You Need to Inform Your Geotechnical Engineer about Change

Your geotechnical engineer considered unique, project-specific factors when designing the study behind this report and developing the confirmation-dependent recommendations the report conveys. A few typical factors include:

- the client's goals, objectives, budget, schedule, and risk-management preferences;
- the general nature of the structure involved, its size, configuration, and performance criteria;
- the structure's location and orientation on the site; and
- other planned or existing site improvements, such as retaining walls, access roads, parking lots, and underground utilities.

Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.*

This Report May Not Be Reliable

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, that it could be unwise to rely on a geotechnical-engineering report whose reliability may have been affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If your geotechnical engineer has not indicated an "apply-by" date on the report, ask what it should be, and, in general, if you are the least bit uncertain about the continued reliability of this report, contact your geotechnical engineer before applying it.* A minor amount of additional testing or analysis – if any is required at all – could prevent major problems.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface through various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing were performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgment to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team from project start to project finish, so the individual can provide informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, *they are not final*, because the geotechnical engineer who developed them relied heavily on judgment and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* revealed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a full-time member of the design team, to:

- confer with other design-team members,
- help develop specifications,
- review pertinent elements of other design professionals' plans and specifications, and
- be on hand quickly whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction observation.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for informational purposes only*. To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report, but they may rely on the factual data relative to the specific times, locations, and depths/elevations referenced. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may

perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely*. Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures*. If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. As a general rule, *do not rely on an environmental report prepared for a different client, site, or project, or that is more than six months old*.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, none of the engineer's services were designed, conducted, or intended to prevent uncontrolled migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, *proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration*. Confront the risk of moisture infiltration by including building-envelope or mold specialists on the design team. *Geotechnical engineers are not building-envelope or mold specialists*.



Telephone: 301/565-2733

e-mail: info@geoprofessional.org www.geoprofessional.org

ROSEDALE NATURE PARK

9519 ROSEWOOD MEADOW LANE

HUNTERSVILLE, NC

EPM REFERENCE NUMBER - #415800

SHEET TITLE

SHEET NO.

Cover
Existing Conditions
Demolition Plan
Tree Survey
PCSO Plan
Sight Distance Plan
Sight Distance Plan
Overall Erosion Plan
Playground Phase 1 Erosion Control Plan
Dog Park Phase 1 Erosion Control Plan
Playground Phase 2 Erosion Control Plan
Dog Park Phase 2 Erosion Control Plan
Erosion and Sediment Control Details
Erosion and Sediment Control Details
Storm Drainage Plan
Storm Profiles
Storm Details
Utility Plan
Utility Profile
Utility Details
Overall Layout Plan
Parking Layout Plan
Accessible Play Layout Plan
Natural Play Layout Plan
Trail System Layout Plan
Dog Park Layout Plan
Overall Grading Plan
Parking Grading Plan
Playground Grading Plan
Dog Park Grading Plan
Overall Planting Plan
Parking Planting Plan
Dog Park Planting Plan
Details
Details
Details
Details
Details
Details
Details
Details

C100
C101
C102
C200
C201
C202
C300
C301
C302
C303
C304
C305
C306
C400
C401
C402
C500
C501
C502
L100
L101
L102
L103
L104
L105
G100
G101
G102
G103
P100
P101
P102
D100
D101
D102
D103
D104
D105
D106
D107
D108

SHEET TITLE

SHEET NO.

Cover Sheet
Restroom Structure Appendix B
Shade Structure Appendix B
Life Safety Plan
Restroom Structure Plans
Restroom Structure RCP and Roof Plans
Shade Structure Plans
Shade Structure RCP and Roof Plans
Restroom Structure Elevations
Restroom Structure Elevations
Shade Structure Elevations
Restroom Structure Building Sections
Shade Structure Building Sections
Restroom Structure Wall Sections
Shade Structure Wall Sections
Enlargement Plans
Schedules
Schedules
Structural General Notes
Shade Structure Plans & Details
Restroom Plans & Details
Specifications Plumbing
Specifications Plumbing
Specifications Plumbing
Specifications and Notes Plumbing
Floor Plan Domestic Water Plumbing
Floor Plan Waste and Vent - Plumbing
Specification HVAC
Specification HVAC
Specification HVAC
Notes, Details and Schedules - HVAC
Floor Plan HVAC
Legend, Notes, and Details - Electrical
Specifications - Electrical
Specifications - Electrical
Specifications - Electrical
Site Plan - Electrical
Floor Plans - Electrical

A000
A002
A003
A004
A101
A102
A103
A104
A201
A202
A203
A301
A302
A303
A304
A401
A601
A602
S0
S1
S2
P001
P002
P003
P004
P101
P102
M001
M002
M003
M004
M101
E001
E002
E003
E004
E005
E101



VICINITY MAP (NOT TO SCALE)

Owner
Town of Huntersville
101 Huntersville-Concord Road
Huntersville, North Carolina 28078

Landscape Architect
The Dodd Studio, LLC
314 Tom Hall Street
Fort Mill, SC 29715
Contact: Dan Dodd, RLA
Phone: 803.981.4330

Engineer
Roper Civil Engineering
3007 Hindsdale Street
Charlotte, NC 28210
Contact: Matthew Roper, PE
Phone: 704.582.3751

Architect
Vinyet Architecture
312 Pendleton Street
Rock Hill, SC 29730
Contact: Lari McAbee-Meza
Phone: 803.324.5531



CONTRACTOR SHALL NOTIFY "NORTH CAROLINA ONE CALL" (811) OR (1-800-452-4869) AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED.
CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NORTH CAROLINA ONE CALL".
REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.

BID SET

THE DODD STUDIO
314 Tom Hall St.
Fort Mill, SC 29715
(7) 803.981.4330
www.thedoddstudio.com



REVISIONS:
1-6-21: ADDENDUM 1

TOWN OF HUNTERSVILLE
HUNTERSVILLE, NORTH CAROLINA

ROSEDALE NATURE PARK
9519 ROSEWOOD MEADOW LANE
HUNTERSVILLE, NORTH CAROLINA

SCALE: NTS
DATE: 12-11-20
SHEET NAME:
COVER
SHEET NO:

12-11-20

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Rosedale Nature Park
Address: 9519 Rosewood Meadow Ln, Huntersville, NC 28078 Zip Code: 28078
Owner/Authorized Agent: Dan Dodd Phone # (803) 981-4330 E-Mail: dan@thedoddstudio.com
Owned By: City/County Private State
Code Enforcement Jurisdiction: City of Huntersville County State

CONTACT:				
DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE # E-MAIL
Architectural	Vinylet Architecture	Myles Alexander	7387	(803) 324-5531 myles@vinylet.com
Civil				
Electrical	Barrett Woodyard & Associates	Jacob B. Hall	036874	(704) 357-9333
Fire Alarm				
Plumbing	Barrett Woodyard & Associates	Jason McCall	028742	(704) 357-9333
Mechanical	Barrett Woodyard & Associates	Jason McCall	028742	(704) 357-9333
Sprinkler-Standpipe				
Structural	Integrity Consulting Group, PLLC	Chad Ritter	31995	(704) 335-7200
Retaining Walls >5' High				
Other				

(*Other* should include include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: New Building Addition Renovation
1st Time Interior Completion
Shell/Core - Contact the local inspection jurisdiction for possible additional procedures and requirements
Phased Construction - Shell/Core-Contact the local inspection jurisdiction for possible additional procedures and requirements

2018 NC EXISTING BUILDING CODE: EXISTING: Prescriptive Repair Chapter 14
Alteration: Level I Level II Level III
Historic Property Change of Use

CONSTRUCTED: (date) CURRENT OCCUPANCY(S) (Ch. 3):
RENOVATED: (date) PROPOSED OCCUPANCY(S) (Ch. 3):

RISK CATEGORY (Table 1604.5): Current: I II III IV
Proposed: I II III IV

BASIC BUILDING DATA
Construction Type: I-A II-A III-A IV V-A
(check all that apply) I-B II-B III-B V-B
Sprinklers: No Partial Yes NFPA 13 NFPA 13R NFPA 13D
Standpipes: No Yes Class I II III Wet Dry
Fire District: No Yes Flood Hazard Area: No Yes
Special Inspections Required: No Yes (Contact the local inspection jurisdiction for additional procedures and requirements.)

GROSS BUILDING AREA			
FLOOR LEVEL	EXISTING	RENOVATED	NEW
GRADE			234 SQFT

ALLOWABLE AREA
Primary Occupancy Classification(s):
Assembly A-1 A-2 A-3 A-4 A-5
Business
Educational
Factory F-1 Moderate F-2 Low
Hazardous H-1 Detonate H-2 Deflagrate H-3 Combust H-4 Health H-5 PHM
Institutional I-1 Condition I 2
I-2 Condition I 2
I-3 Condition I 2 3 4 5
I-4
Mercantile
Residential R-1 R-2 R-3 R-4
Storage S-1 Moderate S-2 Low High-piled
Parking Garage Open Enclosed Repair Garage
Utility and Miscellaneous

Accessory Occupancy Classification(s):
Incidental Uses (Table 509):
Special Uses (Chapter 4 – List Code Sections):
Special Provisions: (Chapter 5 – List Code Sections):
Mixed Occupancy: No Yes Separation: Hr. Exception:
Non-Separated Use (508.3) - The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined, shall apply to the entire building.
Separated Use (508.4) - See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.
Actual Area of Occupancy A + Actual Area of Occupancy B < 1
Allowable Area of Occupancy A Allowable Area of Occupancy B
+ + < 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2.4 AREA	(C) AREA FOR FRONTAGE INCREASES	(D) ALLOWABLE AREA PER STORY OR UNLIMITED
1	U	234 SQFT	5,500 SQFT	4125	9625

- Frontage area increases from Section 506.3 are computed thus:
 - Perimeter which fronts a public way or open space having 20 feet minimum width = (F)
 - Total Building Perimeter = (P)
 - Ratio (F/P) = (F/P)
 - W = Minimum width of public way = (W)
 - Percent of frontage increase If = 100[(F/P - 0.25) x W/30] = (%)
- Unlimited area applicable under conditions of Section 507.
- Maximum Building Area = total number of stories in the building x D (maximum 3 stories) (506.2).
- The maximum area of open parking garages must comply with Table 406.5.4.
- Frontage increase is based on the un sprinklered area value in Table 506.2.



CONTRACTOR SHALL NOTIFY "NORTH CAROLINA ONE CALL" (811) OR (1-800-632-4949) AT LEAST 48 HOURS PRIOR TO BEGINNING CONSTRUCTION OR EXCAVATION TO HAVE EXISTING UTILITIES LOCATED. CONTRACTOR SHALL CONTACT ANY LOCAL UTILITIES THAT PROVIDE THEIR OWN LOCATOR SERVICES INDEPENDENT OF "NORTH CAROLINA ONE CALL". REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.

ALLOWABLE HEIGHT			
	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE 1
Building Height in Feet (Table 504.3) 2	40FT	18'-1 1/2"	
Building Height in Stories (Table 504.4) 3	1	1	

- Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
- The maximum height of air traffic control towers must comply with Table 412.3.1.
- The maximum height of open parking garages must comply with Table 406.5.4.

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING		DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
		REQ'D	PROVIDED (W/ REDUCTION)				
Structural Frame, including columns, girders, trusses		0	0				
Bearing Walls							
Exterior		0	0				
North							
East							
West							
South							
Interior		0	0				
Nonbearing Walls and Partitions							
Exterior walls		0	0				
North							
East							
West							
South							
Interior walls and partitions		0	0				
Floor Construction							
Including supporting beams and joists		0	0				
Floor Ceiling Assembly		0	0				
Columns Supporting Floors		0	0				
Roof Construction, including supporting beams and joists		0	0				
Roof Ceiling Assembly		0	0				
Columns Supporting Roof		0	0				
Shaft Enclosures - Exit		N/A	N/A				
Shaft Enclosures - Other		N/A	N/A				
Corridor Separation		N/A	N/A				
Occupancy/Fire Barrier Separation		N/A	N/A				
Party/Fire Wall Separation		N/A	N/A				
Smoke Barrier Separation		N/A	N/A				
Smoke Partition		N/A	N/A				
Tenant/Dwelling Unit/ Sleeping Unit Separation		N/A	N/A				
Incidental Use Separation		N/A	N/A				

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS			
FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
North	UP/NS	No Limit	No Limit
East	UP/NS	No Limit	No Limit
South	UP/NS	No Limit	No Limit
West	UP/NS	No Limit	No Limit

LIFE SAFETY SYSTEM REQUIREMENTS
Emergency Lighting: No Yes
Exit Signs: No Yes
Fire Alarm: No Yes
Smoke Detection Systems: No Yes Partial
Carbon Monoxide Detection: No Yes

LIFE SAFETY PLAN REQUIREMENTS
Life Safety Plan Sheet #:
N/A Fire and/or smoke rated wall locations (Chapter 7)
Assumed and real property line locations (if not on the site plan)
Exterior wall opening area with respect to distance to assumed property lines (705.8)
Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
Occupant loads for each area
Exit sign locations (1013)
Exit access travel distances (1017)
N/A Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
N/A Dead end lengths (1020.4)
Clear exit widths for each exit door
Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
Actual occupant load for each exit door
N/A A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
N/A Location of doors with panic hardware (1010.1.10)
N/A Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
N/A Location of doors with electromagnetic egress locks (1010.1.9.9)
N/A Location of doors equipped with hold-open devices
N/A Location of emergency escape windows (1030)
The square footage of each fire area (202)
N/A The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
N/A Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS (SECTION 1107)							
UNIT CLASSIFICATION	TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED
N/A							

REFER TO CIVIL ACCESSIBLE PARKING (SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES REQUIRED	PROVIDED	# OF ACCESSIBLE SPACES PROVIDED 96" SPACES	132" SPACES	TOTAL # ACCESSIBLE PROVIDED

TOTAL

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)										
USE	SPACE	EXIST'G	WATER CLOSETS			URINALS		LAVATORIES		SHOWERS / TUBS
			MALE	FEMALE	UNISEX	MALE	FEMALE	UNISEX	REGULAR	ACCESSIBLE
NEW		0	0	2	0	0	0	2	0	1
REQ'D		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

SPECIAL APPROVALS
Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, etc., describe below)

ENERGY SUMMARY
The following data shall be consistent with the energy code attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: No Yes (The remainder of this section is not applicable)

Exempt Building: No Yes (Provide code or statutory reference):

Climate Zone: 3A 4A 5A

Method of Compliance: Energy Code Performance Prescriptive
ASHRAE 90.1 Performance Prescriptive
(If "Other" specify source here)

THERMAL ENVELOPE (Prescriptive method only)

Roof/Ceiling Assembly (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Skylights in each assembly:
U-Value of skylight:
total square footage of skylights in each assembly:

Exterior Walls (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Openings (windows or doors with glazing)
U-Value of assembly:
Solar heat gain coefficient:
projection factor:
Door R-Values:

Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Openings (windows or doors with glazing)
U-Value of assembly:
Solar heat gain coefficient:
projection factor:
Door R-Values:

Walls below grade (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:

Floors over unconditioned space (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:

Floors slab on grade
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Horizontal/vertical requirement:
slab heated:

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE) SEE STRUCTURAL

DESIGN LOADS:

Importance Factors: Snow (IS) Seismic (IE)

Live Loads: Roof psf Mezzanine psf Floor psf

Ground Snow Load: psf

Wind Load: Ultimate Wind Speed mph (ASCE-7) Exposure Category

SEISMIC DESIGN CATEGORY: A B C D

Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) I II III IV
Spectral Response Acceleration SS %g S1 %g

Site Classification (ASCE 7) A B C D E F
Data Source: Field Test Presumptive Historical Data

Basic structural system Bearing Wall Dual w/Special Moment Frame
Building Frame Dual w/Intermediate R/C or Special Steel
Moment Frame Inverted Pendulum

Analysis Procedure: Simplified Equivalent Lateral Force Dynamic
Architectural, Mechanical, Components anchored? Yes No

LATERAL DESIGN CONTROL: Earthquake Wind

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) psf
Presumptive Bearing capacity psf
Pile size, type, and capacity

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb:
summer dry bulb:

Interior design conditions
winter dry bulb:
summer dry bulb:
relative humidity:

Building heating load:

Building cooling load:

Mechanical Spacing Conditioning System

Unitary
description of unit:
heating efficiency:
cooling efficiency:
size category of unit:
Boiler
Size category. If oversized, state reason:
Chiller
Size category. If oversized, state reason:

List equipment efficiencies:

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE) SEE ELECTRICAL

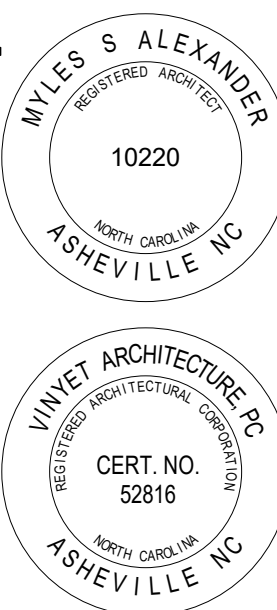
ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code Performance Prescriptive
ASHRAE 90.1 Performance Prescriptive

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC; not required for ASHRAE 90.1)
C406.2 More Efficient HVAC Equipment Performance
C406.3 Reduced Lighting Power Density
C406.4 Enhanced Digital Lighting Controls
C406.5 On-Site Renewable Energy
C406.6 Dedicated Outdoor Air System
C406.7 Reduced Energy Use in Service Water Heating



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REVISIONS:

TOWN OF HUNTERSVILLE

HUNTERSVILLE, NORTH CAROLINA

OWNER:

ROSEDALE NATURE PARK
9519 ROSEWOOD MEADOW LANE
HUNTERSVILLE, NORTH CAROLINA

DATE: 12/11/20

SHEET NAME:
RESTROOM
STRUCTURE
APPENDIX B

SHEET NO:

A002

& ' ' & & ' "

SECTION 260010

ELECTRICAL GENERAL

1.0 GENERAL

1.01 SCOPE

- A. Division 26 includes all Specifications in the 260000 series and the accompanying Electrical Drawings. Provide all labor, materials and equipment, and all necessary operations to provide the complete scope of the electrical systems intended under this Division. Division 26 is not a stand-alone document, but a part of the complete Project Documents.
- B. Attention is called to the fact that there are many interfaces between the work required in this Division and the work required in other Divisions. Provide the necessary interface and coordination with other Divisions to provide a complete project.

1.02 EXISTING CONDITIONS

- A. Attention is called to the fact that the work is to be performed within an existing, operational facility. Prior to the submission of bids, each bidder shall visit the project site, thoroughly investigate and be familiar with all existing conditions, which will affect their work; especially the work to be performed above the existing ceilings.
- B. When this project is finished, the work under this Division shall be complete in every respect, completely integrated with all the existing systems, and left in perfect operating condition. The electrical service to the building shall not be interrupted at any time without written coordination of the building's Owner. All existing electrical equipment removed during the project shall be removed from the site after inspection of the building's Owner. All existing electrical systems required to be operating at the project's completion or required to remain in use during the project shall be reconnected, replaced, rerouted or otherwise made to fit with proper workmanship techniques and left in safe working order.
- C. Connect new work to existing work in a neat and workmanlike manner. Where an existing structure must be cut or existing utilities interfere, such obstructions shall be bypassed, removed, replaced or relocated, patched and repaired. Work disturbed or damaged shall be replaced or repaired to its prior condition.
- D. Prior to the start of any demolition or construction, secure the services of a qualified, EPA Certified asbestos abatement agency to check the existing insulation, etc. for asbestos. Should asbestos be found, do not proceed with demolition or construction; notify the Architect in any case in writing of the agency's findings.

1.03 CODES AND REGULATIONS

- A. All work under this Division shall comply with all local building codes, laws, regulations, ordinances and the requirements of the 2017 National Electrical Code.
- B. Where conflicts of installation requirements occur between the aforementioned codes, regulations or the Contract Documents, the most restrictive shall govern.
- C. Obtain all permits and licenses and pay all fees required by local authorities. Arrange for all necessary inspections required by the authorities having jurisdiction and provide written certificates of approval to the project Owner or his designated representative.

1.04 DEFINITIONS

- A. Contract Documents: The complete set of project Drawings and Specifications.
- B. Provide: Furnish, install and connect.
- C. Work: All materials installed, including all labor to provide complete system.
- D. Wiring or Wired: All wire or cable installed in conduit from panelboard to equipment and connected at both ends with all required boxes, connectors, couplings, etc.
- E. Conduit: Rigid steel conduit intermediate metal conduit (I.M.C.), electrical metallic tubing (EMT) plastic conduit (PVC), electrical non-metal tubing (ENT), or flexible steel conduit.

1.05 DRAWINGS AND SPECIFICATIONS

- A. The Drawings and Specifications together are to be considered as the Contract Documents. Any work shown in one and not shown in the other, or implied by either, shall be provided to give a complete project.
- B. Should any conflicts exist between the Drawings and Specifications or there is an item shown/called for which is not clearly defined, immediately submit a request for clarification. No additional monies will be granted later when a conflict is resolved or an item is more clearly defined.
- C. The Drawings are schematic and are not intended to show the exact location outlets, etc. or the routing of conduit.
- D. The exact location of equipment requiring electrical connections (mechanical equipment, elevators, lights, etc.) shall be as located by other Divisions of the Contract Documents. Refer to the Architectural, Structural and Mechanical Documents for dimensions and details of building construction and provide work described in this Division so that it conforms to the details of the project. The right is reserved to relocate any receptacle, switch or other outlet a maximum of 10'-0" before it is permanently installed without incurring additions to the Contract amount.

1.06 SITE VISIT

- A. Visit the site and become familiar with all aspects of the site and existing conditions before submitting Contract price.
- B. No allowance will be made for lack of knowledge of existing conditions.

1.07 DEVIATIONS

- A. No deviations from the Contract Documents shall be made without the full knowledge and written consent of the Architect.
- B. If the existing conditions make it desirable to modify the Contract Documents in regard to any item, provide a written request to the Architect.

2.0 PRODUCTS

2.01 STANDARDS FOR MATERIALS AND WORKMANSHIP

- A. All materials used shall be new and shall be stamped with the label of Underwriters Laboratories, Inc. (UL).
- B. All materials shall meet the standards of the following associations and institutes where applicable:
1. National Fire Protection Association (NFPA)
 2. American Society of Testing Materials (ASTM)
 3. American National Standards Institute (ANSI)
 4. National Electrical Manufacturer's Association (NEMA)
 5. Institute of Electrical and Electronic Engineers (IEEE)

- C. Manufacturers names and catalog numbers specified herein are intended to describe the material and set the standard of quality. All bids shall be based on material specified. Requests for approval of material not specified shall be considered if the request is in written form and submitted to the Architect no later than fourteen (14) days before bid date. All requests shall conform with the provisions of the general and supplementary conditions.

- D. Samples of materials requested to be substituted shall be furnished upon the request of the Architect.

2.02 SHOP DRAWINGS AND SUBMITTAL

- A. The Engineer's review of shop drawings or submittals is a cursory review to check for general compliances of submittals with the design intent of the Contract Documents. The Engineer's review does not relieve the Contractor of his responsibility of complying with the Contract Documents. All coordination of the work in strict compliance with the Contract Documents is the sole responsibility of the Contractor.
- B. The following items shall be submitted for review:
1. Conduit and wire
 2. Devices
 3. Coverplates
 4. Metering equipment
 5. Panelboards
 6. Fuses
 7. Overcurrent devices
 8. Disconnect switches
 9. Lighting fixtures
 10. Lighting control system
 11. Dimming system
 12. Emergency system
- C. All shop drawings and submittals shall be submitted in compliance with the requirements of the general and supplementary conditions. All submittals are to be received electronically in .pdf format only.
- D. All submittals shall bear the name of the manufacturer to be used, along with all associated options and specific input/output requirements clearly marked.
- E. All shop drawings and submittals shall include a stamped indication signifying that the submittal has been reviewed for compliance with the Contract Documents by the Contractor. This stamped indication also represents the fact that the Contractor has checked this submittal for its interaction with all other Divisions and certifies by his signature or initials that all coordination has taken place. The stamp shall include the date, name of the Contracting Firm, the signature of the Contractor, certification of compliance and approval. This stamp shall be on the submittal before the Engineer will review it.
- F. The engineer will review an individual submittal not more than twice. If the submittal is rejected again on the second review, the contractor will bore all responsibility for paying for the engineer's time for additional reviews. Such payments to the engineer shall be withheld from the next monthly pay application.

2.03 RECORD (AS-BUILT) DRAWINGS AND MAINTENANCE MANUALS

- A. At job completion, submit to the Architect, an electronic set of the latest plans, in .pdf format, showing all deviations from the Contract Documents. The Drawings shall also have dimensions locating all underground conduits.
- B. At job completion, submit to the Architect, three (3) hardcopy sets of maintenance and instruction manuals for all equipment furnished on the project. Also provide an electronic copy in .pdf format. Coordinate file delivery method with the architect.

3.0 EXECUTION

3.01 COORDINATION

- A. Coordinate all space requirements with all other Divisions before installing any work. Install work such that adequate space will be allotted for all other work from other Divisions to be installed and also will allow room for future access for repair and maintenance.
- B. Any work installed without proper coordination shall be relocated at the Architect's direction without increasing the Contract price.
- C. During the bidding process or the pricing for a guaranteed maximum price, coordinate with all other Divisions for the total amount of work required in Division 26. Any work shown or implied in another Division requiring work in Division 26 shall be included in the Contract price regardless of whether or not it is addressed in Division 26.

3.02 PROTECTION OF MATERIALS

- A. All equipment shall have the original finish when the building is turned over to the Owner.
- B. Protect equipment during construction from dirt, water, chemical, mechanical damage, etc. Protect all conduit openings so that no foreign material will enter the conduit.

3.03 TESTS, DEMONSTRATION AND INSTRUCTIONS

- A. Functional Testing:
1. Test all systems described in this Division in the presence of the Owner or a designated representative upon completion of the work. Demonstrate that the installation is in accordance with Contract Documents.
 2. For all new lighting and lighting control systems within the Contract Documents, the contractor shall obtain the services of a licensed professional engineer (registered to the state this project is within) to perform system commissioning in compliance with local energy conservation codes. The contractor shall demonstrate in the presence of the commissioning agent that the installation of such systems are in accordance with the Contract Documents.
- B. Any work found not to be in compliance with the Contract Documents shall be repaired or replaced without incurring any additions to the Contract price.
- C. Provide to the Owner and System Commissioning Agent, all instruction on maintenance and operation of all systems and equipment provided under this Division. Provide all necessary tools and personnel to thoroughly present these instructions. The documentation shall include the following, at minimum:

1. Submittal data indicating all selected options.
 2. Operation and maintenance manual for all equipment and systems. Include routine maintenance actions and cleaning procedures.
 3. A schedule for inspecting and recalibrating, where applicable.
 4. A narrative of how each system is intended to operate, including any recommended set points where adjustment is available.
- D. At project completion, prior to obtaining Certificate of Occupancy, present at final inspection to the jurisdiction's AHJ a signed and dated statement of system commissioning for all lighting and lighting control systems. The format of the statement of system commissioning shall be in the form required by the state's energy conservation codes and/or AHJ requirements. The document shall be signed by the contractor's licensed professional engineer representative.

3.04 GUARANTEE

- A. All systems, equipment, components, work, etc. provided under this Division shall be covered by a one year guarantee starting at the time of final acceptance of the work by the Owner. Any defects in the work, systems, equipment or components found during this year shall be corrected at no charge. The guarantee shall include providing all necessary cutting, patchwork, repainting, etc. to make the work complete and new.
- B. Present this guarantee and any additional warranties or guarantees on furnished equipment or systems to the Architect. All equipment or system guarantees are in addition to the general guarantee.

END OF SECTION

SECTION 261000

ELECTRICAL BASIC MATERIALS & METHODS

1.0 GENERAL

1.01 DESCRIPTION

- A. All work specified in this Section shall comply with the provisions of Section 260010.
- B. This Section describes the basic electrical materials and installation methods that are acceptable and

applicable to Division 26.

2.0 PRODUCTS

2.01 CONDUIT

- A. Galvanized rigid steel conduit shall be low carbon, hot-dipped galvanized both inside and out with threaded joints.
- B. Intermediate metal conduit (IMC) shall be steel, galvanized both inside and out with threaded joints.
- C. Electrical metallic tubing (EMT) shall be steel, galvanized both inside and out.
- D. Plastic conduit (PVC) shall be schedule 40 PVC heavy wall type. A grounding conductor shall be provided.
- Electrical non-metallic tubing (ENT) shall be of such material that it is resistant to moisture, chemical atmospheres and is flame retardant. A grounding electrode conductor shall be provided.
- E. Flexible metal conduit shall be flexible steel conduit tubing and shall meet Underwriters Laboratories Standard for Flexible Steel Conduit.
- F. Liquid-tight flexible metal conduit and liquid-tight non-metallic conduits shall be liquid-tight and sunlight resistant.
- G. Steel conduit approved manufacturers are Allied, Triangle and Republic.
- H. PVC and ENT conduit approved manufacturers are Carlon and Triangle.

2.02 CONDUIT FITTINGS

- A. Rigid conduit and IMC conduit fittings shall be zinc-coated, ferrous metal and taper threaded type.
- B. EMT fittings shall be zinc-coated steel and hexnut compression or set-screw type. EMT connectors shall have insulated throats.
- C. PVC fittings, elbows and cement shall be produced by the same manufacturer. All joints shall be solvent welded in accordance with the manufacturer's recommendations.
- D. Conduit connections to switchboards, motor control centers, transformers, panel cabinets, and pull boxes shall have grounding wedge lugs between the bushing and the box or locknuts designed to bite into the metal.
- E. Each conduit end shall be provided with either an insulated throat connector or separate locknut and insulated bushing. Bushing shall be installed before any wire is pulled.
- F. Conduit fittings approved manufacturers are Raco, Steel City, O.Z. Gedney, Thomas & Betts and Appleton.
- G. Expansion fittings shall be provided in all conduit which crosses and expansion joint.

2.03 CONDUCTORS

- A. Conductors shall be copper of 98% conductivity, 600 volt insulation. Sizes specified are AWG gauge for No. 4/0 and smaller and circular mils (MCM) for all sizes larger than no. 4/0. Conductors No. 10 and smaller shall be solid and type "THHN" or "THWN" insulation. No. 8 and larger shall be stranded and type "THW" or "XHHW" insulation.

2.04 OUTLETS

- A. Outlet boxes and covers shall be of such form and dimensions as to be adapted to their specified usage, locations, size and quantity of conduit, and size and quantity of conductors entering the boxes. In special "Fire Rated" partitions, outlets shall comply with ASTM No. E119.
- B. Flush ceiling outlets for surface or pendant mounted lighting fixtures shall be one-piece 4" square or octagonal pressed steel boxes. Boxes for devices in unfinished masonry walls or stud walls shall be pressed steel, square corner, sectional switch boxes, or shall be 4" square box with a square cornered tile wall cover, set flush with masonry construction. Boxes in concrete ceiling slab shall be octagonal, shallow concrete boxes. Welded boxes are not acceptable.
- C. All outlet boxes in plaster or masonry walls or ceiling shall be provided with plaster rings.
- D. Junction boxes and all outlets not indicated as containing wiring devices or lighting fixtures shall have covers. Covers for outlets in walls shall be as specified for wall switches and receptacles.
- E. Outlet boxes exposed to the weather and outlet boxes for vaportight lighting fixtures and devices shall be of cast iron corrosion resistant type.
- F. Outlet box approved manufacturers are Appleton, Raco, Steel City or Crouse-Hinds.

2.05 DISCONNECT SWITCHES

- A. Disconnect switches shall be "heavy-duty" type, enclosed switches of quick-make, quick-break construction. Switches shall be horsepower rated for 600 volts AC as required. Lugs shall be UL listed for copper and aluminum.
- B. Padlocking provisions shall be provided for padlocking in the OFF position.
- C. Switches shall be furnished in NEMA 1 General purpose enclosure unless noted otherwise. Switches located on the exterior of the building or in "wet" locations shall have NEMA 3R enclosures.
- D. Fused disconnect switches shall have rejection type fuse clips with dual element, current limiting fuses of rating shown.
- E. Disconnect switches shall be mounted to structure. Disconnect switches shall not be mounted to mechanical equipment or ductwork.

2.06 NAMEPLATES

- A. Nameplates shall have 3/8" high engraved letters.
- B. 120 or 208 volts: white core laminated bakelite with black finish.
- C. 277 or 480 or higher volts: white core laminated bakelite with red finish.
- D. Nameplate shall indicate the panel name and the name of the device or equipment where the power supply/feeder originates.

2.07 WALL SWITCHES

- A. Wall switches shall be plastic, totally enclosed, quiet type, self-grounding, 277 volts and 20A rating and shall match existing if possible and equal the following:
- Single Pole: Hubbell No. CS1221, or equal by Leviton, P&S or Cooper.
- Double Pole: Hubbell No. CS1222, or equal by Leviton, P&S or Cooper.
- Three-Way: Hubbell No. CS1223, or equal by Leviton, P&S or Cooper.
- Four-Way: Hubbell No. CS1224, or equal by Leviton, P&S or Cooper.
- B. Color shall be as selected by architect.
- C. Flush motor switches with red pilot light and with overload protection for fractional horsepower motors shall be Hubbell No. HBL1221PL.
- D. Key switches shall be Hubbell No. HBL1221L 20A Series or approved equal by P&S or Leviton.

2.08 WALL MOUNTED OCCUPANCY SWITCHES

- A. The passive infrared sensor shall be a completely self-contained control system that replaces a standard toggle switch. Sensor shall have ground wire for safety. Switching mechanism shall be a latching air gap relay, compatible with electronic ballasts, compact fluorescent and inductive loads. Triac and other harmonic generating devices shall not be allowed.
- B. Sensor shall cover up to 1000 sq. ft. for walking motion, with a field of view of 180 degrees.
- C. Sensor shall have system which provides superior 180 degree coverage.
- D. Sensor shall operate at 120 VAC.
- E. Sensor shall have no minimum load requirement and shall be capable of switching from 0 to 500 watt incandescent and 0 to 800 watts fluorescent or 1/6 hp @ 120 VAC, 60 Hz.
- F. For accuracy and consistency, sensor shall have a DIP switch controlled, digital time delay adjustable from 15 seconds to 30 minutes.
- G. Sensor shall have standard 5 year warranty and shall be UL and CUL listed.

- H. Sensor shall be as specified on plans or approved equal by engineer.

2.09 RECEPTACLES

- A. Duplex receptacles shall be plastic, two-pole, three wire, self-grounding, side wired, 125 volts and 15A rating and shall match existing if possible and be equal to the following: Duplex receptacles shall be Hubbell No. CR5262 Series, or equal by Leviton, P&S or Cooper. Isolated ground type shall be Hubbell No. CR5252IG Series, or equal by Leviton, P&S or Cooper.
- B. Single receptacles shall be two-pole, three wire, self-grounding, side wired, 125 volts and 20A rating and shall be equal to the following: Single receptacles shall be Hubbell No. HBL5361 Series, or equal by Leviton, P&S or Cooper. Isolated ground type to be Hubbell No. IG-5361 Series, or equal by Leviton, P&S or Cooper.
- C. Ground fault circuit interrupt (GFI) receptacles shall be Hubbell GFR5352, or equal by P&S, Leviton or Cooper.
- D. Color shall be as selected by the Architect.

2.10 COVERPLATES

- A. Coverplates for flush mounted devices shall be standard size (color or finish to be selected by the architect), Hubbell P-Series or equal by Leviton, P&S or Cooper.
- B. Telephone outlet coverplates shall have same finish as above and have a bushed hole in the center.
- C. Coverplates for exterior devices shall be self-closing, die cast aluminum Hubbell WP8M or equal by Leviton, P&S or Cooper.

2.11 PLYWOOD BACKBOARDS

- A. Provide plywood backboards where shown. Backboards shall be minimum 3/4" thick and sized as shown or to accommodate equipment indicated to be mounted thereon.
- B. Secure plywood to the building structure and paint with two coats of gray paint.

2.12 SMOKE AND FIRE STOP FITTINGS

- A. Smoke and Fire Stop Fittings shall be UL listed for that purpose. The fittings used to seal conduit either on the outside of the conduit, busway or cable or internally shall have heat activated intumescent material, which expands to fill all voids. Smoke and fire stop fittings shall be O.Z./Gedney "FIRE-SEAL" or Dow Corning silicone RTV foam with an hourly fire-rating equal to or higher than the rating of the floor, ceiling or wall through which the cable or conduit passes. The seals for conduit shall be of the flanged type.

2.13 FLOOR OUTLETS

- A. Refer to floor plans for device specifications.

2.14 FUSES

- A. Provide all fuses. All fuses shall be of the same manufacturer. All fuses shall be of the high interrupting rating (200,000 Amps), current limiting type and manufactured by Bussmann. Fuses shall be provided for each fuse cutout and the specified quantity of fuses shall be furnished for spares.
- B. Circuits 0 to 600 ampere shall be protected by rejection type, current limiting BUSSMANN LOWPEAK Dual Element Fuses LPN-RK (250 volts) or LPS-RK (600 volts). All dual-element fuses shall have separate overload and short-circuit clearing chamber. The fuse must hold 500% of rated current for a minimum of 10 seconds and be listed by Underwriter's Laboratories, Inc., with an interrupting rating of 200,000 amperes RMS symmetrical. The fuses shall be UL Class RK-1.
- C. Circuits 601 to 6000 ampere shall be protected by current limiting BUSSMANN HI-CAP Time-Delay Fuses KRP-C. Fuses shall employ "O" rings as positive seals between the end bells and the glass melamine fuse barrel. The terminals shall be opened. Fuses shall be time-delay and must hold 500% of rated current for a minimum of 4 seconds, clear 20 times rated current in 0.1 seconds or less and be listed by Underwriter's Laboratories, Inc., with an interrupting rating of 200,000 amperes RMS symmetrical. The fuses shall be UL Class L.
- D. Furnish and turn over to the Owner a minimum of one (1) set of spare fuses (set consisting of three fuses) for each type and rating of fuse used. When the number of fuse sets of the same type and rating actually installed exceeds five (5) sets, furnish an additional spare set of fuses for each five (5) or fraction thereof.
- E. Provide a cabinet in which to store all spare fuses, Bussman Catalog No. SFC
- F. Acceptable manufacturers are Bussman or equal by Littelfuse.

3.0 EXECUTION

3.01 CONDUIT

- A. Rigid steel (or IMC) shall be used for service entrance and all feeders and branch circuits where exposed to damage.
- B. EMT shall be used for branch circuits, fire alarm and telephone when not underground or in concrete in contact with the earth.
- C. Schedule 40 PVC may be used for all underground feeders, service entrance conductors when encased in 4" of concrete on all sides, or under the lowest floor slab.
- D. Conduit shall be continuous from outlet to outlet, from outlet to cabinet, junction box and pull box. Conduit shall enter and be secured to all boxes, etc., in such a manner that each system will be electrically continuous from service to all outlets such that a good ground is provided. All conduit from cabinets and junction boxes shall terminate in approved outlet boxes or conduit fittings. Conduit connections to any box which has no threaded hub shall be double locknutted.
- E. Provide junction boxes or pull boxes where shown and where necessary to avoid excessive runs or too many bends between outlets. The conduit sizes shown may increase if desired to facilitate the pulling of cables.
- F. All conduit shall be concealed unless indicated otherwise. Install exposed conduit parallel with or at right angles to the building walls and support from walls or ceilings at intervals required by Code with approved galvanized iron clamps or hangers. Concealed conduit above the ceiling shall be supported independent of ceiling construction. Where ceilings of lay-in type are used, conduit must be installed high enough to permit removal of ceiling panels and lighting fixtures. Use threaded rods and hangers for supporting single conduit. Use trapeze hangers consisting of double-nutted threaded rods and "Unistrut" channels or angles of 12 gauge minimum steel for supporting multiple conduit.
- G. Minimum size conduit for branch circuits shall not be smaller than 1/2". Home runs shall extend from outlets shown to panel designated. Home runs shown shall not be combined. Home run conduit shall not be smaller than 3/4".
- H. At couplings, conduit ends shall be threaded so that they meet in the coupling. Right and left hand couplings shall not be used; conduit couplings of the Erikson Type shall be used at locations requiring such joints.
- I. All conduit for future use, for telephone wire, or for data communication cable, shall be left with No. 16 gauge wire pulled in them or a pull line as manufactured by Ideal, and the ends securely corked or capped.
- J. Expansion fittings shall be installed in all conduit which pass through the cross-sectional area of expansion joints.

BW
&A Barrett, Woodyard and Associates, Inc.
License # C-2226

420 Minuet LN.
Charlotte, North Carolina 28217
(p) 704-357-9333 (f) 704-357-9385

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BWA JOB # 2020-1133



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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Stephen Trott, Director

Date: February 1, 2021

Subject: Adopt Resolution approving designation of certain Town-owned property to public right-of-way. (*Stephen Trott*)

EXPLAIN REQUEST:

ACTION RECOMMENDED:

Adoption

FINANCIAL IMPLICATIONS:

None

ATTACHMENTS:

1. Resolution Approving right of way designation final



**Resolution Approving Designation of certain Town Owned
Property to Public Right of Way**

WHEREAS, the Town of Huntersville (the “Town”) owns certain real property located within Mecklenburg County that was conveyed to the Town by certain deeds recorded in Mecklenburg County Registry, said lots being more particularly described on Exhibit A attached hereto (collectively referred to as the “Property”).

WHEREAS, the Property was conveyed to the Town in fee simple; and

WHEREAS, the intent of the deeds was to designate the Property as dedicated public right of ways within the Town of Huntersville; and

WHEREAS, the Huntersville Board of Commissioners (the “Board of Commissioners”) desires to designate the Property described in the attached Exhibit A as Public Rights of Way for mapping purposes.

NOW THEREFORE, BE IT RESOVLED AS FOLLOWS:

1. The Board of Commissioners hereby approves the designation of the Property to dedicated Public Rights of Way.
2. This Resolution shall be submitted to the Mecklenburg County Registry for recordation.
3. Except as revised by this Resolution, the deeds shall remain in full force and effect.
4. The Town Manager and Town Attorney are hereby authorized to take necessary actions and to execute such documents as may be necessary to complete the designation of the Property as approved herein.
5. This Resolution shall be effective as of the date of its adoption.

Adopted this the ____ day of _____ 2021.

Attest:

Clerk to the Board

Mayor, Town of Huntersville

Approved as to Form:

Town Attorney

Exhibit A

Parcel 1: Parcel ID number 00915384

COMMENCING at an existing #4 rebar said corner being a common corner of Merlin Fidler, and wife Jean B. Fidler, Tract 1 (Deed Book 17342, Pg 868) and Merlin Fidler, and wife Jean B. Fidler, Tract 2 (Deed Book 17342, Pg 868) now or formerly; thence N 47°15'48" W, 32.64 feet to a #4 rebar found, common corner of David M. Cox and wife Judy F. Cox (Deed Book 5050, Pg 638) now or formerly and James B. Harold Jr. (Deed Book 20764, Pg 632) now or formerly, the POINT OF BEGINING; thence N 47°22'57" W, 76.96 feet to a #4 rebar set; thence new property lines with the following (5) courses and distances: (1) with a non-tangent curve to the left with an arc length of 336.22 feet, a radius of 965.00 feet, chord bearing N 33°42'51" E with a chord length of 334.52 feet to a #4 rebar set; (2) thence N 23°45'21" E, 59.44 feet to a #4 rebar set; (3) thence with a tangent curve to the right with an arc length of 75.61 feet, a radius of 1534.46 feet, chord bearing N 25°10'03" E with a chord length of 75.61 feet to a #4 rebar set; (4) thence N 50°55'41" W, 34.17 feet to a #4 rebar set; (5) thence N39°04'19" E, 250.47 feet to a #4 rebar set at the Northwest corner of Birkdale Commons Parkway 70' Right of Way; thence N 50°05'33" W, 217.16 feet to a #4 rebar found; thence S 42°21'18" W, 717.03 feet, to the POINT AND PLACE OF BEGINING; containing 102,706 SQ.FT. (2.357 Acres), as shown on a survey entitled "Boundary Survey of 8564 Chatham Glen Drive", dated January 6th, 2015, by Daryl W. Long, PLS L-4918.

For title reference: See Deed Book 29795 at Page 769, Mecklenburg County Registry.

Parcel 2: Parcel ID number 01532199

Commencing at an existing North Carolina Grid Monument "Glove" (NC State Plane Grid Coordinates: N 604,554.44ft; E 1,441,798.20, NAD83/2007 datum) thence N47°36'23"E, a ground distance of 1,005.67 feet to an existing iron pin, said iron being the common corner of Lots 39 & 40 of the Village of Stratton Farm at Cedarfield Plantation Phase 2, Map 5 as recorded in Map Book 24 at Page 48 in the Mecklenburg County Register of Deeds and also being the POINT OF BEGINNING; said point also being the beginning of a curve to the left, having a radius of 920.01 feet, and an arc a distance of 684.61 feet, and a chord bearing N25°25'52"E and a chord distance of 668.92 feet to a point; thence N03°58'34"E, a distance of 356.32 feet to a set #4 rebar; thence S67°59'48"E, a distance of 16.88 feet to a point in the Bridge along McCoy Road; thence S02°18'07"W, a distance of 613.79 feet to a point of curve of a non-tangent curve to the right, having a radius of 990.01 feet, an arc distance of 473.47 feet, and a chord bearing S33°10'51"W and a chord distance of 468.97 feet to a set #4 Rebar; thence N41°22'28"W, a distance of 70.03 feet to the POINT OF BEGINNING. Containing 50,003 square feet or 1.148 acres, more or less as shown on a survey entitled "McCoy Road Exhibit Map for the Town of Huntersville", dated February 14, 2013 by Daryl W. Long, PLS L-4918, a copy of which is attached to Deed Book 28190 at Page 221 as Exhibit "A."

For title reference: See Deed Book 28190 at Page 221, Mecklenburg County Registry.

Parcel 3: Parcel ID number 01532198

Commencing at an existing North Carolina Grid Monument "Glove" thence N48-37-07E, a distance of 1,294.26 feet to a set iron pin, said pin being in the line of the Village of Stratton Farm at Cedarfield Plantation, Phase 2, Map 5 Common Open Space Lot as recorded in plat book 24 at page 48 in the Mecklenburg County Register of Deeds, and said iron being the POINT OF BEGINNING, said point also being the beginning of a curve to the left having a radius of 990.01 feet and a chord bearing of N24-39-29E and a chord distance of 178.70 feet, thence along the arc a distance of 178.94 feet to a point, thence N02-18-07E, a distance of 436.38 feet to a set iron pin, said iron being on the westerly right of way of McCoy Road (having a variable with right of way) and said iron being the point of curve of a non-tangent curve to the left, having a radius of 619.72 feet and a chord bearing S12-02-36E and a chord distance of 18.57 feet, thence along the arc a distance of 18.57 feet to a point, thence S15-44-32E, a distance of 237.62 feet to the point of curve of a non-tangent curve to the right, having a radius of 597.96 feet and a chord bearing S10-17-02E and a chord distance of 55.90 feet, thence along the arc a distance of 55.92 feet to a point to the point of curve of a non-tangent curve to the right, having a radius of 254.04 feet and a chord bearing S18-44-41W and a chord distance of 172.04 feet, thence along the arc a distance of 175.51 feet to a point to the point of curve of a non-tangent curve to the right, having a radius of 1,616.68 feet and chord bearing S40-44-27W and a chord distance of 176.39 feet, thence along the arc a distance of 176.48 feet to a point to the POINT OF BEGINNING, Containing 30,248 square feet or 0.694 acres, more or less. Based on a Physical Survey by Professional Property Surveyors, Inc. dated 9/14/2012.

For title reference: See Deed Book 27853 at Page 954, Mecklenburg County Registry.

Parcel 4: Parcel ID number 00915396

COMMENCING at an existing #4 rebar, said #4 rebar found being the common corner of James B. Harold Jr. (Deed Book 20764, Pg 632) now or formerly and Glens at Birkdale Commons, LLC (Deed Book 19230, Pg 904), thence S 47°22'57" E, 179.76 feet to a #4 rebar found, said point being the common corner of Glens at Birkdale Commons, LLC (Deed Book 19230, Pg 904) and Merlin Fidler, and wife Jean B, Fidler, Tract 1 (Deed Book 17342, Pg 868) now or formerly; thence continuing S 47°22'57" E, 24.78 feet to a #4 rebar set on the James B. Harold Jr. line, the **POINT AND PLACE OF BEGINNING**; thence S 47°22'57" W, 75.51 feet to a #4 rebar set on the James B. Harold Jr. line; thence new property lines with the following (4) courses and distances: (1) thence with a non-tangent curve to the right with an arc length of 82.89 feet, a radius 1035.90 of feet, chord bearing S 45°55'05" W with a chord length of 82.87 feet to a #4 rebar set; (2) thence S 48°12'40" W, 50.00 feet to a #4 rebar set; (3) thence with a tangent curve to the left, with an arc length of 148.02 feet, a radius 965.00 of feet, chord bearing S 43°49'01" W with a distance of 147.88 feet to a #4 rebar set; (4) thence S 38°20'29" W, 62.80 feet to a computed point in the center of Babe Stillwell Farm Road (S.R. # 2143); thence with said center of road N 47°45'24" W, 75.68 feet to a computed point; thence leaving said center of road, new property lines with the following (4) courses and distances: (1) N 38°21'24" E, 59.07 feet to a #4 rebar set; (2) thence with at a tangent curve to the right, with an arc length of 159.60 feet, a radius 1040.50 of feet, chord bearing N 43°49'01" E with a chord length of 159.45 feet to a #4 rebar set; (3) thence N 48°12'40" E, 50.00 feet to a #4 rebar set; (4) thence with a tangent

curve to the left, with an arc length of 75.52 feet, a radius 964.59 of feet, chord bearing N 45°57'45" E with a chord length of 75.50 feet to **POINT AND PLACE OF BEGINNING**; containing 25,968 SQ.FT. (0.596 Acres); as shown on a survey entitled "Boundary Survey of 7923 Babe Stillwell Farm Road", dated January 30th, 2015, Revised March 10th, 2015, by Justin R. Williams PLS-4942, Professional Property Surveyors, Inc.

For title reference: See Deed Book 29808 at Page 237, Mecklenburg County Registry.

Parcel 5: Parcel ID number 01931105

To arrive at the point of beginning, begin at a point in the centerline of the existing Norfolk-Southern Railway tracks, which point of beginning is the northwest corner of that property conveyed to the Town of Huntersville by a Deed recorded in Book 18410 at Page 880, of the Mecklenburg County Registry, thence with the centerline of said railroad tracks in a southerly direction four calls as follows: (1) S. 23-00-52 E. 72.12 feet, (2) S. 22-15-31 E. 77.39 feet, (3) S. 20-22-04 E. 100.00 feet (4) S. 18-10-21 E. 9.03 feet to the point or place of beginning; thence from said point or place of beginning in an easterly direction with a circular curve to the right of radius of 2661.71 feet, an arc distance of 155.93 feet, with a chord bearing and distance of S. 86-41-30 E. 155.91 feet; thence S. 19-07-09 E. 98.40 feet; thence in a westerly direction with the arc of a circular curve to the left of radius 9140.00, an arc distance of 158.97 feet, with a chord bearing and distance of N. 85-39-02 W. 158.96 feet a point in the centerline of the Norfolk-Southern Railroad; thence N. 16-04-41 W. 3.62 feet to a point; thence N. 18-10-21 W. 90.97 feet to the point or place of beginning, and as further shown and described on Exhibit A.I attached to Deed Book 25768 at Page 514 as being that property delineated by hatch marks on said survey.

For title reference: See Deed Book 25768 at Page 514, Mecklenburg County Registry.

Parcel 6: Parcel ID numbers 01931101 and 01931111

BEGINNING at an existing iron rod, #5 rebar, which iron rod is located in the centerline of the Norfolk-Southern Railroad track (formerly Southern Railway), also located at the intersection of the northerly line of the property of Wilson D. Johnston (now or formerly, see Deed Book 2792, Page 78) and which existing iron rod is located S. 55-38-49 E. 5,955.38 feet, ground distance, 5954.42 feet, grid distance, from N.C.G.S. Monument "FILL" with coordinates N. 605095.347 feet, E. 1448315.784 feet; thence from said point of beginning with the centerline of said Norfolk-Southern Railroad the following twelve courses and distances: (1) N. 03-51-01 W. 1125.38 feet, (2) N. 04-16-21 W. 100 feet, (3) N. 05-45-21 W. 100 feet, (4) N. 07-54-21 W. 100 feet, (5) N. 10-06-21 W. 100 feet, (6) N. 12-12-31 W. 100 feet, (7) N. 14-09-31 W. 100 feet, (8) N. 16-04-41 W. 100 feet, (9) N. 18-10-21 W. 100 feet, (10) N. 20-22-01 W. 100 feet, (11) N. 22-15-31 W. 77.39 feet, and (12) N. 23-21-51 W. 73.67 feet to a new iron rod, #4 rebar, on the line of James D. Venable and Melissa Fisher (now or formerly, Deed Book 16788, Page 816) thence with the line of Fisher and of John Lee Caldwell and Sadie R. Caldwell (now or formerly, Deed Book 6529, Page 577) S. 88-04-04 E. 419.09 feet to an existing iron pipe; thence S. 02-08-30 E. 82.50 feet to an existing iron rod, #4 rebar, thence with the lines of Adam Lee Bost, et al, Ericka C. Neal, Charles E. Patterson, Claude Turner, Jr., Annie Mae McElrath, and A.W. Johnston (all

now or formerly) S. 78-01-28 E. 1513.48 feet to an existing #2 pipe on the line of the property of A.W. Johnston (now or formerly); thence with the A.W. Johnston line S. 00-27-20 W. 907.58 feet to an existing 1" pipe; thence continuing with the Johnston line S. 80-51-08 E. 1475.72 feet to an existing iron rod, #5 rebar, on the line of Linda Wester Long (now or formerly, Deed Book 6116, Page 663) thence with Long's line S. 12-10-14 E. 1171.82 feet to an existing 1.5" pipe on the line of Wilson D. Johnston; thence with the line of Wilson D. Johnston (now or formerly, Deed Book 4654, Page 6) and of Gary Lane Norris and Dean P. Norris (now or formerly, Deed Book 4552, Page 918) S. 87-22-22 W. 2032.37 feet to a point on the line of Arnold Wilson Johnston (now or formerly, Deed Book 1184, Page 100) thence with said Johnston's line N. 03-59-56 W. 139.81 to an existing one inch pipe; thence continuing with the line of Arnold Wilson Johnston and also the line of Wilson D. Johnston (now or formerly, Deed Book 7730, Page 428) N. 04-06-25 E. 420.63 feet to an existing iron pin; thence with Wilson Johnston's line N. 85-45-20 W. 1270.70 feet to the point or place of BEGINNING, containing 126.466 acres as shown on a survey entitled "Survey for the Town of Huntersville" prepared by R.B. Pharr & Associates, P.A., dated January 26, 2005, revised February 9, 2005 and February 25, 2005.

LESS AND EXCEPT those parcels described by their parcel ID numbers as: 01931110, 01931109, 01931106, 01931102, 01931112, 01931113, 01931114, 01931115, 01931116, 01931117, and 01931104.

For title reference: See Deed Book 18410 at Page 880, Mecklenburg County Registry.

Parcel 7: Parcel ID number 01742205

BEGINNING at an existing iron pin located on the westerly right of way margin of Old Statesville Road (N.C. Highway 115) a common northeast corner of the property of Lake Norman Charter School, Inc. (see Deed Book 23756, Page 89) and the southeast corner of the property of the Town of Huntersville (Deed Book 21031, Page 614, Mecklenburg County Registry); thence with the westerly right of way margin of Old Statesville Road in a southerly direction with a circular curve to the right of radius 1920.00, an arc distance of 86.68 feet, with a chord bearing and distance of S. 23-09-26 E. 86.68 feet to a number 5 rebar; thence in a westerly direction with the arc of a southerly curve to the right of radius 9166.84, an arc distance of 118.15 feet, chord bearing and distance of N. 87-09-44 W. 118.15 feet; thence N. 85-13-06 W. 24.97 feet; thence N. 85-13-06 W. 71.70 feet to a point on the line of the Town of Huntersville as aforesaid; thence N. 69-56- 57 E. 191.88 feet to the point or place of BEGINNING and as further depicted on that survey of Craig L. Long, Professional Surveyor, dated October 14, 2009, attached to Deed Book 25242 at Page 971 as Exhibit A-1 and A-2 and incorporated herein by reference.

BEGINNING at an existing iron pin on the westerly right-of-way margin of Old Statesville Road (N.C. Highway 115) being also the starting point of that tract above described, thence from said starting point N. 69-56-57 E. 60.17 feet to a point on the easterly right-of-way margin of easterly right-of-way margin of Old Statesville Road; thence N. 69-56-57 E. 41.20 feet to the centerline of the Norfolk-Southern Railroad tract; thence with the centerline of said tract in a southerly direction to a point that intersects with an easterly extension of the second line of the above described tract; thence in a westerly direction along said extended line to the No. 5 rebar located

in the existing westerly right-of-way margin of Old Statesville Road; thence along said westerly right-of-way margin in a northerly direction; a circular curve to the left of 1920.00, an arc distance of 86.68 feet, with a chord and distance of N. 23-09-26 W. 86.68 feet to the point or place of BEGINNING.

For title reference: See Deed Book 25242 at Page 971, Mecklenburg County Registry.

Parcel 8: Parcel ID number 01710107

Being all that certain parcel of land identified as “Holbrook Street Extension- 53’ Public R/W (24,421 sq. ft- 0.5606 acre) as shown on that certain plat entitled “BAYSHPRE PLAZA | SOUTHSTAR HOLDINGS- HUNTERSVILLE LLC (OWNER)” recorded in Map Book 60, Page 975, Mecklenburg County Registry.

For title reference: See Deed Book 32517 at Page 944, Mecklenburg County Registry.

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Don Mitchell, Electric System Manager

Date: February 1, 2021

Subject: Award Formal Bid for Materials for Bulk Feeder Projects (Electric). *(Don Mitchell)*

EXPLAIN REQUEST:

Southeastern Consulting Engineers held a Formal Bid on January 5, 2021 for materials to construct bulk feeder electric lines that are part of the FY20-21 Capital Projects. These projects will add slightly more than two miles of underground lines to the electric system and are a part of the long range plan to provide interconnections between the town's substations to improve reliability and maintainability of the electric system. Bids were received from R. W. Chapman Co., Irby Utilities, Shealy Electrical Wholesalers, and Wesco Distribution. The bid total from the lowest, responsive, responsible bidder is \$253,892.79.

ACTION RECOMMENDED:

Award bids per the attached recommendation and bid tabulation from Southeastern Consulting as follows:

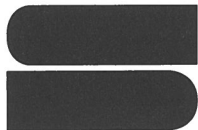
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|----------------------------------|--------------|
| 1. R. W. Chapman | \$16,567.00 |
| 2. Irby Utilities | \$39,160.00 |
| 3. Shealy Electrical Wholesalers | \$172,679.00 |
| 4. Wesco Distribution | \$25,486.79 |

FINANCIAL IMPLICATIONS:

Funds are available in the FY 20-21 budget for these expenditures.

ATTACHMENTS:

1. Huntersville Bulk Feeder Material Recommendation
2. Bulk Feeder Bid Tab



Southeastern Consulting Engineers, Inc.

January 13, 2021

Mr. Don Mitchell
Electric Systems Manager
ElectriCities of North Carolina
11316 Sam Furr Road
Huntersville, North Carolina 28078

Ref.: Material Bid Recommendations
Bulk Feeder Material

Dear Mr. Mitchell:

ElectriCities received proposals in our office on January 5, 2021, from four suppliers and representatives solicited for providing electrical material necessary for construction of East, Mirabella, and Bryton Bulk Feeders.

A tabulation of bids received is attached.

It was subsequently decided to include materials for a portion of the Hambright Bulk Feeder.

We have evaluated each item quoted based on compliance with specifications, cost, and delivery. These are the bidders we are recommending and amount of award for materials for all bulk feeder projects mentioned above.

Schedule I - Padmounted Switchgear	R.W. Chapman	\$16,567.00
Schedule II - Conductors (Partial)	Irby	39,160.00
Schedule II - Conductors (Complement)	Shealy	155,295.00
Schedule III - Connectors and Terminators	Wesco	21,257.16
Schedule IV - Switchgear Pad	Shealy	1,324.00
Schedule V - Junction Boxes	Shealy	16,060.00
Schedule VI - Miscellaneous Material	Wesco	<u>4,229.63</u>

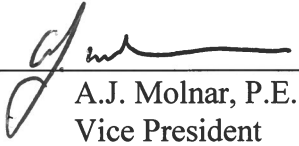
Total recommended excluding Sales Tax	\$253,892.79
---------------------------------------	--------------

Please let us know if you agree with our recommendations and we can prepare and distribute contract documents for these purchases.

Very truly yours,

SOUTHEASTERN CONSULTING ENGINEERS, INC.

By



A.J. Molnar, P.E.
Vice President

AJM/lc

BID TABULATION**Material for Bulk Feeders**

(Original Quantities before Adding
Hambright Bulk Feeder)

Electricities of North Carolina
c/o Town of Huntersville
Huntersville, North Carolina

Date: January 5, 2021
Time: 2:00 PM, EST

<u>Bidder</u>	R.W. Chapman Charlotte, NC	Irby Fredricksburg, VA	WESCO Clayton, SC	Shealy Greenville, SC	Shealy Greenville, SC
<u>Schedule I</u> Padmounted Switchgear	\$ 16,567.00	\$ 19,910.00	\$ NQ	\$ 18,812.00	\$
<u>Schedule II</u> Conductors - See Note	\$ NQ	\$ 111,128.20	\$ 134,820.00	Prysmian \$ 127,890.00	Kerite \$ 149,100.00
<u>Schedule III</u> Connectors & Terminators	\$ NQ	Incomplete \$ 20,875.65	\$ 14,744.07	\$ NQ	\$
<u>Schedule IV</u> Switchgear Pad	\$ NQ	\$ 1,366.00	\$ 1,359.00	\$ 1,324.00	\$
<u>Schedule V</u> Junction Boxes	\$ NQ	\$ 11,060.00	\$ 10,486.00	\$ 10,220.00	\$
<u>Schedule VI</u> Miscellaneous Material	\$ NQ	Incomplete \$ 902.50	\$ 3,393.10	\$ 3,471.50	\$
Bid Bond	5% Check	5%	5%	5%	

Note: Irby offered approximately half of cable at discounted rate. Complement from Shealy is at most attractive rate for remaining needed.

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Michael Jaycocks, Director

Date: February 1, 2021

Subject: Adopt Resolution to purchase playground equipment for the Rosedale Nature Park Project and approve the purchasing contract. *(Michael Jaycocks)*

EXPLAIN REQUEST:

The Town used Omni Partners Cooperative Purchasing Contract to purchase playground equipment from Landscape Structures, Inc. for the Rosedale Nature Park Project. The purchase of this playground equipment is being made pursuant to statute N.C.G.S. 143-129(e)(3). This playground provides unique play opportunities for children of all abilities. This playground will provide the only merry go round that can accommodate wheelchairs in our region. This playground will also provide the only adaptive zip line in our area as well. In addition to those play elements it also provides challenging and thrill seeking play elements as well.

ACTION RECOMMENDED:

Approve Resolution and Purchasing Contract for the Rosedale Nature Park Playground Equipment with Landscape Structures, Inc.

FINANCIAL IMPLICATIONS:

\$275,000.80 from the Rosedale Nature Park Construction Budget

ATTACHMENTS:

1. Resolution awarding the purchasing contract for Rosedale Nature Park Playground
2. Rosedale Park Playground Equipment- Landscape Structures



**RESOLUTION OF THE TOWN OF HUNTERSVILLE TO PURCHASE PLAYGROUND EQUIPMENT
FOR THE ROSEDALE NATURE PARK PROJECT AND APPROVE THE PURCHASING CONTRACT**

Whereas, the Town of Huntersville received pricing through Omnia Partners Cooperative Purchasing Contract for the Landscape Structures, Inc. playground equipment for the Rosedale Nature Park Project (the "Project"); and

Whereas, the purchase of this playground equipment is being made pursuant to statute N.C.G.S. 143-129(e)(3). In which the town selected Landscape Structures, Inc., a company located in Minneapolis, MN ("Company"); and

Whereas, the Town wishes to select the purchasing of playground equipment for, and approve and establish administrative authority for the purchasing contract with Landscape Structures, Inc.;

NOW THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. The Board of Commissioners awards the purchasing contract to Landscape Structures, Inc., in accordance with the Playground Equipment Proposal submitted, as priced below:

- Purchased Price consisting of:

1. <u>Playground Equipment & Delivery</u>	\$275,000.80 (lump sum)
---	-------------------------

<u>Total Base Bid:</u>	\$275,000.80
------------------------	---------------------

2. The Purchasing Contract, attached hereto as Exhibit 1, is hereby approved. As used herein, the Purchasing Contract is deemed to include all equipment identified and incorporated therein by reference.
3. The Board hereby authorizes the Town Manager, acting on advice of counsel, to take any actions necessary to effect the provisions of this Resolution, including signing the Purchasing Contract.
4. This Resolution shall be effective as of the date its adoption.

Adopted this _____ day of February, 2021.

ATTEST:

TOWN OF HUNTERSVILLE

Town Clerk

Town Mayor

APPROVED AS TO FORM:

Town Attorney



Quote #: 7384
Created: 12/8/2020
Modified: 1/20/2021

Quote Name Rosedale Park - Play Equipment

Prepared By: Ryan McDuffee
(704) 288-7013
ryan@carolinaparksandplay.com

Prepared For: Michael Jaycocks
(704) 766-2228
mjaycocks@huntersville.org

Bill To: Michael Jaycocks
Town of Huntersville
PO Box 2879
Huntersville, NC 28070

Ship To: Michael Jaycocks
Town of Huntersville
9519 Rosewood Meadow Lane.
Huntersville, NC 28078

Please make out purchase orders, contracts, and checks to:

Invoice Address Landscape Structures, Inc.
SDS 12-0395 PO Box 86
Minneapolis, MN, 55486
(763) 972-5200

Lead Time: 12-14 weeks ARO
Payment Terms: 50% to order, balance on shipping
Total Wt 0
Other Conditions: Omnia Contract # R170302
Playground design and color selection based on
drawing # 1149637

Product	Line Description	Quantity	Sales Price	Wt Subtotal	Total Price
Landscape Structures	Playground Main Structure with GFRC Tree Trunk & Double Tree Houses with Corrugated Roofs. Includes ground level play panels - Kaleidospin, Mirror, Reach and Table Panels	1.00	\$244,535.00	0	\$244,535.00
Landscape Structures	We-Go-Round	1.00	\$27,600.00	0	\$27,600.00
Landscape Structures	50' Double ZipKrooz	1.00	\$24,950.00	0	\$24,950.00
Shipping and Handling	Shipping and Handling to Huntersville, NC	1.00	\$6,600.00	0	\$6,600.00
Discount	Omnia Contract	1.00	(\$47,274.00)	0	(\$47,274.00)

Subtotal	\$256,411.00
Tax Rate	7.25%
Project Tax	\$18,589.80
Project Total	\$275,000.80



Standard Terms and Conditions

Quote #: 7384
Created: 12/8/2020
Modified: 1/20/2021

Pricing: Prices are firm for 30 days unless otherwise noted. Installation costs, if shown, are for one installation unless otherwise noted. Taxes will be shown separately, if applicable. Any applicable taxes not shown will be applied to the final invoice.

Payment terms: Payment terms are as stated above subject to approval by Credit Manager. Payment in full is due within those terms. Pre-payment may be required for orders equaling less than \$5000.00. A signed purchase order made out to the business name and address, as listed in the "Invoice Address" section of this quotation, or this signed quotation is required for all orders unless otherwise noted. A 1.5% per month finance charge will be imposed on all past due accounts. Checks should be made payable to and mailed as indicated in the "Invoice Address" section of this quotation.

Returns: Returns are available on shipments delivered within the last 60 days if the product is in merchantable condition, has never been installed, and has never been stored in an area with little or no protection. A 25% restocking fee will be charged on all returned goods. Customer will be charged freight for both the outbound and inbound shipment. Any credit will be based on the condition of the item(s) upon return.

Installation: The site should be clear, level and allow for unrestricted access of trucks and machinery. Customer is responsible for providing a secure location to off-load and store the equipment during the installation process. The customer is responsible for theft or damage of the equipment from the time the equipment is off-loaded until the installation is complete, unless other arrangements are made and noted on the quotation. The customer is responsible for any locally required building permits unless specifically noted otherwise in this proposal. Price includes only what is stated in this quotation. If additional site work or equipment is needed then the price is subject to change. Customer shall be responsible for unknown conditions such as buried utilities (public and private), tree stumps, rock, or any concealed materials that may result in additional labor or material costs. Customer will be billed hourly or per job for any additional costs.

Agreement Execution

As an authorized agent, I accept the terms and conditions of this proposal for purchase of goods and services.

Name (print) _____ Signature _____ Date _____

Purchase order # _____ (please provide)



Rosedale Park

1149637-01-03-02 • 01.11.2021



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LS
landscape
structures

Rosedale Park

1149637-01-01-02 • 12.04.2020


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Rosedale Park

1149637-01-01-05 • 12.04.2020


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Rosedale Park Option 1

1149637-01-01-01 • 12.03.2020


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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Pattie Ellis

Date: February 1, 2021

Subject: Approve budget amendment appropriating Park Capital reserve revenue of \$108,000 and Fund Balance of \$109,000 to the Rosedale Nature Park project.
(Pattie McGinnis/Michael Jaycocks)

EXPLAIN REQUEST:

Appropriate Park Capital reserve revenue (103510.9999) of \$108,000 and Fund Balance of \$109,000 (103890.9999) to the Rosedale Nature Park project (105400.0592.20004). The Town received three bids and they were higher than the budgeted amount even with the \$150,000 PARTF grant. The PARTF grant will offset some cost and allow the Town to offer more ADA accessible amenities (asphalt path and pour in play area). Parks and Recreation Commission unanimously recommended to use these Park Reserve funds.

ACTION RECOMMENDED:

Approve Budget Amendment

FINANCIAL IMPLICATIONS:

Decrease of \$109,000 to fund balance.

ATTACHMENTS:

None

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Pattie Ellis

Date: February 1, 2021

Subject: Approve Tax Refund Report from Mecklenburg County. (*Pattie McGinnis*)

EXPLAIN REQUEST:

Attached is the Refund report from Mecklenburg County. This report contains one refund totaling \$25.98 which includes \$1.26 interest. This refund is the result of the Property Tax Commission.

ACTION RECOMMENDED:

Approve Board Action.

FINANCIAL IMPLICATIONS:

Decrease in revenue of \$25.98.

ATTACHMENTS:

1. Huntersville PTC refunds 2021 12 22

HUNTERSVILLE Refunds

Tax Year	Bill Number	Parcel #	Source Type	Adj #	Adj Reason	Date of Adj.	Refund Recipient Name	Refund Address Line 1	City	State	Zip	Payment Date for Interest Calculation	Refund Amount (\$)	Total Interest to Pay if mailed on or before 1/13/2021 (\$)
2019	0001468441-2019-2019-0000-00	01304112	REI	591638	PTC Decision	12/16/2020	JACKSON, DAVID KEITH	13027 ALLISON FERRY RD	HUNTERSVILLE	NC	28078	1/7/2020	\$ 24.72	\$ 1.26
TOTAL													\$ 24.72	\$ 1.26

**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: David Peete, Principal Planner

Date: February 1, 2021

Subject: Call a Public Hearing for Monday, February 15, 2021 at 6:00 p.m. on Petition #ANNEX20-02, a request by Huntersville Magnolia Development Company LLC to annex 59.889-acres (North Creek Village) into the Town of Huntersville. This public hearing will be held both in person at the Huntersville Recreation Center located at 11836 Verhoeff Drive, Huntersville, NC 28078, and virtually via livestream at <https://www.facebook.com/HuntersvilleNCTownGovernment>. The Board of Commissioners will participate remotely. *(David Peete)*

EXPLAIN REQUEST:

Call a Public Hearing for Monday, February 15, 2021 at 6:00 p.m. on Petition #ANNEX20-02, a request by Huntersville Magnolia Development Company LLC to annex 59.889-acres (North Creek Village) into the Town of Huntersville. This public hearing will be held both in person at the Huntersville Recreation Center located at 11836 Verhoeff Drive, Huntersville, NC 28078, and virtually via livestream at <https://www.facebook.com/HuntersvilleNCTownGovernment>. The Board of Commissioners will participate remotely.

ACTION RECOMMENDED:

Call a Public Hearing for Monday, February 15, 2021 at 6:00 p.m. at Huntersville Town Hall on Petition # ANNEX 20-02, a request by Huntersville Magnolia Development Company LLC to annex 59.889-acres (North Creek Village) into the Town of Huntersville.

FINANCIAL IMPLICATIONS:

n/a

ATTACHMENTS:

1. Certificate of Sufficiency (NonContiguous Annex) - North Creek Village
2. ANNEX 20-02 North Creek Village (Huntersville East) Annexation Zoning Map

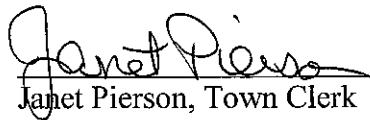
CERTIFICATE OF SUFFICIENCY

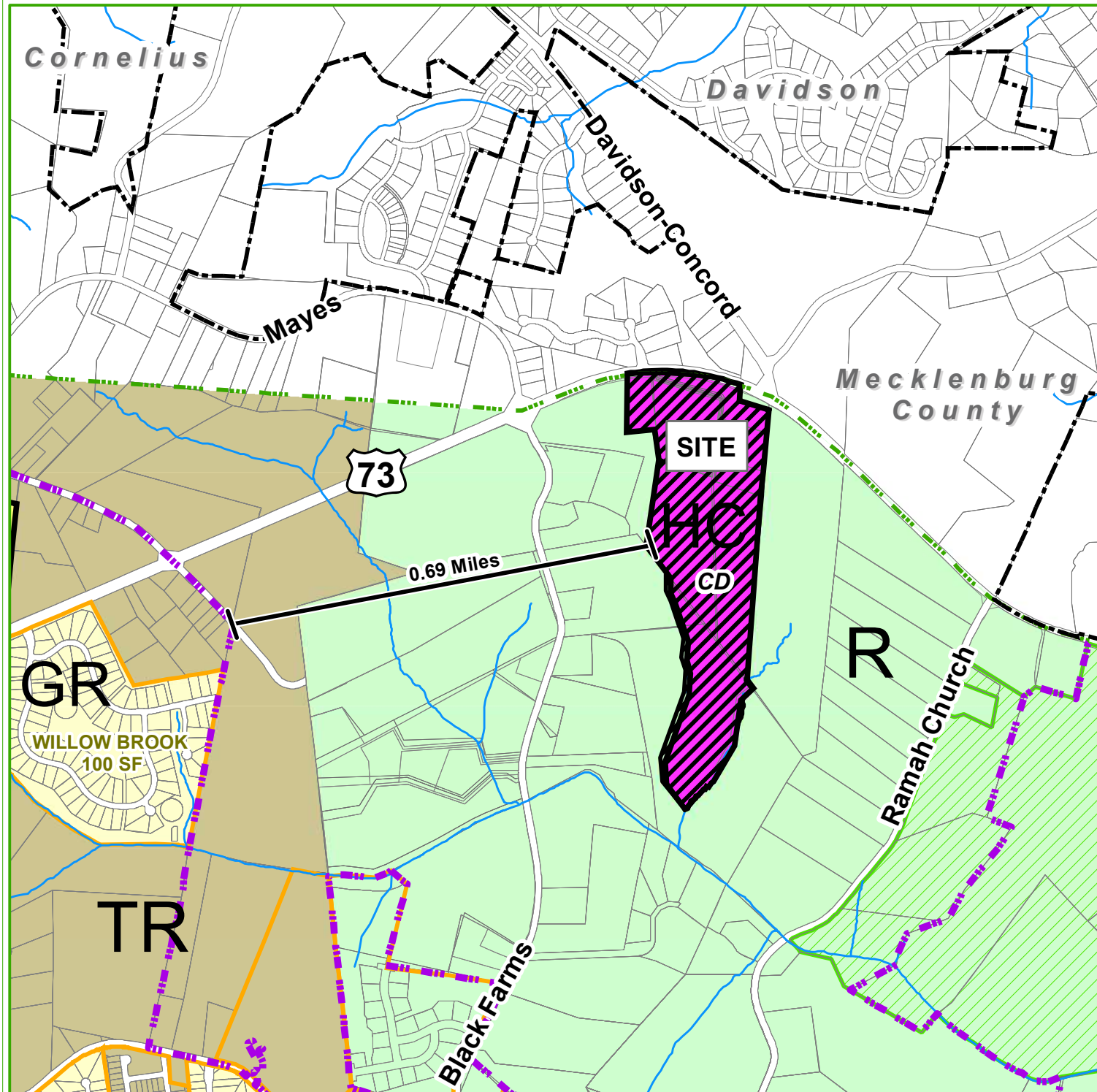
To: The Board of Commissioners of the Town of Huntersville, North Carolina

I, Janet Pierson, Town Clerk, do hereby certify that I have investigated the Petition by Huntersville Magnolia Development Company, LLC for the no-contiguous annexation of certain property known as North Creek Village (formerly Huntersville East), and have found as a fact that said Petition is signed by all the owners of real property lying in the area described therein in accordance with North Carolina General Statutes 160A-58, *et seq.* The undersigned therefore certifies that the Petition is sufficient for the voluntary annexation of a non-contiguous area pursuant to NCGS §160A-58.1.

IN WITNESS WHEREOF, I have hereto set my hand and affixed the seal of the Town of Huntersville this 25th day of January, 2021.




Janet Pierson, Town Clerk



Annexation 20-02: North Creek Village (Huntersville East)

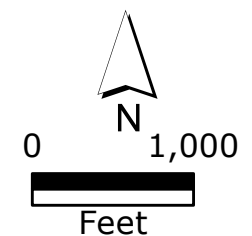
Zone :
HC (CD)

Applicant:
Magnolia Huntersville
Development, LLC

+/- 59.486 acres

Parcels:
01107318, 01107322,
01107315, 01107337,
01107317, 01107336,
01107320, 01107319,
& 01126140

- HC Highway Commercial
- R Rural
- GR General Residential
- TR Transitional Residential
- Huntersville Corporate Limits



**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept streets located in Arbormere Phase II for Town Maintenance. *(Kevin Fox)*

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the streets listed below for maintenance, which are located in Arbormere Phase II.

Street Name	From	To	Approx. Length
Kalson Street	Charmont Place	Bud Henderson Rd	1070 feet
Rayneridge Drive	205' S of Foreleigh Rd	Kalson Street	1780 feet
Charmont Place	340' E of Grenfell Ave	150' N of Bud Henderson Rd	3265 feet
Hallowford Drive	Charmont Place	Rayneridge Drive	980 feet
Byndkrest Drive	Hallowford Drive	Charmont Place	240 feet
Hyghbough Street	195' S of Foreleigh Rd	Hallowford Drive	950 feet
Cantrell Way	180' E of Rickard Drive	Cantrell Way	3035 feet
Barnmore Drive	160' E of Grenfell Ave	Cantrell Way	440 feet

ACTION RECOMMENDED:

Accept of Streets for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

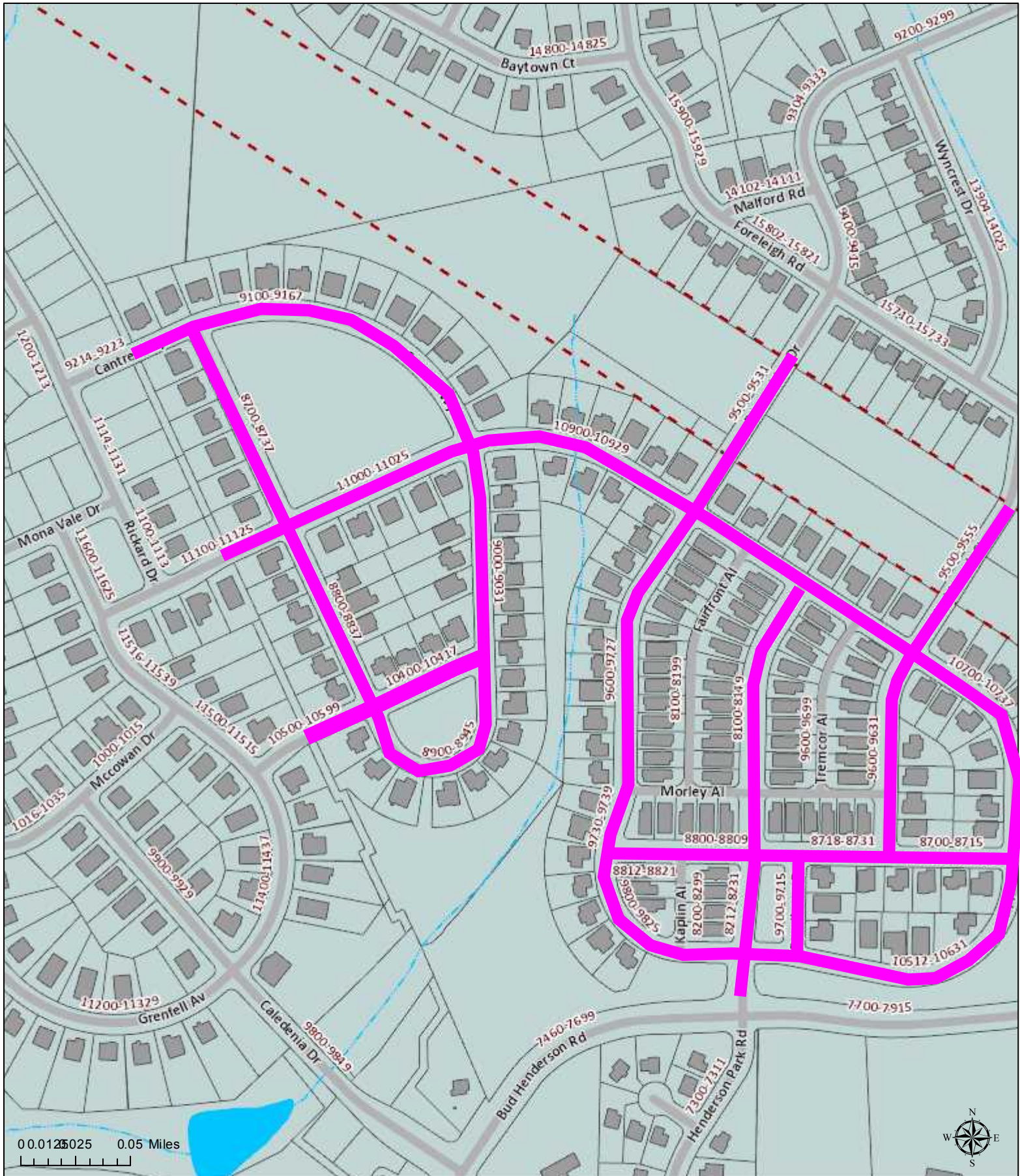
ATTACHMENTS:

1. Arbormere Phase 2
2. Arbormere Phase 2 Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

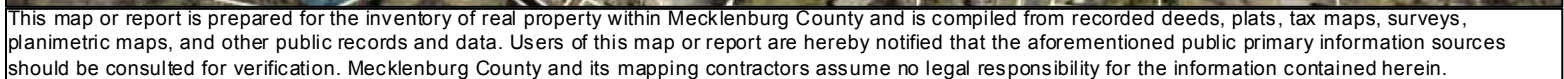
Arbormere Phase 2

Date Printed: 6/17/2020 2:58:34 PM



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Date Printed: 6/17/2020 2:59:01 PM



**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept streets located in Bryton Parcel 6 (NVR Townhomes) for Town Maintenance.
(Kevin Fox)

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the streets listed below for maintenance, which are located in the Bryton Parcel 6 (NVR Townhomes).

Street Name	From	To	Approx. Length
Radiant Road	Clear Summit Alley	Bryton Parkway	645 feet
Glowing Peak Road	Radiant Road	Bryton Parkway	940 feet
Blessington Road	Radiant Road	Glowing Peak Road	520 feet

ACTION RECOMMENDED:

Accept Streets for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

ATTACHMENTS:

1. Bryton Parcel 6 (NVR Townhomes)
2. Bryton Parcel 6 (NVR Townhomes) Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

Bryton Parcel 6 (NVR Townhomes)

Date Printed: 9/10/2020 11:18:53 AM

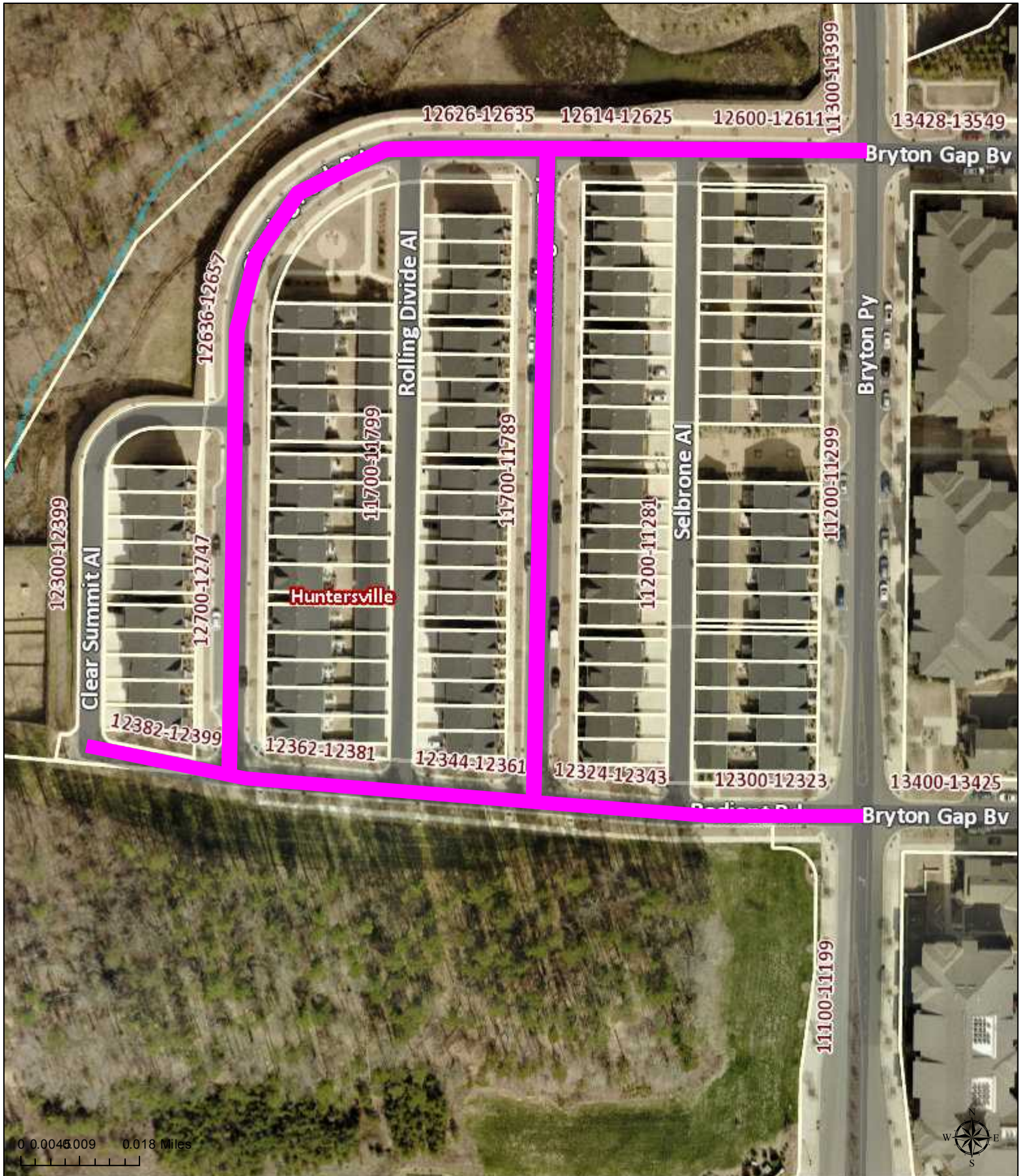


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Polaris 3G Map – Mecklenburg County, North Carolina

Bryton Parcel 6 (NVR Townhomes)

Date Printed: 9/10/2020 11:18:01 AM



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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept streets located in Bryton Parkway Map 2 for Town Maintenance. *(Kevin Fox)*

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the streets listed below for maintenance, which are located in the Bryton Parkway Map 2.

Street Name	From	To	Approx. Length
Bryton Parkway	65' N of Glowing Peak Road	300' S of Chantrey Wy	935 feet
Bryton Ridge Parkway	254' E of Meacham Farm Dr	Bryton Parkway	117 feet

ACTION RECOMMENDED:

Accept Streets for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

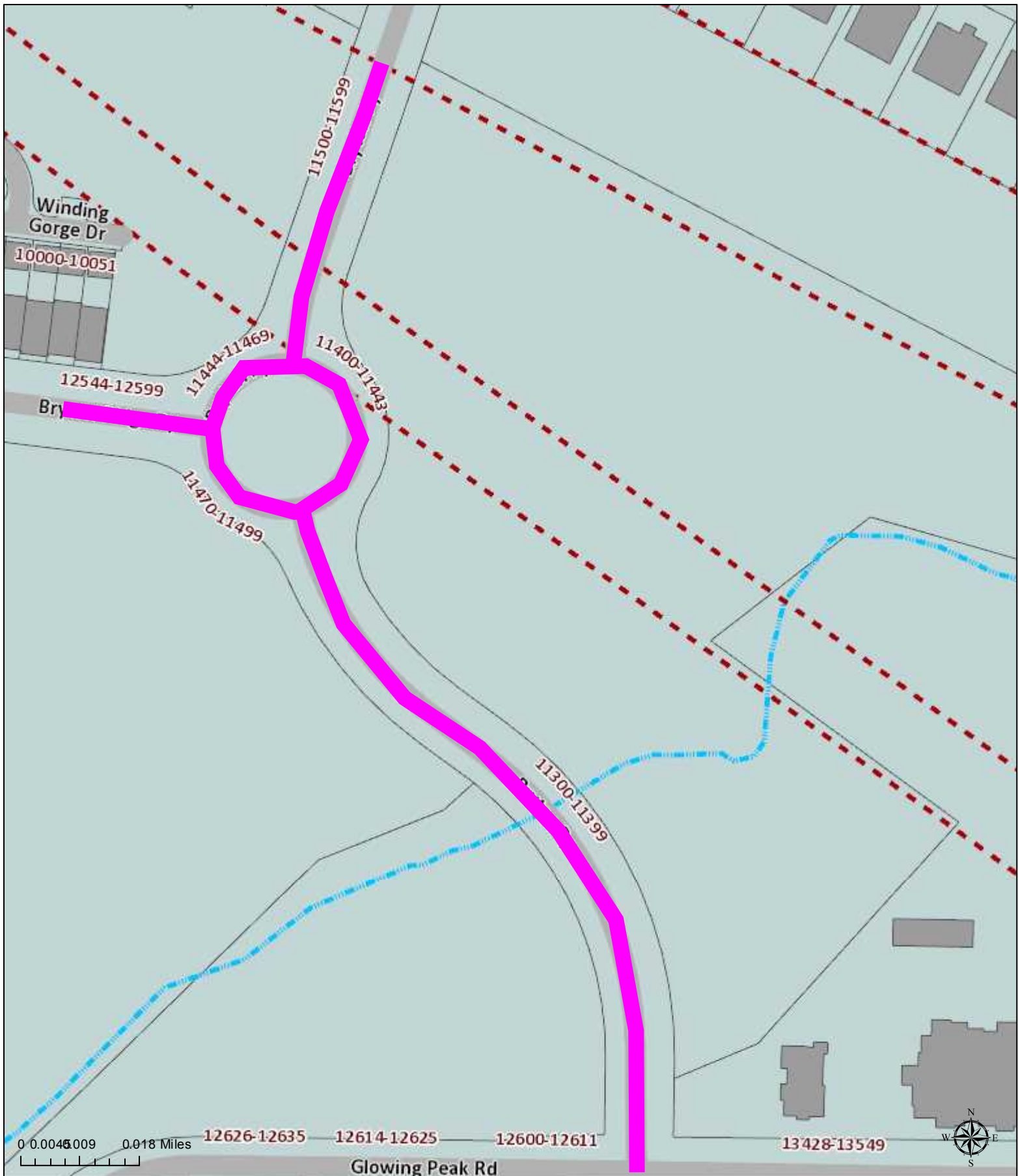
ATTACHMENTS:

1. Bryton Parkway Map 2
2. Bryton Parkway Map 2 Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

Bryton Parkway Map 2

Date Printed: 9/10/2020 12:51:19 PM



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Polaris 3G Map – Mecklenburg County, North Carolina

Bryton Parkway Map 2

Date Printed: 9/10/2020 12:50:45 PM



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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept streets located in Bryton Single Family Phase 1 for Town Maintenance.
(Kevin Fox)

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the streets listed below for maintenance, which are located in the Bryton Single Family Phase 1.

Street Name	From	To	Approx. Length
Bryton Parkway	295' S of Chantrey Way	145' N of Roderick Drive	685 feet
Chantrey Way	Bryton Parkway	155' E of Maher Lane	960 feet
Maher Lane	Chantrey Way	Roderick Drive	650 feet
Gilroy Lane	Chantrey Way	Roderick Drive	440 feet
Roderick Drive	Bryton Parkway	145' E of Maher Lane	950 feet

ACTION RECOMMENDED:

Accept Streets for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

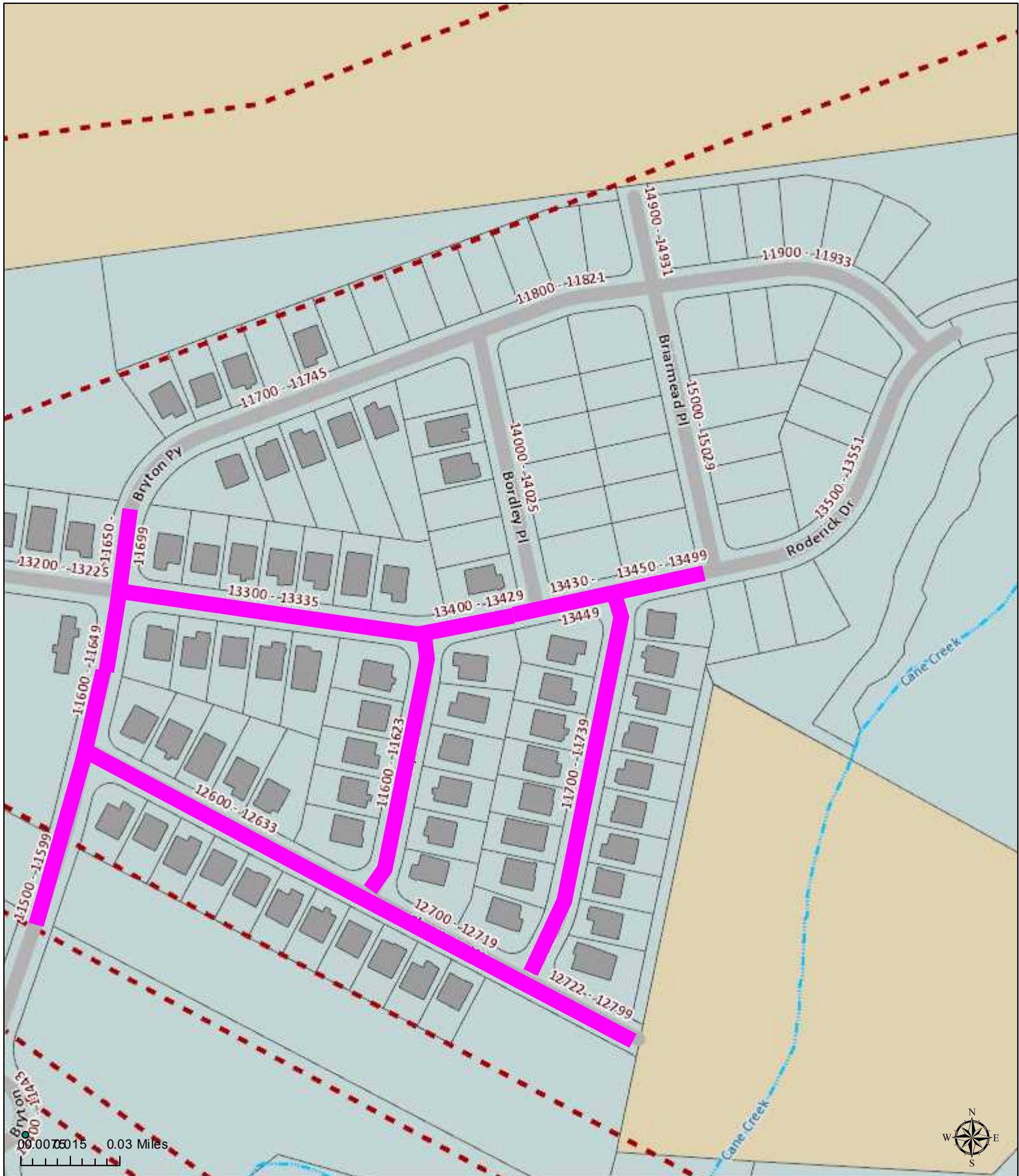
ATTACHMENTS:

1. Bryton Single Family Phase 1
2. Bryton Single Family Phase 1 Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

Bryton Single Family Phase 1

Date Printed: 10/12/2020 9:58:03 AM

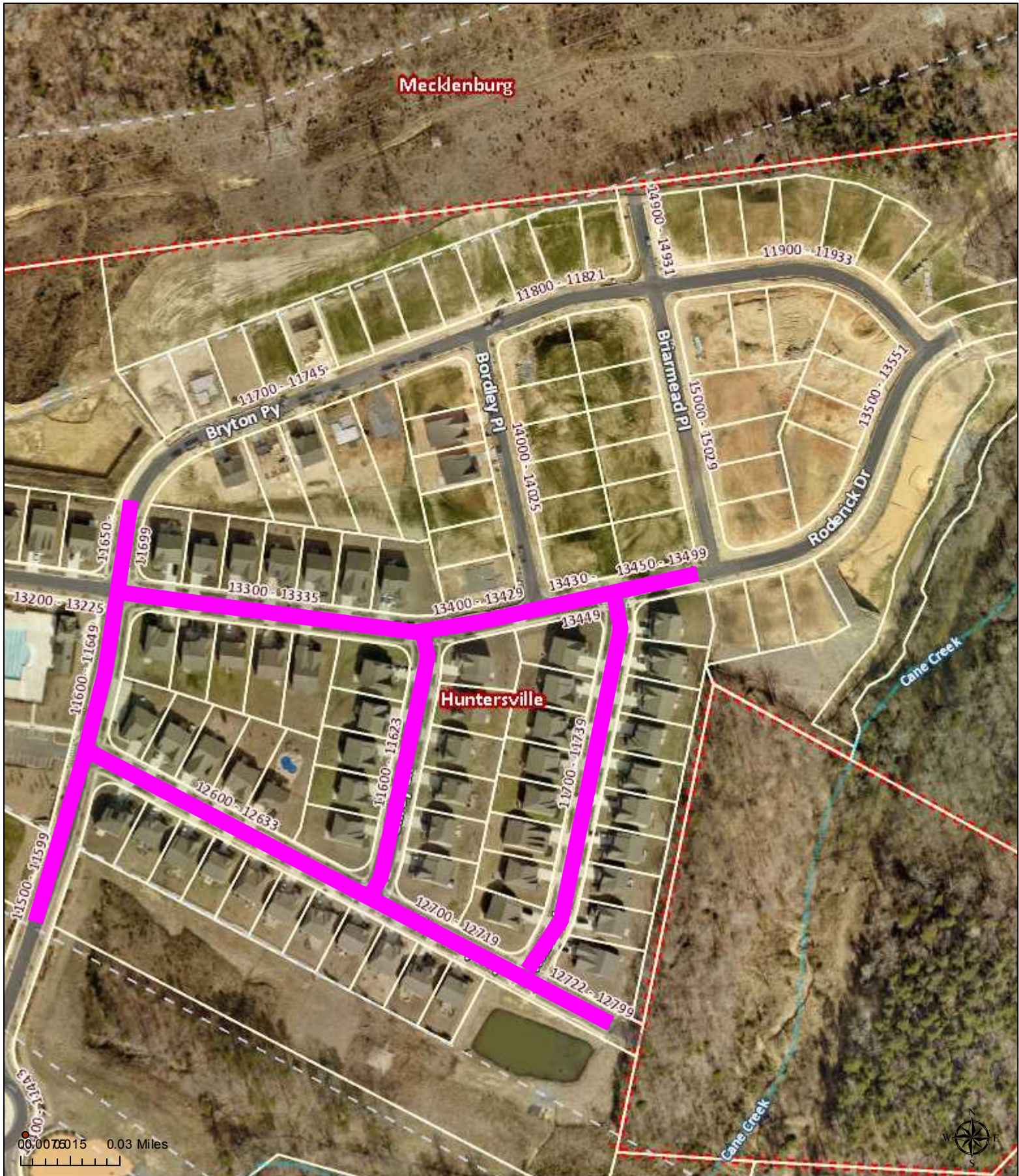


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Polaris 3G Map – Mecklenburg County, North Carolina

Bryton Single Family Phase 1

Date Printed: 10/12/2020 9:59:06 AM



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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept streets located in Courtyards at Huntersville for Town Maintenance. *(Kevin Fox)*

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the streets listed below for maintenance, which are located in the Courtyards at Huntersville.

Street Name	From	To	Approx. Length
Hidden Ln	NC Highway 73	Parknoll Dr.	225 feet
Dewpoint Pl	Parknoll Dr	Hidden Lane	410 feet
Parknoll Dr	Hidden Pl	175 feet E of Hidden Pl	1875 feet
Reflection Dr	Parknoll Dr	145 feet Parknoll Dr	145 feet

ACTION RECOMMENDED:

Accept Streets for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

ATTACHMENTS:

1. Courtyards at Huntersville
2. Courtyards at Huntersville Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

Courtyards at Huntersville

Date Printed: 12/29/2020 12:17:42 PM

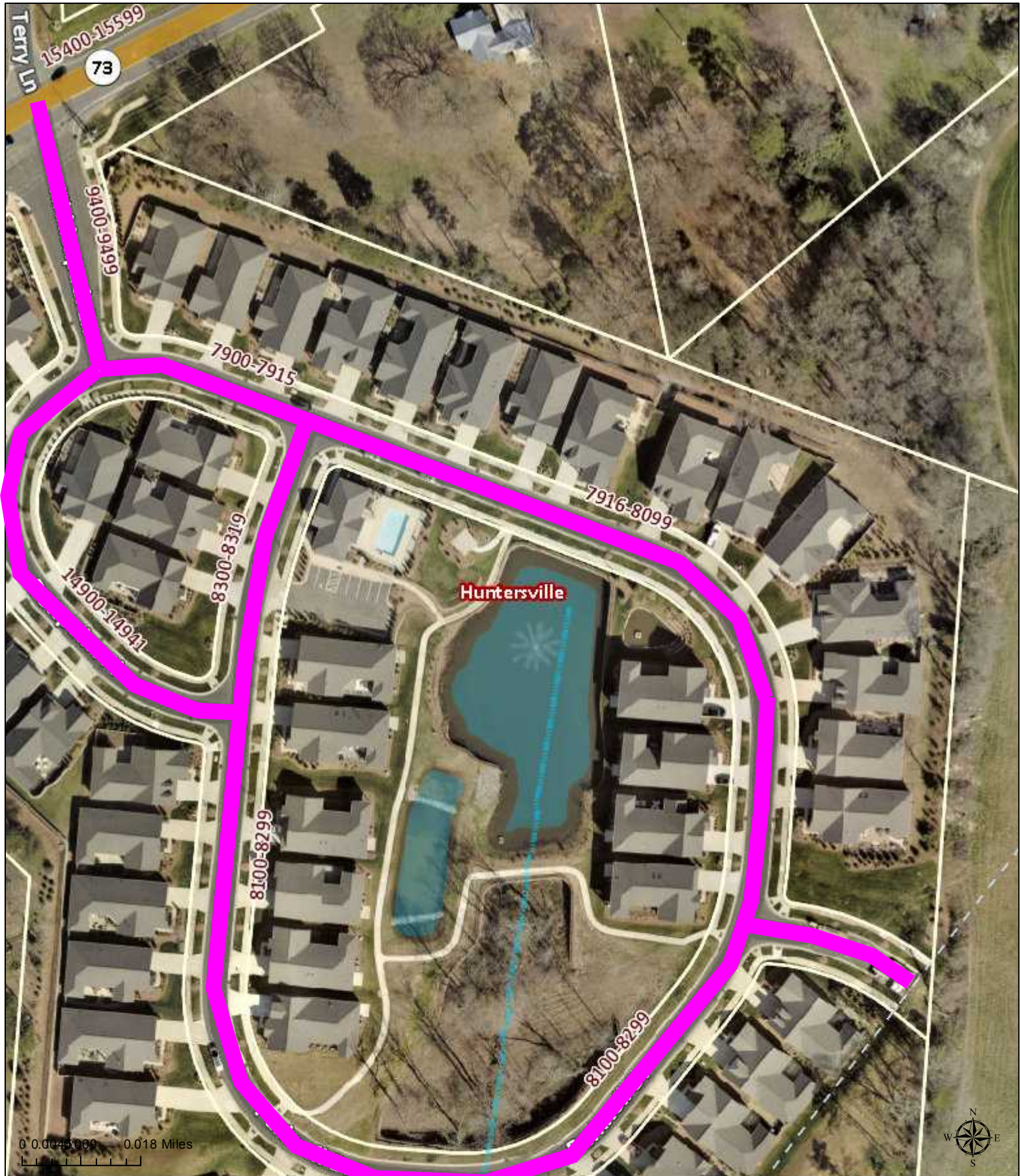


This map or report is prepared for the inventory of real property within Mecklenburg County and is compiled from recorded deeds, plats, tax maps, surveys, planimetric maps, and other public records and data. Users of this map or report are hereby notified that the aforementioned public primary information sources should be consulted for verification. Mecklenburg County and its mapping contractors assume no legal responsibility for the information contained herein.

Polaris 3G Map – Mecklenburg County, North Carolina

Courtyards at Huntersville

Date Printed: 12/29/2020 12:18:26 PM



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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept streets located in Courtyards at Kinnamon Park for Town Maintenance.
(Kevin Fox)

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the streets listed below for maintenance, which are located in the Courtyards at Kinnamon Park.

Street Name	From	To	Approx. Length
Fawntail Lane	Lindley Dr	Cloverknoll Dr/Passau Path	720 feet
Passau Path	Cul-de-sac	Fawntail Ln	2290 feet
Cloverknoll Drive	40' East of Kinnamon Rd	Fawntail Ln	1280 feet
Nynward Crossing	Passau Path Dr	Cloverknoll Dr	350 feet
Kornblume Ln	Passau Path Dr	Cloverknoll Dr	350 feet
Meadowmist Ln	Passau Path Dr	Cloverknoll Dr	350 feet
Edelweiss Ln	Passau Path Dr	Cloverknoll Dr	350 feet
Falls Hollow	Cul-de-sac	Passau Path Dr	170 feet
Gilead Grove Rd	Passau Path Dr	45' West of Kinnamon Rd	200 feet

ACTION RECOMMENDED:

Accept Streets for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

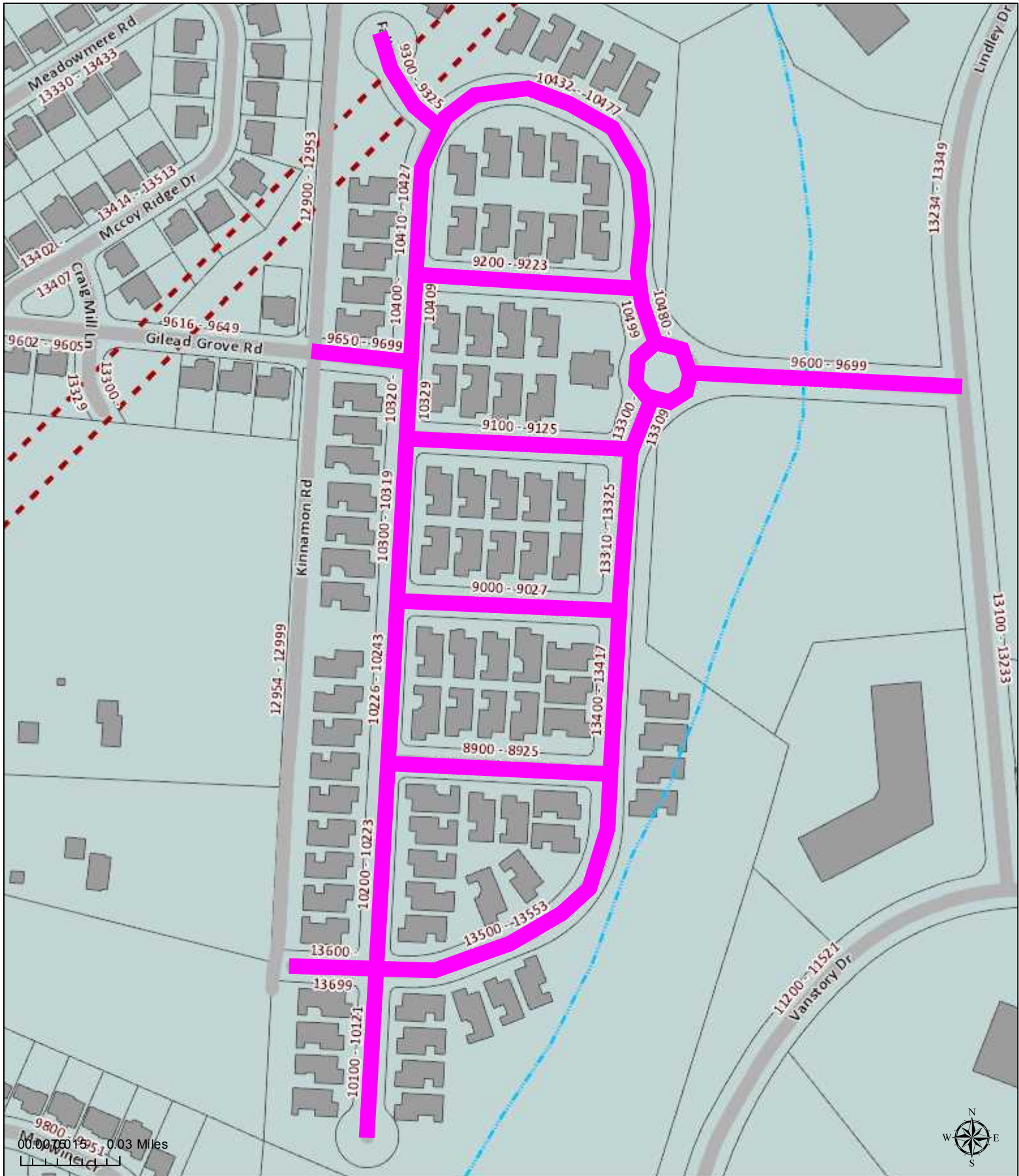
ATTACHMENTS:

1. Courtyards at Kinnamon Park
2. Courtyards at Kinnamon Park Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

Courtyards at Kinnamon Park

Date Printed: 12/15/2020 11:13:38 AM

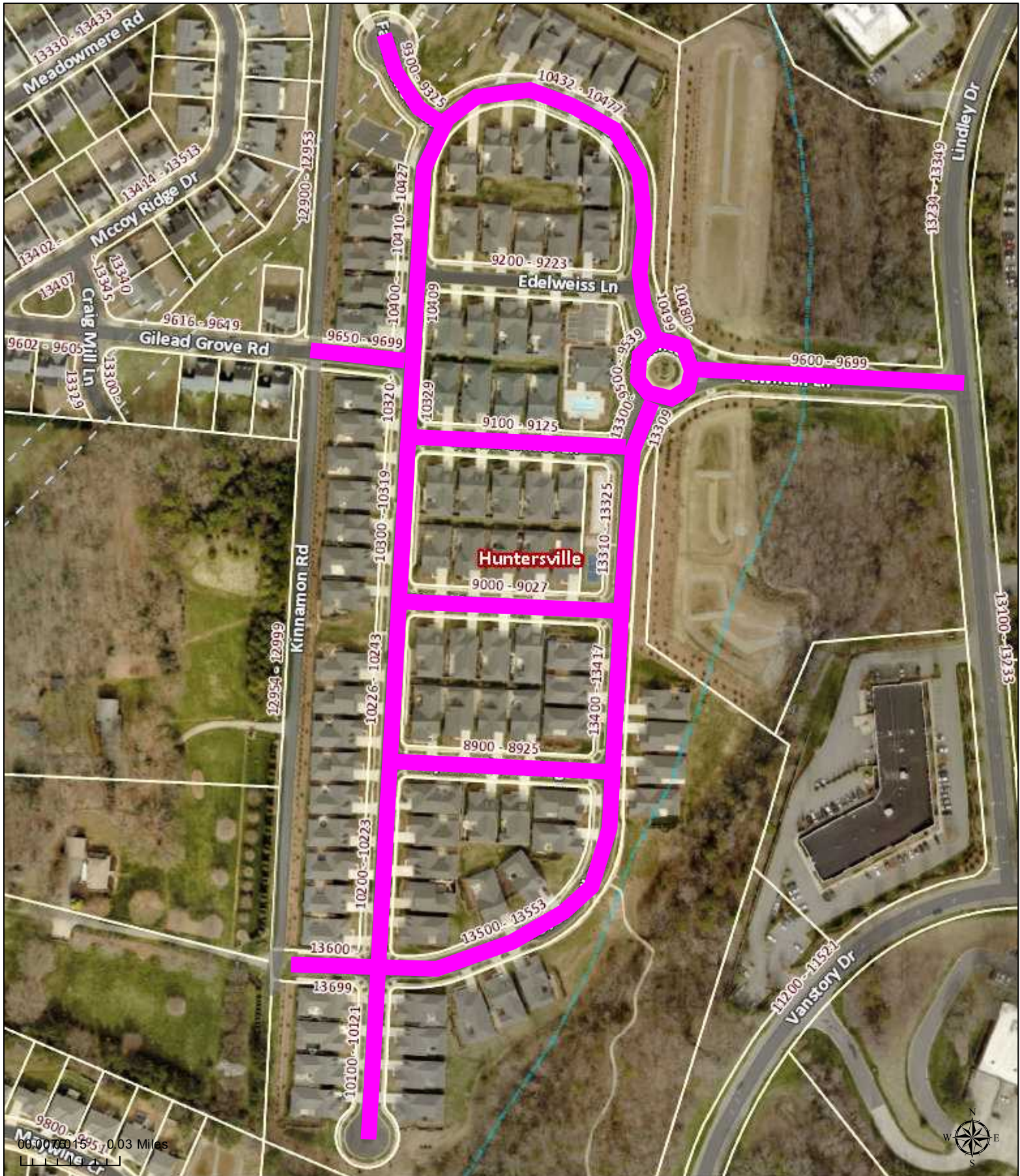


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Polaris 3G Map – Mecklenburg County, North Carolina

Courtyards at Kinnamon Park

Date Printed: 12/15/2020 11:14:33 AM



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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept streets located in Lakemont Commons Phase 1 for Town Maintenance.
(Kevin Fox)

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the streets listed below for maintenance, which are located in the Lakemont Commons Phase 1.

Street Name	From	To	Approx. Length
Shady Vale Lane	Gilead Road	Baytown Court	340 feet
Baytown Court	Foreleigh Road	370 feet SE of Shady Vale Drive	3320 feet
Foreleigh Road	Baytown Court	190 feet NW of Malford Road	1430 feet
Trancion Hills Court	Baytown Court	Belfort Forest Lane	780 feet
Belfort Forest Lane	Baytown Court	Foreleigh Road	670 feet
Cosselin Falls Drive	Baytown Court	210 feet N of Baytown Court	210 feet
Calmont Street	Baytown Court	310 feet W of Baytown Court	310 feet

ACTION RECOMMENDED:

Accept Streets for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

ATTACHMENTS:

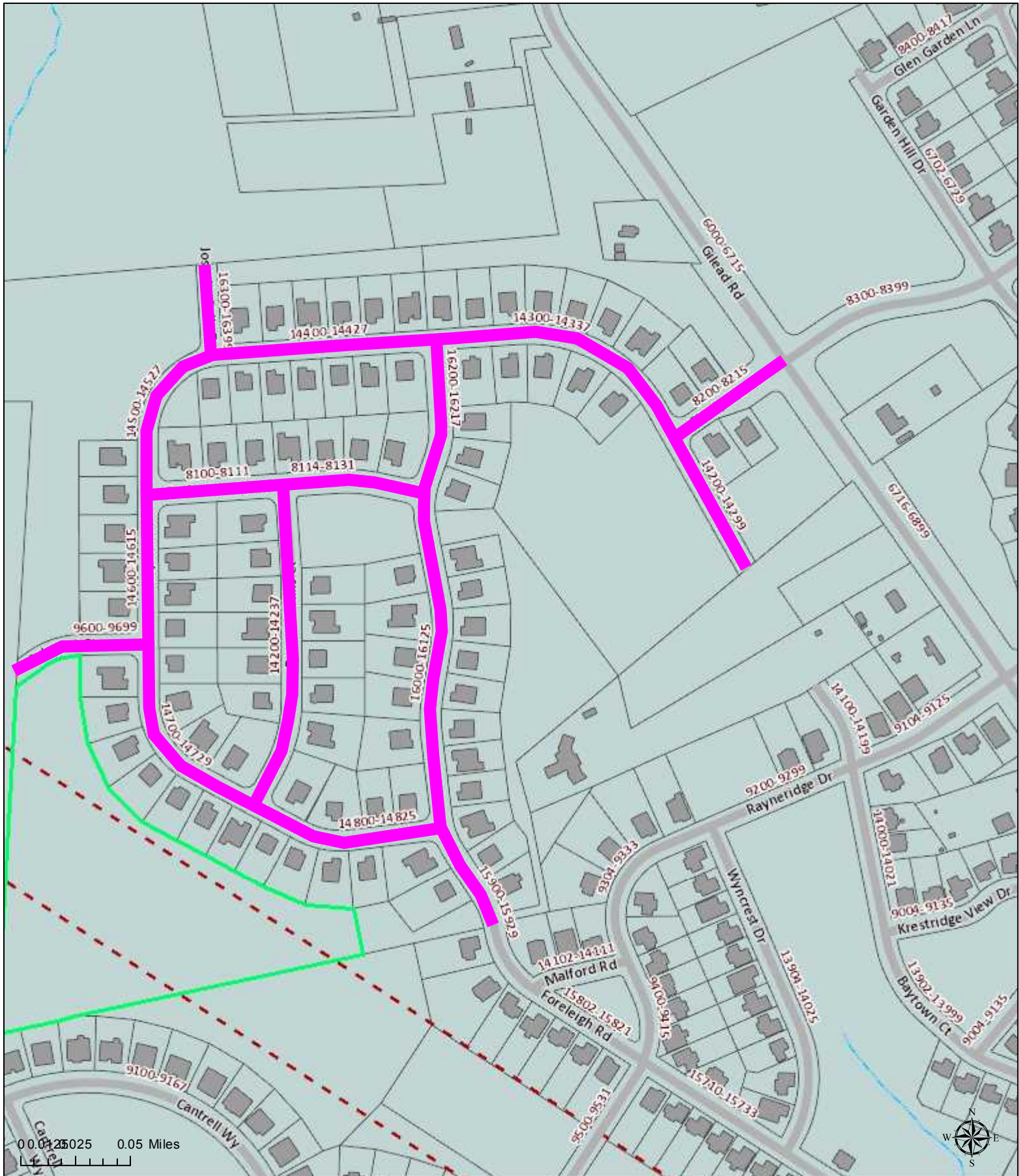
1. Lakemont Commons Phase 1
2. Lakemont Commons Phase 1 Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

Lakemont Commons

308.81 ft(0.06 miles)

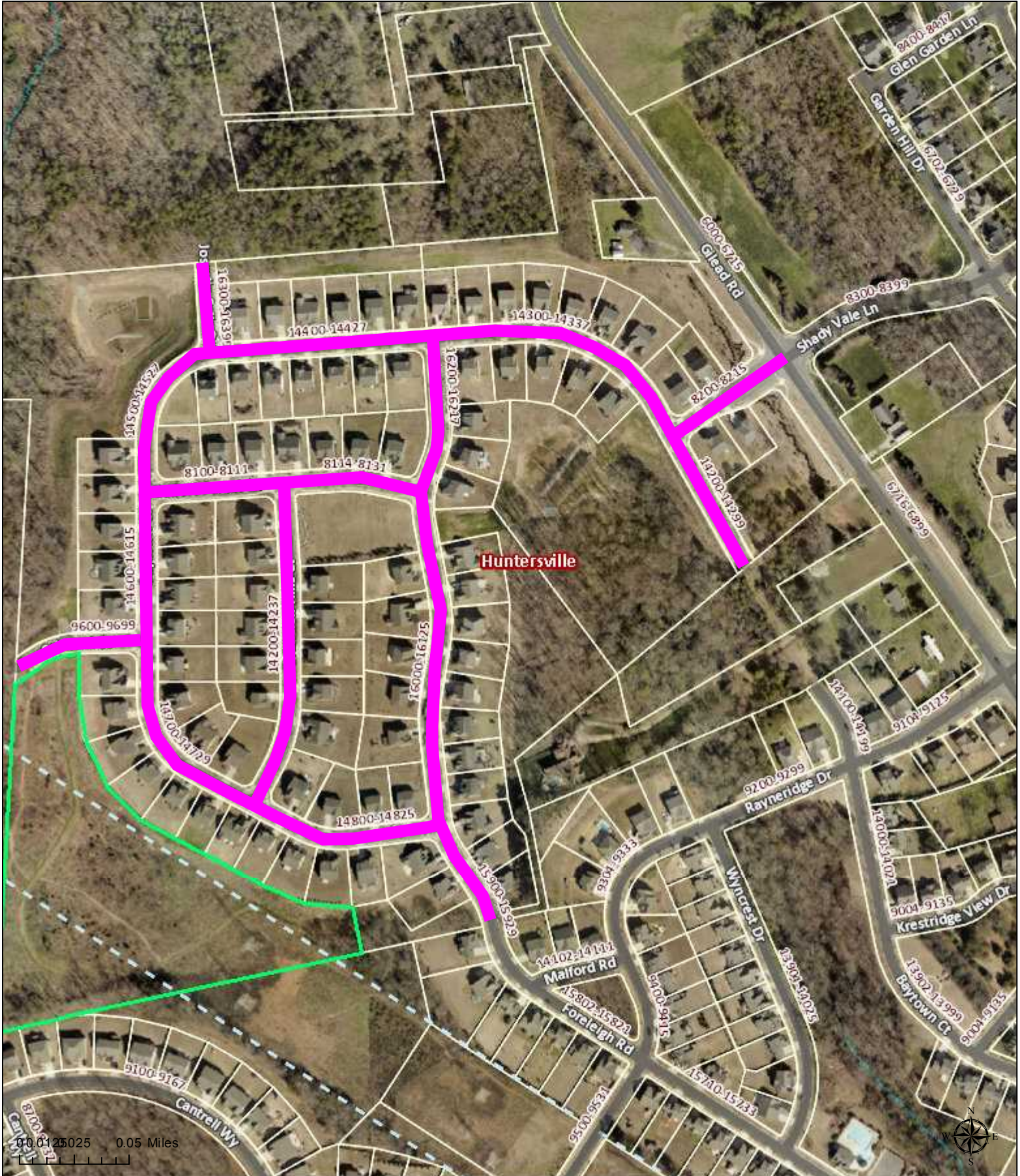
Date Printed: 1/22/2021 10:19:13 AM



Polaris 3G Map – Mecklenburg County, North Carolina

308.81 ft(0.06 miles)

Date Printed: 1/22/2021 10:30:14 AM



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**Town of Huntersville
Town Board
February 1, 2021**

To: Town Board

From: Kevin Fox, Director

Date: February 1, 2021

Subject: Accept street located in Villages of Skybrook North, Phase 4 Map 1, for Town Maintenance. *(Kevin Fox)*

EXPLAIN REQUEST:

It is recommended that the Town of Huntersville accept the street listed below for maintenance, which is located in the Villages of Skybrook North, Phase 4 Map 1.

Street Name	From	To	Approx. Length
Trailside Road	Poplar Tent Church Road	165' SW of Coffeetree Dr NW (Mecklenburg/Cabarrus County line)	565 feet

ACTION RECOMMENDED:

Accept Street for Town Maintenance

FINANCIAL IMPLICATIONS:

Powell Bill

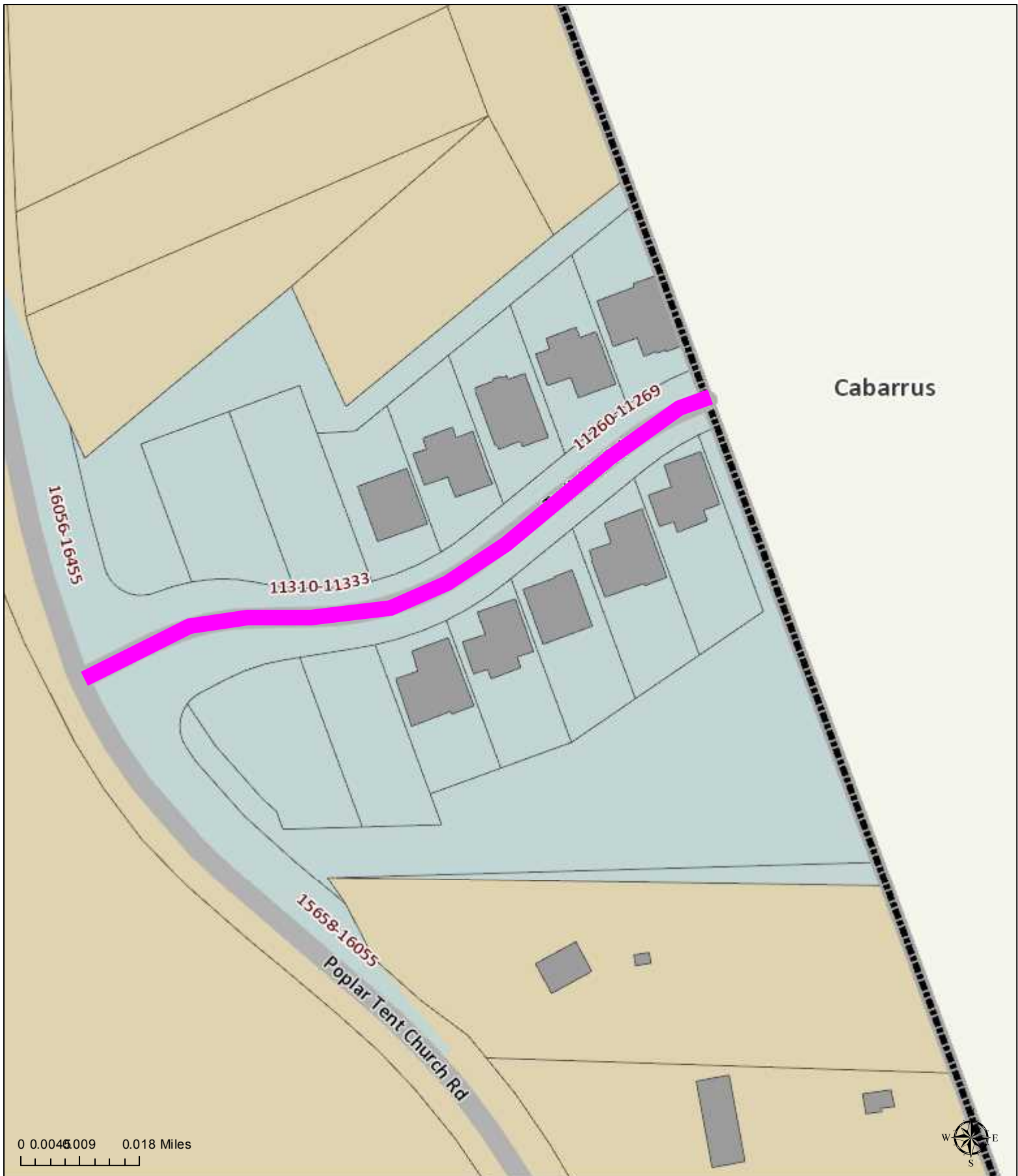
ATTACHMENTS:

1. Skybrook N Phase 4 Map 1
2. Skybrook N Phase 4 Map 1 Aerial

Polaris 3G Map – Mecklenburg County, North Carolina

Skybrook N Phase 4 Map 1

Date Printed: 12/10/2020 9:43:13 AM



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Polaris 3G Map – Mecklenburg County, North Carolina

Skybrook N Phase 4 Map 1

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