CONTRACT DOCUMENTS

The Town of Kill Devil Hills

102 Town Hall Drive

Kill Devil Hills, North Carolina

SOUTHEAST AREA

WATER IMPROVEMENTS

March 2024

Prepared by:

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SOUTHEAST AREA

WATER IMPROVEMENTS

The Town of Kill Devil Hills

March 2024

NOTICE OF BID

A. Bids for a Street, Stormwater and Water Main Improvement Project, "**Southeast Area, Water Improvements**" will be received by the Town Clerk of the Town of Kill Devil Hills, NC in the Board of Commissioners Meeting Room at 102 Town Hall Drive, until **Thursday, April 18, 2024 at 11:00 a.m.**, at which time they will be publicly opened and read aloud.

The project includes the overlay and reconstruction of pavement and asbestos cement pipe replacements. Concrete work will also include partial removal and construction of existing driveway segments as necessary, and construction or replacement of curb & gutter. Existing 6" and 8" asbestos-cement water main will be replaced with PVC pipe, including fittings, valves, fire hydrant assemblies, tie-ins of side street mains and transfer of all water services from the existing main to the new main. All areas shall include incidental clearing, pavement cuts/patch, reseeding and restoration, etc. As a general indication to prospective bidders of the size of the project, the approximate total length of pavement overlay/reconstruction is 1,940 linear feet (LF); length of water main replacement is approximately 3,160 LF, and new sidewalk is approximately 140 LF.

B. Complete Contract Documents may be obtained at the Department of Public Services, 107 Town Hall Drive, off Colington Road, or by calling (252) 480-4080. Contract Documents also may be obtained from the offices of American Engineering Associates, P. A., 830 Greenbrier Circle, Suite 110, Chesapeake, VA 23320, or by calling (757) 468-6800. A **MANDATORY** prebid meeting will be held on **Thursday, March 13, 2024 at 11:00 a.m.** in the Board of Commissioners Meeting Room noted above. Bids from bidders who have not attended the meeting will be rejected.

C. **All Contractors submitting bids shall possess a valid North Carolina Contractors License—with specialty license(s) appropriate, as determined by the Town of Kill Devil Hills, to the nature of the work—and may be required to provide evidence satisfactory to the Town, in its sole judgment, of qualifications and experience sufficient for the successful accomplishment of projects of this nature and size within the time requirements set forth in the Contract Documents.** A Certificate of General Liability Insurance (minimum $5,000,000.00) and Workers Compensation Insurance shall be attached to each bid submitted for consideration. Each bid shall be accompanied by a deposit equal to 5% of the net price bid. This deposit may consist of cash, or cashier check issued by or drawn on a Bank or Trust Company authorized to do business in the State of North Carolina, or a Bank insured by the Federal Deposit Insurance Corporation, payable to the Town of Kill Devil Hills, or a 5% Bid Bond issued by any Insurance Company authorized to do business in North Carolina. This deposit will be retained in the event of the failure of the successful bidder to execute the contract within ten (10) days after Notice of Award or to give satisfactory surety as required.

D. The successful bidder must furnish a Payment and Performance and Materialman's bond on some surety company authorized to do business in the State of North Carolina for the full amount of the contract price prior to execution of contract.

E. The bidder(s) to whom each of these Project Groups, Projects or portions thereof shall have **two-hundred twenty-one (221)** calendar days from the date of Notice to Proceed of the contract to Substantially Complete the work. Other provisions as to time of Full Completion, intermediate completion requirements, Liquidated Damages, etc. are set forth in the Contract Documents.

F. The Town of Kill Devil Hills reserves the right to reject any and all bids.

G. The purpose of this Notice of Bid is to make this project known to the contracting community; it is not one of the "Contract Documents" as enumerated in the General Conditions. In the event of any discrepancy between the provisions in this Notice of Bid and the provisions of any of the Contract Documents, the provisions of the Contract Document shall take precedence.

-- End of Notice of Bid --

INSTRUCTIONS TO BIDDERS

A. **All Contractors submitting bids shall possess a valid North Carolina Contractors License and may be required to provide evidence satisfactory to the Town of Kill Devil Hills, in its sole judgment, of qualifications and experience sufficient for the successful accomplishment of projects of this nature and size within the time requirements set forth in the Contract Documents.** A Certificate of General Liability Insurance (minimum $5,000,000.00) and Workers Compensation Insurance shall be attached to each bid submitted for consideration. Each bid shall be accompanied by a deposit equal to 5% of the net price bid. This deposit may consist of cash, or cashier check issued by or drawn on a Bank or Trust Company authorized to do business in the State of North Carolina, or a Bank insured by the Federal Deposit Insurance Corporation, payable to the Town of Kill Devil Hills, or a 5% Bid Bond issued by any Insurance Company authorized to do business in North Carolina. This deposit will be retained in the event of the failure of the successful bidder to execute the contract within ten (10) days after Notice of Award or to give satisfactory surety as required.

B. Bids for this project shall be separated and marked in the following manner:

1. A copy of the Contractor's license, Certificate of General Liability Insurance and Workers Compensation Insurance, 5% bid deposit, and verification of solicitation of minority business participation shall be placed in an envelope numbered "Envelope #1" and marked as to its contents.
2. The Bid Proposal Form, properly completed and signed, including Pages BP-1 through BP-6 inclusive, shall be placed in a separate envelope numbered "Envelope #2" and marked as to its contents.
3. The items listed above shall constitute each company's bid. Each bid shall be submitted in a sealed envelope, so marked as to indicate its contents without being opened. This envelope shall be placed in another one addressed to the Town Clerk, Town of Kill Devil Hills, P. O. Box 1719, Kill Devil Hills, North Carolina 27948.

C. This project shall be bid, contracted, and paid on a Lump Sum Basis for each project, except as otherwise provided below. The Bid Proposal Form provided as part of these Contract Documents provides for the following, for each project:

1. A space for the bidder to indicate his Lump Sum Price for the Base Bid, which shall comprise all the work except for any item(s) which may be expressly listed as an Additive Alternate, a Deductive Alternate, or Unit Price Work thereon.
2. Space for the bidder to indicate his separate Lump Sum Price for any Additive Alternate(s), which shall be full compensation for the described item(s) of work which the Owner, at his sole discretion, may elect to ADD TO the Base Bid work.
3. Space for the bidder to indicate his separate Lump Sum Price for any Deductive Alternate(s), which shall be full value for the described item(s) of work which the Owner, at his sole discretion, may elect to DEDUCT FROM the Base Bid work.
4. Space for the bidder to indicate his separate Unit Price for any item(s) of work for which the precise quantity of same cannot be accurately determined in advance, and which the Owner desires to measure and pay for on a unit price basis. A change order shall be initiated, based on the estimated quantities of such work, and a purchase order issued, before any such work is begun. Some such Unit Price Items may be included on the Bid Proposal Form with

nominal quantities, and the extension (unit price times quantity) of such Item(s) will be included the Total Bid amount which is the basis for establishing the low bid. For other Unit Price Items NOT included on the Bid Form, it is recognized that a fair unit price for a work item may be hard to establish with uncertainty as to the quantity, exact location and other circumstances. Accordingly, for each item in the Unit Price Items beginning on page BP-3, a Base Quantity is provided. The bid Unit Price for each such item **shall be the basis** for change orders, as described above, unless:

a. The quantity of the item in the change order is less than 50%, or more than 200%, of the Base Quantity, in which case a reasonable increase or decrease, respectively, in the unit price will be negotiated. The increase for quantities less than 50% of the Base Quantity is intended for small items of added work where economies of scale cannot be attained and shall not apply when the change order work for that item represents an increase in the quantity of a larger work effort being done at the same time.

b. The Engineer determines that the specific circumstances of the work of the proposed change order are significantly more or less challenging than average for the item, in which case a reasonable increase or decrease, respectively, in the unit price will be negotiated. For example, asphalt patching work will not be expected to be done at the unit price per ton for asphalt in an overlay or new pavement context.

c. The Engineer determines that the work of the proposed change order cannot reasonably be done while the crew for the type of work including such item is still mobilized at the site, which case appropriate compensation for additional mobilization will be negotiated.

5. Only those spaces provided for entry of the Base Bid, Additive and/or Deductive Alternates (if any), Unit Price items (if any), and the Schedule of Values are to be filled in. Bidders may not add in conditions, provisions, or items of their own; doing so will result in disqualification of the bidder.

D. If forwarded other than by mail, it must be delivered directly to the Office of the Town Clerk. These bids shall be received no later than **Thursday, April 18, 2024 at 11:00 a.m.** at the Board of Commissioners Meeting Room, 102 Town Hall Drive, Kill Devil Hills, NC, at which time they will be publicly opened and read. Bidders or their authorized agents are invited to be present.

E. The successful bidder must furnish a Payment and Performance and Materialman's bond on some surety company authorized to do business in the State of North Carolina for the full amount of the contract price prior to execution of project contract.

F. Attendance at the pre-bid conference (or at least one such pre-bid conference, if multiple are held), verified by an authorized representative of the bidder having entered his/her name on a sign-in sheet, is **mandatory** for participation in this project.

G. The bidder to whom this project is awarded shall have **two-hundred twenty-one (221)** calendar days from the effective date of Notice to Proceed to complete all work awarded to the state of Substantial Completion, as defined in the General Conditions. He/they shall have an additional **thirty-five (35)** days after each entire Project is determined by the Engineer to be Substantially Complete to fully complete all remaining work to bring all awarded Projects to Full Completion, as defined in the General Conditions.

Per Article 13 Paragraph F.4 of the General Conditions, relief is provided for situations where paving is not able to be completed due to Substantial Completion dates occurring in December, January, February.

H. The Town of Kill Devil Hills, in accordance with its goals adopted for participation by minority businesses, encourages minority businesses to submit bids for this construction project(s). The Town of Kill Devil Hills shall award public contracts without regard to race, religion, color, creed, national origin, sex, age, or handicapping condition, as defined by North Carolina Statutes, Section 168A-3. All Contractors submitting bids for this project(s) shall verify to The Town of Kill Devil Hills that such Contractor neither discriminates in the employment of any subcontractors nor does it discriminate in the purchase of materials or equipment for reason of race, religion, color, creed, national origin, sex, age, or handicapping condition as defined by North Carolina General Statutes, Section 168A-3. Each Contractor submitting a bid for such project(s) shall further verify that it has directly solicited and encouraged minority subcontractors and minority businesses and in the event of solicitation of bids by subcontractors, has directly solicited and encouraged participation in the bidding process by minority businesses. Verification of solicitation of minority business participation shall be included with all bid documents.

I. The final scope for the **SOUTHEAST AREA, WATER IMPROVEMENTS** for The Town of Kill Devil Hills will be subject to approval of the Board of Commissioners and, if the Bid Proposal Form provides for multiple sections or projects, or includes additive and/or deductive alternates, may include all the items on which bids are based, or any combination thereof. Unless otherwise specified, evaluation of bids to determine the low bidder will be based on the sum of all sections and all alternates; however, the Town reserves the right to evaluate using other combinations it finds to be in its best interest.

1. Therefore, individual improvements and/or whole projects may be eliminated from the scope of the work and final bid amount accepted based on the adjusted total. The Town of Kill Devil Hills reserves the right to reject any or all bids, or any combination thereof.
2. The Town specifically reserves the right to reject the bid for any bidder who, in its sole determination, lacks sufficient qualifications, experience, equipment, financial strength, and/or other resources, to complete the Project(s) in a timely manner and in accordance with the Contract Documents. Any such rejection will be based upon objective information furnished pursuant to the requirements noted in the Bid Proposal Form and to the Town's subsequent investigations of said information.
3. Throughout the remaining Contract Documents, and once an award(s) has been made, the term "the Project" shall mean the specific combination of project(s), project groups or bid packages awarded to the contractor, together with all subsequent additions and deletions to/from the work made by change order.

J. Project Schedule

1. On **Wednesday, March 6, after 11:00 a.m.**, Contract Documents are available to bidders.
2. A **MANDATORY** Pre-Bid Meeting will be held on **Wednesday, March 13 at 11:00 a.m.** in the Board of Commissioners Meeting Room, 102 Town Hall Drive, Kill Devil Hills, NC. Bids will not be accepted from firms not having attended the mandatory Pre-Bid Meeting.
3. If fewer than three prospective bidders appear at the Pre-Bid Meeting, or if the Town otherwise is concerned that there may be fewer than three bidders, the Bid Date will be delayed one week, a second Notice of Bid will be published, and a second Pre-Bid Meeting will be held on Wednesday, March 20 at 11:00 a.m. in the same Board of Commissioners Meeting Room. Firms having attended the first Pre-Bid Meeting on March 13, 2024, may, but are not required to, attend the second one on March 20.

4. On **Thursday, April 18 at 11:00 a.m.**, bids will be publicly opened and read, by the Town Engineer, at the Board of Commissioners Meeting Room, 102 Town Hall Drive, Kill Devil Hills, NC, unless delayed until **April 25, 2024 at 11:00 a.m.** to accommodate any new bidders appearing at the second (March 20, 2024) Pre-Bid.
5. If the bids are deemed acceptable by the Town of Kill Devil Hills, in its sole discretion, a Notice of Award will be issued within approximately two to three weeks after the bid opening. Otherwise, at its sole discretion, the Town may re-bid the project(s). The remainder of this schedule assumes that the original bid opening date is delayed one week as provided in the previous paragraphs.
6. On or about **Monday, May 13, 2024**, the Kill Devil Hills Board of Commissioners will consider the recommendations of the Engineer and other Town staff regarding award of a contract. The remainder of this schedule assumes that the Board approves award of the contract at that meeting.
7. On or about **Tuesday, May 14, 2024**, based on the Board's approval, the Town Manager approves the award and the Notice of Award of the contract shall be issued by the Engineer, and the Engineer shall forward the contract to the Contractor for execution.
8. On or about **Monday, May 20, 2024**, the Contractor delivers executed Contract, along with bonds and any other required items, to the Engineer for review.
9. On or about **Tuesday, May 21, 2024**, the Engineer delivers the reviewed Contract, with any corrections and/or omissions resolved, to the Town Manager for signature.
10. On or about **Thursday, May 23, 2024, tentatively at 11:00 a.m.**, a Pre-Construction Meeting will be held at the Board of Commissioners Meeting Room, 102 Town Hall Drive. On this date, letters also will be sent by the Town staff to property owners affected by the project(s).
11. On or about **Thursday, May 23, 2024**, Town Manager signs, and executed Contract is distributed to Contractor. Notice to Proceed shall be issued by the Engineer. The effective date of Notice to Proceed, and thus the first day of the Contract Time, if this schedule is maintained, will be **Monday, October 1, 2024**.
12. The Date of Substantial Completion for all work shall be **two-hundred twenty-one (221)** calendar days from the effective date of the Notice to Proceed, or **Monday, October 1, 2024**, based on the "first day" being October 1, 2024. Substantial Completion Date for this project is **Saturday, May 10, 2025.** The Date of Full Completion shall be **thirty-five (35)** calendar days after attainment of Substantial Completion, all as provided in the General Conditions. Full Completion date for this project shall be **Saturday, June 14, 2025.**

K. Liquidated damages will be assessed at a rate of **three hundred dollars ($300.00)** per calendar day for each day beyond the Date of Substantial Completion that the awarded work is not Substantially Complete, as set forth in the executed Contract Documents. In addition, liquidated damages will be assessed at a rate of **one hundred dollars ($100.00)** for each day beyond the Date of Full Completion, as set forth in the executed Contract Documents, by which the awarded work is not, in the determination of the Engineer, Fully Complete.

-- End of Instructions to Bidders --

BID PROPOSAL FORM

PROJECT and DESCRIPTION	LUMP SUM PRICE:
Base Bid Work shall include all work described in that portion of the plans for the **SOUTHEAST AREA, WATER IMPROVEMENTS.** The following description is general in nature; all work shall be performed in accordance with the Contract Documents: The project includes the overlay and reconstruction of pavement and asbestos cement pipe replacements. Concrete work will also include partial removal and construction of existing driveway segments as necessary, and construction or replacement of curb & gutter. Existing 6" and 8" asbestos-cement water main will be replaced with PVC pipe, including fittings, valves, fire hydrant assemblies, tie-ins of side street mains and transfer of all water services from the existing main to the new main. All areas shall include incidental clearing, pavement cuts/patch, reseeding and restoration, etc. As a general indication to prospective bidders of the size of the project, the approximate total length of pavement overlay/reconstruction is 1,940 linear feet (LF); length of water main replacement is approximately 3,160 LF, and new sidewalk is approximately 140 LF.	**1. $ _____ .** Base Bid (water work)
1. On Line 2 at right, noted "Based Bid (water work)", enter the bid price for all new water mains, including valves, fittings, fire hydrant assemblies, tie-ins to existing mains, water services; plugging of old water mains, cutting, trenching and patching for water items, and any and all other labor, equipment, materials and supplies for the water mains and related improvements in the Project. Also include the cost of the following items: Project bonds and mobilization, pavement overlay, traffic control, restoration and seeding. Enter the bid price for all work, except for unit price work items 4 and 5, and except for "Base Bid Neptune Sidewalk", line 2 as defined below.	**2. $ _____ .** Base Bid Neptune Sidewalk
2. On Line 2 at right, noted "Base Bid Neptune Sidewalk" enter the price for approximately 140 LF of new sidewalk on Neptune Dr.	**3. $ _____ .** **Total Base Bid**
3. On Line 3 at right, noted "Total Base Bid," enter the sum of Line 1 and Line 2. Applications for Payment shall have to be broken down to reflect Water Work and Neptune Sidewalk items so that they total up to the amounts of Lines 1 and 2, respectively.	**4. $ _____ .** Base Bid Silt Fence
4. On Line 4 at right, noted "4. Base Bid Silt Fence" at right, enter the price for **500 LF** of Silt Fence at the unit price in Item 59 of the Unit Price Items.	**5. $ _____ .** Base Bid Watering
5. On Line 5 at right, noted "4. Base Bid Watering," enter the price for **25 days** of Watering at the unit price in Item of the Unit Price Items.	**6. $ _____ .** **Total Bid**
6. On Line 6 at right noted "**Total Bid**," enter the sum of Lines 3, 4, and 5	

UNIT PRICE ITEMS (see Paragraph C.4, Instructions to Bidders)			
Item Number and Description / Base Quantity (# of Units)		**Unit Price**	per **Unit**
1) Concrete Curb & Gutter, 24" / 50 (1.5 x this price to Remove & Replace)		$ _____ .	per LF
2) Concrete Curb & Gutter, 30" / 50 (1.5 x this price to Remove & Replace)		$ _____ .	per LF
3) Concrete Curb, 6" / 50 (1.5 x this price to Remove & Replace)		$ _____ .	per LF
4) Asphalt Base Course, Type B25.0B, in place (as overlay or new pvmt) / 50		$ _____ .	per TON
5) Asphalt Intermediate Course, Type I19.0B, in place (as overlay or new pvmt) / 50		$ _____ .	per TON
6) Asphalt Surface Course, Type SF9.5A, in place (as overlay or new pvmt) / 50		$ _____ .	per TON
7) Cut out and patch designated failed or cut areas of existing pavement with 3" thick (min.) I19.0B + 3" SF9.5A,per Spot Patch Repair detail, C-502 (field-measured) /50		$ _____ .	per SY
8) Same as 7 above, except, where Engineer determines heavier section is needed, increase I19.0B to 5", installed in one lift /50		$ _____ .	per SY
9) Aggregate Base Course (ABC) Stone, in place / 50		$ _____ .	per TON
10) Clearing / 0.1		$ _____ .	per ACRE
11) Select Fill, in place / 50		$ _____ .	per CY
12) Concrete Driveway REMOVAL / 200		$ _____ .	per SF
13) Concrete Driveway REPLACEMENT – Regular / 200		$ _____ .	per SF
14) Concrete Driveway REPLACEMENT –Exposed Aggregate / 200		$ _____ .	per SF
15) Seeding & Mulching, watered and maintained until full establishment of grass		$ _____ .	per SF
Sod, Centipede or Bermuda, in place, watered and maintained until fully established, quantity per installation….	16) Base Quantity 40	$ _____ .	per SY
	17) Base Quantity 160	$ _____ .	per SY
18) Excelsior Matting, installed / 100		$ _____ .	per SY
19) Unsuitable Soil Material, Excavation, Removal and Disposal / 100		$ _____ .	per CY
20) Class "A" Rip-Rap, in place / 4		$ _____ .	per TON
21) Class "B" Rip-Rap, in place / 4		$ _____ .	per TON
22) 2" PVC Schedule 80 Water Main / 100		$ _____ .	per LF
23) 6" PVC Water Main / 100		$ _____ .	per LF
24) 8" PVC Water Main / 100		$ _____ .	per LF
25) 4" Ductile Iron Water Main (incl. adapters & reducers to 2" Sch 80 PVC) / 100		$ _____ .	per LF
26) 6" Ductile Iron Water Main / 100		$ _____ .	per LF
27) 8" Ductile Iron Water Main / 100		$ _____ .	per LF
28) Fire Hydrant Assembly (incl 6" pipe, 6" GV, tee) /2		$ _____ .	per EACH
29) 2" Ball Valve / 2		$ _____ .	per EACH
30) 6" Gate Valve / 2		$ _____ .	per EACH
31) 8" Gate Valve / 2		$ _____ .	per EACH
32) Connection to Existing 6" Water Main / 2		$ _____ .	per EACH
33) Connection to Existing 8" Water Main / 2		$ _____ .	per EACH
34) New Residential Water Service, w/sleeve on new or existing Water Line, installed / 2		$ _____ .	per EACH
Instances of lowering or raising existing Water Line or Sewer Force Main by up to 18"*, using Ductile Iron Pipe on all legs of offset except 2" shall be PVC Sch 80, including all labor, equipment, materials, patching. Base Quantity 2 for each size. *This price will be multiplied by 1.2 for offsets 18"-30"	35) 2" WM or SFM / 2	$ _____ .	per EACH
	36) 3" WM or SFM / 2	$ _____ .	per EACH
	37) 4" WM or SFM / 2	$ _____ .	per EACH
	38) 6" WM or SFM / 2	$ _____ .	per EACH
	39) 8" WM or SFM / 2	$ _____ .	per EACH
40) 12" HDPE, "N-12" culvert/storm drain, installed / 80		$ _____ .	per LF
41) 15" HDPE, "N-12" culvert/storm drain, installed / 80		$ _____ .	per LF
42) 18" HDPE, "N-12" culvert/storm drain, installed / 80		$ _____ .	per LF
43) 24" HDPE, "N-12" culvert/storm drain, installed / 80		$ _____ .	per LF
44) 30" HDPE, "N-12" culvert/storm drain, installed / 80		$ _____ .	per LF

45) 12" HDPE, "N-12" sock drain culvert/storm drain, installed / 80		$ _____.____	per LF
46) 15" HDPE, "N-12" sock drain culvert/storm drain, installed / 80		$ _____.____	per LF
47) 18" HDPE, "N-12" sock drain culvert/storm drain, installed / 80		$ _____.____	per LF
48) 24" HDPE, "N-12" sock drain culvert/storm drain, installed / 80		$ _____.____	per LF
49) 30" HDPE, "N-12" sock drain culvert/storm drain, installed / 80		$ _____.____	per LF
50) Remove and Dispose of existing 12", 15" or 18" Pipe (any type) / 80		$ _____.____	per LF
51) Repair Existing Drainage Structure , 1 or 2 connecting pipe / 2		$ _____.____	per EACH
52) Repair Existing Drainage Structure, more than 2 connecting pipes / 2		$ _____.____	per EACH
53) Removal of Existing Storm Structures / 2		$ _____.____	per EACH
54) Construct Standard Drop Inlet, with boots for all pipe connections <3' deep / 2		$ _____.____	per EACH
55) Construct Standard Drop Inlet, with boots for all pipe connections >3' deep / 2		$ _____.____	per EACH
Grade, seed, fertilize, mulch & water new roadside swale, until vegetation is fully established, average depth:	56) Less than 1' / 200	$ _____.____	per LF
	57) 1' to 2' / 200	$ _____.____	per LF
Silt Fence: Install if and where directed, per details on the Drawings, and maintain/repair /replace as required during life of project. Unit prices for Items 56 and 57 shall not be more than triple and double, respectively, of Item 58.	58) Base Quantity 75	$ _____.____	per LF
	59) Base Quantity 500	$ _____.____	per LF
	60) Base Quantity 1,200	$ _____.____	per LF
61) Watering, in full accordance with Sec. 3.13.E.1.d) of Technical Specifications / 30 NOTE: This Unit Price shall be for one day of Watering for the Southeast Area, Water Improvements		$ _____.____	per DAY

This BID, consisting of Pages BP-1 through BP-6 of the Bid Proposal Form, along with the additional items required by the Instructions to Bidders, is hereby submitted as follows:

Date of Bid _____

BIDDER'S INFORMATION:

Name of Firm: _____

License Number: _____

Business Address: _____
(Street or Post Office Box) (City/Town) (State) (Zip Code)

Telephone Number: _____
(area code) (telephone #) (fax #)

BIDDER'S SIGNATURE:

I, the undersigned, am a duly authorized representative of the firm identified above. We, the firm, hereby present our bid for the work described in, and in full accordance with, the Contract Documents, as that term is defined in the General Conditions, including any Addenda issued, the receipt of which is acknowledged below. In preparing this bid, we further acknowledge and state the following:

1. We have carefully examined and studied the site of the project(s) and all the Contract Documents.

2. We understand and agree that the Owner may award based on the Base Bid only, or any or all Alternates in any combination, or to make no award at all, as is in the Owner's interest.

3. We are fully capable of performing the work in the manner and subject to the terms and conditions described therein. We have, within the 5-year period ending with the date of this bid, successfully completed projects of similar size, nature, complexity and dollar value, and key personnel having performed such projects remain with the firm. We and/or our paving subcontractor are approved by NCDOT to furnish and place plant mix asphalt on new and existing roads and streets. Upon request of the Owner, we will furnish particulars as to such past projects, and, by our signature below, agree that the Owner shall have the sole right to review our capability and qualifications to perform the work comprising this Project and to accept or reject our bid based on said review.

4. Our properly executed Affidavit of E-Verify Compliance is attached.

Signature: _____

Signer's Information: _____
(PRINTED Name) (TITLE)

ACKNOWLEDGEMENT OF ADDENDA:

We acknowledge the receipt of addenda numbered: _____
(list the number of each ADDENDUM received)

Town of Kill Devil Hills, North Carolina
Affidavit of E-Verify Compliance

WHEREAS, North Carolina General Statute § 160A-20.1 authorizes cities and towns to contract with a private entity to carry out any public purpose that the city or town is authorized to engage in by law; and

WHEREAS, North Carolina General Statute § 143-129 prohibits cities and towns from entering into a contract with a private entity unless said entity and its subcontractors complies with the requirements of Article 2 of Chapter 64 of the General Statutes; and

WHEREAS, Article 2 of Chapter 64 of the General Statutes requires an employer that transacts business in the State of North Carolina and employs 25 or more employees in the State of North Carolina to verify the work authorization of its employees through the federal E-Verify program; and

WHEREAS, in accordance with North Carolina General Statute § 160A-20.1and as a condition of bidding on potential contracts, the Town of Kill Devil Hills, North Carolina requires contractors to comply with the E-Verify requirements of Article 2 of Chapter 64 of the North Carolina General Statutes as evidenced by submission of this Affidavit.

Now, Therefore, I, _____, (the individual attesting below), being duly authorized by and on behalf of _____ (the entity bidding on project, hereinafter "Contractor") and as a condition of bidding on _____ (the project, hereinafter "Project") with/for the Town of Kill Devil Hills, North Carolina, after first being duly sworn hereby swear or affirm as follows:

1. Contractor is a person, business entity or other organization that transacts business in the State of North Carolina and employees 25 or more employees in this State.

   (mark Yes or No)

   a. Yes _____ b. No _____

2. Contractor understands that E-Verify is the federal E-Verify 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 North Carolina General Statute § 64-25.

3. Contractor affirms that if the answer to question 1 above is "yes" then, after hiring an employee to work in the United States it shall verify the work authorization of said employee through E-Verify in accordance with North Carolina General Statute § 64-26.

4. Contractor acknowledges that a subcontractor that transacts business in the State of North Carolina and employees 25 or more employees in this State must comply with E-Verify.

5. Contractor will ensure that any subcontractor subsequently hired by Contractor will comply with E-Verify.

This _____ day of _____, 20_____.

_____
Signature of Affiant

Print or Type Name: _____

Title: _____

Company Name/Contractor: _____

State of North Carolina
County of _____

Signed and sworn to (or affirmed) before me this the
_____ day of _____, 20_____. **(Affix Official/ Notarial Seal)**

_____
Notary Public

My Commission expires: _____

GENERAL CONDITIONS

Article 1. DEFINITIONS

A. The **Contract Documents** consist of the following:

1. The Instructions to Bidders
2. The Bid Proposal Form
3. The General Conditions
4. The Technical Specifications
5. The Waterline Specifications
6. The Drawings
7. The Construction Contract, including
    a. the Performance Bond
    b. the Payment Bond
    c. the Certificate(s) of Insurance
8. Any and all bulletins, addenda, change order(s), and/or other modifications to any Contract Document(s).
9. All terms and conditions of any plan approvals, permits, etc. which have been issued for the work by higher governmental authorities, which may include some or all of the following: Public Water Supply, Erosion and Sedimentation Control, State Stormwater, CAMA, US Army Corps of Engineers and NCDOT.
10. The NCDOT Encroachment Agreement, if any portion of the Work lies within the right of way of a road or street maintained by the North Carolina Department of Transportation (NCDOT), such as US 158 (Croatan Highway), NC 12 (Virginia Dare Trail), or Ocean Bay Boulevard/Colington Road.
11. All of these items together form the Contract Documents.
12. The terms “the Specifications” or “the Specs” may be used colloquially to refer to the Contract Documents, or to all of the Contract Documents except for the Drawings. Because of the potential for confusion between the Technical Specifications and “the Specifications” meaning all the documents, the term Contract Documents shall be the preferred term.

13. Additional definitions specifically relevant to waterline work are provided in the Waterline Specifications which are an element of these Contract Documents. They shall apply to all work which is predominantly water line work, and to any incidental water system work such as offsets of existing water lines.

B. The **Owner** is the Town of Kill Devil Hills, who may also be referred to as the "Party of the Second Part."

C. The **Contractor** is any individual, partnership, firm, corporation, joint venture, or other legal entity undertaking the execution of the Project under the terms of the contract with the Town of Kill Devil Hills, North Carolina, and acting directly or through its agents, or employees. The Contractor may also be referred to as the "Party of the First Part."

D. The **Engineer** is American Engineering Associates, P. A., or such other person or firm as may be designated by the Town to act on its behalf.

E. A **Subcontractor** is one who entered into a direct contract with the Contractor and includes one who furnishes materials worked to a special design in accordance with Drawings and specifications covered by the contract but does not include one who only sells or furnishes materials not requiring work so described or detailed.

F. **Written Notice** is notice in writing delivered in person to the Contractor, or to a partner of the firm in the case of a partnership, or to a member of the contracting organization, or to an officer of the organization in the case of corporation or sent to the last known business address of the contracting organization by registered mail.

G. **Work**, as used herein as a noun, includes materials, labor, and workmanship of the appropriate contractor.

H. The **Project** is the total construction work to be performed under the Contract Documents by the Contractor.

I. **Change Order**, as used herein shall mean a written order to the Contractor subsequent to the signing of the contract authorizing a change in the contract. The change order shall be signed by the Contractor, and the Public Services Director, and approved by the Town Manager, in that order.

J. The **Contract Time** is the number of consecutive calendar days, from the date of the Notice to Proceed until the Date of Substantial Completion, as set forth in the Construction Contract agreement, during which the Contractor shall complete the Project to a state of Substantial Completion as set forth in Article 13.

K. **Date(s) of Substantial Completion** is the date by which the Project must be Substantially Complete, as provided in Article 13 herein. It shall be established by adding the Contract Time to the date of the Notice to Proceed. Modifications to the Contract Time, and thus to the Date of Substantial Completion, shall be made only as provided in Article 13. Intermediate Date(s) of Substantial Completion may be provided in the Instructions to Bidders for portion(s) of the Project.

L. **Date of Full Completion** is the date by which the Project must be Fully Complete, as provided in Article 13 herein. It shall be established by adding **forty-five (45)** calendar days, or such lesser number of days as may be set forth in the Instructions to Bidders, to the date by which the Project is required to be Substantially Complete by this Contract; provided, however

1. If the Project is deemed by the Engineer to be Substantially Complete by a date earlier than required under this Contract, the Date of Full Completion shall be computed from said earlier date by which Substantial Completion was attained.

2. If the Date of Full Completion, established as provided above, falls on a Saturday, Sunday or holiday (a day on which the Town offices are closed), it shall be moved to the following Monday, or if that Monday is a holiday, to the following Tuesday.

M. **Surety**, as used herein, shall mean the bonding company or corporate body which is bound with and for the Contractor, and which engages to be responsible for the Contractor and his acceptable performance of the work.

Article 2. INTENT AND EXECUTION OF DOCUMENTS

A. The drawings and specifications are complementary, one to the other. That which is either 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 provisions of Section A.1. of the Waterline Specifications shall first be applied. If this does not result in a clear resolution of the discrepancy, precedence shall be given to the documents in the following order: Contract Agreement, General Conditions, Technical Specifications, Waterline Specifications, large-scale detail drawings, small-scale drawings.

B. The wording of the specifications shall be interpreted in accordance with common usage of the language except that words having a commonly used technical or trade meaning shall be so interpreted in preference to other meanings.

C. The Contractor shall execute each copy of the proposal, contract, performance bond, and payment bond as follows:

1. If the documents are executed by a sole owner, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them.

2. If the documents are executed by a partnership, that fact shall be evidenced by the word "Owner" appearing after the name of the person executing them, and the authority to execute the same must be attached.

3. If the documents are executed on the part of a corporation, they shall be executed by either the president or the vice president and attested by the secretary or assistant secretary in either case, and the title of the office of such persons shall appear after their signatures. The seal of the corporation shall be impressed on each signature page of the documents.

4. If the documents are made by a joint venture, they shall be executed by each member of the joint venture in the above form for sole owner, partnership, or corporation, whichever form is applicable to each particular member, and executed by each particular member in their respective capacities.

5. All signatures shall be properly witnessed.

6. If the Contractor's license is held by a person other than an owner, partner or officer of a firm then the licensee shall also sign and be a party to the contract. The title "Licensee" shall appear under his/her signature.

7. The bonds shall be executed by an attorney-in-fact. There shall be attached to each copy of the bond a certified copy of power of attorney properly executed and dated.

8. Each copy of the bonds shall be countersigned by an authorized individual agent of the bonding company licensed to do business in North Carolina. The title "Licensed Resident Agent" shall appear after the signature.

9. The seal of the bonding company shall be impressed on each signature page of the bonds.

10. The Contractor's signature on the performance bond and the payment bond shall correspond with that on the contract.

Article 3. MATERIALS, EQUIPMENT, EMPLOYEES

A. The Contractor shall, unless otherwise specified, supply and pay for all labor, supervision, transportation, materials, tools, apparatus, lights, power, 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 Drawings, stated in the specifications, or reasonably implied therefrom, all in accordance with the Contract Documents.

B. The Owner will provide, at Owner’s expense, basic surveying stakeout services for the project, to include vertical control benchmarks, staking or marking where the right of way intersects driveways, staking all storm drainage pipes and structures, staking all beginning and ending points for curb and gutter (including radius points, where applicable. Where the work includes a roadway staking of the centerline at 50-foot intervals will be provided. Where the work includes a sidewalk, path, etc. edge or other reference line of the new work will be provided. Individual stakes will not be set at every point in roadside swales; instead, benchmarks will be provided at intervals so that a benchmark is within 300’ of every point on all swales. The Contractor’s responsibilities shall be to:

1. Protect all stakes, marks and control points which the Owner has caused to be set; any which are damaged or destroyed will be replaced at the Contractor’s expense.

2. Construct his work in accordance with the stakes and marks, transferring them accurately as required.

3. Notify Owner or Engineer IMMEDIATELY upon discovering any apparent discrepancy in the Drawings, or the stakes and marks, or between the two, before performing any work affected by the apparent discrepancy.

C. 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 acceptable 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.

D. Upon notice, the Contractor shall furnish evidence as to quality of materials.

E. Whenever products, materials or equipment are named in the specifications, the specifications shall be interpreted to mean an item of material or equipment similar to that named and which is suited for the same use and capable of performing the same function as that named.

F. The Contractor shall obtain written approval from the Owner for the use of substitute products, materials, or equipment claimed as equal to those specified. Such approvals must be obtained as soon after Notice of Award as possible and before any materials are ordered. Applications for approvals shall be made by the Contractor and not by subcontractors or material suppliers. The Contractor shall submit within twenty (20) days following Notice of Award a complete list of materials proposed for the job. When this list is approved, no further substitutions will be permitted except in unusual or extenuating circumstances. If no list is submitted, the Contractor shall supply materials specified.

G. The Owner shall be the judge of equality for proposed substitution of products, materials, or equipment.

H. If at any time during the construction and completion of the work covered by these Contract Documents, the conduct of any workman of the various crafts be adjudged a nuisance to the Owner, or if any workman be considered detrimental to the work, the Contractor shall order such parties removed immediately from the site of the Project.

Article 4. PROTECTION OF WORK, PROPERTY AND THE PUBLIC

A. The Contractor shall be responsible for the entire site of the Project and the building or construction of the same and provide all the necessary protections, as required by the Owner, and by laws or ordinances governing such conditions. The Contractor shall be responsible for any damage to the Owner's property, including the facilities within the Project area and the newly-completed work itself, or the property of others in the Project vicinity, by Contractor, Contractor's personnel, or subcontractors, and shall repair or replace such damaged property. The Contractor shall be responsible for and pay for any claims against the Owner. The Contractor shall have access to the project at all times.

B. The site of the Project is the Town-owned site and/or publicly-owned street rights of way and/or easement(s), as indicated on the Drawings. All work is to be conducted within the site of the Project as shown on the Drawings. No work or other Contractor activity, storage, etc. shall be conducted on private property, or public property outside the street right of way, except with express written permission of the property owner as provided in the Contract Documents

C. Contractor, in preparing his bid, shall have fully examined the site, determined any need for areas to stage equipment and/or store materials, and made appropriate arrangements therefor.

1. The Owner will generally allow such activities to occur within its street rights of way, where sufficient room exists for such storage and/or staging to be done without undue risk or inconvenience to the public. Any questions about the availability of an area of specific size or location shall be raised at the Pre-Bid Meeting.

2. If the Contractor determines that he needs areas above and beyond any available public lands, he shall make separate, direct arrangements in advance with the private property owner(s) involved.

    a. No separate compensation shall be provided to Contractor for the costs of acquiring, preparing, using or restoring such area(s).

    b. PRIOR TO beginning any use of any such area, Contractor shall provide to the Owner, in writing, evidence of the concurrence of any and all affected property owners. Such written evidence shall include a statement signed by the affected owner(s), or, if such arrangements are made verbally, Contractor shall send a confirming letter, by Certified Mail, with a copy to the Engineer.

    c. Unless the owner of such property used for staging and/or storage shall provide a written waiver of same, such property shall, as a precondition of the Project being declared by the Engineer to be Fully Complete, restore such property to a condition equal to or better than when the work began. Contractor shall provide "before" and "after" photographs to document his satisfactory restoration. Unless the property owner has waived restoration in writing, Contractor shall provide written confirmation from the property owner that the property has been restored in accordance with his agreement with the property owner.

D. The Contractor shall employ construction equipment of a size and weight appropriate to the requirements of the project, and not substantially larger/heavier, and shall use methods, materials and procedures designed to minimize the risk to damage of property in the Project area. Damage to existing improvements or property within and outside of the limits of the Project shall be avoided to the maximum extent practical. In order to assure compliance with this requirement, Contractor shall submit a list of the heavy equipment he proposes to use, for review and approval by the Engineer, as set forth in the Technical Specifications. Any damage to existing improvements or public or private property (including, but not limited to, existing roadway pavements) which, in the opinion of the Engineer, is caused or significantly contributed to by the Contractor's actions shall be repaired its original condition or better at no additional cost to the Owner. Additionally, in his selection of equipment and in his operation of it, Contractor shall avoid other forms of damage to public and private pavement, including but not limited to:

1. Marks or damage from the teeth of backhoe or excavator buckets.

2. Marks or damage from the tracks of tracked equipment.

3. Marks or damage from the feet of outriggers or stabilizers.

E. The Contractor shall provide cover and protect all portions and elements of the structure or other components of the Project when the work is not in progress, including non-working hours on days when work IS in progress. 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. When damage to property, including the work of the Project itself, has been caused or appears to have been caused by others who are not a party to this Contract, it shall be the Contractor's responsibility to pursue any claims against such third parties. Such damages shall have to be corrected by the Contractor, regardless of the status or success of any such claim against any other party.

F. The Contractor shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property markers and shall not move them until directed. Monuments or markers disturbed or damaged shall be replaced by a licensed land surveyor at Contractor's expense.

G. No fires of any kind will be allowed around the operations during the course of construction without special permission from the Owner.

H. The Contractor shall protect all trees, shrubs, and dunes designated to remain in the vicinity of the operations. Trees may be trimmed to remove branches or roots which interfere with construction when approved by the Owner. Do not unnecessarily cut tree roots extending into grading limits. When roots are exposed, cut them back clearly to the soil with hand pruning shears, loppers, or hand saws. Backfill immediately. Backfill around tree roots immediately after completion of construction in vicinity of the trees. Trees to be saved but were damaged during construction operations shall be replaced or pruned and treated as needed.

I. The Contractor shall barricade all walks, roads, etc., as directed by the Owner 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.

J. The Contractor shall provide all necessary safety measures for the protection of all persons on the job, including the requirements of the AGC 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, 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. At no time shall an open excavation or other hole or falling hazard remain unattended without proper warning and barricading.

K. 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.

L. The Contractor shall designate a responsible member of his organization as safety inspector, whose duties shall include accident prevention on the work project. The name of the safety inspector shall be made known to the Owner at the time the work is started.

M. 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 10(c).

N. The Contractor shall adhere to the rules, regulations, and interpretations of the Federal Highway Administration relating to Part IV, Manual on Uniform Traffic Control Devices (MUTCD) Standards and Guides for Traffic Controls for Street and Highway Construction, Maintenance, Utility, and Incident Management Operations (current edition). For any portions of the work lying within a street right of way maintained by the North Carolina Department of Transportation (NCDOT), such as US Route 158 (Croatan Highway), NC Route 12 (Virginia Dare Trail) and Ocean Bay Boulevard/Colington Road, Contractor shall comply with the provisions of the NCDOT Encroachment Agreement for the project, a copy of which shall be provided to bidders at the Pre-Bid Meeting and which shall be considered a Contract Document.

O. Except during the event of emergency, as described above, or otherwise approved in advance by the Owner, the Contractor shall confine all work to the following days and hours: Monday through Saturday (excluding the following holidays: New Year's Day, Good Friday (the Friday before Easter), Memorial Day, Independence Day, Labor Day, Thanksgiving Day and Christmas Day), 7 a.m. to 7 p.m.

1. No work (except for emergencies or other work approved in advance, as stated above) shall be done on Sunday or any of the aforementioned holidays. If any of the foregoing holidays falls on a Friday, Sunday or Monday, the Saturday of that weekend shall also be considered a holiday.

2. During the period from the Saturday of the Memorial Day weekend through the Labor Day weekend, no work shall be done on Saturday. Outside of this period, Saturday work may be prohibited if so noted on the Drawings.

3. When the Engineer or Owner grants advance approval of work on Sundays, holidays or other days, or during the evening hours from 7 p.m. until 7 a.m. the following morning, during which work is not generally allowed, as provided above, such approval shall generally be limited to circumstances when work needs to be done at times of minimal traffic, water usage, etc., such as open-cut crossings of busy streets, waterline tie-ins where service will be interrupted, etc. Contractor should not expect such approval to be granted to increase the length of his workday to allow him to catch up from being behind schedule.

Article 5. SEDIMENTATION POLLUTION CONTROL ACT OF 1973

A. Any land-disturbing activity performed by the Contractor in connection with the project shall comply with all erosion control measures set forth in the Contract Documents and any additional measures which may be required in order to ensure that the project is in full compliance with the Sedimentation Pollution Control Act of 1973, as implemented by Title 15, North Carolina Administrative Code, Chapter 4, Sedimentation Control, Subchapters 4A, 4B and 4C, as amended (15 NCAC 4A, 4B, and 4C). If Contractor elects to use property of others, or Town property with Town's advance consent, for staging of equipment and/or

materials, he shall prepare a sketch plan for Engineer's approval, which approval shall not be unreasonably delayed or withheld, showing a Temporary Construction Entrance and other erosion control measures appropriate to the property and its temporary use. Measures to control wind erosion shall be included.

B. Upon receipt of notice that a land-disturbing activity is in violation of said act, the Contractor shall be responsible for ensuring that all steps or actions necessary to bring the project in compliance with said act are promptly taken.

C. The Contractor shall be responsible for defending any legal actions instituted pursuant to NCGS 113A-64 against any party or persons described in this article.

D. To the fullest extent permitted by law, The Contractor shall indemnify and hold harmless the Owner, consultants and employees of the Owner, from and against all claims, damages, civil penalties, losses and expenses, including, but not limited to, attorney's fees, arising out of or resulting from the performance of work or failure of performance of work, provided that any such claim, damage, civil penalty, loss or expense is attributable to a violation of the Sedimentation Pollution Control Act. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any part or persons described in this article.

Article 6. INSPECTION OF THE WORK

A. It is a condition of this contract that the work shall be subject to inspection during normal working hours by the Owner, designated official representatives of the Owner, and those persons required by state law to test special work for official approval. The Contractor shall therefore provide safe access to the work at all times for such inspections.

B. All instructions to the Contractor will be made only by or through the Owner or his designated project representative. Observations made by official representatives of the Owner shall be conveyed to the Owner for review and coordination prior to issuance to the Contractor.

C. Where special inspection or testing is required by virtue of any state laws, instructions of the Owner, specifications or codes, the Contractor shall give adequate notice to the Owner of the time set for such inspection or test, if the inspection or test will be conducted by a party other than the Owner. Such special tests or inspections will be made in the presence of the Owner, or his authorized representative, and it shall be the Contractor's responsibility to serve ample notice of such tests, not less than a forty-eight (48) hour minimum.

D. All laboratory tests, as required by the Technical Specifications and/or the Waterline Specifications, shall be paid by the Contractor unless provided otherwise in the Contract Documents. The general contractor shall pay for laboratory tests to establish design mix for concrete, and for additional tests to prove compliance with Contract Documents where materials have tested deficient except when the testing laboratory did not follow the appropriate ASTM testing procedures.

E. Should any work be covered up or concealed prior to inspection and approval by the Owner, such work shall be uncovered or exposed for inspection, if so requested by the Owner in writing. Inspection of the work will be made promptly upon notice from the Contractor. All

cost involved in uncovering, repairing, replacing, recovering, and restoring to design condition, the work that has been covered or concealed will be paid by the Contractor involved.

F. If any other portion of the work has been covered which the Owner has not specifically requested to observe prior to being covered, the Owner may request to see such work, and it shall be uncovered by the Contractor. If such work is found in accordance with the Contract Documents, the cost of uncovering and replacement shall, by appropriate change order, be charged to the Owner. If such work is found not in accordance with the Contract Documents, the Contractor shall pay such costs unless it is found that this condition was caused by the Owner or a separate contractor, in which event the Owner or the separate contractor shall be responsible for the payment of such costs.

Article 7. CONSTRUCTION SUPERVISION

A. Throughout the progress of the work, the Contractor shall keep on the job a competent general superintendent satisfactory to the Owner. The general superintendent shall oversee and coordinate every aspect of the work, including all subcontract work, work of other direct prime contractors, Town forces or others performing work in or near the area of the project, along with components of work being performed by the various divisions or crews of Contractor's own forces. The superintendent shall not be changed without the consent of the Owner unless said superintendent ceases to be employed by the Contractor or ceases to be competent. The superintendent shall have authority to act on behalf of the Contractor, and instructions, directions or notices given to him shall be as binding as if given to the Contractor. However, important directions, instructions, and notices will be confirmed in writing to the Contractor as will all such items if requested by the Contractor.

B. Prior to the commencement of any Work on the Project, Contractor shall furnish the Engineer the name and at least two working telephone numbers by which the general superintendent, or a responsible, authorized officer of similar rank in the company, who may be reached before or after normal working hours, including on weekends. Engineer and/or Owner will use this contact information to reach an effective representative of Contractor in case of an after-hours situation which, in the determination of Engineer or Owner, presents a danger or problem too serious to wait until the next workday morning.

C. The Contractor shall examine and study the drawings and specifications and fully understand the project design and shall provide constant and effective supervision to the work. Should he discover any discrepancies of any sort in the drawings or specifications, he shall report them to the Owner without delay. He will not be held responsible for discrepancies in the drawings and/or specifications but shall be held responsible to report them should they become known to him.

D. The Owner may, at his sole discretion, establish a regular schedule for project meetings with the Contractor. Such jobsite meetings shall generally be bi-weekly. Depending upon the nature and schedule of the work, meetings may be held throughout the entire Contract Time or just during times when the Contractor is conducting active operations. When the Owner establishes a schedule of regular meetings, the Contractor shall make available at such jobsite meetings a person or persons of appropriate authority in his firm, and appropriately familiar with the work, to meet and discuss the work effectively with the Owner and/or the Engineer.

Article 8. SUBCONTRACTS AND SUBCONTRACTORS

A. Within fourteen (14) days after Notice of Award, the Contractor shall submit to the Owner a list giving the names and addresses of subcontractors and equipment and material suppliers he proposes to use, together with the scope of their respective parts of the work.

1. The Owner reserves the right to require information regarding the qualifications, experience, financial strength, etc. of any proposed Subcontractor, to the same extent required regarding Contractor's own qualifications, etc. as provided in the Bid Proposal Form.

2. The Owner reserves the right to disapprove any Subcontractor for cause, such as qualifications, experience financial strength, problems with past performance, etc., in the Owner's sole determination.

3. The cumulative amount of the work to be performed by all Subcontractors shall not exceed 50% of the amount of the contract awarded, as appearing in the executed Construction Contract agreement.

B. The Owner will furnish to any subcontractor, upon request, evidence regarding amounts of money paid to the Contractor on account of the subcontractor's work.

C. The Contractor is and remains fully responsible for his own acts or omissions as well as those of any subcontractor or of any employee of either. The Contractor agrees that no contractual relationship exists between the subcontractor and the Owner in regard to the contract, and that the subcontractor acts on this work as an agent or employee of the Contractor.

Article 9. CONTRACTOR AND SUBCONTRACTOR RELATIONSHIPS

A. The Contractor agrees that the term of these Contract Documents shall apply equally to each subcontractor as to the Contractor, and the Contractor agrees to take such action as may be necessary to bind each subcontractor to these terms. The Contractor further agrees to conform to the Code of Ethical Conduct as adopted by the Associated General Contractors of America, Inc., with respect to the Contractor-subcontractor relationships, and that payments to subcontractors shall be made in accordance with the provisions of NCGS 143-134.1 titled Interest on final payments due to the general contractor: payments to subcontractors.

B. The Contractor acknowledges and agrees that he is fully responsible for all aspects of the performance of his subcontractors and suppliers with regard to this Project. This responsibility includes thorough and complete command and control over subcontractors. No communication or interaction which happens to occur between any subcontractor and the Owner or Engineer shall in any negate or reduce the Contractor's sole responsibility to manage and control his subcontractors.

C. On all public construction contracts which are let by the Town of Kill Devil Hills the balance due the Contractor shall be paid in full within forty-five (45) days after the Date of Full Completion. Should final payment to the Contractor be delayed by more than 45 days, said contractor shall be paid interest, beginning on the 46th day, at the rate of one percent (1%) per month or fraction thereof unless a lower rate is agreed upon on such unpaid balance as may be due. However, if final payment is being withheld for cause, as provided in Article 22,

the 45-day provision shall not apply, nor shall interest be paid. In addition to the above final payment provisions, periodic payments due a contractor during construction shall be paid in accordance with the payment provisions of Article 21 herein or said contractor shall be paid interest on any such unpaid amount at the rate stipulated above for delayed final payments. Such interest shall begin on the date the payment is due and continue until the date on which payment is made.

D. Within seven days of receipt of each periodic or final payment, the Contractor shall pay the subcontractor based on work completed or service provided under the subcontract. Should any periodic or final payment to the subcontractor be delayed by more than seven days after receipt of periodic or final payment by the Contractor, the Contractor shall pay the subcontractor interest, beginning on the eighth day, at the rate of one percent (1%) per month or fraction thereof on such unpaid balance as may be due.

E. Except as provided in Paragraph F below, the percentage of retainage on payments made by the Contractor to the subcontractor shall not exceed the percentage of retainage on payments made by the Owner to the Contractor. Any percentage of retainage on payments made by the Contractor to the subcontractor that exceeds the percentage of retainage on payments made by the Owner to the Contractor shall be subject to interest to be paid by the Contractor to the subcontractor at the rate of one percent (1%) per month or fraction thereof.

F. Nothing in this section shall prevent the 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 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 Owner.

Article 10. CHANGES IN THE WORK

A. The Owner may have changes made in the work covered by the contract. These changes will not invalidate and will not relieve or release the Contractor from any guarantee given by him pertinent to the contract provisions. These changes will not affect the validity of the guarantee bond and will not relieve the surety or sureties of said bond. All extra work shall be executed under conditions of the original contract.

B. Except in an emergency endangering life or property, **NO CHANGE SHALL BE MADE BY THE CONTRACTOR EXCEPT UPON WRITTEN ORDER FROM THE OWNER AUTHORIZING SUCH CHANGE, AND NO CLAIM FOR ADJUSTMENTS OF THE CONTRACT PRICE SHALL BE VALID UNLESS THIS PROCEDURE IS FOLLOWED**. The procedure for initiating a Change Order shall be as follows:

1. If the proposed Change Order arises from circumstances arising in the field, Contractor shall notify Engineer of said circumstances. If the Change Order results from the Engineer's or Owner's determination to modify the scope of the work, Engineer shall notify Contractor of the nature and extent of such modification.

a. In cases where there is a need for especially fast processing of a Change Order to minimize associated costs, Contractor shall let Engineer know how quickly a decision is needed to avoid such costs of delay.

b. Contractor shall advise Engineer as to whether there are any special cost or time considerations associated with the proposed Change Order.

2. Engineer, in consultation with Owner, will determine

a. Whether the Change Order is, in fact, warranted, and

b. Whether there are sufficient funds available.

3. If the Change Order cannot be approved, Engineer will notify Contractor and provide the reasons why.

4. If the Change Order is approvable, Engineer will notify Contractor to prepare the Change Order form and will notify Owner, who will initiate a supplementary Purchase Order,

5. Contractor shall send his proposed Change Order form to Engineer for review of its content and the associated cost and time; the requested change in the contract time shall be included **even if it is zero**, and failure to note the change in contract time shall result in the Change Order request being sent back to Contractor. If Engineer finds any problem with the proposed Change Order, he shall send it back to Contractor for revision; otherwise, he shall forward it on to the Owner with his recommendation for approval.

6. Owner shall approve the Change Order in writing before any work covered by it is initiated.

7. Additional work required by a *bona fide* emergency, as determined by the Engineer, shall be covered by Paragraph D below.

8. Change order requests shall be consecutively and uniquely numbered. For example, if Change Order Request 6 is considered and rejected, and Change Order 6 is not issued, the next change order request will be numbered 7.

9. If a change in the contract time is approved which would move the required date of Substantial Completion onto a Sunday or holiday, as defined herein, an additional day or days shall be granted, so as to extend the required date to the next Monday or non-holiday date.

C. In determining the values of changes, either additive or deductive, contractors are restricted to the use of the following methods:

1. Where the extra work involved is covered by unit prices quoted in the proposal, the value of the change shall be computed by application of unit prices based on quantities, estimated or actual as agreed of the items involved, subject to the provisions of subparagraph C.4 of the Instructions to Bidders.

2. Where there is work to be deleted or withdrawn from the contract, the contracting parties shall negotiate and agree upon the equitable value of the change prior to issuance of the change order, and the change order shall stipulate the corresponding lump sum adjustment to the contract price.

D. In the event of emergency endangering life or property, the Contractor may be directed to proceed on a time and materials basis whereupon the Contractor shall proceed and keep accurately on such form as may be required, a correct account of costs together with all proper invoices, payrolls, and supporting data. Upon completion of the work the change order will be prepared as outlined under either Method "C.1" or Method "C.2" or both.

E. Under methods C.1, no additional allowances shall be made for overhead and profit. Under methods C.2 in paragraph C above, the allowances for overhead and profits combined shall include no more than 10%.

F. The term "net cost" as used herein shall mean the difference between all proper cost additions and deductions. The "cost" as used herein may include all items of material and labor, rental value of power tools and equipment, and such items of cost as worker's compensation insurance, unemployment insurance, special insurance, Social Security, and old age benefit, fringe benefits, bond adjustments, and sales tax. Overtime and extra pay for holidays and weekends may be cost items only to the extent approved by the Owner.

G. The following items shall be considered as overhead: insurance other than mentioned above, supervision, superintendents, timekeepers, clerks, expediters, watchmen, small tools, incidental job burdens and general office expense and all other items not included in "cost" as above defined.

H. Should concealed conditions be encountered in the performance of the work below grade or should concealed or unknown conditions in an existing structure be at variance with the conditions indicated by the Contract Documents, the contract sum and time for completion may be equitably adjusted by change order upon claim by either party made within thirty (30) days after the condition has been identified. The cost of such change shall be arrived at by one of the foregoing methods.

ALL CHANGE ORDERS SHALL BE SUPPORTED BY A BREAKDOWN SHOWING METHOD OF ARRIVING AT NET COST AS DEFINED ABOVE.

I. At the time of signing a change order, the Contractor shall be required to certify as follows:

"I certify that my bonding company will be notified forthwith that my contract has been changed by the amount of this change order, and that a copy of the approved change order will be mailed upon receipt by me to my surety."

J. A change order, when issued, shall be full compensation, or credit, for the extra 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.

K. It is acceptable for the Contractor to enter into separate contract or other arrangements to perform work (Private Work) directly for any private property owner within the Project area, subject to the following provisions and limitations:

1. Such Private Work shall be entirely a matter between the Contractor and the private owners. Contractor agrees to indemnify and save harmless the Owner and all its employees and agents for any claim of any sort arising from Private Work.

2. To the extent fair and appropriate to both parties, Owner encourages Contractor to perform Private Work at prices not higher than the Unit Prices set forth in this Contract.

3. Private Work shall not be subject to the time limits of this Contract, nor shall it be a basis for an extension of the Contract Time.

4. Contractor may trade Private Work as compensation for the use of private property for staging or storage activities as described in Article 4 of these General Conditions. Such arrangements are entirely between Contractor and the affected property owner.

5. Contractor may, but is under no obligation to, make minor increases in the extent of work (Courtesy Work), beyond that as shown on the Drawings, at the request of a private owner and without compensation from said owner. In such cases, all costs and risks of such Courtesy Work shall be borne by the Contractor. If Contractor receives such requests which he feels to be excessive or inappropriate, he shall promptly report same to the Owner or Engineer.

Article 11. CLAIMS FOR EXTRA COST

A. Should the Contractor consider that as a result of any instructions given in any form by the Owner, he is entitled to extra cost above that stated in the contract, he shall give written notice thereof to the Owner within seven (7) days without delay, and shall not proceed with the work affected, until further advised, except in emergency involving the safety of life or property, which condition is covered in Article 10(D) and Article 4(H). No claims for extra compensation will be considered unless the claim is so made. The Owner shall render a written decision within seven (7) days of receipt of claim.

B. **THE CONTRACTOR SHALL NOT ACT ON INSTRUCTIONS RECEIVED BY HIM FROM PERSONS OTHER THAN THE OWNER, AND ANY CLAIMS FOR EXTRA COMPENSATION OR EXTENSION OF TIME ON ACCOUNT OF SUCH INSTRUCTION WILL NOT BE HONORED.** The Owner will not be responsible for misunderstandings claimed by the Contractor of verbal instructions which have not been confirmed in writing, and in no case shall instructions be interpreted as permitting a departure from the Contract Documents unless such instruction is confirmed in writing and supported by a properly authorized change order. For purposes of this section, the Town of Kill Devil Hills, Owner, appoints the Public Services Director to be its spokesperson.

Article 12. UNCORRECTED FAULTY WORK

Should the correction of faulty or damaged work be considered inadvisable or inexpedient by the Owner, the Owner shall be reimbursed by the Contractor. A change order will be issued to reflect a reduction in the contract sum. Such reduction may, in the Owner's sole discretion, represent the full value of the faulty or damaged work or some percentage thereof, with the percentage reflecting the degree of reduced value of the faulty or damaged work.

Article 13. TIME OF COMPLETION, DELAYS, EXTENSION OF TIME

A. The Contract Time, as defined herein, is stated in the Instructions to Bidders.

B. The Project shall be determined by the Engineer to be Substantially Complete when all elements of the work, as described by the Drawings and other Contract Documents, have been completed to a degree where they are ready for utilization by the public in a manner which is safe and convenient, and not likely to expose any person or property, or the work itself, to risk of damage or injury.

1. When the Engineer determines the Project to be Substantially Complete, he shall notify the Owner and Contractor in writing, establish the Date of Substantial Completion.

2. The following are examples of work which is not acceptable, but which may be resolved after the Date of Substantial Completion:

    a. Cracks or blemishes in concrete or asphalt work, provided the number and extent of same are limited and they do not pose a safety hazard.

    b. Areas which require cleanup, such as removal of debris, rocks, etc. in lawn or swale areas, provided the number and extent of same are limited and they do not pose a safety hazard.

    c. Minor discrepancies in the fine-grading of lawn or swale areas, provided the number and extent of same are limited and they do not pose a safety hazard.

    d. Areas where vegetation has not yet become established. However, the Project shall not be found Substantially Complete unless all disturbed areas have been graded, seeded, and mulched.

3. All work which must be surveyed by the Engineer for the preparation of As-Built Drawings (storm drainage structures and pipes, replaced driveways, curb and gutter, final pavement surface, etc.) must be completed before the Engineer shall declare the Project to be Substantially Complete.

    a. Generally, Engineer shall initiate such surveying as soon as all such work is complete, but not later than five (5) days after the Date of Substantial Completion.

    b. In the event that such surveying reveals that a substantial percentage of the work is outside a reasonable construction tolerance from the location and grade set forth on the Drawings, the Engineer may revoke his determination of Substantial Completion.

C. The Contractor shall commence work to be performed under this agreement on a date to be specified in a written order from the Owner (the Notice to Proceed) and shall Substantially Complete all work hereunder within the Contract Time and by the Date of Substantial Completion, as defined herein.

D. The Project shall be determined by the Engineer to be Fully Complete when all elements of the work, as described by the Drawings and other Contract Documents, have been fully completed.

1. When the Engineer determines the Project to be Fully Complete, he shall notify the Owner and Contractor in writing, establish the Date of Full Completion, which shall be the Date of Acceptance.

2. The only known discrepancies or incomplete work which may remain after the Date of Full Completion and Acceptance is the establishment of vegetation, if the Owner so elects as provided in Article 14 below and in the Technical Specifications.

E. The Contractor shall have **forty-five (45)** calendar days after the Date of Substantial Completion to bring the Project to a state of Full Completion as described herein, unless a shorter time is set forth in the Instructions to Bidders.

F. If the Contractor is delayed at any time in the progress of his work by any act or negligence of the Owner, by any separate contractor employed by the Owner, or by any employee of either; by changes ordered in the work by labor disputes at the project site; by abnormal weather conditions not reasonably anticipated for the locality where the work is performed; by unavoidable casualties; by any causes beyond the Contractor's control; or by any other causes which the Owner determines may justify the delay, then the Contract Time may be extended by change order for the time which the Owner may determine is reasonable.

1. Time extensions will not be granted for rain, wind, snow or other natural phenomena of normal intensity and frequency.

2. Owner and Contractor agree that the determination of "normal" intensity and frequency of weather events can be a difficult process. In lieu of any attempt to determine same through records or opinions of some weather agency, Owner and Contractor, by their having signed the Construction Contract agreement for this Project mutually agree that a number of calendar days equal to 10% of the Contract Time shall represent the number of days during which work is not feasible (Bad Weather Days) during "normal conditions". Only Bad Weather Days **in excess of said 10%** shall be a valid basis for claim for extension of the Contract Time. The following procedures shall be followed:

a. Once each week during the Contract Time, Contractor shall notify Engineer of any Bad Weather Day(s) occurring during the previous week. Should Contractor fail to so notify Engineer within fourteen (14) calendar days after any such Bad Weather Day, Engineer may, in his sole discretion, refuse to accept such day. Owner and Contractor agree that this shall be an ongoing process, while events are fresh in everyone's minds, and the determination of Bad Weather Days will not be done retrospectively at the end of the project.

b. Events giving rise to a Bad Weather Day shall include, but not necessarily be limited to, the following:

(1) Rain during working hours totaling more than 0.25" or lasting more than 2 hours.

(2) Excessively wet jobsite conditions due to heavy rain the previous day or night.

(3) Other extreme and dangerous weather, such as heat 100° F or above, nearby lightning, etc.

(4) Temperatures too cold for proper conduct of paving, concrete or other operations. The use of blankets on freshly-placed driveways in anticipation of freezing temperatures will not be approved.

(a) Recognizing the scheduling challenges associated with asphalt paving operations, when a Required Date of Substantial Completion for the Project, and/or portion thereof, falls in December, January or February, Engineer may grant extension days of the Contract Time when, in his determination, temperatures are too cold for proper paving in accordance with NCDOT specifications. In such case,

(b) Such extensions may be granted to provide up to three (3) opportunities for Contractor to complete a paving operation.

(c) For purposes of this provision, a "paving operation" shall mean the placement of one or more pavement courses on a single day, or consecutive workdays, by a single mobilization of a paving crew. If the Project includes multiple, separate components with separate mobilizations, each shall be addressed separately.

(d) Such extensions may be granted without regard to whether other Bad Weather Days have met the 10% threshold.

(e) If, after any such extension for paving, there is any other work remaining to be done which is a prerequisite to attaining Substantial Completion, such as backing up pavement edges, fine-grading, seeding and sodding, such work must be accomplished in not more than 10 days after completion of such paving; failure to do so will result in assessment of Liquidated Damages at the rate prescribed not attaining Substantial Completion. The days allowed for Full Completion shall begin immediately upon Substantial Completion.

(5) Flooding or other effects of tropical storm, hurricane, or nor'easter.

(6) Any weather or other event giving rise to a declaration of a State of Emergency by the Town Manager or other public official in the jurisdiction of the jobsite.

(7) No Bad Weather Day will be approved during which the Contractor actually carries out production operations for at least 6 hours.

c. Engineer shall keep a running record of Bad Weather Days, on an individual day basis, noting the type of condition which prevented work. If Engineer disagrees with Contractor that conditions on a given day were unsuitable for work, he shall promptly advise Contractor of such opinion.

d. After the cumulative number of Bad Weather Days exceeds the said 10% of the Contract Time, each excess day (except as provided below) shall be the basis of a claim for one day's extension of the Contract Time.

e. A similar procedure shall be employed for the **forty-five (45)** days, or other amount of time set forth in the Instructions to Bidders, allowed for taking the Project from Substantial Completion to Full Completion. Ten percent of such days are hereby agreed to be "normal conditions" for such period, and only Bad Weather Days in excess of said 10% shall be a basis for additional days to be granted for Full Completion.

f. Bad Weather Day conditions occurring on a Sunday or Holiday, as defined herein, shall be counted toward the 10%, since the base Contract Time includes Sundays and Holidays.

Article 14. FINAL INSPECTION AND ACCEPTANCE

A. When the Contractor believes the Project is Substantially Complete, he shall so notify the Engineer, who shall schedule a final inspection at a time and date acceptable to the Owner, and contractor(s).

B. At the final inspection, the Engineer shall, if job conditions warrant, record a list of items that are found to be incomplete or not in accordance with the Contract Documents. At the conclusion of the final inspection, the Engineer shall make one of the following determinations, in writing:

1. That the project is Fully Complete and accepted, and if so, that date shall be recorded and shall become the Date of Acceptance as described below.

2. That the Project is Substantially Complete, but that a list of discrepancies (punch list) must be resolved before the Project is Fully Complete. All punch list items must be completed within forty-five (45) calendar days after the Date of Substantial Completion; however, if the Owner elects to accept the project with the full establishment of vegetative cover incomplete, as provided for in Section 3.13, and especially subparagraph 3.13.E.2, of the Technical Specifications, the establishment of a healthy stand of grass (or other vegetative cover, as applicable) need not be completed within said forty-five (45) days. Nor shall this paragraph be construed in any way to limit the time for which Contractor must continue watering, reseeding, etc. until full establishment of cover is achieved.

3. That the project is not Substantially Complete and a date for another final inspection will be established.

C. When the Contractor believes the Project is Fully Complete, and all punch list items have been properly resolved, he shall so notify the Engineer, who shall schedule an inspection to

confirm same. If said inspection reveals additional items to be resolved, another punch list shall be prepared, and the process repeated until all items are resolved. When the Engineer finds that all discrepancies and issues have been satisfactorily resolved, he shall notify the Owner and Contractor that the Project is Fully Complete, thus establishing the Date of Full Completion, which shall also be the Date of Acceptance. The **Date of Acceptance** will establish the following:

1. The beginning of guarantees and warranties period.

2. The date on which the Contractor's insurance coverage for public liability, property damage and builder's risk may be terminated.

3. The termination date of utility cost to the Contractor.

Article 15. CORRECTION OF WORK BEFORE FINAL PAYMENT

A. Any work, materials, fabricated items or other parts of the work which have been condemned or declared not in accordance with the contract by the Owner shall be promptly removed from the work site by the Contractor and shall be immediately replaced by new work in accordance with the contract at no additional cost to the Owner. Work or property of other contractors or the Owner, damaged or destroyed by virtue of such faulty work, shall be made good at the expense of the Contractor whose work is faulty.

B. Correction of condemned work described above shall commence within five (5) calendar days after receipt of notice from the Owner and shall make satisfactory progress until completed.

C. Should the Contractor fail to proceed with the required corrections, then the Owner may complete the work in accordance with the provisions of Article 17.

Article 16. CORRECTION OF WORK AFTER FINAL PAYMENT

See **Article 24, Performance Bond and Payment Bond**, and **Article 30, Guarantee**. Neither the final certificate, final payment, occupancy of the premises by the Owner, nor any provision of the contract, nor any other act or instrument of the Owner, nor the Owner, shall relieve the Contractor from responsibility for negligence, or faulty material or workmanship, or failure to comply with the drawings and specifications. He shall correct or make good any defects due thereto and repair any damage resulting therefrom which may appear during the guarantee period following final acceptance of the work except as stated otherwise under Article 30, Guarantee. The Owner will report any defects as they may appear to the Contractor and establish a time limit for completion of corrections by the Contractor. The Owner will be the judge as to the responsibility for correction of defects.

Article 17. OWNER'S RIGHT TO DO WORK

If, during the progress of the work or during the period of guarantee, the Contractor fails to prosecute the work properly or to perform any provision of the contract, the Owner, after fifteen (15) days' written notice sent by certified mail, return receipt requested, to the Contractor from the Owner, may perform or have performed that portion of the work. The cost of the work may be deducted from any amounts due or to become due to the Contractor, such action and cost of

same having been first approved by the Owner. Should the cost of such action of the Owner exceed the amount due or to become due The Contractor, then the Contractor or his surety, or both, shall be liable for and shall pay to the Owner the amount of said excess.

Article 18. ANNULMENT OF CONTRACT

A. If the Contractor fails to begin and continuously pursue the work under the contract within the time specified, or fails to perform the work with sufficient workmen and equipment or with sufficient materials to ensure the prompt completion of said work, or shall perform the work unsuitably, or shall discontinue the prosecution of the work, or if the Contractor shall become insolvent or be declared bankrupt or commit any act of bankruptcy or insolvency, or allow any final judgment to stand against him unsatisfied for a period of forty-eight (48) hours, or shall make an assignment for the benefit of creditors, or for any other cause whatsoever shall not carry on the work in an acceptable manner, any such failing behavior or combination thereof being referred to as the Delay, Neglect or Default, the Owner shall give notice in writing to the Contractor and his surety of such delay, neglect or default, specifying the same, and if the Contractor within a period of fifteen (15) days after such notice shall not proceed in accordance therewith, then the Owner shall, upon written certificate from the Owner of the fact of such Delay, Neglect or Default, and the Contractor's failure to comply with such notice, have full power and authority, without violating the contract, to take the prosecution of the work out of the hands of said contractor, to appropriate or use any or all contract materials and equipment on the grounds as may be suitable and acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof or use such other methods as in his opinion shall be required for the completion of said contract in an acceptable manner.

    1. The Engineer, in consultation with the Owner, may deem that Delay, Neglect or Default has occurred if more than 25% of the Contract Time elapses without the Contractor having begun concerted production work on the Project, and continued such production work without substantial interruption other than as due to Bad Weather Days as defined herein.

    2. Even if Contractor, upon receipt of notice by Owner as described above or on his own volition without such notice having been issued, begins and continues active production work AFTER said Delay, Neglect or Default is deemed by Owner to have occurred, Owner, in considering any subsequent claim for extension of Contract Time due to Bad Weather Days, reserves the right not to count toward the 10% Bad Weather Days allowance for “normal conditions” any such Bad Weather Days which may have occurred during the period of such Delay Neglect or Default.

B. All costs and charges incurred by the Owner, together with the costs of completing the work under contract, shall be deducted from any monies due or which may become due said contractor. In case the expense so incurred by the Owner shall be less than the sum which would have been payable under the contract, if it had been completed by said contractor, then the said contractor shall be entitled to receive the difference, but in case such expense shall exceed the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of said excess.

Article 19. OWNER'S AND CONTRACTOR'S RIGHT TO STOP WORK OR TERMINATE THE CONTRACT

A. Should the work be stopped by order of a court having jurisdiction, or by order of any other public authority for a period of three months, due to cause beyond the fault or control of the Contractor or the Owner, and written notice of the same be sent by certified mail, return receipt requested, the parties may suspend operations on the work or terminate the contract. If the Owner should fail or refuse to make payment on account of a certificate issued by the Public Services Director within thirty (30) days after receipt of same, then the Contractor, after fifteen (15) days written notice sent by certified mail, return receipt requested, to the Owner, and the Owner may suspend operations on the work or terminate the contract.

B. The Owner shall be liable to the Contractor for the cost of all materials delivered and work performed on this contract plus 20 percent overhead and profit and shall make such payment until the above-described notice is received by either party. The Owner shall be the judge as to the correctness of such payment.

Article 20. REQUEST FOR PAYMENT

A. Not later than the fifth day of the month, the Contractor shall submit to the Owner, through the Engineer if the Owner so directs, a request for payment for work done during the previous month. The request shall be in a form acceptable to the Owner, but shall show substantially the value of work done and materials delivered to the site during the period since the last payment, and shall sum up the financial status of the contract with the following information:

1. Total of contract including change orders;
2. Value of work completed to date;
3. Less five percent (5%) retainage; provided, however, that retainage shall not be withheld after the Project reaches 50% complete IF the Contractor's work is satisfactory and he is on schedule, and provided further that the Owner may withhold funds sufficient to complete or correct defects in the work.
4. Less previous payments;
5. Current amount due.

B. The Contractor, upon request, shall substantiate the request with invoices of vouchers or payrolls or other evidence.

C. The Contractor shall include a Sales Tax Report, which shall be a tabulation of State and County sales tax paid on materials and work incorporated into the project. If no such sales tax was paid in a certain month, a Sales Tax Report marked "NONE" shall be provided.

D. The Contractor shall include progress as-built drawings that have been marked up to show the work completed during the previous month. Red-line markups of the Drawings are acceptable provided that they include enough horizontal and vertical data to revise the Drawings and located the completed work. Digital or paper copies of the drawings are acceptable. Failure by the Contractor to submit these progress as-built drawings will delay processing of request for payment until the progress as-built drawings have been submitted to the Owner.

E. If requested by the Owner, the Contractor's payment requests shall be broken down by Owner's funding categories, in a manner acceptable to the Owner.

F. Prior to submitting the first request, the Contractor shall prepare for the Owner a schedule (or schedules, if multiple separate payment requests are required for separate parts or components of the work) showing a breakdown of the contract price into values of the various items of the work, so arranged as to facilitate payments to subcontractors in accordance with Article 9, Contractor and Subcontractor Relationships.

G. Request for extension of time shall be made in writing within twenty (20) days following cause of delay. In case of continuing cause for delay, only one claim is necessary.

H. The Contractor shall notify his surety in writing of extension of time granted.

Article 21. CERTIFICATE OF PAYMENT AND FINAL PAYMENT

A. Within five (5) days from receipt of a complete request for payment from the Contractor, the Engineer shall issue and forward to the Owner a certificate for payment. This certificate shall indicate a recommendation that the Owner pay (1) the amount requested by the Contractor or (2) such other amount as the Engineer shall recommend. If the amount recommend for payment differs from that requested, the reasons for such recommendation shall be stated in writing to the Contractor.

B. Payment by the Owner to the Contractor, other than final payment, shall be due and payable by the 28th day of the month following the month for which payment is requested. Engineer. However, this due date shall be extended by fifteen (15) days if request is received later than the 5th day of the month as provided in Article 20, or if Engineer notifies Owner and Contractor that he requires additional time to review Contractor's request for payment due to questions or problems with it.

C. No certificate issued or payment made shall constitute an acceptance of the work or any part thereof. The making and acceptance of final payment shall constitute a waiver of all claims by the Owner except:

    1. Claims arising from unsettled liens or claims against the Contractor.

    2. Faulty work or materials appearing after final payment.

    3. Failure of the Contractor to perform the work in accordance with drawings and specifications, such failure appearing after payment.

D. The making and acceptance of final payment shall constitute a waiver of all claims by the Contractor except those claims previously made and remaining unsettled.

E. The Owner will not authorize final payment until the work under contract has been certified by the Engineer.

F. Final certificate of payment shall be accompanied by the following:

    1. Warranties and guarantees required by the contract.

2. Affidavit by Contractor of payment to material suppliers and subcontractors.

3. Certificates of state agencies required by state law.

4. Certificate of compliance by Engineer.

5. Consent of surety to final payment.

Article 22. PAYMENTS WITHHELD

A. 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 Owner.

3. To provide for sufficient contract balance to cover liquidated damages that will be assessed. Liquidated damages so assessed shall not constitute a "change order," and shall be noted on the Contractor's certificate for payment as "Withheld for Liquidated Damages: $_____.00."

B. The Owner may authorize the withholding of payment for the following reasons:

1. Claims filed against the Contractor or evidence that a claim will be filed.

2. Evidence that subcontractors have not been paid.

C. 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 NCGS 143-134.1.

Article 23. MINIMUM INSURANCE REQUIREMENTS

The work under this contract shall not commence until the Contractor has obtained all required insurance and verifying certificates of insurance have been approved in writing by the Owner. These certificates shall contain a provision that coverages afforded under the policies will not be cancelled, reduced in amount or coverages eliminated until at least thirty (30) days after mailing written notice, by certified mail, return receipt requested, to the insured and the Owner of such alteration or cancellation. If the project is funded in whole or part by federal moneys, higher limits may be set forth in the Special Provisions, which shall take precedence.

A. Worker's Compensation and Employer's Liability

The Contractor shall provide and maintain, during the life of the contract, worker's compensation insurance, as required by law, as well as employer's liability coverage, with minimum limits of $100,000.

B. General Liability and Property Damage

1. The Contractor shall provide and maintain, during the life of the contract 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 Contractor or by any subcontractor, or by anyone directly or indirectly employed by either of them.

   The amount of the insurance required is determined by the following:

   a. Worker's Compensation - $100,000 regardless of project size (this is the State Statute limit)

   b. General Liability – our insurance company would prefer that we have vendors match the Town limit of $5,000,000 – but they will accept the tiered limits below because they understand the Town has a small vendor pool due to location:

      - Projects under $10,000 – require $1,000,000
      - Projects $10,000 to $100,000 – require $2,500,000
      - Projects over $100,000 – Require $5,000,000

   Certificates of Insurance must list the Town of Kill Devil Hills as the "Certificate Holder". Certificates must be originals mailed to the Finance Department, included in bid packages, faxed from the insurance company to the Finance Department at 252-480-4074, or emailed to nickens@kdhnc.com

2. 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. Property Insurance

The Contractor shall purchase and maintain property insurance during the life of this contract, upon the entire work at the site to the full insurable value thereof. This insurance shall include the interests of the Owner, the Contractor, and subcontractors in the work and shall insure against the perils of fire, extended coverage, and vandalism and malicious mischief. If the Owner is damaged by failure of the Contractor to purchase or maintain such insurance, then the Contractor shall bear all reasonable costs properly attributable thereto; the Contractor shall effect and maintain similar property insurance on portions of the work stored off the site when request for payment per articles so includes such portions.

D. Deductible

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

E. Other Insurance

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

F. Proof of Carriage

The Contractor shall furnish the Owner with satisfactory proof of carriage of the insurance required before written approval is granted by the Owner.

Article 24. PERFORMANCE BOND AND PAYMENT BOND

A. The Contractor shall furnish a performance bond and payment bond executed by a surety company authorized to do business in North Carolina. The bonds shall be in the full contract amount. Bonds shall be bound with these specifications.

B. All bonds shall be countersigned by an authorized agent of the bonding company who is licensed to do business in North Carolina.

C. The Contractor shall comply with all provisions and requirements of NCGS §44.1 relating to the form and content of performance and payment bonds, provision of copies of said bonds and "contractor's project statements" to subcontractors and suppliers, etc., and shall insure that Contractor's subcontractors require same of all lower-tier subcontractors and suppliers.

Article 25. CONTRACTOR'S AFFIDAVIT

The final payment of retained amount due the Contractor on account of the contract shall not become due until the Contractor has furnished to the Owner an affidavit signed, sworn, and notarized to the effect that all payments for materials, services or subcontracted work in connection with his contract have been satisfied, and that no claims or liens exist against the Contractor in connection with this contract. In the event that the Contractor cannot obtain similar affidavits from subcontractors to protect the Contractor and the Owner from possible liens or claims against the subcontractor, the Contractor shall state in his affidavit that no claims or liens exist against any subcontractor to the best of his (the Contractor's) knowledge, and if any appear afterward, the Contractor shall indemnify the Owner from said claims or liens.

Article 26. ASSIGNMENTS

The Contractor shall not assign any portion of this contract nor subcontract in its entirety. Except as may be required under terms of the performance bond or payment bond, no funds or sums of money due or become due the Contractor under the contract may be assigned.

Article 27. USE OF PREMISES

A. The Contractor shall confine his apparatus, the storage of materials, and the operations of his workmen to limits indicated by law, ordinances, permits, or directions of the designer and shall not exceed those established limits in his operations.

B. The Contractor shall not load or permit any part of the project to be loaded with a weight that will endanger its safety or be likely to cause damage to public or private property.

C. The Contractor shall enforce the Owner's instructions regarding signs, advertisements, fires, and smoking.

Article 28. UTILITIES, STRUCTURES, SIGNS

A. The Contractor shall provide toilet facilities and adequate sanitary arrangements on site. These facilities will be available to all subcontractors on the job and shall be kept in a neat and sanitary condition at all times. Chemical toilets are acceptable.

B. The Contractor will erect one sign on the project if required. The sign shall be of sound construction, and shall be neatly lettered with black letters on white background. The sign shall bear the name of the project, and the names of contractors on the project, and the name of the Owner and consultants. Directional signs may be erected on the Owner's property subject to approval of the Owner with respect to size, style, and location of such directional signs. Such signs may bear the name of the Contractor and a directional symbol. No other signs will be permitted except by permission of the Owner.

Article 29. CLEANING UP

The Contractor shall keep the project and surrounding area reasonably free from rubbish, trash, food and drink containers, etc. at all times, and shall remove debris from the site from time to time or when directed to do so by the Owner.

Article 30. GUARANTEE

The Contractor(s) shall guarantee the materials and workmanship against defect due to faulty materials or faulty workmanship or negligence for a period of twelve (12) months, except as otherwise provided below, following the Date of Acceptance of the work. Where items of equipment or material carry a manufacturer's warranty for any period in excess of twelve (12) months, then the manufacturer's warranty shall apply for that particular piece of equipment or material. The Contractor shall replace such defective materials, equipment, or workmanship without cost to the Owner within the stipulated guarantee period. Where an extended warranty period is provided for as an ADDitive alternate in the Bid Proposal Form, and if the Town awards the contract including the ADDitive alternate for extended warranty, the “twelve (12) months” indicated above shall be extended to the length of the said extended warranty.

For any portion of the Work which is an extension or modification to the town’s Water Distribution system, including but not limited to water mains, valves, fire hydrants, fittings, water services, casing pipes, etc., an additional twelve (12) months guarantee period shall apply, for a total warranty period of twenty-four (24) months from the Date of Acceptance. This provision for 24 months’ guarantee on any Water work shall apply regardless of the percentage of the overall Project represented by such Water work.

Article 31. CODES AND STANDARDS

Wherever reference is given to codes, standard specifications or other data published by regulating agencies including but not limited to national electrical codes, North Carolina state

building codes, federal specifications, ASTM specifications, and various institute specifications, it shall be understood that such reference is to the latest edition including addenda published prior to the date of the Contract Documents.

Article 32. INDEMNIFICATION

To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, the agents, consultants and employees of the Owner from and against all claims, damages, losses and expenses, including, but not limited to, attorney's fees, arising out of or resulting from the performance or failure of performance of the work, provided that any such claim, damage, loss or expense (1) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom, and (2) is caused in whole or in part by any negligent act or omission of the Contractor, the Contractor's subcontractor, or the agents of either the Contractor or the Contractor's subcontractor. Such obligation shall not be construed to negate, abridge or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this article.

Article 33. EQUAL OPPORTUNITY CLAUSE

The non-discrimination clause contained in Section 202 (Federal) Executive Order 11246, as amended by Executive Order 11375, relative to equal employment opportunity for all persons without regard to race, color, religion, sex or national origin, and the implementing rules and regulations prescribed by the secretary of Labor, are incorporated herein.

Article 34. EMPLOYMENT OF THE HANDICAPPED

The Contractor agrees not to discriminate against any employee or applicant for employment because of physical or mental handicap in regard to any position for which the employee or applicant is qualified. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified handicapped individuals without discrimination based upon their physical or mental handicap in all employment practices.

Article 35. MINORITY BID PARTICIPATION

The Town of Kill Devil Hills, in accordance with its goals adopted for participation by minority businesses, encourages minority businesses to submit bids for this construction project. The Town of Kill Devil Hills shall award public contracts without regard to race, religion, color, creed, national origin, sex, age, or handicapping condition as defined by North Carolina General Statutes 143. All contractors submitting bids for this project shall verify to the Town of Kill Devil Hills that such contractor does not discriminate in the employment of any subcontractors nor does it discriminate in the purchase of materials or equipment for reason of race, religion, color, creed, national origin, sex, age or handicapping condition as defined by North Carolina General Statutes 143. Each contractor submitting a bid for such project shall further verify that they have directly solicited and encouraged participation by minority subcontractors and minority businesses, and in the event of solicitation of bids by subcontractors, has directly solicited and encouraged participation in the bidding process by minority businesses.

-- End of General Conditions --

TECHNICAL SPECIFICATIONS

Part 1 - Description

Section 1.01 - General

A. Summary:

1. The Work covered by these Contract Documents consists of furnishing all labor, equipment, and materials and of performing all operations in connection with the excavating, filling, backfilling, grading, paving, finish, and cleanup as required for the completion of the Work in accordance with the terms and conditions set forth in the Contract Documents.

2. All Work performed under this Section shall be governed by the Contract Documents, as they are defined and enumerated herein.

3. Additions to and/or modifications of the Town's Water Distribution System shall be governed by the "WATERLINE SPECIFICATIONS" which follow these "TECHNICAL SPECIFICATIONS."

B. Required Submittals:

1. Construction Schedule:

a) The Contractor shall submit a project schedule that delineates the proposed construction schedule including all major tasks and their anticipated completion for each right-of-way improvement. This schedule shall be submitted to the Town at the preconstruction meeting for review and approval prior to the initiation of the Work. The Work schedule may, from time to time, be amended so long as it does not exceed the total time for the completion of the Work or represent a substantial deviation as defined below. Extension to the total time of the completion of the Work shall be in accordance with the General Conditions as specified in Article 13. Substantial deviation from the schedule may be a basis, the Owner's sole determination, to declare that a Delay, Neglect or Default, as defined in Article 18 of the General Conditions, has occurred. In the absence of mitigating factors, such as abnormal weather conditions, a substantial deviation shall mean any work element on the schedule falling behind by more than 15% of the total Contract Time.

b) The Contractor shall provide weekly schedule updates. These shall be submitted no later than noon on the preceding Friday. The weekly schedules shall include tasks, anticipated roadway closures, surveying needs and any other information as may be determined necessary.

c) As required by Article 4, Paragraph B of the General Conditions, the Contractor shall submit a list of the heavy equipment he proposes to use for the project to the Engineer for his review and approval, which approval will not be unreasonably withheld. This information shall include the make, model, total gross weight and

other information as the Engineer may require to determine whether the weight and ground pressure of the equipment is likely to cause harm to existing pavement in the area of the Work.

2. Testing Results:

   The Contractor shall submit original testing results as specified in the construction specifications. The results shall be forwarded to the Town within 24 hours of receipt. Copies of the test results shall be forwarded to the Engineer for approval.

C. Availability of Lands:

Rights-of-way, permanent easements, and temporary construction easements are shown on the Drawings or described in the General Conditions. Lands not shown or described but required for construction shall be the Contractor's responsibility.

D. Notice to Utility Companies:

Utility companies shall be notified by Contractor, in writing, prior to construction and given a proposed schedule of progress. Copies of all letters of notification shall be furnished to the Owner. The Contractor shall protect all existing utilities. He shall assist and cooperate with the utility companies in locating and exposing existing facilities.

E. Responsibility Regarding Existing Utilities and Structures:

1. The existence and location of underground utilities or structures, whether indicated on the Drawings or not, are not guaranteed and shall be investigated and verified in the field by the Contractor before starting Work. Excavation in the vicinity of existing structures and utilities shall be carefully done by hand.

2. The Contractor shall be held responsible for any damage to, and maintenance for and protection of existing utilities and structures.

3. The Contractor is responsible for notifying the proper authorities to have any underground utilities, except waterlines, relocated to avoid conflicts with roadway and drainage improvements. In the event that the owner or operator of any such underground utility is unresponsive to the Contractor’s efforts to coordinate such relocation or adjustment, Contractor shall promptly notify the Engineer. Engineer and Owner shall then assist in requiring the timely relocation/adjustment of such utility.

4. Where existing utilities can be dealt with by bracing, shoring, temporarily holding poles, hand-digging underground cables and setting them to the side of the trench, slight adjustments to lines and structures, etc., such measures shall be taken as necessary to accomplish the Work and without separate compensation to the Contractor. Any such methods and measures shall be approved in advance by the owning utility and the Engineer.

F. Notice of Roadway Closures:

In the event that a roadway must be closed to perform the required right-of-way improvements, the Contractor shall notify the Town Police and Fire Departments and Dare Central Emergency Services at least 72 hours prior to the closing of the roadway. The Contractor shall maintain some form of vehicular access, for emergency access purposes, to every building during construction.

G. Erosion and Sediment Control Plan:

1. All earthwork shall comply with the provisions for the Soil Erosion and Sedimentation Control Design Manual as approved by the NCDENR, Division of Environmental Management, Land Quality Section.

2. The Contractor shall plan, install, and maintain his sediment and erosion control measures to balance the requirement to prevent erosion and sediment deposition with the need to reduce the risk of flood damage to public and private property in the vicinity of the work. For example, care shall be taken not to fully obstruct with filter cloth or other protective measures an inlet to a storm drainage system in cases where a low-lying, flood-prone adjacent property would have significantly increased probability of flooding damage. In any such situation where the Contractor is uncertain as to which consideration should take priority, he shall ask the Town for a written determination.

H. References:

The following industry standards are hereby referenced:

a) American Concrete Institute (318. 522.1 & 530) PERVIOUS CONCRETE

b) North Carolina Department of Transportation (NCDOT) Standard Specifications for Roads and Structures (SSRS) and Roadway Standard Drawings (RSD), latest edition as of date of bid in both cases.

Part 2 - Products

Section 2.01 - General

A. Summary:

This section includes definitions of materials associated with the execution of the Work.

B. Crushed Stone:

Unless stated otherwise, crushed stone shall conform to ASTM C-33 with gradation number 67.

C. Aggregate Base Course (ABC):

ABC shall meet Division 10 of NC DOT SSRS. Crushed Concrete is not allowed.

D. Bituminous Bases and Pavements:

Bituminous bases and pavement shall meet Division 6 & 10 of NC DOT SSRS. The terms "black base" and "HB" or "Type HB" shall mean Asphalt Concrete Base Course, Type B25.0B; the term "binder" or "binder course" shall refer to Asphalt Concrete Intermediate Course, Type I19.0B; and the term "surface" or "surface course" shall mean "Asphalt Concrete Surface Course, Type SF9.5A," all as set forth in NC DOT SSRS. These designations shall take precedence over any reference to older asphalt concrete mix designations which may be found on the Drawings and/or in the Town Standards.

E. Reclaimed Asphalt Materials:

Asphalt pavement milled or removed from the project limits may be used in combination with aggregate base materials when pre-approval by the Town. The reclaimed material shall be processed so that all material is six inches (6") or smaller with a minimum of seventy percent (70%) passing a two-inch (2") sieve and a maximum of ten percent (10%) passing a number 200 sieve.

F. Geotextiles

1. Pavement Overlay Fabric:

Fabric placed under asphalt mixtures to provide waterproofing and delay/reduce reflective cracking shall be capable of withstanding installation stresses and shall not be damaged by temperatures common to asphalt mixtures. The fabric shall have the following properties:

Property	Value	Test Method
Grab strength, dry, minimum average value in either principal direction	90 lbs. (400 N)	Iowa 913
Elongation, dry, minimum average value in either principal direction	20%	Iowa 913
Grab Strength after 400°F (204°C) for 3 hr.* minimum average value in either principal direction	75 lbs. (335 N)	Iowa 913
*Applies only when asphalt temperatures exceeding 300°F (149°C) are anticipated.		

The asphalt absorption shall be sufficient to produce a good bond between the overlay and the overlaid surface when a tack coat of 0.20 gallon to 0.25 gallon of asphalt binder per square yard is used. Fabrics such as fiberglass, which do not lend themselves to testing by some of the previously specified methods, may be approved by the Engineer.

G. Concrete:

1. Hydraulic Cement Concrete: Shall meet the requirements of Division 10, NC DOT SSRS (Class A: 3,000 psi)

2. Flowable Fill: Shall meet the requirements of Division 3, Section 340, NC DOT SSRS, except that the Engineer may waive any requirements for mix design submittal and testing for quantities smaller than 50 cubic yards on any project.

3. Pervious Concrete: Shall be constructed in accordance with the latest version of ACI 522.1, *Specification for Pervious Concrete*. Void ratio shall be not less than 15%.

H. Drainage pipes:

1. Culverts and other pipes beneath paved surfaces shall have smooth interior wall and shall include gasketed joints and meet one of the following:

a) Pressure Class Poly (Vinyl Chloride), or PVC, Pipe conforming to ANSI/AWWA C900, with a minimum DR of 18 and a minimum pressure class of 150 psi, and having push-on type joints having bells made as an integral part of the pipe conforming to ASTM D3139. All materials and methods shall conform to Divisions 10 and 15 of NC DOT SSRS except as otherwise noted herein or on the Drawings. In applying said Divisions here and elsewhere in these specifications, their context shall be adjusted appropriately for the fact that this material, typically used in water and sewer utility settings, is being used for storm drainage purposes.

b) Corrugated PVC Sewer Pipe with Smooth Interior, and fittings, conforming to ASTM F949-06 and F794-03 (e.g., Contech A-2000), with watertight joints. Installation shall conform to the requirements of ASTM Practice D2321 and those of the manufacturer; in the case of conflict the stricter shall govern.

c) Ductile Iron Pipe conforming to ANSI/AWWA C110/A21.51, with push-on joints conforming to ANSI/AWWA C111/A21.11. All materials and methods shall conform to Divisions 10 and 15 of NC DOT SSRS except as otherwise noted herein or on the Drawings. In applying said Divisions here and elsewhere in these specifications, their context shall be adjusted appropriately for the fact that this material, typically used in water and sewer utility settings, is being used for storm drainage purposes.

d) Corrugated High Density Polyethylene (HDPE) pipe, and fittings, conforming to ASTM F2306 and AASHTO M294. All materials and methods shall conform to Divisions 3 and 10 (and especially the requirement that the supplier be a participant in the NCDOT HDPE Pipe Quality Control/Quality (QC/QA) Assurance Program) of NC DOT SSRS except as otherwise noted herein or on the Drawings. All pipe shall have smooth inner wall. Pipe shall be one of the following, as noted on the Drawings:

1) Solid wall (not perforated) pipe shall be ADS N-12 WT IB by ADS, Inc. or approved equal, and shall be used when any portion of a section of pipe is under roadway pavement and at other locations where noted on the

Drawings. Callouts for such pipe will be, for example, "12" HDPE N-12 @ 0.1%". Such pipe of 12" or greater diameters shall have a reinforced bell with a polymer composite band, and shall be capable of passing testing for watertightness in accordance with ASTM F2487.

2) Perforated pipe shall be ADS N-12 ST IB by ADS, Inc. or approved equal, and shall be used when no portion of a section of pipe is under roadway pavement, and shall be perforated per AASHTO standards, at the factory, and shall be encased in drainage filter fabric, said configuration being commonly known as "sock drain." Callouts for such pipe will be, for example, "15" HDPE N-12 SOCK DRAIN @ 0.05%".

e) Corrugated High Performance Polypropylene Pipe shall be "HP Storm" by ADS, Inc. or approved equal. Pipe shall have a smooth interior and annular exterior corrugations and shall meet ASTM F2881 or AASHTO M330. Pipe shall be joined using a bell & spigot joint meeting the requirements of ASTM F2881 or AASHTO M330. The joint shall be watertight according to the requirements of ASTM D3212. Gaskets shall meet the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.

f) Reinforced Concrete Pipe (RCP) shall be Class III, except where a stronger class is noted on the drawings and shall meet ASTM C76. Joints shall be sealed with a Town-approved mastic sealant and "diapered" with a full circumferential wrap of non-woven filter fabric extending at least 12" either side of the joint.

2. Except where otherwise noted herein or on the Drawings, transitions between pipe materials are not permitted except at drainage structures. Cut ends of the same size HDPE pipe shall be joined with a gasketed coupling of that size. Pipes of different type shall be joined with a "MarMac" coupling specifically made for the size(s) and types involved.

3. Corrugated HDPE pipe shall include anti-flotation holes, except for "sock drain" as noted above.

I. Drainage Structures:

1. Meeting Sections 846 and 840 NC DOT SSRS

2. Precast boxes shall be fitted with flexible rubber boots at all inlets and outlet.

3. Special Design Low-Head Drop Inlet and/or other special drainage structures shall be as indicated on the Drawings.

J. Backfill Material:

1. General: Backfill, as referred to in these Technical Specifications, is that material placed above the initial and intermediate backfill as specified in applicable divisions for the installation of roadway, pipe, and appurtenances.

2. Material: Backfill material shall consist of loam, sand, or gravel which is free of cinders, ashes, refuse, vegetable or organic material, frozen soil, or stones more than 2 inches in their greatest dimension. Where excavated material does not provide sufficient quantity of material as described herein to complete the backfill, such additional material as may be required shall be furnished by the Contractor.

K. Warm Season Grasses:

SPECIES	Pounds of Seed per 1,000 sf	Optimum Time for Seeding
Centipede Grass	2 - 3	March - May
Bahia Grass (exclude when directed by Engineer)	2 - 3	March - July
Weeping Love Grass	2	March - July
Common Bermuda Stolongs	1 bushel	April - July
Common Bermuda (hulled)	2 - 3	April - July

Contractor shall provide a certification that the correct seed mix, at the required application rate, has been applied.

L. Cool Season Grasses:

SPECIES	Pounds of Seed per 1,000 sf	Optimum Time for Seeding
Italian Rye Grass	1 - 2	September - December
Tall Fescue	5 - 7	September - November
American Beach Grass	Sprig 1,000 plants per 2,500 sf	November - February
Common Bermuda (unhulled)	2 - 3	January - March

Contractor shall provide a certification that the correct seed mix, at the required application rate, has been applied.

M. Fertilizers:

Fertilizer shall be used if necessary to establish vegetation. Fertilizers shall be a 10-10-10 mix.

Part 3 - Execution

Section 3.01 - General

A. Prior Investigation:

Prior to general excavation, the Contractor shall make an investigation to the extent necessary to determine the location of existing underground utilities, structures, or conflicts. In cases where the presence and location of such utilities is so critical that an adjustment to the design may be required, and in all cases involving jack/boring of casings 8" or larger, such investigations shall include test pitting to positively locate and identify conflicting utilities,

with surveyed locations and elevations, performed and the results furnished to the Engineer not later than 30 calendar days before the start of any jack/boring or other critical operation.

B. Protection of Existing Utilities:

Existing utilities, structures and fencing shall be protected during the construction period and, if damaged or removed by the Contractor in his operations, shall be repaired or replaced by him at no additional cost to the Town. All valve boxes, manholes and other existing appurtenances shall be raised or lowered by the Contractor as required to match the proposed finished grades as illustrated on the Drawings.

C. Access to Property:

Bridging (*i.e.*, aggregate material, steel plate(s) or similar measures) shall be provided to maintain vehicular driveway access to public or private premises. Bridging shall be considered as part of excavation and will not be paid for as an extra. Sand or soil alone shall not be considered acceptable bridging. Driveway access shall not be blocked longer than the actual duration of pipe-laying or other operations which cannot be feasibly accomplished without blocking such access, except with the concurrence of the affected property owner(s).

D. Horizontal and Vertical Alignment:

Where detailed horizontal and vertical alignment is not given on the Drawings, the Contractor shall study the required horizontal and vertical alignment in relation to the existing roadway and pipes. Pavement widening, wedging, and leveling may be required to achieve final elevations, widths and grades as illustrated on the Drawings. All pavement overlays shall be feathered down at a rate of 1/4" per foot to match existing pavement elevations, except where noted on the drawings as requiring a more gradual transition.

E. Removal/Reclamation of Existing Asphalt Pavement:

Equipment shall include a self-propelled unit capable of removing the existing bituminous pavement depth and width. Reclaimed asphalt shall be stored at a storage area specified by the Town.

F. Topsoil Removal:

In cultivated areas, lawns and public improved areas, topsoil shall be stripped to minimum depth of four inches, stockpiled as directed, and care taken in so doing to avoid mixing of subsoil and topsoil. Topsoil shall be kept free from trash, brush and other debris, and shall only be handled when dry.

G. Construction Tolerances:

Work shall be constructed and installed to the lines and grades indicated on the plans, unless permission is granted by the Engineer for a deviation, with the tolerances set forth in the NC DOT SSRS. The following additional tolerance standards shall apply, and shall take precedence where they differ from those set forth in NC DOT SSRS:

Dimension or Parameter	Allowable Deviation from Plan Dimension Minus	Plus
Roadway pavement width	Overall Average: 0.00' Not more than 10% of road: 0.10'	0.50'*
Roadway pavement cross slope	0.5%*	0.5%*
Roadway pavement elevation	0.10'*	0.20'*
Sidewalk, path or trail width, cross slope, and elevation.	Same as for roadway. Additionally, Americans with Disabilities Act (ADA) maximum slope standards shall not be exceeded.	
Concrete or asphalt pavement component thickness	½", except that greater deviation may be allowed if another layer is thicker and, in Engineer's determination, compensates	No limit *
Length or horizontal alignment of pipe and horizontal location of drainage structures.	1', but must connect to structures as indicated	1'
Rim and invert elevations of storm drainage pipes and structures	0.10' for rims, 0.20' for inverts	0.10'
Driveway flowline elevations	0.04'**	0.04'**
Other driveway elevations	0.10'**	0.10'**
Concrete driveway thickness	½"	No limit *

* Provided, however, that a plus deviation shall not be deemed allowable if it causes an adjacent or other dimension or standard to violate a construction tolerance standard.

** Provided, however, that a deviation shall not be deemed allowable if it results, in the Engineer's determination, in either a flat or adverse (more than ¼" ponding) flowline slope, or in a reduction in the height of the backslope (elevation difference from the flowline to the right of way line) of more than 0.05' from that indicated on the Drawings, or, in the case of a driveway component steeper than 8% by design, an increase in the slope of that component of more than 1%.

Section 3.02 - Definitions (For use in these Technical Specifications):

A. **Foundation**: the material placed between the bottom of pipe, appurtenance, or related structure, or their bedding, and the top surface of stable, undisturbed earth. Material may be flowable concrete fill, crushed stone or select backfill as shown on the Drawings or as specified.

B. **Undercut**: the distance between the bottom of pipe, appurtenance, or related structure and top of stable, undisturbed earth.

1. Undercut Up to 12 Inches: fill with approved embedment material placed in layers not exceeding 6 inches, compacted to at least 95% maximum dry density as determined by AASHTO T-99, Method A.

2. Undercut More Than 12 Inches: fill entire undercut with crushed stone (as described in this Section) placed as above.

Section 3.03 - Trenching

A. Summary:

1. The Contractor shall perform all excavation described of whatever substance encountered to dimensions and depths shown on the Drawings or as specified herein. Material suitable for backfill shall be stockpiled near the site. Rock or other material unsuitable for backfill shall be removed from the Work area and disposed by the Contractor.

2. The Contractor shall keep excavation as close to pipe laying operations as possible during the prosecution of the Work. The Owner or his Engineer reserves the right to stop the excavation at any time, when, in his opinion, the excavation is opened too far in advance of the pipe laying. In developed or improved areas, trenches shall not be left open overnight.

B. Dewatering:

The Contractor shall prevent the accumulation of water in trench excavation and shall remove, by well-point system and/or by other means satisfactory to the owner or his Engineer, any water or other liquid waste which accumulates in the excavation. The Contractor shall provide the proper equipment to remove the water and other liquids from the excavation and its adjacent area. The Contractor shall prevent damage of any sort to public or private property and shall not cause undue nuisance to the public. Low-noise equipment shall be used so that a noise level not higher than 55dBA results at the property line of any property used for residential, lodging, worship or other uses which, in the Engineer's determination, are noise-sensitive by nature, or at any location where the pump is operated after sunset and before dawn. The low noise characteristics of such equipment shall be subject to the approval of the Town and the Engineer. All water removed from the excavation site shall be piped to a storm drainage system or to a natural drainage area nearest to the excavation. The routing of discharge pipe and the location and configuration of discharge points shall be reviewed and approved by the Town and the Engineer before dewatering at a given location commences. This shall include placing and securing the end of the discharge hose in a manner that prevents erosion, flooding or other damage. Discharge onto private property without express written permission is prohibited. Discharge to a roadside area or other location where no swale, ditch or other defined drainage system exists is prohibited. The Contractor shall make his own investigations to determine whether or not dewatering is required, and, if so, the nature, extent, configuration, duration, etc. Dewatering shall be considered incidental to the pipe or structure work for which it is needed, shall not be separately compensated, and shall not be a basis for any claim for additional cost or time.

C. Sheeting and Shoring:

The Contractor shall furnish and place all necessary bracing, sheeting, or shoring necessary to construct and protect the excavation, existing utilities, structures of all types, and as necessary for the safety of the employees. All sheeting shall be removed by the Contractor during backfilling operations unless directed otherwise by the Owner or his Engineer.

D. Trench Dimensions:

1. Maximum Width: For general pipe laying, the maximum width of trench measured at the top of the pipe shall be the actual pipe outside diameter plus twenty-four inches. Where this dimension is exceeded, additional bedding or backfill requirements may be imposed by the Engineer. Such additional Work as may be required shall be performed by or installed by the Contractor at no additional cost to the Owner.

2. For installation of appurtenances, the trench shall be widened only to the extent necessary for proper installation.

3. Depth: The trench shall be excavated to a depth that will insure a minimum cover of twelve inches (12") for the installed pipe as measured from the top of the pipe barrel to the ground surface at the centerline of the trench unless otherwise shown on the Drawings or directed. This requirement is to establish a minimum depth only.

4. Excavations shall be made to the grades and/or depths shown on the Drawings or to such grade as may be required by the following paragraphs.

Section 3.04 - Unstable Subgrade

A. General:

1. In the event that the existing material encountered is considered by Engineer to be unstable or otherwise unsuitable to serve as foundation, an adequate foundation, approved by Engineer, shall be provided by Contractor and paid for as Extra Work.

2. When ordered in writing by Engineer, unstable or unsuitable material shall be removed and either disposed of or stabilized and replaced in a manner satisfactory to Engineer. When so directed, material disposed of shall be replaced with approved backfill material placed in layers not exceeding 6 inches, compacted to at least 95% maximum dry density as determined by AASHTO T-99, Method A. Measurement for payment shall be made in accordance with the contract unit prices.

3. When ordered in writing by Engineer, replacement material shall be suitable backfill, flowable concrete fill, or crushed stone placed as described above. Payment for this material, so ordered, shall be made in accordance with the contract unit prices.

4. The Contractor's particular attention is called to the fact that no payment shall be made for replacing excess, unauthorized excavation beyond the limits shown in the Drawings or used to correct conditions which have resulted from the Contractor's improper practices or negligence, or from Work during wet weather or other wet trench conditions resulting from the Contractor's choice of working area or weather conditions. The

Contractor will be paid for stabilizing subgrade or other efforts to provide a satisfactory foundation only when it can be shown that unstable or unsuitable subgrade conditions existed prior to excavation and when the Owner or his Engineer determines that a payment authorization is justified by pre-existing, natural ground conditions.

Section 3.05 - Base Material

A. Crushed Stone:

Placement - Unless otherwise specified, this material shall be placed and consolidated, if necessary, to achieve maximum density in place.

B. Reclaimed Asphalt:

Placement - Unless otherwise specified, this material shall be placed at a maximum depth of three inches (3"), and then overlaid with a minimum five-inch (5") depth of stone to achieve a total thickness of eight inches. The reclaimed asphalt must be compacted prior to placement of stone.

Section 3.06 - Final Backfill

A. Placement:

Final backfill shall be placed be either hand or mechanical methods at the Contractor's option. When backfilling flexible pipe (PVC, Truss), the Contractor shall provide the minimum cover over the top of the pipe, as recommended by the pipe manufacturer, before wheel loading the trench. Otherwise, no special placement method or procedure shall be required provided the required degree of compaction is obtained throughout the backfill.

Section 3.07 - Compaction

A. Unimproved Areas:

In unimproved areas, such as cross-county and wooded sections of the line, which are not subject to public travel, the backfill shall be lightly compacted by the machine placing the backfill. The trench shall be overfilled by the amount of anticipated settlement and left neatly rounded.

B. Under Sidewalks and Pavement, Other Traffic Areas and Lawns:

Soil density of not less than 98% maximum dry density shall be achieved, as determined by AASHTO T-99, Method A. Compaction to this standard shall be attained to an extent at least 6” outside the extent of all sidewalks, pavements and other traffic areas.

C. Appurtenances and Existing Structures:

Soil backfill placed under or around installed appurtenances or placed under or around existing structures or utilities shall be compacted to achieve not less than 95% maximum dry density as determined by AASHTO T-99, Method A. The volume receiving the specified

degree of compaction shall include all disturbed soil beneath a line, inclined to 45 degrees and passing one foot from the structure at finished grade.

D. Town or NCDOT Right-of-Ways:

In area covered by permit or special agreement, such as an NCDOT Encroachment Agreement, the backfill requirements shall be as described in the above paragraphs or as required by the permit or agreement, whichever is more stringent.

Section 3.08 - Drainage Features

A. Swales & Ditches:

1. All swales will be constructed pursuant to design elevations and in relationship to road centerline elevations, as shown. Special attention shall be given to those areas with special drainage concerns, as illustrated on the Drawings.

2. Swales and ditches shall be constructed with side slopes not steeper than 1:6 (vertical: horizontal) unless otherwise specified on the Drawings.

B. Drainage Structures:

1. Drainage structures and appurtenances shall be constructed in accordance with NC DOT SSRS and RSD. Structures shall be located as shown on the Drawings and connections to existing drainage features made accordingly. Culverts, pipes and drainage structures will not be considered Fully Completed until they are completely cleaned of all sediment, debris and other foreign materials.

2. Grates and frames shall be as specified on the Drawings and/or as illustrated in NC DOT RSD.

3. Special drainage structures, fittings, etc., shall be furnished and installed by Contractor in accordance with manufacturer/supplier's instructions and as indicated on the Drawings. Where manufacturer/supplier's instructions and the information indicated on the Drawings conflict, the Drawings shall govern.

4. Contractor shall coordinate with the Engineer or other Town representative when establishing rims or tops of drainage structures. Upon request of such representative, Contractor shall adjust the rim or top of each structure, after its initial construction, one time, by up to 4", to—in the representative's opinion—better suit surrounding grades, without additional compensation.

C. Culverts:

Culvert for driveways shall be furnished and installed by the Contractor except as shown otherwise on the Drawings and specifications. Culvert for under-road-crossings shall be furnished and installed by the Contractor and shall be as noted in "Part 2 - Products" and, if so indicated on the Drawings, include flared end sections as specified in the North Carolina Department of Transportation (NC-DOT) SSRS, Section 1032-4, and, if indicated on the Drawings or elsewhere in the Contract Documents, shall be encased in flowable concrete fill.

Sizes will be on drawings or as specified. Culverts, pipes and drainage structures will not be considered Fully Completed until they are completely cleaned of all sediment, debris and other foreign materials.

D. Pipes:

Drainage pipes other than driveway culverts and roadway culverts shall be furnished and installed by the Contractor and shall be as noted in "Part 2 – Products." All pipe under public streets and roadways, whether a "culvert" or a portion of a continuous storm drain system, shall be encased in flowable fill as required above for "culverts for under-road crossings." Culverts, pipes and drainage structures will not be considered Fully Completed until they are completely cleaned of all sediment, debris and other foreign materials.

E. Locating Tape:

All continuous storm drainage systems and roadway culverts, but not including individual driveway culverts, shall have included in the pipe trench metallic locating tape: Terra-Tape or approved equal, labeled "STORM DRAIN BELOW" (or similar language acceptable to the Town) installed nine (9) inches (±3") above pipe. Any broken or damaged locating tape shall be replaced or repaired in a manner which effectively maintains electrical conductivity

Section 3.09 - Driveways

A. Residential or commercial driveways that are cut to install drainage facilities are to be repaired using similar construction materials (*i.e.*, concrete where concrete, asphalt where asphalt), and of comparable or greater thickness.

1. Existing driveways which are Exposed Aggregate, as designated on the drawings or as determined in the field by the Engineer or other Town representative, shall be replaced with Exposed Aggregate.

2. Other existing driveways which are neither asphalt nor standard broom finished concrete nor exposed aggregate concrete, such as stamped concrete, "Bowmanite" or other specialty finish, will be handled as follows:

a) Replacement of such a special driveway shall be bid as if it is to be replaced with standard broom finish concrete.

b) Town staff will contact the owner and offer him the option of replacing the special driveway with a special finish, using a contractor of his own choosing. In such case, a Change Order will be issued under which the Contractor's cost of replacing such driveway with standard broom finished concrete, at the price indicated in the Unit Price Table, shall be deducted from the Contract Price. The amount of said deduction will be offered to the owner to partially defray the cost of such replacement with special-finished concrete.

c) If the owner declines to engage a contractor to replace such a driveway with a special finish, the Contractor for this project shall replace it with standard broom finished concrete.

3. That portion of any replaced driveway within 3’ of the edge of roadway pavement shall be constructed to not less than 6” thickness.

B. All new driveways, where none exist of concrete or asphalt, shall be concrete and extend from the road surface to the Town right of way line.

1. For single-family residential properties, concrete driveways shall be a minimum of ten feet (10') in width and four inches (4") in depth, except for the first three feet (3') adjacent to the paved road surface which shall be six inches (6") in depth, 3,000 PSI concrete. Asphalt shall be two inches (2") in depth with four inches (4") of ABC. Widths or lengths exceeding these shall be the responsibility of the property owner except where an existing concrete or asphalt driveway is wider than ten feet (10'), it shall be replaced in-kind.

2. For properties which are multi-family residential, commercial or industrial, concrete driveways shall be six inches (6”) in depth and asphalt shall be four inches (4”) in depth (2” surface course over 2” intermediate course), with six inches (6”) of ABC. Width and other geometrics shall be as per the Drawings.

C. Driveways shall be constructed in accordance with the approved roadway section and sloped according to the drainage plan. Drainage plan may include design driveway flowline slopes of 0.5% or flatter, which will require careful attention to avoid unacceptable ponding (see Paragraph 301.G, Construction Tolerances, above. Contractor may provide a crack-control joint along the flowline to help mitigate ponding. Where no drainage plan or other detailed grading information is provided on the plan sheet, grading of the driveway in the direction of the adjacent road shall be provided to suit the general drainage pattern of that portion of the road, as directed by the Engineer or other Town representative.

D. In removing portions of concrete driveways, Contractor shall be careful not to damage portions of such driveways which are to remain. Damage shall include scrapes, gouges, cracks, and any pulling open of an existing joint by more than ¼”. (In determining whether any such crack has been pulled open by actions of Contractor, the Engineer shall consider the temperature at the time of the preconstruction photographs versus the temperature at the time the opened crack is observed.) Any such damage shall be corrected unless Contractor’s pre-construction photographic evidence shows that the damage was pre-existing.

E. When multiple driveways in a single block or section of street are being placed, Contractor shall use a long stringline to assure that the front edges of each driveway form a neat line, and properly establish the designed width of the road.

F. No driveway shall be poured until the Engineer or other Town representative has inspected and approved the forms.

Section 3.10 - Roadway Improvements

A. Standards:

1. Unless otherwise explicitly stated on the Drawings, the Town Streets Construction standards shall be used for new roadways, reconstruction or widening of existing roadways.

a) Aggregate Base Course: ABC eight inches (8") in depth or four inches (4") of Asphalt Base Course, Type B25.0B (When pre-approved by the Town, three inches (3") maximum reclaimed asphalt and five inches (5") minimum ABC)

b) Asphalt Intermediate Course: Type I19.0B, two inches (2") in depth.

c) Asphalt Surface Course: Type SF9.5A, two inches (2") in depth.

d) Width: Width shall vary as shown on the approved Drawings.

e) Intersection radii: All radii shall be twenty-five feet (25') unless noted otherwise, with a standard taper. Radius shall be measured at the face of curb, if applicable; otherwise, at the edge of pavement.

2. Wedging and leveling is required on street overlayments to achieve the proper cross slope and pavement grades as shown on the Drawings.

3. Streets shall be constructed in accordance with NC DOT SSRS Division 5, 6 & 8

4. Mailboxes shall be maintained by the Contractor and relocated if necessitated by the work. If it is necessary for a mailbox to be removed for more than one full day, it shall be temporarily placed in an alternate location acceptable to the property owner and the U. S. Postal Service. Landscaping and other temporary structures located within the right-of-way shall be removed and placed upon the property adjacent to the right-of-way.

B. New Roadway Construction

1. The Contractor shall clear and rough grade right-of-way to achieve preliminary grades as shown on the Drawings.

2. ABC shall be placed and compacted to achieve not less than 98% of maximum dry density as determined by AASHTO T -99 and a minimum thickness of eight inches (8").

3. Asphalt Intermediate Course, Type I19.0B shall be placed to achieve a minimum thickness of two inches (2"), except as otherwise noted on the Drawings.

4. Asphalt Surface Course, Type SF9.5A shall be placed to achieve a minimum thickness of two inches (2"), except as otherwise noted on the Drawings.

C. Roadway Resurfacing or Reconstruction

1. Existing Concrete Streets:

a) Existing concrete streets shall be rolled with a vibratory roller to promote settling and cracking. Sand shall be used to fill all cracks and voids and the roadway, unless otherwise noted on drawings.

b) If directed by the Drawings or other contract documents as part of Base Bid work or Alternate work, install pavement overlay fabric in accordance with manufacturer's instructions.

c) The roadway will be widened in accordance with the specifications and Drawing with ABC or Asphalt Base Course of proper width and thickness.

d) Asphalt Intermediate Course, two inch (2") minimum thickness, will be placed to achieve the proper wedging and leveling and cross slopes.

e) The Asphalt Surface Course, two inches (2"), will be placed as per the Standards.

2. Existing Asphalt Streets:

a) The roadway will be widened as shown on the Drawings, with ABC or HB Base of proper width and thickness.

b) Asphalt Intermediate Course, two inch (2") minimum thickness or as otherwise indicated on the drawings, will be placed to achieve the proper wedging and leveling and cross slopes.

c) The Asphalt Surface Course, two inches (2") or as otherwise indicated on the drawings, will be placed as per the Standards.

d) To minimize paving problems, just prior to the beginning of milling (if applicable) and paving operations, a field meeting shall be held, attended by the Engineer and the Contractor's Project Manager or General Superintendent, Paving Superintendent and at least one other key member of the Paving Crew. This Pre-Paving Meeting shall cover the following topics, at a minimum:

i) The pavement section for each portion of the work.

ii) Whether levelling or "scratch" course is required.

iii) The number of lifts required for each course.

iv) How compliance with cross-slope requirements will be met.

v) Any critical or unusual grade situations.

vi) Any special notes or requirements on the plans.

vii) Anticipated weather limitations.

viii) Means of controlling traffic.

ix) Any other topic(s) necessary to assure Contractor's field personnel clearly understand the design intent and the requirements of the Contract Documents.

Contractor shall assure that at least one hour is allotted for this meeting, so that all participants have ample time to understand the work, without undue time pressure.

3. Adjustment of Manhole Covers, Valve Boxes, etc.: Any and all manhole covers, valve boxes or similar castings within the limits of any roadway resurfacing or reconstruction project, or any new roadway construction project, will be adjusted to grade using appropriate rings, risers, or other standard adjustment measures. Materials and effort for such measures shall be incidental to the Asphalt Surface Course.

4. Shoulder clipping and backing up of edges: In addition to the pavement reconstruction and overlay work itself, the following items shall be incidental and not paid separately:

   a) Clipping grass, etc. which has encroached onto the existing pavement to be overlaid.

   b) Furnishing, if necessary, and placing soil material to bring the shoulder grade up to ½" below the grade of the new edge of pavement, tying to existing grade at a slope not steeper than 1":1', and establishing vegetation on the disturbed shoulder area.

D. Other Right-of-Way Improvements:

1. Concrete Curb & Gutter:

   a) Concrete curb & gutters shall be constructed to match existing and/or finished grades as illustrated on the approved Drawings.

   b) Curbs and gutters shall be constructed in accordance with NC DOT SSRS Section 846.

2. Sidewalks, Bike Paths, Multi-Use Paths, and similar facilities:

   Concrete sidewalks shall be five feet (5') in width and, except where a greater width is noted on the Drawings or elsewhere herein, four inches (4") in thickness, unless greater thickness is noted on the drawings, and of 3,000 PSI concrete. Contraction (crack control) joints shall be installed at even intervals equaling 80% to 120% of the width, in no case exceeding twelve feet (12'); tooled or sawn joints are acceptable, to a depth of ¼ of the slab thickness. Expansion joints shall be provided against fixed objects, at changes of material, as directed by the Engineer, and in any case at intervals not exceeding 100'.. All curb cuts shall meet current ADA standards. All asphalt sidewalks shall be based on two inches (2") of Asphalt Surface Course, Type SF9.5A over six inches (6") of ABC. Sidewalks that are anticipated to sustain heavy vehicular traffic shall have an asphalt sidewalk section consisting of four inches (4") of Asphalt Base Course, Type B25.0B, with two inches (2") of Asphalt Intermediate Course, Type I19.0B and two inches (2") of Asphalt Surface Course, Type SF9.5A.

   Where sidewalks, paths or other paved areas are denoted as Pervious Concrete, it shall be constructed in accordance with the latest version of ACI 522.1, *Specification for Pervious Concrete*. Void ratio shall be not less than 15%. Pervious Concrete shall be placed over a base of 6" washed stone. Where total area of Pervious Concrete is 2,500 sf or less, requirement for cores and density testing will be waived; however, a 5' x 5' test panel shall be poured at a location directed by the Engineer for subsequent testing, at Contractor's expense, if Engineer determines there may be problems with density, void ratio, etc.

Timber boardwalks, paths, gazebos, etc., and their appurtenances, shall be constructed in conformity with local building codes and the provisions set forth on their drawings.

Sidewalks shall meet all current ADA standards, including but not limited to those for longitudinal slope and cross slope. No sidewalks shall be installed with more than a 2% cross slope, nor a 5% longitudinal slope, except ramps installed per ADA standards shall have longitudinal slopes not exceeding 1:12, or 8.33%. The Contractor shall immediately notify the Engineer if any provision of the Drawings, or any stakes or marks which have been set, would appear to result in a violation of these maximum slope standards. Unless explicitly stated on the Drawings, other non-vehicular ways, including bicycle paths and multi-purpose paths or trails, shall also meet the ADA standards set forth above.

3. Pavement Markings:

   Pavement markings and placement shall be in accordance with the NC DOT SSRS standards and located as shown on Drawings, and shall be thermoplastic unless expressly stated otherwise on the drawings. Crosswalk lines shall be evenly spaced.

E. Testing:

1. The Contractor shall employ an independent testing agency to sample and evaluate core samples on all improved streets (overlaid or new construction) as follows:

   a) The testing agency shall be licensed in the State of North Carolina as an independent laboratory to conduct all testing required, and credentials shall be presented.

   b) Samples shall be taken on all improved streets at an interval of three (3) cores per one thousand (1,000') linear feet of improved roadway, with a minimum of one core taken on each street improved with the Contract. Core sample locations shall be as directed by the Town.

   c) Core samples taken shall be evaluated for asphalt mix composition, thickness and for compaction in accordance with procedures identified in the most current edition of the NCDOT SSRS.

Section 3.11 - Finishing

A. Disposal of Materials:

Such portions of the excavated materials as needed shall be used for backfilling and grading about the completed Work to the elevations as shown on the Drawings or as directed. All excavated material in excess of the quantity required for this purpose shall be disposed of, in a manner compliant with all requirements of these Contract Documents and with all applicable regulations governing such disposal, by the Contractor. The location of disposal sites shall be approved by the Owner. If disposal is at a private site not routinely known to accept such materials, Contractor shall provide the Owner with written confirmation of the agreement of the disposal site's owner to accept such materials, and, if applicable, evidence of any permits required for such disposal.

B. Finish and Cleaning:

1. The Contractor shall leave the mounding of earth over the trenches in a neat and uniform condition acceptable to the Owner or his Engineer. The Contractor shall make such provisions as may be necessary to divert surface water across or away from the line of the trench.

2. In cultivated or improved areas where topsoil has been stripped, the topsoil shall be replaced as uniformly as possible over the disturbed areas.

3. Cleanup of excess materials, debris, etc., shall be done as promptly as practicable and shall not be left until the end of the construction period.

Section 3.12 - Restoration

A. General:

All areas disturbed by this Work shall be restored to a condition equal to or better than the condition prior to construction, as determined by the Owner or his Engineer.

B. Lawns and Other Roadside Areas:

Grass plots, sod, shrubbery, ornamental trees, signs, fences, mailboxes, etc. shall be restored to the condition existing prior to making the excavation as determined by the Engineer. The cost of doing this Work shall be included in the cost of various applicable items.

C. Alleys, Driveways, Roadways:

Roadways, alleys, and driveways constructed with concrete, asphalt pavement, stabilized soil or gravel that are traversed by the excavation Work shall be restored to the condition existing prior to making the excavation as determined by the Engineer. See Section 3.09 for additional details regarding driveways.

Pavement cuts on heavily traveled streets (Croatan Highway, Virginia Dare Trail, Ocean Bay Drive/Colington Road), if allowed, shall be patched with a temporary or permanent asphalt patch within 24 hours after the work causing the cut is complete. On lesser-traveled roads and streets, if a temporary or permanent asphalt patch is not made within 24 hours, the trench shall be filled to flush with the adjacent pavement grade with not less than 8" of ABC stone. Contractor shall monitor the condition of such stone patches at least daily, re-grading and adding make-up stone as required, until the permanent patch is placed.

The Contractor may reclaim existing material by stockpiling or other acceptable means, or he may furnish and compact new material. New or reused material shall be compacted to a minimum of 95% of the maximum density as determined by AASHTO T-99, Method A. The cost of doing this Work and the furnishing of any new material required shall be included in the cost of the Work and no separate payment shall be made unless a separate bid item is provided in the Contract.

Restoration of roads and streets shall include restoration of pavement striping and marking to a condition equal to or better than before the project. As set forth elsewhere herein,

Contractor shall protect all existing infrastructure, including roadways and their marking and striping, as well as practical given the nature of the work and his operations. Generally, local areas of damage may be spot-repaired; however, when the Owner and the Engineer determine that areas of damage are so extensive and frequent that spot repairs would result in an unsatisfactory, "patchwork" appearance, they may require Contractor to replace the affected striping for long sections or the whole length of the project, without separate compensation.

D. Paved Ditch, Sidewalk, Curb and Gutter Removal and Replacement:

Paved ditch, sidewalk, curb and gutter removal and replacement required in the construction of this Work shall be done by the Contractor. The Contractor shall either stockpile or dispose of this material, as directed by the Owner or his Engineer. All brick, concrete or built-up asphalt sidewalk replacement and curb and gutter replacement shall be replaced with like material in a manner and condition equal to or better than that existing at the time of removal, as determined by the Engineer. Materials and method of replaced state highway sidewalks or curbs or ditches shall conform to the Specifications of the agency having jurisdiction.

E. Fine Grading:

All finished areas shall be graded smooth, hand-raked where necessary and shall meet the elevations and contours shown on the Drawings. All lumber, earth clods, rocks larger than ¾" inch, or exposed roots larger than ¾" in diameter, and other undesirable materials, shall be removed from the site at the completion of construction. In general, rocks which will not pass between the tines of a standard steel-tine garden rake shall be removed.

Section 3.13 - Finish Grading and Seeding:

A. General:

1. Contractor shall adhere to the following requirements as well as the seeding requirements shown on the Drawings. In general, any and all areas within the project limits which are not covered by hard surface (pavement, structure, etc.) or otherwise indicated on the Drawings to receive some other surface treatment or to remain bare, shall have a healthy stand of turfgrass established by the Contractor as part of the project work.

2. NCDOT Right-of-Way:

In those areas covered by permit or agreement, the conditions of the permit or agreement shall prevail.

3. Landscaped Areas:

a) In landscaped areas finished grading shall result in a uniform finish free of clods, rills, or depressions. Hand-raking shall be performed where required to achieve the degree of finish or provide suitable surface for seeding.

b) Areas requiring seeding shall be seeded as required to achieve a finish of equal type, quality, and density to surrounding areas. Sufficient mulch shall be applied, and reapplied as necessary, to maintain the surface and protect the new vegetation until stabilized.

4. Unimproved Areas:

   Unimproved areas created or disturbed by this construction shall be finish graded and seeded to stabilize soil. Seeding shall be applied as specified in Part 2 Products.

B. Fertilizer Recommendations:

1. Apply 10-10-10 at rates of 25 lbs/1,000 square feet in early spring (April) and late summer (August) to build up food reserves and increase winter hardiness. Apply nitrogen at rates of 1-2 lbs/1,000 square feet every 4 to 8 weeks during summer. Do NOT apply large amounts of nitrogen in the growing season (early fall) since this makes warm season grasses more susceptible to winter kill. These are general recommendations; soil test to be sure in fertilizing warm-season grasses.

2. Proper fertilization for cool-season grasses should be guided by soil tests. In the absence of a soil test, follow these general recommendations:

   Apply 25 lbs/1,000 square feet of 10-10-10 in early fall (September) and late winter (February).

3. Do not apply nitrogen on cool season grasses between June-September when these grasses are dormant. This may increase chances for disease to invade and kill these plants.

C. Liming:

The sands of the Outer Banks generally require little or no liming. Lime according to soil test only.

D. Mulch:

Mulch with 4,000 lbs/acre of straw, anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blade set nearly straight can be used as a mulch anchoring tool. "Hydroseeding," where seed, fertilizer and mulch in a water-based slurry are all sprayed on at once will be acceptable in lieu of separately-applied mulch, etc., provided that hydroseeding must be accomplished in a workmanlike manner, achieve full coverage of disturbed areas, and lead to well-established vegetative cover.

E. Maintenance and Completion:

1. General:

   a) Satisfactory stabilization and erosion control requires a complete vegetative cover. Even small breaches in vegetative cover can expand rapidly and, if left unattended, can allow serious soil loss from an otherwise stable surface. A single heavy rain is often sufficient to greatly enlarge bare spots, and the longer repairs are delayed, the more costly they become. Prompt action will keep sediment loss and repair cost down. New seedlings should be inspected frequently, and maintenance performed as needed. If rills and gullies develop, they must be filled in. re-seeded, and mulched as soon as possible. Diversions may be needed until new plants take hold.

b) Maintenance Requirements Extend Beyond the Seeding Phase. Weak or damaged spots must be re-limed, fertilized, mulched, and reseeded as promptly as possible. Re- fertilization may be needed to maintain productive stands.

c) Stabilization shall be done by hydroseeding, mats, or sod, subject to the following:

1) UNLESS OTHERWISE NOTED ON THE DRAWINGS, ALL DISTURBED AREAS WITH A SLOPE OF 2% OR GREATER SHALL RECEIVE SOD.

i) However, the side slopes of swales and ditches, even when 2% or greater, shall not receive sod under this provision unless the longitudinal slope is 2% or greater.

ii) Where the limits of sod are shown on the drawings, such depiction shall govern, instead of the 2% rule.

iii) Sod shall be Bermuda to match the predominant turf of adjacent lawns, or, where few or no adjacent lawns are Bermuda, sod shall be Centipede. Species of sod shall not change within a single block without the approval of the Engineer.

iv) Sod placement shall be in accordance with the SSRS, except as otherwise noted herein and/or on the drawings.

v) Sod will be priced as a separate item on a per square foot basis, except where it is called for as part of the base bid work.

vi) Sod shall be watered as required to keep it alive; watering shall be incidental to the price for sod and not paid separately. Sod shall not be paid for and should not be included in any application for payment until at least 30 days after it is placed. Dead sod shall not be paid for.

d) All stabilization will be done to the Town's satisfaction after substantial project completion. Watering of seeded and sodded areas shall be as follows:

1) Areas to be stabilized shall be watered every day, including weekends and holidays, by the Contractor, after seeding and sodding have occurred, to promote growth until satisfactory stabilization is obtained. Once watering has begun, a daily record of the time and amount of watering shall be kept and forwarded weekly to the Engineer. The individual performing each watering shall call the Town’s representative approximately 30 minutes before each watering is to begin.

2) Each individual watering shall be at a rate of not less than 2,500 gallons per seeded/sodded acre.

3) Water shall be applied using nozzles and spraying techniques which do not erode the seeded areas; the first watering shall be observed by a Town representative to confirm that watering techniques are acceptable.

4) A rainfall event of at least 0.1" may take the place of a scheduled watering, ONLY if such rain is actually occurring at the time watering is to begin; *i.e.*, watering will not take place while it is raining. If a rain occurs between midnight and 7 a.m., or between sunset and midnight the previous day, watering will still take place that day. A heavier rain shall not be a basis not to water on the next day; *i.e.*, rainfall amounts may not be "carried forward."

5) The duration of such daily watering shall be thirty (30) calendar days, The Town, in its sole discretion, may allow termination of watering early, ONLY if vegetation is fully established to its satisfaction

6) If overseeding or reseeding of areas is required, due to erosion, seed problems, etc., watering of those areas will be extended as needed until they germinate and are established.

7) Watering shall be paid for on a Unit Price basis, where provisions for such are made in the Bid Proposal Form. The bid quantity for watering, in such case, shall be multiplied by the unit price indicated in the Unit Price Items table, and will be included in the "Total Base Bid" amount for purposes of evaluating which bidder is the Low Bidder. A DAY of Watering shall be paid for each day that watering is accomplished in full compliance with the foregoing 6 provisions.

e) The Contractor's Schedule of Values, established at the beginning of the Project and serving as the basis for his Applications for Payment, shall include a separate Pay Item, which may be called "Seeding and Mulching," for example, that includes all work required to establish grass on all disturbed areas.

1) The value of this line item shall not be less than 3% of the total amount bid.

2) If there are Additive Alternate(s), a separate such line item shall be proved for each, being not less than 3% of the bid amount for the Alternate.

3) Not more than 50% of said line item(s) shall be deemed earned when all areas have been fine graded, approved for seeding and mulching, and seed and mulch have been properly applied. The remainder shall not be deemed earned until, in the Town's determination, vegetation is fully established in all areas.

2. Completion:

a) As noted in Article 14 of the General Conditions, the Town may elect to accept the project and establish the Date of Substantial Completion, subject to a list of discrepancies (punch list), which discrepancies must be completed within forty-five (45) days of said acceptance.

b) The Town may, at its sole discretion, elect to accept the project with some or all of the "complete vegetative cover" described above not in place. Such acceptance with incomplete vegetative cover shall be subject to the following:

1) This will not be the Town's general practice and will only occur if the Town believes that weather conditions at the time of the end of the project are such that it is not feasible to achieve complete vegetative cover. Bidders should not bid the project expecting that such a deferral of vegetation establishment beyond acceptance will occur. With no such deferral, late attainment of vegetative cover to the Town's satisfaction WILL result in the incurring of liquidated damages.

2) Acceptance shall not occur until, at a minimum, all areas to be vegetated have been fine-graded, limed, fertilized, seeded and mulched as required above, including the repair and re-doing of any and all areas damaged by erosion, contract operations or any other cause.

3) Contractor shall be obliged to deliver an established stand of vegetation on all disturbed areas before the project is consider fully and satisfactorily complete.

4) Where such acceptance occurs, a portion of the Contract Amount shall be withheld until vegetation is fully established. Said portion shall be determined by the Engineer but shall be not less than 1.5% of the Contract Amount.

-- End of Technical Specifications --

WATERLINE SPECIFICATIONS

PART A. GENERAL

Section A.1. Relationship to other Contract Documents.

(a) When these Waterline Specifications are used by the Town of Kill Devil Hills (the Town) as part of an overall set of Contract Documents, said Contract Documents will include Instructions to Bidders, Bid Proposal, General Conditions, Technical Specifications, these Waterline Specifications, the Contract Agreement, any Addenda or Special Conditions which may be provided, and the Drawings. In such case, and in case of any conflict between any of the Contract Documents,

(1) Regarding the details of installation of any water improvements (mains, services, fittings, valves, hydrants, casing pipe, etc.), these Waterline Specifications shall take precedence over the Technical Specifications.

(2) Regarding matters not specific to water improvements (trenching, roadway cutting and patching, roadside restoration, storm drainage work, dealing with utilities and other conflicts, etc.), the Technical Specifications shall take precedence over these Waterline Specifications.

(3) Regarding legal, procedural, financial matters and the protection of public and private property and persons, the General Conditions shall take precedence over these Waterline Specifications.

(b) These Waterline Specifications may also be used to govern work being done by a private entity (the Developer) for eventual acceptance by the Town. In such case, special attention is directed to PART G. CROSS-CONNECTION PREVENTION PROGRAM below. The terms of the private contract between Developer and his Contractor shall govern the legal, procedural, financial and other aspects of the work. However, in no such case shall such provisions of a private contract supersede or replace any provision in these Waterline Specifications.

Section A.2. Definitions.

For the purposes of this article, the following words, phrases and abbreviations shall have the meanings respectively ascribed to them by this section

AASHTO shall mean the American Association of State Highway and Transportation Officials.

ASTM shall mean the American Society of Testing and Materials.

AWWA shall mean the American Water Works Association.

PWSS shall mean the Public Water Supply Section of the Division of Water Resources of the North Carolina Department of Environmental Quality (NCDEQ).

Approved equal shall mean an alternate product or material which is, in the opinion of the Town's Department of Public Services or Town Engineer, of equal quality, durability and suitability to the product or material specified herein, and which has received express written approval as such.

As-built drawings shall mean final drawings, including all changes from the original drawings, prepared by a registered engineer showing the location, character and dimensions of a project as finished and completed.

Contractor shall mean the firm hired by the developer or the Town, as applicable, for installation of the water system.

Defective work shall mean work that does not conform to the specifications stated in these Waterline Specifications, other Contract Documents, approved drawings, Town Code, or applicable state or federal law.

Developer shall mean any person who owns or improves or subdivides land. In the case where the work is being done by the Contractor for the Town, *Developer* shall mean the Contractor

Drawings shall mean the Drawings prepared by a registered engineer showing the location, character and dimensions of the work as approved in writing by the Town.

Engineer shall mean a professional registered in the state and duly authorized to act as the representative of the developer for the Town; or, in the case of work being done by Contractor hired by the Town, shall mean the person or firm engaged by the firm to serve as Town Engineer.

Inspector shall mean the Town's employee or the engineer's authorized representative approved by the Town assigned to make detailed inspections of the work

NCDOT Standards shall mean "Policies and Procedures for Accommodating Utilities on Highway Rights-of-Way," State of North Carolina, Department of Transportation, July 1, 1975, revised April 1, 1993, or most current edition.

Shop drawings shall mean all drawings, diagrams, illustrations, brochures, schedules and other data that are prepared by a Contractor, a subcontractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the work.

Subcontractor shall mean an individual, partnership, firm corporation or joint venture contracting with the Contractor or developer to do a portion of the work or furnish materials for the work.

Superintendent shall mean the Contractor's authorized representative in charge of the work.

Work shall mean the furnishings of all labor, materials, equipment and incidentals necessary to successfully complete the project and satisfy the duties and obligations imposed by this article.

Section A.3. Scope of Contractor's responsibility.

The Contractor shall furnish all labor, materials, land, and equipment required to construct the water line, appurtenances, and other miscellaneous items, excavate the trench, keep the trench dry, maintain proper slopes and high safety standards, using a shoring box where required, furnish and install pipe, plug watertight the pipe end when left unattended, backfill the trench,

maintain the backfilled trench until final acceptance, replace pavement; sidewalks, curb and gutter and any permanent structures where required, and clean up the right-of-way after construction, in a manner consistent with best practice in the industry for this type of Work.

Section A.4. Work within public rights-of-way.

(a) Work included. The Contractor shall furnish all labor and materials for the complete installations of bored and jacked casings or tunnel liners as specified herein. If it has not already been obtained by the Owner or Engineer and furnished prior to bid opening, the Contractor shall obtain from the North Carolina Department of Transportation (NCDOT) the necessary Highway Encroachment Permit. It shall be the responsibility of the Contractor to obtain, or cause to be obtained, any additional permits or approvals necessary for this construction.

(b) Bored highway and street crossings. In addition to complying with all PWSS regulations, bored and jacked highway or street crossing shall comply with standards set forth in the NCDOT Standards. Where the water line is to be laid in streets or on the shoulders of paved streets, the Contractor shall be responsible for maintaining the streets and adjacent private drives and entrances in usable condition at all times.

(c) Open cut street crossings. All paved surfaces to be disturbed by the installation of the underground utilities shall be saw cut, straight and true, along the extremities of the trench excavation required. Upon completion of the installation, the crossing shall be restored to its original condition in accordance with the detail shown on the contract drawings. Where streets are shown to be open cut, the Contractor must provide sufficient flag persons and allow one lane of traffic to be open at all times.

(1) After pipe laying operations are completed in each area or designated section, the Contractor or developer shall clean up all debris and surplus earth and restore the street or area immediately adjacent to the street to the same condition or better as existed before construction.

(2) If open cutting is allowed, all pavement on Town streets and on state highways shall be replaced in kind or as required by the NCDOT. In street areas, the trench backfill shall be maintained for traffic until, in the opinion of the Town, complete settlement and compaction have been obtained. The cut area shall then be excavated to proper depth, base course placed and compacted, and the pavement surface replaced. Base course and pavement shall conform to the requirements of the NCDOT or the Kill Devil Hills Town Code. See also Section 3.12, Paragraph C of the Technical Specifications.

(d) Right-of-way conditions. During the progress of the work, the Contractor shall keep the premises and vicinity of the work free from unsightly and disorderly piles of debris and materials resulting from or used in his/her operations. Suitable locations shall be allotted for the various materials and for debris. The materials shall be kept in their storage locations except as needed in the work; and debris shall be promptly and regularly collected and deposited in the allotted location, the intent being to avoid unsightly and disorderly appearance and confusion, and to promote an orderly and efficient conduct of the work. Upon completion of each structure or element of the work, the Contractor shall shape up the ground adjacent

thereto, removing all surplus excavated material and leaving the area free from humps and hollows.

PART B. JOB CONDITIONS

Section B.1. Laws to be observed.

The Contractor and subcontractor must keep fully informed of all federal and state laws, local laws, ordinances and regulations, and all orders and decrees of bodies having any jurisdiction or authority, which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. Such persons shall at all times observe and comply with all such laws, ordinances, regulations, orders and decrees and shall protect and indemnify the Town and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order or decree, whether by himself/herself or his/her employees.

Section B.2. Before starting work.

A preconstruction meeting shall be held to review the progress schedules, to establish procedures for handling shop drawings and other items submitted in accordance with this chapter, and to establish an understanding between the parties as to the project. The Town, developer, Contractor, utility companies and other interested parties may attend.

Section B.3. Protection and restoration of property and landscape.

(a) The developer shall be responsible for the preservation of all public and private property and shall protect carefully from disturbance or damage all land monuments and property markers and shall not move them until directed. Monuments or markers disturbed or damaged shall be replaced by a licensed land surveyor at Contractor's expense.

(b) The developer shall be responsible for all damage or injury to property of any kind during the execution of the work, resulting from any act, omission, neglect or misconduct in his/her manner or method of executing the work, or at any time due to defective work or materials.

Section B.4. Shutting off for connections.

(a) The existing water supply and fire protection systems shall not be disturbed, except as absolutely necessary, by the developer's operations. Special care shall be exercised where pipes are being removed and replaced with new lines. The developer shall carefully plan his/her work in order to avoid contamination and lengthy shutdowns of existing water lines.

(b) Prior to commencing work on any existing water line, the Contractor shall furnish the Town with workers and tools to enable the Town to shut off the water in order to make connections. Existing valves shall be operated by the Town's employees only. All materials and equipment necessary for work shall be on-site at least eight (8) hours prior thereto.

(c) Prior to shutting off the water, the Contractor or the developer shall notify any affected property owners and the fire department at least twenty-four (24) hours prior thereto; copies of such notice shall be furnished to the Engineer. Notice to the Fire Department shall be in writing, via e-mail, to the following addresses: johnr@kdhnc.com; frank@kdhnc.com; troy@kdhnc.com; pam@kdhnc.com. Contractor shall send a test e-mail to this list, early in the project, to confirm that the list is valid and shall make any updates or corrections as directed by the Fire

Department. In planning his shutoff, Contractor shall minimize the number of all fire hydrants which will be out of service during the shutoff and shall report those to the Fire Department. The Town reserves the right to disapprove a shutoff if, in its sole determination, the number of hydrants disabled is excessive and can be reduced by an alternate plan or method.

(d) Timing of shutoffs shall, to the maximum extent practical and subject to approval by the Engineer, avoid peak business hours of customers. Shutoffs to restaurants shall be avoided between 5 a.m. to 8 a.m., 11 a.m. to 2 p.m. and 5 p.m. to 9 p.m. Shutoffs to hotels or motels shall be limited to between 8 a.m. and 5 p.m. Additional provisions regarding water outages may be provided on the Drawings.

Section B.5. Cleanup.

All surplus construction material shall be removed from the site by the Contractor; however, cleanup work, including complete trench backfill, may be delayed for testing purposes, but shall be limited to single sections of pipe that can be valved off. Cleanup must be done prior to or concurrent with pipe laying operations for the next valved section.

Section B.6. Access to work.

The Town and its representatives shall at all times have access to the work. The Contractor shall provide facilities for such access and observation of the work as well as inspection and testing by others.

Section B.7. Warranty; defective work.

(a) If work has been rejected by the Town, it must be removed from the site and replaced with non-defective work. If the developer does not correct such defective work or remove and replace such rejected work within a ninety (90) day period, as specified in a written notice thereof from the Town, the Town may have the deficiency corrected or the rejected work removed and replaced. The developer shall pay all direct and indirect costs of such correction or removal and replacement, including compensation for additional professional services. The developer shall also bear the expenses of making good all work of others destroyed or damaged by the developer's defective work. No permits shall be issued to or approvals granted to the developer until all such costs have been paid to the Town.

(b) The Town must approve the work in writing after its completion. However, such approval shall not affect or waive the Town's warranty rights and remedies as set forth in this section. The developer shall warrant and guarantee all workmanship and materials against defects for a period of two (2) years after the date of final approval. The Town may, at its election, require the developer to secure the warranty obligation with a deed of trust or other form of security satisfactory to the Town. If any work is found to be defective during the warranty period, the developer shall promptly correct such defective work or, if the work has been rejected by the Town, remove the defective materials from the site and replace them with non-defective materials. If the defect is such that it causes a break in the water line or is of such a nature that, in the opinion of the Town's Public Services Department or Town Engineer, it impairs the operation of the water system, then the Town may repair or replace the defective work or material or have the defective work corrected, and all direct and indirect costs thereof, including compensation

for additional professional services, shall be paid by the developer. If the developer fails to pay all such costs and expenses, then the Town may proceed against the security posted by the developer without waiving or prejudice to any other rights, claims, or remedies.

PART C. MATERIALS

Section C.1. Generally.

All water system and water line materials used shall conform to the specifications set out in this division and any changes shall be submitted in writing to and approved by the Town. All backflow prevention assemblies and other materials associated with the Cross Connection Control Program shall be as set forth in PART G. CROSS-CONNECTION PREVENTION PROGRAM below.

Section C.2. Pipe standards.

(a) *PVC:* Except for 2" diameter pipe, PVC pipe shall conform to all requirements of AWWA Specification C900, latest edition, for nominal sizes 4" through 12", and AWWA C905, latest edition, for nominal sizes larger than 12". PVC pipe and fittings shall be pressure rated at one hundred fifty (150) psi (pounds per square inch) with a standard dimension ratio (SDR) of eighteen (18) for both barrel and bell dimensions. 2" diameter pipe shall be 2" Schedule 80 PVC, Iron Pipe Size (IPS). Pipe shall bear the National Sanitation Foundation seal of approval and shall comply with the requirements for Type 1, Grade I (PVC 1120) of the ASTM resin Specification D-1784.

(1) Joints. PVC pipe shall have push-on joints, incorporating a rubber ring bell joint which shall be an integral and homogeneous part of the pipe barrel. Solvent-welded joints shall not be used, except for 2" pipe.

(2) Fittings shall be the same as for ductile iron pipe as set forth below.

(b) *Ductile Iron:* Ductile Iron Pipe shall be furnished in 18- or 20-foot laying lengths, with push-on type joints, except where mechanical joint or pipe is called for on the Drawings. Ductile iron pipe shall conform to the requirements of AWWA C151. Flanged ductile iron pipe shall comply with the requirements of AWWA C115.

(1) Thickness Class of the pipe shall be Pressure Class 350 as required by the pipe size, bedding type and depth. The pipe shall be round and gaged throughout its entire length. Ungauged pipe will not be accepted.

(2) Lining – All pipe shall be single coat cement lined and sealed coated in accordance with AWWA C104.

(3) Joints shall be either mechanical, push on, or flanged conforming to AWWA C111 (ANSI A21.11) or AWWA C115 (ANSI A21.15) as applicable. All flanges and glands for pipes and fittings shall be made of ductile iron.

(4) Fittings shall be manufactured in accordance with AWWA C110 (ANSI A21.10) or AWWA C153 (ANSI A21.53) and shall be ductile iron. The minimum acceptable pressure rating shall be 350 psi. All fittings shall be lined in the same manner as ductile iron pipe.

(5) Coating shall be provided on the exterior of all ductile iron pipe, joints and fittings as required by AWWA C110, C111, C115, C151, or C153 as applicable. All pipes, joints and fittings shall be examined before and after laying to determine if the coating has been damaged. Any damaged areas and all joints shall be coated with approximately 1 mil of a bituminous coating, such as Koppers No. 50 or Intertol No. 49.

(6) Polyethylene Wrap, where indicated on Drawings, shall conform to the requirements of AWWA C105.

(7) Retainer Glands, or other joint restraint devices, shall be cast from high strength ductile iron. Restraint devices shall be rated to perform their restraining function at the full rated pressure of the pipe itself. Devices used on mechanical joint pipe shall be compatible with mechanical joint connectors meeting requirements of AWWA C111. Acceptable types:

(a) For PVC Pipe: Only devices which apply pressure around the full circumference of the pipe. Devices which use radial screws to press pads against only a portion of the pipe's circumference are not acceptable. Acceptable devices include Romac "GripRing" for PVC and Romac 600 Series, and EBAA Iron's 1600 and 2800 series where a bell restraint is appropriate.

(b) For Ductile Iron Pipe: Acceptable devices shall be Romac "GripRing", "RomaGrip" and 600 Series, and EBAA Iron's "MegaLug," Series 1100 (1100SD may be used if a split restrainer is required), and Series 1700 where a bell restraint is appropriate.

(8) Tracer Wire shall be 14-gauge CCS with 30 mil (min) insulation for open-trench installations. Thicker wire and insulation will be required for directional-bored or jack-bored lines.

(c) *Casing pipe*. Casing pipe shall be smooth wall or spiral welded steel pipe with a minimum yield strength of thirty-five thousand (35,000) psi. All joints shall be welded. The casing pipe shall be new and shall conform to ASTM A139 Grade B, ASTM A53 Grade B, and AWWA C200-75.

Casing pipe for water service lines shall be PVC, Schedule 40 conforming to ASTM D1785, provided in 20' lengths with integral coupling bells; not more than 1 joint shall occur underneath any roadway. HDPE tubing, having a DR of 11 or less, may also be used for service line casings, provided that no connector or joining of HDPE is allowed, only a single, continuous piece for each casing.,

(1) Size and thickness shall be as follows (larger and/or thicker casing may be substituted at no additional cost to Town.

Carrier Pipe Size, (nominal)	Casing Pipe Size, (O.D.)	Casing Wall Thickness, (minimum)
16" DI	30 inch	0.3750 inch
12" DI	24 inch	0.3125 inch
10" DI	18 inch	0.3125 inch
8" DI	16 inch	0.250 inch
6" DI	12 inch	0.250 inch
4" DI	10 inch	0.250 inch
2" water service	3" nominal	Sch. 40 PVC or DR11
Up to 1 ½" water service	2" nominal	Sch. 40 PVC or DR11

(2) Except for casings for water service lines, the interior and exterior of the casing pipe shall be coated with coal tar epoxy. The Contractor shall submit specifications on the proposed casing pipe for approval by the Kill Devil Hills Public Services Department prior to construction.

(3) Spacers to center carrier pipe within the casing pipe shall be stainless steel, bolt-on style, either Model CCS as made by Cascade Waterworks Manufacturing Company or Model SSI as made by Advance Products & Systems, Inc., or approved equal. Spacers are not required in casings for water service lines.

(4) Bulkheads at end of casing shall be of brick and mortar. Manufactured neoprene end seal systems, such as made by Advance Products & Systems, Inc., or equal, may be used if approved by the Engineer. For water service lines, use common duct tape to seal end of PVC casing to water service line at each end.

(d) *Size.* Except for water service lines, all pipelines shall be a minimum of six (6) inches and shall meet the size requirements of the North Carolina Department of Environment and Natural Resources, unless otherwise approved by the Board of Commissioners.

Section C.3. Valves.

(a) *Resilient wedge gate valves*. All resilient wedge gate valves shall conform in all respects to latest AWWA Specification C500 and shall be American Flow Control, Mueller "O" ring or M&H, or approved equal. Resilient wedge gate valves shall be vertical, shall open counterclockwise, and shall be of the non-rising stem type with mechanical joint ends and two (2) inch square operating nut. Resilient wedge valves shall be iron body, double disc, parallel seat, fully bronze mounted.

Resilient wedge valves shall be designed for a working pressure of two hundred (200) psi.

(b) *Butterfly valves*. Butterfly valves shall have the following characteristics:

(1) Butterfly valves shall be class 150-B meeting or exceeding AWWA Specification C- 504, with cast iron disc.

(2) Butterfly valves shall be manually operated with the operator assembly meeting all requirements of section 12, AWWA Specification C-504-70. Operating torques shall comply with Table 1 of C-504 for class 150-B valves. They shall open counterclockwise and be provided with two (2) inch square operating nuts. The operator assembly shall be suitable for trench bury.

(3) Butterfly valves shall have mechanical joint ends. Each valve shall have a serial number permanently indented into the body. The number shall be kept on file by the manufacturer for future reference. Certified copies of the teals shall be forwarded to the Town for record purposes.

(4) Butterfly valves shall be American-Darling, Henry Pratt Ground Hog or approved equal quality.

(c) *Ball valves:* Where valves on 2" PVC water lines are called for they shall be 2" Ball Valve Curb Stops (Ford B11-777-NL).

(d) *Valve boxes*. Valve boxes shall have the following characteristics:

(1) Valve boxes shall be of close-grained, gray cast iron, in three (3) pieces consisting of

(a) a lower base piece which shall be flanged at the bottom to fit around the stuffing gland and rest on the valve bonnet.

(b) an upper part which shall also be flanged on the lower end, of such size so as to telescope over the lower part and the upper end being constructed in the form of a socket to receive the cover.

(c) The centerpiece shall be minimum five (5) inches inside diameter.

(2) The valve box shall be Dewey Brothers, Inc., VBX-TE-3B or approved equal.

(3) The cover shall have cast on the upper surface in raised letters the word "WATER." Valve boxes shall be painted prior to shipment with a coat of protective asphaltum paint and contain a cement collar.

Section C.4. Hydrants.

(a) Fire hydrants shall be AWWA Specification C502, of the compression type and designed for a minimum working pressure of one hundred fifty (150) psi and a hydrostatic test pressure of three hundred (300) psi with the valve in both open and closed positions.

(b) The hydrant valve opening shall be a minimum of four and one-half (4½) inches. Hydrants shall be equipped with two (2) two and one-half (2½) inch hose nozzles, and one (1) four and one-half (4 ½) inch pumper nozzle. All nozzles shall have

N.P.T. threads. Nozzles shall be bronze with cast iron caps secured thereto with suitable steel chain. A drain outlet shall be provided.

(c) The upper hydrant operating stem within the bonnet shall be sealed and lubricated by means of an oil or grease bath. The operating nut shall be standard pentagon type measuring one and one-half (1½) inches from point to flat. Hydrants shall open counterclockwise.

(d) The hydrant shoe shall be six (6) inches in size, of the mechanical joint type.

(e) Hydrants shall be of the safety type so that if the upper barrel is broken off, the hydrant valve will remain closed and reasonably tight.

(f) All hydrants shall be furnished with barrel and stem extensions as required for the final field location. The nominal minimum bury shall be three (3) feet

(g) Hydrants shall be M & H or approved equivalent.

Section C.5. Service pipe and fittings.

(a) Tubing for water services up through 2" shall be HDPE, Copper Tube Size (CTS), conforming to AWWA C901, maximum SODR 9, 200 psi.

(b) The service clamp shall be a brass saddle with double brass bolts conforming to AWWA C800.

(c) The corporation valve shall be Hays Mfg. Co. #5605-DF or approved equal quality.

(d) Minimum size tap and service line shall be 3/4".

(e) Plastic inserts shall be used on all compression fittings and couplings.

(f) Corporation stops shall not be required.

(g) Compression couplings shall be Ford or approved equal, 3-part CTS, as follows:

(1) ¾" x ¾" shall be C34-33G

(2) 1" x ¾" shall be C44-34G

(3) 1" x 1" shall be C44-34G

(h) Water meters shall be Sensus TR/PL positive displacement or approved equal quality.

(i) Meter boxes shall be Carson Industries, LLC, black, solid flush cover, or approved equal, as follows:

(1) For ¾" meters, model 1015-12

(2) For 1" meters, model 1220-12

(3) For 1½" and larger, model 1730; confirm details with Public Services Department before ordering.

(j) Coppersetters shall be Ford, or approved equal, as follows:

(1) For ¾" meters, model VHH72-7W-41-33-G-SNCSTR

(2) For ¾" meters, model VHH74-7W-41-44-G-SNCSTR

(3) For 1½" and 2" Series 70, confirm details with Public Services Department before ordering.

Section C.6. Miscellaneous conditions.

(a) The tapping valve shall be mechanical joint equal to Clow F-5903 and tapping sleeve shall be Romac stainless steel, full-gasket wraparound or approved equal.

(b) Concrete shall be composed of Portland cement, sand and crushed stone or gravel mixed in proportions to develop the twenty-eight (28) day compressive strength of not less than three thousand (3,000) psi.

(c) Welded steel pipe shall be used for encasement pipe and shall conform to the NCDOT Standards, section 932-8. The inside diameter of the casing pipe shall be not less than four (4) inches greater than the largest outside diameter of the carrier pipe, joints or couplings, minimum one-fourth (1/4) inch thickness.

(d) All water line installations shall have included in the pipe trench metallic locating tape: Terra-Tape or approved equal, labeled "WATER LINE BELOW;" installed eighteen (18) inches above pipe and a minimum width of six (6) inches. Tracer wire shall also be provided, installed per industry standard practice.

Section C.7. Certificate of compliance.

Certificates of compliance with the standard specifications shall be furnished with each lot of pipe supplied.

Section C.8. Shop drawings for valve, hydrant and miscellaneous items.

Two (2) copies of shop drawings shall be furnished to the Town before installation to allow the Town to review the proposed materials that will be installed. The Town's written approval of the shop drawings shall be required before commencing work.

PART D. PREPARATION TO INSTALL LINES

Section D.1. Alignment and grade.

(a) *Deviations*. Wherever obstructions, not shown on the Drawings, are encountered during the progress of the work and interfere to such an extent that an alteration in the plan is required, the Town shall be notified at once for approval of any changes.

(b) *Depth of pipe*. The pipe shall be buried to provide thirty-six (36) inches of cover over the top of the pipe, unless otherwise specified by the Town or on the approved Drawings. High points in the line shall be avoided in intersections and when crossing streets. Required cover shall be provided at the lowest grade in the street. High points shall be located at house services or air vents. Ditch crossings shall have a minimum thirty-six (36) inch cover unless otherwise approved by the Engineer.

(c) *Location*.

(1) The pipe shall be located a minimum of ten (10) feet from any wastewater pipe or sewer.

(2) Water mains shall be laid at least 10 feet laterally from existing or proposed sewers, unless local conditions or barriers prevent a 10-foot lateral separation—in which case:

(a) The water main is laid in a separate trench, with the elevation of the bottom of the water main at least 18 inches above the top of the sewer; or

(b) The water main is laid in the same trench as the sewer with the water main located at one side on a bench of undisturbed earth, and with the elevation of the bottom of the water main at least 18 inches above the top of the sewer. NOTE: This condition shall not generally be allowed and may be employed only with the advance permission of the Public Water Supply Section. Contractor shall not use this technique unless advance approval is obtained through the Engineer.

(c) Crossing a Water Main Over or Under a Sewer. This provision shall apply to gravity sanitary sewers and sanitary sewer force mains. New water mains shall be laid to cross sewers with a minimum of 18" separation, over or under, with water OVER the sewer where practical. In either case, a full, un-cut section of new water pipe shall be centered on the point of crossing.

(d) In applying the provisions above, the term "Sewer" shall include, in addition to sanitary sewer lines, pipes carrying reclaimed water.

(3) Relative to storm drainage or stormwater management piping, or other utilities, the following vertical separation standards shall apply when either the water main or the storm drain, or both, is/are new:

(a) Maintain 12" of vertical separation, over or under.

(4) Dead-end lines. No non-looping lines shall be permitted unless otherwise approved by the Town's Board of Commissioners. Non-looping waterlines shall terminate with a fire hydrant or 2" blow- off assembly. Dead end lines without flushing capabilities are not allowed.

Section D.2. Trench width and bedding.

(a) All excavation shall be made in such a manner and to such widths as will provide ample room for properly installing the pipe and permit thorough compaction of backfill around the pipe. All excavation and trenching shall be done in strict accordance with these specifications and all applicable parts of the OSHA regulations, 29 CFR 1926, Subpart E.

(b) Enlargements of the trench shall be made as needed to give ample space for operations at pipe joints. The width of the trench shall be limited to the maximum dimensions shown on the approved drawings, except where a wider trench is needed for the installation of and work within sheeting and bracing. Except where otherwise specified, excavation slopes shall be flat enough to avoid slides that will cause disturbance of the subgrade, damage to adjacent areas, or endanger the lives or safety of persons in the vicinity.

(c) Hand excavation shall be employed wherever, in the opinion of the engineer or the Town of Kill Devil Hills, it is necessary for the protection of existing utilities, poles, trees, pavements, or obstructions.

(d) No greater length of trench in any location shall be left open, in advance of pipe laying, than shall be authorized or directed by the engineer or the Department of Public Services and, in general, such length shall be limited to approximately one hundred (100) feet.

(e) The Contractor shall excavate the trenches to the full depth and grade indicated on the approved drawings including the relevant requirements for bedding. The trench bottoms shall then be examined by the engineer as to the condition and bearing value before any pipe is laid or bedding is placed.

(f) If, in the opinion of the Department of Public Services, the trench requires excavation below the requirements for bedding to provide a sound base, the Department of Public Services shall direct the Contractor to perform the additional excavation. It is the intent that unsatisfactory subgrade materials for pipe be removed.

Section D.3. Boring and jacking.

Installation. The boring equipment to be used for installing the jacked casing shall be of such size and capacity to allow the boring to proceed in a safe and expeditious manner. The installation of the casing and boring of the hole shall be done simultaneously to avoid cave-ins or settlement and for safety of traffic above. Provide dewatering adequate to prevent running sand ahead of casing.

(a) Pits shall be well sheeted and braced as necessary for safe and adequate access for workers, inspectors and materials and shall be of size suitable to equipment and material handling requirements.

(b) Stainless steel spacers shall be installed to support the carrier pipe at the proper elevation inside the casing pipe. Two spacers shall be installed for each full joint of carrier pipe, one within two feet of the end of each joint and the other half a joint length away so as to provide a uniform spacing pattern.

(c) Each of the casing conduits shall be made watertight with a brick masonry bulkhead, or, if submitted to and approved by the Engineer, a manufactured neoprene end seal. In addition, a Class B concrete cradle shall be provided from the end of the tunnel bulkhead to the first pipe joint outside the tunnel.

(d) All joints of carrier pipe inside casing pipe and for at least one addition joint beyond each end of casing shall be restrained.

(e) Under no conditions shall jetting or wet boring of the encasement be allowed.

(f) Water services shall have PVC Schedule 40 or HDPE DR 11 casings as provided herein, which shall be installed by pneumatic “mole” or similar method. Final cover after installation shall be not less than 30 inches. Boring logs shall be maintained. Any resulting humping or other damage to pavement shall be corrected immediately in a manner satisfactory to the Engineer.

PART E. INSTALLATION OF LINES

Section E.1. Laying pipe.

(a) *Generally*. Waterlines are to be installed in accordance with C600, C602, C603, C605, and C606 of the AWWA Standards.

(1) *Contamination protection*. Prevent entrance of foreign material; plug watertight where left unattended.

(2) *Placement*. Pipe length and bedding as a unit in a frost-free, dry trench.

(3) *Special supports and saddles*. See approved drawings.

(b) *Joint deflection*. Manufacturer's recommendation.

(c) All piping shall be installed by skilled workers and in accordance with the best standards for piping installation. Proper tools and appliances for the safe and convenient handling and installation of the pipe and fitting shall be used. Great care shall be taken to prevent any pipe coating from being damaged on the inside or outside of the pipe and fittings.

(d) All pieces shall be carefully examined for defects, and no piece shall be installed which is known to be defective. If any defective piece should be discovered after having been installed, it shall be removed and replaced with a sound one in a satisfactory manner by the Contractor at his/her own expense. Pipe and fittings shall be thoroughly cleaned before they are accepted in the complete work.

(e) All exposed piping shall be installed with vertical and horizontal angles properly related to adjoining surfaces or pipes to provide evidence of good workmanship.

(f) All piping shall be installed to the correct line and grade, with no abrupt changes in line or grade, and as shown on the approved drawings. Joint deflection shall not exceed seventy-five (75) percent of the manufacturer's recommended deflection. Excavation and backfilling shall conform to the requirements of this section. Maximum trench widths shall conform to the trench width excavation limits on the approved drawings.

(g) Following proper preparation of the trench subgrade, pipe and fittings shall be carefully lowered into the trench so as to prevent dirt and other foreign substances from gaining entrance into the pipe and fittings. Under no circumstances shall any of the materials be dropped or dumped into the trench. Proper facilities shall be provided for lowering sections of pipe into trenches.

(h) The full length of each section of pipe shall rest solidly upon the bed of the trench, with recesses excavated to accommodate bells, couplings, joints, and fittings.

(i) Pipe that has the grade or joint disturbed after installation and removed shall be reinstalled by the Contractor at his/her own expense. Pipe shall not be laid in water or when trench conditions are unsuitable for work. Water shall be kept out of the trench until jointing and backfilling are completed. When work is not in progress, open ends of pipe, fittings, and valves shall be securely closed so that no water, earth, or other substance will enter the pipes, fittings, or valves. Pipe ends left for future connection shall be valved, plugged, or capped, and anchored as required. All piping shall be installed in such a manner that it will be free to expand and/or contract without injury to itself or to structures to which it is connected.

(j) Where pipe having joint systems other than conventional (push-on, mechanical joint, etc.), during the laying of such pipe, the Contractor shall arrange for a representative of the pipe manufacturer to instruct the Contractor's pipe laying personnel in the correct procedure to be followed.

(k) When it is necessary to cut ductile iron pipe in the field, such cuts shall be made carefully in a neat workmanlike manner using approved methods to produce a clean, square cut. The outside of the cut end shall be conditioned for use by filing or grinding a small taper, at an angle of approximately thirty (30) degrees.

(l) Before joints are made, each pipe shall be well bedded on a solid foundation, and no pipe shall be brought into position until the preceding length has been thoroughly bedded and secured in place.

(m) Proper and suitable tools and appliances for the safe convenient handling and laying of pipe shall be used and shall in general agree with manufacturer's recommendations.

(n) The Town shall be notified prior to installation of any pipe. The Town shall be allowed to inspect joints, valves, hydrant construction and thrust blocks prior to covering. Contractor shall allow inspection by the Town during normal business hours.

Section E.2. Jointing.

Mechanical joints shall be lubricated with an approved pipe lubricant meeting C111/A21.11 and bolts tightened evenly using a torque of between seventy-five (75) and ninety (90) foot-pounds. Push-on joints shall be lubricated as above and pushed fully home; final position shall be at least 80% to the home mark. Restrain joints with approved devices as described herein, to the extent indicated on the Drawings or as specified elsewhere herein. Every bolt of all mechanical joints, bolted fittings, bolted restraints, etc. shall be tightened to the correct torque, as determined by the manufacturer's specification, by standard practice, or as directed by the Engineer, with final tightness confirmed by a torque wrench.

Section E.3. Cleaning pipe and fittings.

The Contractor shall maintain the interior of pipe and fittings free of foreign material and joint surfaces free of lumps and blisters.

Section E.4. Setting valves and fittings.

(a) Valves, fittings, fire hydrants, plugs and caps shall be set and joined to the pipe in a manner as specified for cleaning, laying and joining pipe and shall be installed with Romac grip rings or approved equal on all MJ fittings.

(b) Valves shall be placed as shown on the drawings or as directed by the Town. Two valves shall be located at all tees, three valves at all crosses and not farther apart than one thousand (1,000) feet

(c) The valve shall be set plumb.

(d) A valve box shall be provided for each valve. The box shall not transmit shock or stress to the valve when the box cover is flush with the surface of the pavement or such level as may be directed. The base section of the valve box shall be set two

(2) inches above the flanged bonnet joint of the valve and accurately centered on the valve operating unit.

(e) A precast concrete ring shall be provided around the top of each valve box; flush with the surface. The ring shall be a minimum of twenty-eight (28) inches in diameter with a nine (9) inch center hole. The ring shall taper from a four (4) inch center thickness to three (3) inches or less on the edges.

Section E.5. Hydrants.

(a) Hydrants shall be installed where shown on drawings or as directed by the Town. Hydrants shall be set a maximum of five hundred (500) feet apart and at any high points.

(b) The hydrant shall be set on a compacted crushed stone base thirty (30) inches square and ten (10) inches thick. Reaction backing shall be installed behind the base of the hydrant.

(c) The hydrant shall be plumb with the pumper nozzle facing the street and nozzle centerline twenty (20) inches above finished grade.

(d) Each hydrant must be connected to the main line with a six (6) inch cast iron or ductile iron branch and controlled by a six (6) inch resilient wedge valve. Romac grip rings or approved equivalent shall be used also.

(e) Drainage shall be provided at the base of the hydrant by placing coarse gravel from the bottom of the trench to at least six (6) inches above the weep hole.

(f) Hydrants shall be painted to the Kill Devil Hills Public Services Department standards. Factory painting alone shall not suffice; a fresh, field coat is required.

Section E.6. Plugs, tees and bends.

Plugs, tees and bends deflecting eleven and one-fourth (11¼) degrees or more shall be provided with restraint.

Section E.7. Method of Restraint.

Of the three commonly-used methods of restraint—thrust or reaction blocks, restraining rods and joint restraint devices—only joint restraint devices are approved for use in all circumstances.

(a) Thrust blocks shall be used at fire hydrants as shown in the detail on the drawings.

(b) Use of thrust blocks other than at fire hydrants or tie-ins to existing mains, and any use of restraining rods, is generally not allowed, and will be allowed only with the express, advance permission of the Engineer.

(c) Extent of joint restraint shall be as shown on the drawings.

(d) Restraint devices shall be installed in full accordance with manufacturer's instructions.

(e) Where joint restraint is not indicated on the drawings, the restrained length shall be determined using the methods promulgated by the Ductile Iron Pipe Research Agency (DIPRA), using Laying Condition 5, Soil Designation "Good Sand," Design Pressure 150 psi, Safety Factor 1.5, and use the restrained length value for "Polywrapped" to account for the smoother exterior wall of PVC versus Ductile Iron.

Section E.8. Thrust Block Dimensions (when and where thrust blocks are allowed).

(a) The following table shows the minimum bearing area against undisturbed trench wall in square feet:

Pipe Size	Tees, Plugs	Hydrants, 90° Bends	Wyes, 45° Bends	22½ ° Bends	11¼° Bends
4”	1	2	1	1	1
6”	3	3	2	1	1
8”	4	6	3	2	1
10”	7	9	5	3	2
12”	9	11	6	3	2
14”	11	15	8	5	3
16”	13	20	10	6	3
18”	16	25	12	7	4
20”	20	28	12	8	4
24”	28	40	20	11	6

(b) Unsuitable soil conditions for trench wall shall require securing fittings with tie rod clamps and concrete or doubling square footage requirements.

Section E.9. Connections.

(a) Existing water lines. Connections shall be made with system pressure on or off as specified by the Town. Existing water lines shall be adequately supported during the tie-in operations and prior to placement of backfill. Reaction backing shall be placed behind all tie-in fittings.

(b) Prior to cutting existing pipelines, the surface of the existing pipe shall be thoroughly cleaned by wire brushing and scraping. When a cut-in is made under pressure, the existing pipe surface shall be washed down with a four (4) percent solution of chlorine prior to installing the tapping valve and sleeve. All fittings, pipes, valves, etc., used in the connection that cannot be disinfected during normal water line chlorination shall be swabbed out with a four (4) percent or stronger solution of chlorine meeting AWWA B301 standards during assembly. Care shall be exercised in order to prevent contamination of the existing water lines, and failure to comply with this requirement will necessitate chlorination of existing water lines at the Contractor’s expense. Alter cutting, the Contractor shall provide the Town with the coupon for its inspection.

(c) After connection is made, the Contractor shall drain sufficient water from the connection to effect removal of the chlorine solution.

(d) The dimensions of existing water lines may not allow use of standard mechanical joint fittings, since these water mains may be pit case pipe, asbestos-cement pipe or classes other than standard. Contractor shall make such investigations as he feels prudent to discover any such non-standard situation and shall, at his expense, make special arrangements to connect to such lines in a manner satisfactory to the Town.

(e) Tapping valve and sleeve shall be installed with the pressure on. Solid or cutting-in sleeve shall be installed with the pressure off.

Section E.10. Service lines.

(a) *Generally*. Service lines shall meet AWWA C800 standards. The Contractor shall provide minimum **three quarter (3/4) inch** service to all lots. Larger services may be required for commercial, multiple housing or those single-family homes requiring such.

(b) *New Services*: When the work includes replacing an existing water main with a new line, all services shall be new. New taps shall be made to the new main and new services extended all the way back to the existing "Coppersetter." If the existing setter is damaged or otherwise unsuitable for connection, the Town shall furnish a replacement to the Contractor from its stock, and the Contractor shall replace the setter, all without additional compensation to Contractor.

(1) *Exception*: Services larger than 2" shall be transferred using a tapping sleeve and valve assembly and cutting into the existing service pipe.

(2) Existing ¾" service piping shall be replaced with new ¾" tap, ¾" service piping back to the meter.

(c) *Line and grade*. The service lines shall be located on the property line of each lot and shall be at right angles to the street centerline.

(d) *Minimum depth*. The minimum depth to top of' pipe shall be thirty (30) inches.

(e) *Tapping water line*. The corporation valve shall be installed forty-five (45) degrees above center and provide a horizontal loop with service line at tap.

(f) *Meter and box*. A meter and box shall be provided for each lot and located on the right-of-way line.

Section E.11. Maximum tap sizes.

The following shall be the maximum tap sizes:

Type of Tap	Pipe Size					
	4”	**6”**	**8”**	**10”**	**12”**	**24”**
Direct Tap, All Pipe	½”	¾”	1”	1¼”	2”	2”
w/Service Saddle, All	1”	1½”	2”	2”	2”	2”

Section E.12. Backfilling.

After the pipelines have been laid and valves, blowoffs and fittings installed, the trenches shall be backfilled by depositing the excavated material, carefully, under and around the pipe and thoroughly tamping up to the elevation of the top of the pipe. The remaining backfill shall be placed in maximum layers twelve (12) inches thick thoroughly tamped with mechanical tampers. The Contractor will be held responsible for settlement over all trenches. The Contactor shall keep all backfill even with the surrounding road surface until the work has been accepted by the Town. Extreme care shall be exercised in placing warning signs, lights and substantial barricades on the work.

PART F. TEST AND CLEANUP

Section F.1. Testing and inspections.

(a) The Town shall monitor all testing and inspect all lines as construction progresses. All testing shall be completed before connecting to existing water lines. The Contractor or developer shall notify the Town twenty-four (24) hours in advance when he/she will be ready for inspection and testing and shall pretest before notifying the Town.

(b) After the pipe has been laid and backfilled as specified, all newly laid pipe, or any valve section thereof; shall be subjected to a pressure of not less than one hundred fifty (150) psi. Air or air-water methods of applying pressure are prohibited. The duration of the pressure test shall be at least four (4) hours, for which time the Contractor shall fill the line slowly, expelling air at the high points, and bring it up to required pressure.

(c) The only lines not required to be pressure tested are short (not longer than 25’ unless approved by the Engineer) connection sections used to tie new mains into existing lines.

(d) The Town shall inspect the entire line and appurtenances for leaks and movement. Any leaks or defects shall be repaired, and the test repeated until acceptable.

(e) A leakage lest shall be conducted after a pressure test has been satisfactorily completed. The average pressure range shall be one hundred fifty (150) psi and be held for four (4) hours, provided that the Engineer may, at his discretion, allow this time to be reduced to (2) hours. The lines shall be filled as for the pressure test or the Contractor shall continue to maintain the pressure from the test. A source of makeup water shall be provided that can be measured. The test will be made to determine the leakage, or the amount of water required to maintain test pressure.

(f) The allowable leakage, as determined by measuring the amount of makeup water added, is less than the value computed by the formula:

$$Q = \frac{L\ D\ P^{1/2}}{148{,}000}$$

Where,

Q = Leakage in gallons per hour
L = Length of pipe in feet
D = Nominal pipe diameter in inches
P = Average test pressure, psi (gauge)

Should any test of pipe disclose leakage greater than that specified above, the Contractor shall locate and repair defective joints until the leakage is within the specified allowance.

(g) The Contractor shall maintain pressure on the line and close each valve progressively, starting from the far end of the system, and vent extreme ends of the line. Allowable pressure drop shall be less than ten (10) psi in five (5) minutes with test pump off.

Section F.2. Adjustment and cleaning.

(a) *Flushing*. The water shall be flushed by providing taps in sufficient size or number to provide a velocity of two and one-half (2 ½) feet per second in the line flushed. Hydrants may be used provided the requirements listed below are met

(1) The Contractor shall submit to the Town a procedure schedule outlining the method he proposes to use for flushing water lines. Lines shall be flushed at a maximum of one fourth (¼) mile intervals.

(2) Flushing may be done prior to pressure testing or following pressure testing but, in any case, prior to chlorination of the water line.

(b) *Disinfection*. All newly-laid lines shall be disinfected. The Contractor shall furnish all necessary equipment and materials and furnish all necessary assistance for effective disinfection of the water lines. Disinfection of waterlines shall comply with Section 4.4.3 (the Continuous Feed Method) of AWWA C651 and 15A NCAC 18C.1003 (Disinfection of Storage Tanks and Distribution Systems)..

(1) After the water line has been pressure tested and flushed, the Contractor shall pump a chlorine solution into the water line in such a manner and at such strength that the residual free chlorine shall be not less than fifty (50) ppm (parts per million) at the end of each line tested.

(a) Using high test calcium hypochlorite, or approved equal, the Contractor shall prepare a ten thousand (10,000) ppm solution in water and pump at a constant rate into the water line while bleeding off the water at the extreme end. The bleed rate will determine the feed rate

of the chlorine in order to arrive at fifty (50) ppm solution in the water line.

(b) Liquid chlorine may be applied to the water line much the same way as the hypochlorite solution. The liquid must be mixed with water before pumping into the water line. The rate of application will have to be adjusted for the degree of concentration of the liquid chlorine.

(c) Chlorine gas shall not be used to chlorinate the water line.

(2) The chlorinating agent shall be applied at the supply end of the line through a corporation valve. The water for injecting the chlorine into the new line shall be taken from an isolated container and injected by utilizing a pressure pump. Care shall be exercised to prevent any of the chlorine solution from entering an existing water line.

(3) The chlorinated water shall be retained in the new water line for a period of twenty-four (24) hours with a chlorine residual of 10 ppm. While the chlorine solution is in the line, the Contractor shall operate valves in the chlorinated section to ensure the complete disinfection thereof.

(4) Chlorinated water shall be flushed from the line at the end of the retention time so that the entire line is clear of any residual chlorine. Chlorinated water shall be wasted in accordance with C651 of the AWWA standards. A sample will be taken from the line twenty (24) hours AFTER the line is flushed. Samples shall be analyzed by a State Certified lab. The number of bacteriological samples and locations will be determined by the Kill Devil Hills Department of Public Services but no less than one every one thousand two hundred (1,200) feet. Authorized Town employees shall monitor all sampling. If the water does not pass the bacteriological test, the test procedure outlined above shall be repeated until the quality of the water is substantially the same as that being delivered from the existing distribution system.

(c) *Pressure test and chlorinating report forms*. All information relative to pressure tests and chlorinating procedures shall be witnessed and verified in writing by the project engineer and the results shall be reported on standard forms available at the office of the Public Services Director. These reports shall be submitted immediately upon completion of such tests and disinfection.

Section F.3. Bacteriological test.

(a) Once all required tests have passed, the Contractor shall furnish one (1) approved set of the bacteriological test results to the Public Services Department. The Town reserves the right to perform a follow-up bacteriological test of its own if the time between the original sampling and the date of placing the line in service exceeds 10 days. The time required for this additional sampling and testing shall not be a basis for a claim for extension of the Contract Time.

Section F.4. Abandonment of Existing Pipe in Place:

(a) In the event that an existing pipe is abandoned as the result of the installation of new pipe, the ends of the abandoned pipe shall be capped or plugged.

(b) All valve boxes shall be removed from the abandoned line and the valves buried with the nuts removed. No remnant of the abandoned pipe shall remain at or above grade.

(c) All hydrants shall be removed from the abandoned line and disposed of legally, or if so directed, delivered to KDH Water Division yard. Plug hydrant branch.

PART G. CROSS-CONNECTION PREVENTION PROGRAM

Section G.1. Intent, Purpose and Control.

(a) This Cross-Connection Prevention Program (this Program) is published as part of the Waterline Specifications of the Town of Kill Devil Hills, NC (the Town), pursuant to § 51.20, STANDARDS FOR CONSTRUCTION of the Town Code, which states as follows:

> All design and construction associated with the water system shall be in conformance with Title 15 A, Subchapter 18C of the North Carolina Administrative Code, "Rules Governing Public Water Systems" and the latest version of the town's standard specifications and details for water construction.

(b) It is the intent of this Program to eliminate the potential hazards to the potable water system from uncontrolled cross connections. It is also the intent to apply the principle that the degree of protection should be commensurate with the degree of hazard.

(c) The purpose of this cross-connection control Program is to define the role of the Town as the water purveyor in the elimination or control of all cross-connections within its public water supply.

(d) This Program shall apply to all consumers connected to the Town's public potable water supply.

(e) This Program will comply with the Federal Safe Drinking Water Act (P.L. 93-523) the North Carolina State Administrative Code (Title 15A, Subchapter 18C), and the North Carolina State Building Code as they pertain to cross- connections with the public water supply.

Section G.2. Definitions.

(a) ***Air gap.*** A physical separation between the free-flowing discharge end of a potable water supply pipeline and an open or non-pressure receiving vessel. An approved air gap distance shall be at least double the diameter of the supply pipe measured vertically above the overflow rim of the vessel but not less than 1 inch.

(b) ***Atmospheric Type Vacuum Breaker***. A device containing a float-check, a check seat and an air inlet port used to prevent backsiphonage, which is designed as not to be subject to static line pressure.

(c) Auxiliary Water Supply. Any water supply on or available to the premises other than the purveyor's approved water supply.

(d) Backflow. Any reverse flow of water or mixtures of water, gas or any other liquid substances into the public water system from any source or sources.

(e) Backflow Prevention Assembly. An assembly used to prevent backflow into a consumer's or public potable water system. The "backflow prevention assembly" shall mean an assembly used for containment and/or isolation purposes that has been inspected and approved by the Town and has been shown to meet the design and performance standards of the American Society of Sanitary Engineers (ASSE), American Water Works Association (AWWA), or the Foundation for Cross Connection Control and Hydraulic Research of the University of Southern California.

(f) Backflow Prevention Assembly Type. A "backflow prevention assembly" shall mean an assembly used to prevent backflow into a consumer's or public water system. The type of assembly used should be based on the degree of hazard either existing or potential. The types are:

(1) Double Check Valve Assembly (DCVA)
(2) Double Check Detector Assembly (DCDA)
(3) Pressure Vacuum Breaker (PVB)
(4) Reduced Pressure Zone Assembly (RPZA)
(5) Reduced Pressure Detector Assembly (RPDA)

(g) Backpressure. Any elevation of pressure in the downstream piping system caused by pumps, elevation of piping, or steam and/or air pressure above the supply pressure at the point of consideration, which would cause a reversal of the normal direction of flow.

(h) Backsiphonage. A reversal of the normal direction of flow in the pipeline due to a negative pressure (vacuum) being created in the supply line with the backflow source subject to atmospheric pressure.

(i) Certified Backflow Prevention Assembly Tester. A person who holds a current certification as a Backflow Prevention Assembly Tester from the North Carolina Chapter of American Water Works Association, the North Carolina Rural Water Association, a comparable organization in Virginia, or is currently certified as a Backflow Prevention Assembly Tester by another municipal water distribution system in North Carolina or Virginia. Testers shall present their credentials to the Town prior to performing work. The Town will maintain a list of Certified Backflow Prevention Assembly Testers who have presented their credentials and meet the above criteria.

(j) Consumer. Any person, firm or corporation using or receiving water from the Town's public water system.

(k) Consumer's Water System. Any water system commencing at the point of delivery and continuing throughout the consumer's plumbing system located on the consumer's premises, whether supplied by public potable water or an auxiliary water supply.

(l) Consumer's Potable Water System. That portion of the privately owned potable water system lying between the point of delivery and the point of use and/or isolation protection. This system will include all pipes, conduits, tanks, receptacles, fixtures, equipment and appurtenances used to produce, convey, store or use potable water.

(m) Containment. Preventing the impairment of the public potable water supply by installing an approved backflow prevention assembly at the service connection.

(n) Contamination. An impairment of the quality of water which creates a potential or actual hazard to the public health through the introduction of hazardous or toxic substances or waterborne health hazards in the form of physical or chemical contaminants or biological organisms and pathogens.

(o) Cross-Connection. Any actual or potential connection or piping arrangement between a public or a consumer's potable water system and any other source or system through which it is possible to introduce into any part of the potable system any used water, industrial fluids, gas or substance which could be harmful or hazardous to the potable water system.

(p) Double Check Valve Assembly (DCVA). An assembly composed of two independently acting, approved check valves, including tightly closing shut off valves located at each end of the assembly and fitted with properly located test cocks. This assembly shall only be used to protect against a non-health hazard.

(q) Double Check Detector Assembly (DCDA). A specially designed assembly composed of a line size approved double-check valve assembly with a specific bypass water meter and a meter size approved double-check valve assembly. The meter shall accurately register in U.S. gallons and show a registration for all rates of flow. This assembly shall only be used to protect against a non-health hazard.

(r) Degree of Hazard. The evaluation of a hazard within a water system, which can be, classified as either a pollutant (non-health) or contaminant (health) hazard as determined by the Town.

(s) Health Hazard. An actual or potential threat of contamination of a physical, chemical, biological, pathogenic or toxic nature to the public or consumer's potable water system to such a degree that there would be a danger to health as determined by the Town.

(t) Non-health Hazard. An actual or potential threat to the quality of the public or the consumer's potable water system. A non-health hazard is one that, if introduced into the public water supply system, could be a nuisance to water consumers but would not adversely affect human health as determined by the Town.

(u) Health Agency. Shall mean the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Resources.

(v) Industrial Fluids. Any fluid or solution, which may be chemically, biologically or otherwise contaminated or polluted in a form or concentration such as would constitute a health or non-health hazard if introduced into the public or consumer's potable water system.

(w) Industrial Piping System. A system used by the consumer for transmission, conveyance or storage of any fluid, solid or gaseous substance other than an approved water supply.

(x) Isolation. Confining a localized hazard within a consumer's water system by installing approved backflow prevention assemblies.

(y) Point of Delivery. The termination of the meter assembly downstream of the meter on the consumer's side and is generally the end of the meter assembly where the consumer's service line connects. The consumer shall be responsible for all water piping and control assemblies located on the consumer's side of the point of delivery.

(z) Pollutant. An impairment of the quality of the water to a degree which does not create an actual hazard to the public health but which does adversely and unreasonably affect the aesthetic qualities of such waters for domestic use.

(aa) Potable Water. Water from any source, which has been approved for human consumption by the North Carolina Department of Environment and Natural Resources (NCDENR).

(bb) Pressure Vacuum Breaker (PVB). An assembly containing an independently operating internal loaded check valve and an independently operating loaded air inlet valve located on the discharge side of the check valve. The assembly is to be equipped with properly located test cocks and tightly closing shut off valves attached at each end of the assembly. This assembly is designed to protect against a health hazard (contaminant) under a backsiphonage condition only.

(cc) Private Water System. Any water system located on the consumer's premise whether supplied by public potable water or an auxiliary supply such as a well.

(dd) Public Potable Water System. Any publicly or privately-owned water system operated as a public utility, under a current North Carolina Department of Environment and Natural Resources NCDENR permit, to supply water for public consumption or use. This system will include all sources, facilities, and appurtenances between the source and the point of delivery such as valves, pumps, pipes, tanks, equipment, and appurtenances used to convey, treat, or store potable water for public consumption or use.

(ee) Reduced Pressure Zone Assembly (RPZA). An approved, properly functioning assembly containing two independently acting check valves with a hydraulically operating, mechanically independent pressure differential relief valve located between the check valves and at the same time below the first check valve. The assembly must include properly located test cocks and tightly closing shutoff valves at each end of the assembly. This assembly is designed to protect against a health hazard.

(ff) Reduced Pressure Detector Assembly (RPDA). A specially designed assembly composed of a line size approved reduced pressure principle backflow prevention assembly with a specific bypass water meter and a meter sized approved reduced pressure principle backflow prevention assembly. The meter shall register in U.S. gallons accurately for only very low rates of flow and shall show a registration for all rates of flow. This assembly shall be used to protect against health hazard.

(gg) Registered Professional Engineer. An individual currently licensed by the North Carolina Board of Examiners for Engineers and Surveyors to practice engineering in the State of North Carolina.

(hh) Service Connection. The terminal end of the piping connection from the public potable water system, i.e., where the water purveyor's jurisdiction and sanitary

control over the potable water stops at its point of delivery to the consumer's water system.

(ii) Unapproved Water Supply. A water supply or any natural supply such as a well, spring, river, stream, etc. which has not been approved for human consumption by the NCDENR.

(jj) Used Water. Any water supplied by a water purveyor from a public water system to a consumer's water system after it has passed through the point of delivery and is no longer under control of the water purveyor.

(kk) Water Purveyor. The operator of a public potable water system providing an approved water supply to the public.

Section G.3. Objective of the Program.

The specific objectives of the Program are as follows:

(a) To protect the public water supply of the Town against the actual or potential contamination or pollution by isolating within the consumer's private water system, contaminants or pollutants that could under adverse conditions, backflow through uncontrolled cross-connections into the public water systems.

(b) To eliminate or control existing cross-connections, actual or potential, between the consumer's potable water system(s) and non-potable water system(s), plumbing fixtures and industrial piping system(s).

(c) To provide a continuing inspection program of backflow and cross-connection control which will systematically and effectively control all actual or potential cross-connections that may be installed in the future.

Section G.4. Responsibility

(a) Responsibility of Health Agency – NCDENR (Division of Water Resources) has the responsibility for promulgating and enforcing laws, rules, regulations and policies applicable to all water purveyors in the state of North Carolina in carrying out an effective cross-connection control program. The N.C. Division of Water Resources also has the primary responsibility of ensuring that the water purveyor operates the public potable water system free of actual or potential sanitary hazards including unprotected cross-connections. NCDENR also has the responsibility of ensuring that the water purveyor provides an approved water supply at the connection to the consumer's water system and further that the purveyor requires the installation of a backflow prevention assembly for all facilities where cross-connections exist or may exist on the basis of the degree of hazard.

(b) Responsibility of the Town - Except as otherwise provided herein, the Town is the water purveyor and is responsible for ensuring a safe water supply, beginning at the source and including all of the public water distribution system, including the service connection and ends at the point of delivery to the consumers' water systems. In addition, the Town shall exercise reasonable vigilance to ensure that the consumer(s) has taken the proper steps to protect the public potable water system. The Town will determine the degree of hazard or potential hazard to the public potable water supply system, the degree of protection required and will

provide for proper containment protection through an on-going inspection program. The Town will identify all facilities where approved backflow prevention assemblies are required to be installed. When it is determined that a backflow prevention assembly is required for the protection for the public system, the Town shall require the consumer, at the consumer's expense, to install an approved backflow prevention assembly at each service connection, to test within ten (10) days of installation and annually thereafter, to properly repair and maintain assembly or assemblies and to keep adequate records of each test and subsequent maintenance and repair, including materials and/or replacement parts and submit annual certifications of these tests to the Town.

(c) Responsibility of Building Inspector - The Building Inspection Department of the Town has the responsibility not only to review building plans and inspect plumbing as it is installed, but they also have the explicit responsibility of preventing cross-connections from being designed and built into the plumbing system within its jurisdiction. Where the review of building plans suggests or detects the potential for cross-connections being made an integral part of the plumbing system, the building inspector has the responsibility, under North Carolina State Building Code, for requiring that such cross-connections be either eliminated or provided with backflow prevention equipment approved by the North Carolina State Building Code.

(d) Responsibility of the Consumer - The consumer has the primary responsibility for preventing pollutants and contaminants from entering his/her potable water system(s) or the public potable water system. The consumer's responsibility starts at the point of delivery from the public potable water system and includes all of his/her water system(s). The approved backflow prevention assemblies shall be installed, operated, tested and maintained at his/her expense as directed by the Town. The consumer shall maintain accurate records of tests and repairs made to backflow prevention assemblies and shall maintain such records for a minimum period of 3 years, and, when requested, provide them to the Town. The records shall be on forms approved by the Town and shall include the list of materials or replacement parts used. Following any repair, overhaul, re-piping or relocation of an assembly, the consumer shall have it tested to ensure that it is in good operational condition and will prevent backflow. A Certified Backflow Prevention Assembly Tester shall test; perform maintenance and repairs of backflow prevention assemblies, consistent with the provisions of the Plumbing Code.

(e) Responsibility of Certified Backflow Prevention Assembly Tester - When employed by the consumer to test, repair, overhaul or maintain backflow prevention assemblies, a certified backflow prevention assembly tester (Tester) shall have the following responsibilities:

(1) The Tester shall be responsible for making competent inspections and for repairing or overhauling backflow prevention assemblies and making reports of such repairs to the consumer and responsible authorities on a form approved by the Town. The Tester shall include a list of materials or replacement parts used. The Tester shall be equipped with and be competent to use all necessary tools, pressure gauges, site tubes, differential gauges, compensating tees, manometer and other equipment

necessary to properly test, repair and maintain backflow prevention assemblies. It will be the responsibility of the Tester to ensure that original manufactured parts are used in the repair of, or replacement of parts in a backflow prevention assembly. It will be the Tester's further responsibility not to change the design, material or operational characteristics of an assembly during a repair or maintenance without prior approval of the Town. A Tester shall perform the work and be responsible for the competency and accuracy of all tests and reports. The Tester shall provide a copy of tests and reports to the consumer and to the Town within 10 business days of any completed repair work. A Tester shall maintain such records for a minimum of 3 years.

(2) All certified backflow prevention testers must obtain and employ backflow prevention assembly test equipment that has been evaluated and/or approved by the Town. All test equipment shall be checked for accuracy at a minimum annually, calibrated if necessary, and certified to the Town as to such calibration, employing an accuracy/calibration method acceptable to the Town.

(3) Nothing herein shall be construed to authorize a Certified Backflow Prevention Assembly Tester to assume any roles that would conflict with the Plumbing Code.

Section G.5. Right of Entry

(a) Authorized representatives from the Town shall have the right to enter any building, structure or premises during normal business hours to perform any duty imposed by this Program. Those duties shall include, but are not limited to, sampling and testing water and/or inspections and observations of all piping systems connected to the public water supply. Refusal to allow entry for these purposes may result in discontinuance of water service.

(b) Where a user has security measures in force, the user shall make necessary arrangements with the security guards so that town personnel will be permitted to enter, without delay, for the purpose of performing their specific responsibilities. Refusal to allow entry for these purposes may result in discontinuance of water service.

(c) Upon request, the consumer shall furnish to the Town any pertinent information regarding the water supply system on such property where cross-connections and backflow are deemed possible.

Section G.6. Elimination of Cross-Connections; Degree of Hazard

(a) When cross-connections are found to exist, the owner will be notified in writing to disconnect the same within the time limit established by the Town. The degree of protection required and the maximum time allowed for compliance will be based upon the potential degree of hazard to the public water supply system. The maximum time limits are as follows:

(1) Unprotected cross-connections with private wells or other auxiliary water supplies require immediate disconnection.

(2) All facilities, which pose a potential health hazard to the potable water system shall be considered health hazard facilities. All health hazard facilities shall install an approved backflow prevention assembly within 60 days of notification.

(3) All facilities not identified as a "health hazard" shall be considered non-health hazard facilities. All non-health hazard facilities shall install an approved backflow prevention assembly within 90 days of notification.

(4) If, in the judgment of the Town, an imminent health hazard exists, water service to the building or premises where a cross-connection exists may be terminated unless an air gap is immediately provided, or the cross-connection is immediately eliminated.

(5) Water mains, served by the Town but not maintained by the Town, will be considered cross-connections, with a degree of hazard to be determined by the Town. Degree of protection shall be based upon the degree of hazard, as determined by the Town.

(6) In the event that town personnel do not have sufficient access to every portion of a private water system (i.e. classified research and development facilities; federal government property) to allow a complete evaluation of the degree of hazard associated with such private water systems, an approved RPZA shall be required as minimum protection.

(7) No person shall fill special use tanks or tankers containing pesticides, fertilizers, toxic chemicals or their residues from the public water system except at a location equipped with an air gap or an approved RPZA properly installed on the public water supply and with prior approval from the Town.

(8) No person shall install any water operated equipment or mechanism or use any water treating chemicals or substance if it found that such equipment, mechanism, chemical or substance may cause pollution or contamination of the domestic water supply. Such equipment or mechanism may be permitted only when equipped with an approved backflow prevention device or assembly.

(9) There are no grandfather clauses that exist for backflow assembly installation. Any existing backflow preventer shall be allowed by the Town of Kill Devil Kills to continue in service unless the degree of hazard is such that it supersedes the effectiveness of the present backflow preventer, or results in an unreasonable risk to the public health. Where the degree of hazard has increased, as in the case of a residential installation converting to a business establishment, any existing backflow preventer must be upgraded to a RPZA, or a RPDA must be installed in the event that no backflow device was present.

Section G.7. Installation of Assemblies

(a) All backflow prevention assemblies shall have approvals from the University of Southern California Foundation for Cross-Connection Control and Hydraulic Research (USC FCCCHR) and the American Society of Sanitary Engineering (ASSE), conform to AWWA C510 (double check valve assemblies) or AWWA C511 (reduced pressure assemblies), and adhere to ANSI and ASTM standards. All assemblies installed on fire lines shall have approval by Factory Mutual system (FM).

(b) All backflow prevention assemblies shall be installed in accordance with the specifications furnished by the Town, manufacturer's installation instructions or in the latest edition of the North Carolina Building Code, whichever is most restrictive.

(c) All new construction plans and specifications, when required by the North Carolina Building Code and NCDENR, shall be made available to the Town for review and approval and to determine the degree of hazard.

(d) Ownership, testing and maintenance of the assembly shall be the responsibility of the consumer.

(e) All backflow prevention assemblies must be located in a place where they are readily accessible for regular testing, maintenance and inspection. Backflow prevention assemblies installed above ground must be in freeze proof enclosures.

(f) All backflow prevention assemblies with gravity drains that do not drain to daylight or atmosphere shall be classified as potential cross-connections and be raised above ground and placed in freeze proof enclosures.

(g) Assembly owners are responsible for the environment that assemblies are installed in. Assembly owners are responsible for supplying supplemental heat when assemblies are endangered of freezing.

(h) The installation of any backflow prevention assembly, which is not approved by the Town, must be replaced by one that is approved by the Town.

(i) When it is not possible to interrupt water service, provisions shall be made for a "parallel installation" of backflow prevention assemblies. Both backflow prevention assemblies must be equal in protection for the degree of hazard. The Town will not accept an unprotected bypass around a backflow prevention assembly when the devise is in need of testing, repair or replacement.

(j) Backflow prevention assemblies may be installed in a vertical position with prior approval from the Town provided the flow of water is in an upward direction and the backflow prevention assembly was designed for a vertical installation.

(k) Following installation, all backflow prevention assemblies are required to be tested by a certified backflow prevention assembly tester within ten days. The consumer is required to furnish the following information to the Town after installation:

(1) Service address where assembly is located
(2) Owner (and address, if different from service address)
(3) Description of assembly's location
(4) Date of installation

(5) Installer (include name, company represented, license number)
(6) Type of assembly and size of assembly
(7) Manufacturer, model number, serial number
(8) Test results/report

(l) All installations of backflow prevention assemblies shall include the installation of strainers located immediately upstream of the backflow device. The installation of strainers will preclude the fouling of backflow devices due to both foreseen and unforeseen circumstances occurring to the water supply system such as water main repairs, water main breaks, fires, periodic cleaning and flushing of mains, etc.

(m) No consumer side water connections shall be permitted between the meter assembly and the backflow prevention assembly.

(n) When a backflow prevention assembly is being installed retroactively in an existing facility, a thorough hydraulic analysis, including revised hydraulic calculations, new fire flow data, and all necessary system modifications to accommodate the additional friction loss, should be performed by a Registered Professional Engineer and be approved by the consumer's insurance underwriters prior to the installation of the backflow assembly.

(o) For existing facilities, the requirement for an RPZA or DCVA assembly on the water service pipe may be waived if the consumer can demonstrate to the satisfaction of the Town that (a) it would impede the function of existing fire sprinkler equipment and (b) sufficient internal isolation backflow preventers have been installed and tested. To qualify for this exception, the consumer shall provide a report prepared by a Registered Professional Engineer providing hydraulic calculations demonstrating impairment of the function of the existing fire sprinkler equipment and identifying the locations of backflow preventers within the premises that provide complete internal protection against cross connections. The consumer will be required to submit reports of annual testing results for the internal isolation backflow assemblies.

Section G.8. Testing and Repairs of Assemblies

(a) Testing of backflow prevention assemblies shall be made by a certified backflow prevention assembly tester at the expense of the consumer. Such tests are to be conducted upon installation and on an annual basis. A record of all testing and repairs is to be retained by the consumer. Copies of the records must be provided to the Town within ten (10) days after the completion of any testing and/ or repair work.

(b) Any time that repairs to backflow prevention assemblies are deemed necessary, whether through annual or required testing, or routine inspection by the consumer or the Town, these repairs must be completed within a specified time in accordance with the degree of hazard. In no case shall this time period exceed:

(1) Health Hazard Facilities – 7 days
(2) Non-Health Hazard Facilities- 21 days

(c) All backflow prevention assemblies with test cocks are required to be tested annually or at a frequency established by the Town.

(d) It shall be unlawful for any consumer or certified backflow prevention assembly tester to submit any record to the Town that is knowingly false or incomplete in any material respect. It shall be unlawful for any consumer or certified backflow prevention assembly tester to knowingly fail to submit to the Town any record that is required by this Program. Such violations shall result in any of the enforcement actions outlined in Section G.14, Enforcement, below.

Section G.9. Examples of Facilities Requiring Protection

The following types of facilities or services have been identified by the Town as having a potential for backflow of non-potable water into the public water supply system. Therefore, an approved backflow prevention assembly for containment will be required on all such services according to the degree of hazard present.

This is not intended to be an exhaustive list. Other types of facilities or services not listed below may also be required to install approved backflow prevention assemblies if determined necessary by the Town. As a minimum requirement, most commercial services will be required to install a Double Check Valve Assembly unless otherwise listed below.

Abbreviations:

DCVA = Double Check Valve Assembly
RPZA = Reduced Pressure Zone Assembly
DCDA = Double Check Detector Assembly
RPDA = Reduced Pressure Detector Assembly
AG = Air Gap

(a) Automotive Service Stations, Dealerships, etc.

(1) Non-Health Hazard: DCVA
(2) Health Hazard: RPZA

(b) Auxiliary Water Systems

(1) Approved Public/Private Water Supply: DCVA
(2) Unapproved Public/Private Water Supply: RPZA
(3) Feed to Non-Potable Water Source: AG
(4) Used Water and Industrial Fluids: RPZA

(c) Bakeries

(1) Non-Health Hazard: DCVA
(2) Health Hazard: RPZA

(d) Beauty Shops/Barber Shops

(1) Non-Health Hazard: DCVA
(2) Health Hazard: RPZA

(e) Beverage Bottling Plants: RPZA

(f) Breweries: RPZA

(g) Buildings-Hotels, apartment houses, public and private buildings or other structures having unprotected cross-connections:

(1) (Under five stories) Non-Health Hazard: DCVA

(2) (Under five stories) Health Hazard: RPZA
(3) (Over five stories) All: RPZA

(h) Canneries, packinghouses and rendering plants: RPZA

(i) Chemically contaminated water system: RPZA

(j) Commercial carwash facilities: RPZA

(k) Commercial greenhouses: RPZA

(l) Commercial sales establishments (department stores, malls etc.)

(1) Non-Health Hazard: DCVA
(2) Health Hazard: RPZA

(m) Concrete/asphalt plants: RPZA

(n) Dairies and cold storage plants: RPZA

(o) Dye works: RPZA

(p) Film Laboratories: RPZA

(q) Fire Systems: All Fire System Connections shall be protected with a RPDA, except simple fire sprinkler systems with no booster pump or chemical injection and less than five stories building height may be DCDA or DCVA

(r) Hospitals, medical buildings, sanitariums, morgues, mortuaries, autopsy facilities, nursing and convalescent homes, medical clinics and veterinary hospitals: RPZA

(s) Laundries:

(1) Non-Health Hazard: DCVA
(2) Health Hazard: (i.e. dry cleaners): RPZA

(t) Lawn Irrigation Systems: RPZA, except DCVA for simple systems with neither chemical injection nor booster pumps

(u) Metal manufacturing, cleaning, processing and fabricating plants: RPZA

(v) Oil and Gas production, storage or transmission plants: RPZA

(w) Pest Control exterminating and fumigating: RPZA

(x) Printing Facility: RPZA

(y) Power Plants: RPZA

(z) Restaurants:

(1) Non-Health Hazard: DCVA
(2) Health Hazard: RPZA

(aa) Restricted, Classified or other closed facilities: RPZA

(bb) Sand and Gravel Plants: RPZA

(cc) Schools and Colleges: RPZA

(dd) Sewage and Storm Drain Facilities: RPZA

(ee) Swimming Pools: RPZA

(ff) Temporary Service:

(1) Non-Health Hazard: DCVA
(2) Health Hazard: RPZA

(gg) Used Water: RPZA

(hh) Waterfront Facilities: RPZA

Facilities not specifically mentioned above, shall comply with the guidelines established in AWWA Manual M-14, current edition.

Section G.10. Fire Protection Systems

All connections for fire protection systems connected to the public water system shall be protected with an approved RPDA as a minimum requirement. All fire systems using toxic additives or booster pumps shall be protected by a RPDA at the main service connection.

Section G.11. Unapproved Sources of Supply

(a) No person shall connect or cause to be connected any supply of water, not approved by the NCDENR, to the water system supplied by the Town.

(b) In the event the consumer has reason to believe that a backflow incident has occurred, between the consumer's private water system and the public water system, the consumer must notify the Town immediately so that appropriate measures may be taken to isolate and remove the contamination.

Section G.12. Other Connections

All other connections to the public water supply shall have backflow prevention assemblies as specified by the Town. This shall include water mains installed but not maintained by the Town, including but not limited to mobile home parks, apartments, group housing projects and other private distribution systems or similar hazard potential as determined by the Town.

Section G.13. Limitation of Liability

(a) Consumers should be aware that installation of a backflow prevention assembly in a plumbing system may limit the volume for thermal expansion unless an expansion tank is provided. The Town shall not be liable for any loss or damage caused by thermal expansion in a plumbing system due to the installation of a backflow preventer on existing water systems.

Section G.14. Enforcement

(a) Any violation or failure to conform with the provisions of this Program shall constitute a violation of Chapter 51 of the *Town Code,* subject to the penalties set forth in §51.55 thereof.

(b) Failure for a consumer or certified tester to submit any record required by this Program or the submission of falsified reports/records shall constitute a violation as set forth above.

(c) The owner of any installation found not to be in compliance with the provisions of this Program shall be notified in writing of the non-compliance and be given specific corrective action(s) necessary to bring the installation into compliance.

(d) Such notice must explain the violation and give the time period within which the violation must be corrected. The time period set to correct a violation shall not exceed thirty- (30) days after receiving notice unless otherwise specified by the Town. If the violation has been determined to be an imminent hazard, the consumer shall be required to correct the violation immediately.

(e) In the event a consumer is found in violation of this Program and fails to correct the violation in a timely manner or pay any civil penalty or expense assessed under §51.55 of the *Town Code,* water service may be terminated, and shall be reestablished when the violation is corrected and any civil penalties are paid.

(f) If, in the judgment of the Town, any consumer or person in charge of any installation is found to be in non-compliance with the provisions of this Program and/or neglects their responsibility to correct a violation, water service may be discontinued until compliance is achieved.

(g) If a certified backflow prevention assembly tester submits falsified reports/records, the Town shall permanently revoke that tester.

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CONSTRUCTION CONTRACT

THIS AGREEMENT, made the _____ day of _____ in the year **2024** by and between _____, hereinafter called the Party of the First Part and the Town of Kill Devil Hills; through the Town Manager, hereinafter called the Party of the Second Part.

WITNESSETH:

That the Party of the First Part and the Party of the Second Part, for the consideration herein named, agree as follows:

1. Scope of Work: The Party of the First Part shall furnish and deliver all of the materials, and perform all of the work in the manner and form as provided by the following enumerated Contract Documents, which are attached hereto and made a part thereof as if fully contained herein: Instructions to Bidders, Bid Proposal Form, General Conditions, Technical Specifications, Waterline Specifications, Performance Bond, Payment Bond, Certificates of Insurance for workers compensation; public liability; property damage and builder's risk, and Drawings entitled [final version will reflect sheets covering awarded work] **"SOUTHEAST AREA, WATER IMPROVEMENTS" dated 03/01/2024, consisting of Sheets G-001, C-101 to C-112, and C-501 to C-505 , made by American Engineering Associates, P. A.**

along with the following addenda:
Addendum Number _____ dated _____.

2. That the Party of the First Part shall commence work to be performed under this agreement on a date to be specified in a written order of the Party of the Second Part. Liquidated damages will be assessed at a rate of **three hundred dollars ($300.00)** per calendar day, for each day beyond the Date of Substantial Completion, as set forth in the executed Contract Documents, by which each Project is not Substantially Complete. In addition, liquidated damages will be assessed at a rate of **one hundred dollars ($100.00)** for each day beyond the Date of Full Completion, as set forth in the executed Contract Documents, by which each Project is not Fully Complete. The Party of the First Part, as one of the considerations for the awarding of this contract, has furnished to the Party of the Second Part a construction schedule setting forth planned progress of the project broken down by the various divisions or part of the work and by calendar days. In the event that the progress of the work is not maintained on schedule by the Party of the First Part, or in the event the work is not completed within the time above specified, the Party of the Second Part may upon fifteen (15) days' notice, sent by certified mail, return receipt requested, declare that he is taking the same over and stating that he will diligently pursue and complete the same, the Party of the Second Part shall have the right to let the work remaining to be done to some other contractor, either by public letting or negotiation, and thereupon the Party of the First Part, the Contractor, shall forthwith pay the Party of the Second Part all increase in cost or loss and damage which it may sustain on account of such default on the part of the Party of the First Part.

3. The Party of the Second Part hereby agrees to pay to the Party of the First Part for the faithful performance of this agreement, in lawful money of the United States an amount of no more than: _____.

4. On or before the 28th day of each calendar month, except as provided in the Contract Documents, the Party of the Second Part shall make payments to the Party of the First Part on the basis of a duly certified and approved estimate of work performed during the preceding calendar month by the Party of the First Part, less five percent (5%), or such lesser percentage as provided by law, of the amount of such estimate which is to be retained by the Party of the Second Part until all work has been performed strictly in accordance with this agreement and until such work has been accepted by the Party of the Second Part.

5. Upon determination by the Party of the Second Park that all work covered by this agreement has been satisfactorily completed, and upon submission by the Party of the First Part of evidence satisfactory to the Party of the Second Part that all payrolls, material bills and other costs incurred by the Party of the First Part in connection with the construction of the work have been paid in full, final payment on account of this agreement shall be made within forty-five (45) days after the completion by the Party of the First Part of all work covered by this agreement and the acceptance of such work by the Party of the Second Part.

IN WITNESS WHEREOF, the Parties hereto have executed this agreement on the day and date first above written in **three (3)** counterparts, each of which shall, without proof or accounting for other counterparts, be deemed an original contract.

Witness:

_____
Contractor: (Trade or Corporate Name)

_____ By: _____
(Proprietorship or Partnership)

Attest: (Corporation) Title: _____
(Owner, Partner, Corporate President or Vice President only)

By: _____

Title: _____
(Corporate Secretary or Assistant Secretary only)

(CORPORATE SEAL) The Town of Kill Devil Hills, through

_____
Witness: (Agency, Department, or Institution)

_____ By: _____

Title: _____