



Town of Mount Airy

Mount Airy, MD

STANDARD SPECIFICATIONS AND DETAILS FOR CONSTRUCTION

Drafted: November 28, 2018

Adopted: _____

Table of Contents

10.01	GENERAL REQUIREMENTS.....	1
.01	General	1
.02	Subdivision of Land and Site Plan Review	1
.03	Zoning.....	1
.04	Public Works Improvements Projects	2
.05	Preconstruction Conference.....	2
.06	Construction Inspection	2
.07	Final Inspection.....	3
.08	Conditional Acceptance of the Work	3
.09	As-Built Development Documents	3
.10	Warranty Period	4
.11	Transfer Documents (Subdivision)	4
.12	Adoption of State Highway Administration Specifications	4
.13	Adoption of the Maryland Department of the Environment’s “Guidance Document for Wastewater Capacity Management Plans” (Guidance Document Wastewater CMP).....	5
.14	Adoption of the Maryland Department of the Environment’s “Guidance Document for Water Supply Capacity Management Plans” (Guidance Document Water Supply CMP).....	5
.15	Adoption of the U.S. Department of Transportation Federal Highway Administration’s “Manual on Uniform Traffic Control Devices for Streets and Highways” (MUTCD)	6
10.02	DEFINITIONS AND ABBREVIATIONS.....	6
.01	Definitions	6
.02	Abbreviations	11
.03	Terminology.....	13
10.03	GENERAL PROVISIONS.....	14
.01	Protection of Property and Structures	14
.02	Care and Protection of Work.....	15
.03	Construction in Right-of-Way and Construction Strips	15
.04	Construction along State Highways.....	15
.05	Storage of Materials	16
.06	Protection of Existing Public Utility Structures.....	16
.07	Adjustment of Utility Structures.....	17
.08	Structures to be Kept Clean.....	17
.09	Protection of Trees	17

.10	Obstructions Shown on Drawings	18
.11	Removal of Obstructions	18
.12	Guarantee.....	19
.13	Final Clean Up.....	19
10.04	CONTROL OF THE WORK	20
.01	Town Supervision and Direction of the Work	20
.02	Cooperation by Developer	20
.03	Notice to Developer	20
.04	Town Engineer’s Authority.....	20
.05	Decisions and Interpretations by the Town Engineer	21
.06	Drawings.....	21
.07	Interpretation of Plans	21
.08	Release of Bonding Determination	22
.09	Inspection of the Work.....	22
.10	Inspectors	23
.11	Workmanship	24
.12	Skilled Labor Only Shall Be Used	24
.13	Defective Work.....	24
.14	Quality of Materials.....	24
.15	Material Samples and Test	25
.16	Equal or Approved Equal	25
.17	Use of Sections of Work	26
.18	Access to Work	26
.19	Test	26
.20	Approval of Testing Agencies	26
10.05	LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC.....	27
.01	Laws and Regulations	27
.02	Public Work’s Agreement (PWA).....	27
.03	Licenses and Permits	27
.04	Patents.....	27
.05	Miss Utility.....	28
.06	Water Supply	28
.07	Sanitary Arrangements.....	28

.08	Electric Power (Temporary).....	28
.09	Lights, Barricades and Watchmen.....	29
.10	Extension of Time	29
.11	Sunday and Holiday Work	29
.12	Explosives	30
.13	Injury to Property	30
.14	Indemnification of Town	31
.15	Public Safety and Convenience	31
.16	Safety and Maintenance of Traffic	31
.17	Accident Prevention	32
.18	Protection and Restoration of Property.....	32
.19	Protection of Structures from Bituminous Materials.....	32
.20	Developer’s Responsibility for Work.....	33
.21	Character of Workmen and Equipment	33
.22	State Permit for Water and/or Sewer Construction	33
10.06	PROSECUTION AND PROGRESS OF WORK	34
.01	Normal Work Week and Holidays	34
.02	Cost for Overtime Inspection Services	34
.03	Responsibility of the Developer	35
.04	Shop Drawings.....	35
.05	Review Time for Shop Drawings (for subdivision developers).....	35
.06	Use of a Portion of the Work.....	35
.07	Telephone Numbers.....	36
.08	Existing Utilities and Services	36
.09	Interruption of Existing Utilities and Services	36
.10	Conformance to Maryland State Highway Administration	36
20.01	GENERAL.....	37
.01	Approval of Materials.....	37
.02	Storage of Materials	37
.03	Testing and Materials	38
.04	Defective Materials	38
20.02	CONCRETE/PRECAST CONCRETE	38
.01	Portland Cement	38

.02	Aggregate	39
.03	Admixtures	40
.04	Water.....	40
.05	Appurtenance Materials.....	41
.06	Manholes, Vaults and Inlets	41
.07	Box Culverts.....	42
20.03	STREETS AND ROADS.....	42
.01	Hot Mix Asphalt Materials.....	42
.02	Raised Pavement Markers (RPM).....	43
.03	Striping / Street Markings	43
20.04	MASONRY MATERIALS.....	44
.01	Clay or Shale Brick	44
.02	Concrete Masonry	44
.03	Masonry Mortar	44
.04	Aggregate	45
.05	Water.....	45
.06	Masonry Reinforcement.....	46
.07	Storage of Materials	46
20.05	STORM/CULVERT PIPE.....	46
.01	Reinforced Concrete Pipe.....	46
20.06	METALS.....	47
.01	Reinforcement.....	47
.02	Structural	47
.03	Castings.....	47
.04	Manhole Steps.....	48
20.07	WATER MAINS	48
.01	General	48
.02	Ductile Iron Pipe	48
.03	Gate Valves.....	49
.04	Valve Boxes.....	49
.05	Fire Hydrants	50
.06	Air Release Valves.....	50
.07	Corporation Stops and Curb Valves.....	51

.08	Detection Tape	51
.09	Mechanical Joint Restraint	51
20.08	SANITARY SEWERS.....	52
.01	General	52
.02	Reinforced Concrete O-Ring Pipe	52
.03	Ductile Iron Sewer Pipe	53
.04	PVC Pipe.....	54
.05	Detection Tape	55
20.09	INSPECTION OF WATER AND SEWER PIPE.....	55
.01	General	55
.02	Stockpiling of Pipe	55
.03	Pipe Order.....	55
.04	Quantity of Pipe.....	55
.05	Load Bearing Test	56
.06	PVC Pipe Deflection Test	56
30.01	GENERAL REQUIREMENTS.....	57
30.02	GRADING & SEDIMENT CONTROL	57
30.03	STORMWATER MANAGEMENT	57
30.04	WETLANDS PROTECTION REQUIREMENTS.....	57
30.05	LANDSCAPING.....	58
30.06	EARTHWORK.....	58
.01	General	58
.02	Clearing and Grubbing.....	58
.03	Excavation General Requirements	60
.04	Trench Excavation	61
.05	Rock Excavation.....	63
.06	Removal of Water.....	63
.07	Accommodation of Drainage.....	64
.08	Responsibility for Conditions of Excavations.....	64
.09	Sheathing, Bracing and Shoring.....	64
.10	Removal of Obstructions	66
.11	Protection of Property and Structures	66
.12	Accommodation of Vehicular, Pedestrian and Traffic	67

.13	Use of Explosives and Blasting	69
.14	Backfilling.....	69
.15	Maintenance of Refilled Excavations	71
.16	Embankment	72
.17	Frozen Material	72
.18	Pipe Trenches in Fill.....	72
.19	Bored Pipe	72
30.07	CONCRETE	74
.01	Mixes	74
.02	Forming.....	74
.03	Reinforcement.....	76
.04	Embedded Items.....	76
.05	Conveying and Placing of Concrete	76
06.	Compaction of Concrete.....	77
07.	Placement of Concrete in Hot or Cold Weather.....	77
.08	Curing	78
.09	Concrete Finishing	78
.10	Construction Joints for Walls and Slabs	80
.11	Expansion Joints for Walls and Floors	81
.12	Chemical Floor Hardener.....	81
.13	Concrete Testing.....	81
30.08	MASONRY	83
.01	General	83
.02	Mortar	83
.03	Laying.....	83
.04	Control Joints.....	84
.05	Reinforcement.....	84
06.	Embedded Item	84
07.	Cleaning.....	84
30.09	ROADWAYS.....	85
.01	Standards and Conditions.....	85
.02	Plan Review Procedure.....	85
.03	Design Criteria	86

.04	Plans and Profiles	87
.05	Preparation of Subgrade	87
.06	Adjustment of Utility Structures.....	88
.07	Weather Restrictions.....	88
.08	Subbase/Base Courses.....	88
.09	Bituminous Pavement	88
.10	Binder Courses.....	89
.11	Tack Coat	89
.12	Surface Courses	89
.13	Bituminous Surface Treatment	89
.14	Provisions for Future Street Connections to include Storm Sewer System	90
.15	Maintenance of Traffic	90
.16	Concrete Structures.....	90
.17	Signing	92
.18	Stripe Markings for Maintenance of Traffic and RPMs	93
.19	Street Lighting	93
.20	Guard Rail W Beam.....	94
.21	Roadside Developments.....	94
.22	Driveway Construction	95
.23	Road Repair over Utility Trenches.....	95
30.10	STORM DRAINAGE.....	95
.01	General	95
.02	Culvert Pipe Installation	95
.03	Structures	96
.04	Channel Protection.....	96
.05	Ditches.....	96
.06	Concrete Berm Ditches.....	97
.07	Disturbed Areas	97
.08	Vehicle Accessibility.....	97
30.11	WATER MAINS	97
.01	General	97
.02	Distribution System Design	98
.03	Pipe Installation	100

.04	Buttresses and Anchors.....	100
.05	Laying of Pipe in Cold Weather	100
.06	Installation of Fire Hydrants	100
.07	Testing of Mains	100
.08	Disinfection.....	102
.09	Connection to Existing Water Mains	103
.10	Installation of Water House Connections	103
30.12	SANITARY SEWERS.....	105
.01	General	105
.02	Force Main and Collection System Design	105
.03	Upgrading of Existing Sanitary Sewers:	105
.04	Trench Excavation	106
.05	Pipe Installation.....	106
.06	Laying Pipe in Cold Weather.....	107
.08	Manholes, General Requirements.....	107
.09	Specifications for Grease Traps, Interceptors and Oil Separators	108
.10	Connection to Existing Sewers	108
.11	Force Mains	108
.12	Sewer House Connections.....	108
.13	Sewer House Connection Renewals	109
.14	Cleaning of Pipelines	110
.15	Disposal of Water and Debris from Cleaning of Existing Lines.....	110
.16	Sanitary Sewer Field Test	110
.17	Manhole Field Test	113
.18	Pressure Test for Force Mains	113
.19	Defects to Be Made Good	114
30.13	CLEANUP.....	114
.01	General	114
.02	Restoration of Construction Areas	115
40.01	General	116
40.02	Conditional and Final Acceptance of New Town Roads.....	116
40.03	Standards of Road Repair for New Development	117
40.04	Repair of New or Recently Resurfaced Roads	118

DIVISION I - GENERAL PROVISIONS

10.01 GENERAL REQUIREMENTS

.01 General

Approval Required: Any residential, commercial or industrial development undertaken within the corporate limits of the Town of Mount Airy, Maryland which involves the construction of roadways, water lines, sanitary sewers, storm sewers and other utilities and/or land improvements requires the approval of the Town Engineer, the Town Planning Commission and of the Town Council prior to construction.

.02 Subdivision of Land and Site Plan Review

In planning and developing a site plan or subdivision, the developer shall comply with the general principles of design and minimum requirements for the layout as set forth in the appropriate articles of Chapter 98 of the Town Code.

The development of sketch plan, preliminary plat, final plat, public works agreement and other required development documents shall conform to the development procedures outlined in Chapter 98 of the Town of Mount Airy Subdivision of Land and Site Plan Review Regulations.

The Developer will be advised as to the correct number of complete sets of Public Works Improvement Plans, specifications, and other required documents to be submitted to the Town Engineer (Department of Public Works) for review, process and approval by the Planning Commission and Town Council. These plans shall indicate the name and address of the developer, their agent, Maryland Licensed Design Professional (MLDP) or architect and shall be signed and sealed by a Licensed Professional Engineer authorized to practice in Maryland.

.03 Zoning

Review by Town Engineer: Review time of the Sketch Plan, Preliminary Subdivision Plat, Public Works Improvement Plans, and Final Plat by the Town Engineer will be accounted for and billed by the Town to the Developer

Signature Block: All Public Works Improvement Plans and Final Site Plans submitted for approval to the Town Engineer shall contain a signature block for the Town Engineer who, before

said plans shall have been deemed to be finally approved, shall certify that the same have been reviewed and meet the Town's then existing standards and specifications.

.04 Public Works Improvements Projects

Pre-Design Conference: The developer may wish to conduct a pre-design conference prior to preparing the improvement plans and specifications in an effort to establish the requirements for the proposed project.

Improvement Plans and Profiles: Detail construction plans for all public works improvements shall be developed on a scale of 1" equal, not greater than, 50' on 24 x 36 inch (D size) sheets for submission to the Town for review approval.

Standard Specifications and Details: The standards, as set forth in Town of Mount Airy Standard Specifications and Details for Construction, are the minimum acceptable construction standards for public works improvements. These standards and specifications may be made a part of the proposed drawings to be improved and used for construction.

Detailed Specifications: Detailed specifications shall be developed for projects or portions thereof when the scope of proposed work is not covered or adequately described in the Standard Specifications and Details for Construction. These specifications will be submitted to the Town Engineer on 8½ x 11 inch paper for review and approval.

.05 Preconstruction Conference

A preconstruction conference will be conducted to review the project and establish procedures for construction and inspection in accordance with the approved Develop Documents. Minimum attendance at this conference shall include an elected representative of the Town, the Prime Contractor, the Developer, the Town Engineer and the Inspector. Attendance by representatives of subcontractors is encouraged.

.06 Construction Inspection

Inspection Requirements: Inspection of all construction practices and materials shall be performed by the Town's Engineer or designated representative. Any construction performed and materials provided or installed without full inspection by the Town Engineer or their designated representative will not be recommended for acceptance by the Town Engineer.

Inspection Coordination: Prior to actual construction operations, the Developer's Contractor shall review the project with an inspector from the Town Engineer's office. The Developer will be responsible for coordination of inspection between the Contractor and the Town's representative.

Inspection Cost: All costs associated with the complete inspection of the project by the Town, Town Inspector, Town Engineer or designated representative will be borne by the Developer and paid prior to final acceptance.

(See Section 10.04.06 Inspection of the Work)

.07 Final Inspection

Scheduling: Upon completion of all construction, the Developer shall request a final field inspection. The request shall be made in writing and delivered to the Town Engineer seventy-two hours (72) prior to the desired inspection date.

Final Inspection: A final inspection will be conducted by the Town Engineer, and/or designated representative, upon completion of the project. All items required of the development shall be completed and the project operational prior to Final Inspection. The Developer shall provide all labor and materials to fully demonstrate the operations of the project.

.08 Conditional Acceptance of the Work

If it is determined that the construction has been in accordance with the plans and specifications, the Town Engineer will recommend to the Town Council that the construction be accepted into the system.

.09 As-Built Development Documents

The Developer shall maintain throughout the project one set of Development Documents including shop drawings with all as-built conditions noted thereon.

Ninety (90) days after completion and final acceptance of the work, the Developer will file one (1) complete set of as-built mylars and one (1) complete set of prints with the Town Clerk for permanent file and record. These record prints shall be marked "As-Built" on every sheet and shall be complete in every respect and incorporate any and all changes from the original plans.

Final acceptance of the project will be withheld until proper as-built Development Documents have been furnished.

[.10 Warranty Period](#)

Warranty Period, Subdivision: It will be the responsibility of the Developer to insure the quality and adequacy of the work performed for a period of twelve (12) months after conditional acceptance of the construction by the Town. (The above warranty shall be in the amount and form consistent with the current requirements of the Public Works Agreement as stated in the Subdivision Regulations.) The 10% bond money will not be released until the twelve (12) month Final Warranty Inspection is accepted and approved by the Town.

Warranty Period (other than for subdivision): Shall be as specified in Section 10.03.12 Guarantee, or as specified in the specific development documents. The 10% bond money will not be released until the twelve (12) month Final Warranty Inspection is accepted and approved by the Town.

[.11 Transfer Documents \(Subdivision\)](#)

At the conclusion of the warranty period, and upon satisfactory twelve (12) month Final Warranty Inspection by the Town Engineer, a recommendation to the Town Council will be made to accept the project into the Town system and to release any remaining bonds. The Developer will prepare the necessary transfer documents for all required right-of-ways, easements, wetlands, open spaces, etc. which are to be dedicated to the Town as part of the approved plans.

[.12 Adoption of State Highway Administration Specifications](#)

The Town of Mount Airy has adopted the State of Maryland, State Highway Administration Book of Standards for Highway & Incidental structures, and Standard Specifications for Construction and Materials. All present and future errata and addenda are hereby made a part of these Standard Documents. These Standard Details and Specifications shall apply where the Town of Mount Airy does not contain such information.

All references to the State of Maryland, State Highway Administration (S.H.A.), or Administration in the Standard Documents shall be construed to refer to the Town of Mount Airy, Maryland.

All references to the Chief Engineer or Assistant Engineer shall be interpreted to refer to the Mount Airy Town Engineer.

The Maryland State Highway Administration Specification will apply to all work except as noted herein. In the event of any discrepancy between this specification and the parent Specification, this specification will govern. Detail drawings shall be those of the Maryland State Highway Administration and of the Town of Mount Airy, as specified in the particular reference or Contract (See Section 10.06.10).

.13 Adoption of the Maryland Department of the Environment’s “Guidance Document for Wastewater Capacity Management Plans” (Guidance Document Wastewater CMP)

The Town of Mount Airy has adopted the MDE Guidance Document for Wastewater CMP. All present and future errata and addenda are hereby made a part of this Standard Specification. These Standard Specifications shall apply where the Town of Mount Airy does not contain such information.

In the event of any discrepancy between this specification and the referenced guidance document, this specification shall govern.

Construction Permit: Any new water and/or sewer construction to be added to the Town system, will require a construction permit from the Maryland Department of the Environment (MDE). Application and associated engineering drawings are to be submitted to the state for review and approval. A construction application is to be filed in the name of the Town of Mount Airy.

.14 Adoption of the Maryland Department of the Environment’s “Guidance Document for Water Supply Capacity Management Plans” (Guidance Document Water Supply CMP)

The Town of Mount Airy has adopted the MDE Guidance Document for Water Supply CMP. All present and future errata and addenda are hereby made a part of this Standard Specification. These Standard Specifications shall apply where the Town of Mount Airy does not contain such information.

In the event of any discrepancy between this specification and the referenced guidance document, this specification shall govern.

Construction Permit: Any new water and/or sewer construction to be added to the Town system, will require a construction permit from the Maryland Department of the Environment (MDE). Application and associated engineering drawings are to be submitted to the state for review and approval. A construction application is to be filed in the name of the Town.

.15 Adoption of the U.S. Department of Transportation Federal Highway Administration’s “Manual on Uniform Traffic Control Devices for Streets and Highways” (MUTCD)

The Town of Mount Airy has adopted the U.S. Department of Transportation Federal Highway Administration’s MUTCD. All present and future errata and addenda are hereby made a part of this Standard Specification.

In the event of any discrepancy between this specification and the referenced guidance document, this specification shall govern.

10.02 DEFINITIONS AND ABBREVIATIONS

.01 Definitions

Whenever in these specifications the following terms are used, the intent and meaning shall be interpreted as follows:

AGREEMENT – An executed contract between the Town and the Developer in the form of a Public Works Agreement (PWA) or other mutually agreed document.

AS-BUILT – Final construction or as-built Mylars which have been approved and signed by all required agencies. The Mylar after all signatures become a permanent record of the Town.

ADDENDA – Written or graphic instructions issued prior to the execution of an Agreement. These instructions may modify the Contract Document by additions, deletions, corrections or for clarification.

BID or PROPOSAL – Written proposal of the Bidder, for the work contemplated, on Proposal Form. (Setting forth the price for the work under consideration.)

BIDDER – Individual, firm or corporation submitting formally a proposal for the work contemplated, or any portion thereof, acting directly or through an authorized representative.

CALENDAR DAY – Every day shown on the calendar including Saturdays, Sundays, weekdays and holidays.

CHANGE ORDER – A written order to the Developer, signed by the MLDP; ordering a change in the work from that originally shown by the plans and specifications. If the work is of a nature involving an adjustment of the unit price as so deemed by the MLDP, a supplemental agreement shall be executed by the Contractor which, when approved by the Town Engineer and by the MLDP, shall constitute authorized modifications of the Contract.

CONTINGENT ITEM – Any item listed on the plans or called for in the Special Provisions and included in the Proposal merely for the obtaining of a contract price in case it may be needed. Such bid constitutes tender of an exercisable option to incorporate such items into the work.

CONTRACT and INCLUDED DOCUMENTS – An approved Agreement and/or Public Works Agreement (PWA) covering the performance of the work as indicated and/or specified. This includes the Advertisement, Instruction to Bidders, Specifications, and accompanying drawings, Proposal, Addendum, Contract, and Contract Bonds, all supplemental agreements entered into, and all General and/or Special Provisions pertaining to the work. For PWA details see sections 98-30 F and 98-36 of the Code of the Town of Mount Airy.

CONTRACT ITEMS – The obligation of the Contractor including the performance of all labor and materials described in the respective articles or sections of the Specifications and Contract or in the Special Provisions which are a part thereof.

CONTRACT TIME – The number of working days or calendar days shown in the Special Conditions (proposal) indicating the time allowed for the completion of the work.

CONTRACTOR – Individual, firm or corporation executing all or part of the Contract. The Contractor may be under agreement with the Owner, the Developer, or the Town.

COORDINATE SYSTEM – Refer to the North American Datum of 1983 (NAD 83) and the North American Vertical Datum of 1988 (NAVD 88), and as amended.

DAY or DAYS – Calendar day or days of twenty-four (24) hours each unless otherwise expressly defined.

DEVELOPER – The Owner(s) or agent(s) under legal authority of the Owners who undertakes to cause a parcel of land to be designed, subdivided, developed, and recorded as a subdivision. For the purposes of these specifications, the Developer may include, but not be limited to its hired employees, contractors or subcontractors.

DEVELOPMENT DOCUMENTS – The various documents which comprise the Contract as listed above under Contract and Included Documents.

DRAWINGS – All drawings or reproductions thereof pertaining to the construction of the project.

EASEMENT – grant or reservation by the owner of land for the use of such land by others for a specific purpose or purposes, and which must be included in the conveyance of land affected by such easement.

EXTRA WORK – A written order to the Developer, signed by the MLDP and approved by the Town Engineer, ordering a change in or an addition to the work from that originally shown by the drawings and specifications.

FENCE – A structure functioning as a boundary or barrier, made of post, boards, wire, or rails.

FIELD ORDER – A written offer, by the MLDP and approved by the Town Engineer, effecting a change in the work. The change would not involve an adjustment in Contract price or an extension of contract time.

GENERAL SPECIFICATIONS – All requirements and provisions contained in this document.

HOLIDAYS – As described by the Town Council of Mount Airy.

INSPECTOR – (see Town Inspector)

LABORATORY – Official testing laboratory or chemist as designated by the Town Engineer.

MLDP – Maryland Licensed Design Professional. The person, firm or corporation employed or retained by the Owner or Developer, responsible for design drawings, design specifications, site plans, and/or improvement plans. The MLDP shall be licensed/registered with the State of Maryland and shall stamp all submissions to the Town with a state certified stamp with signature and state registration number.

OWNER – A proprietor – One who owns or has exclusive rights of possession.

PERFORMANCE BOND – The approved form of security executed by the Owner/Developer and their Surety, guaranteeing complete execution of the Contract.

PLANS – All drawings or reproductions thereof, pertaining to the construction to the improvements and its appurtenances.

PROPOSAL or BID – The written offer submitted by the bidder in the required manner to perform the work contemplated.

PUBLIC WORKS AGREEMENT – An agreement between the Town and the Owner/Developer

PROPOSAL GUARANTY – The security to be furnished by the bidder as a guarantee of good faith to enter into a Contract with the Owner for the proposed work after such work has been awarded to themselves. (See Article VI, Paragraph 6.7 (F) Guarantee of Improvements for Subdivision requirements.)

RIGHT OF WAY – Area designated by the MLDP for use in constructing the work covered by the Contract, including all appurtenances thereto. The right of way so designated may be either temporary or permanent.

ROAD – Any road, lane, street, alley, avenue, appurtenance structure, or right-of-way construction on any public right-of-way in Mount Airy.

SHA or MDSHA – Maryland State Highway Administration

SPECIAL PROVISIONS – Statements modifying or changing the requirements or provisions of the General Specifications or adding new requirements or provisions thereto.

SPECIFICATIONS – The General Specifications, Special Provisions, and all written or printed agreements and instructions pertaining to the performance of the work and to the quantity and quality of the materials to be furnished under the Contract.

STABILIZATION – The prevention of soil movement by any of various vegetation and/or structural means.

STANDARD DETAILS – The detail drawings or reproductions thereof which pertain to the standard method of construction of the work and which are approved by the Town Engineer.

STANDARD SPECIFICATIONS – A book of specifications intended for repeated general application.

STANDING WATER – The level at which ground or surface water stands in a hole or depression twenty-four (24) hours after the introduction of water.

STATE – State of Maryland

SUBGRADE – That portion of the roadbed upon which the sub-base, the base courses, surface courses, or pavement will be or have been placed.

SUBSTRUCTURE – That part of the structure below the bearing of bridges or arches, including back walls, wing walls, abutments and piers.

SUBSTANTIAL COMPLETION – That time at which the construction of a project or a part thereof is sufficiently completed, in accordance with the Development Documents, so that the project or a part thereof can be utilized for the purpose for which it was intended.

SUPERSTRUCTURE – That part of the structure above bearing and not mentioned as substructure.

SURETY – The corporate body which is bound with and for the Owner/Developer who is primarily liable and which engages to be responsible for the work for which they contracted.

TOWN – Town of Mount Airy, Maryland

TOWN ENGINEER – The person, firm or corporation employed or retained by the Town of Mount Airy, or their duly authorized representative, acting within the scope of the particular duties assigned to themselves or the authority given to them.

TOWN INSPECTOR – The person, firm or corporation employed or retained by the Town of Mount Airy, or their duly authorized representative, responsible for inspections of construction/development projects in accordance with the Town Specifications.

WORK – The furnishing of all labor, materials, equipment and other incidentals necessary for the proper and successful completion of the project involved and the carrying out of all duties and obligations imposed by the Development Documents.

WETLANDS – Any area that has saturated soils or periodic high groundwater levels and vegetation adapted to wet conditions and periodic flooding.

WORKING DAY – A calendar day, except Saturdays, Sundays and Holidays, unless used as a working day, which weather and working conditions permits the Contractor to make effective use of not less than fifty percent (50%) of the usual daily man hours during regular working hours.

WRITTEN NOTICE – A written communication addressed to any party involved in the project. It is to be considered delivered and the service thereof completed, when posted by Certified or Registered Mail to the party or their representative.

.02 Abbreviations

ABS Acryloniteile Butadiene Styrene

A.A.S.H.T.O. American Association of State Highway and Transportation Officials

A.C.I. American Concrete Institute

A.I.A.	American Institute of Architects
A.I.S.C.	American Institute of Steel Construction
A.I.S.I.	American Iron and Steel Institute
A.N.S.I.	American National Standards Institute
A.S.C.E	American Society of Civil Engineers
A.S.T.M.	American Society of Testing Materials
A.S.A.	American Standards Association
A.W.W.A.	American Waterworks Association
BCCMP	Bituminous Coated Corrugated Pipe
C.I.	Cast Iron
C.F., Cu.Ft.	Cubic foot (feet)
CMP	Corrugated Metal Pipe
C.Y., Cu. Yd.	Cubic Yard (s)
D.I.P	Ductile Iron Pipe
H.D.P.E	High-Density Polyethylene

L.F., Lin.Ft. Lineal foot (feet)

L.S. Lump Sum

MFBM Thousand board feet measure

PVC Poly-vinyl Chloride

RCP Reinforced Concrete Pipe

RCSP Reinforced Concrete Sewer Pipe

S.C.D. Soil Conservation District

S.F., Sq. Ft. Square foot (feet)

S.H.A. State Highway Administration

SWM Stormwater Management

V.F. Vertical foot (feet)

.03 Terminology

ACCEPTANCE or APPROVAL – When in these Standard Specifications reference is made to any part or all of the work being subject to acceptance or approval by the Planning Commission, by the Town Engineer, or by the Town, it shall mean to include any one of these three or all. Each acting within the limits of its particular interest or jurisdiction.

APPROVED – When in these Standard Specifications the words “approved”, “reasonable”, “suitable”, “acceptable”, “properly”, “satisfactorily”, or words of like effect and import are used,

unless otherwise particularly stipulated, shall mean approved, reasonable, suitable, satisfactory, proper, or no exceptions taken in the judgment of the Town Engineer.

AS DIRECTED – When “as directed”, “as required”, “as permitted” are used, it shall be understood, unless otherwise stipulated, it is intended only to the extent of judging compliance with the terms of these Standard Specifications. None of these terms shall imply that the Owner or Town Engineer has any authority or responsibility for the supervision of the developer’s forces or operations. Supervision of the forces and operations are the sole responsibility of the Developer.

BY OTHERS – Whenever in these Standard Specifications the words “by others”, or words or phrases of like import are used, it shall be understood, unless otherwise particularly stipulated, to mean a corporation, company, partnership, association, or individual who has entered into a Contract with or has been directed by the Owner to perform work in the project area.

OR EQUAL – Whenever in these Standard Specifications the phrase “or equal” or words or phrases of like import are used, it shall be understood to mean the reference to manufacturers’ or vendors’ names, trade names, catalogue numbers, etc. is intended merely to establish a standard; and any material, article, or equipment of other manufacturers and vendors which will perform adequately the duties imposed by the general design will be considered equally acceptable provided the material, article, or equipment so proposed is, in the opinion of the Town Engineer, of equal substance and function.

10.03 GENERAL PROVISIONS

.01 Protection of Property and Structures

The Developer shall, at the Developer’s expense, sustain in their places and protect from direct or indirect injury or damage; all pipes, poles, tracks, walls, buildings and other structures or property in the vicinity of the work whether above or below the ground. The Developer shall at all times have a sufficient quantity of timber and plank, chain, rope, etc., and shall use them as necessary for sheathing their excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened or weakened. The Developer shall take all risk attending the presence or proximity of pipes, poles, tracks, walls, buildings and other structures and property, of every kind and description, in or over their trenches or in the vicinity of their work, whether above or below the surface of the ground, and they shall be responsible for all damage and assume all expense for direct or indirect injury or damage caused by their work.

.02 Care and Protection of Work

From the commencement of the development until its completion, the Developer shall be solely responsible for the care of the work; and all injury or damage to the same from whatever cause, shall be made good by themselves at their own expense before the final payment is made. The Developer shall provide suitable means of protection for all materials intended to be used in the work in progress, as well as for complete work.

.03 Construction in Right-of-Way and Construction Strips

All permanent roadway construction will be within public right-of-way or other easements or right-of-way through private property acquired by the Town as shown on the drawings. The Developer shall keep its operation strictly within the limits of the right-of-way or easements and construction strips as shown, unless obtained prior written permission of the Owner of the property to occupy additional ground. A copy of the written permission shall be placed on file with the Town Engineer.

Trees in a construction strip shall not be cut down except with written permission of the property Owner. Trees marked to be protected in right-of-way or other easements or construction strips shall be barricaded by 2-inch by 4-inch boards in a box form 10 feet square. Trees permitted to be cut down shall be cut to cord length and stacked. Stumps, roots, branches and other debris shall be removed from the site unless otherwise noted or directed.

All work through private property shall be done in such a manner as to avoid all cutting of vegetation and other disturbance of the terrain.

Upon completion of the work, the Developer shall clean up within the right-of-way or other easements and construction strips and shall restore the surface, shrubbery, fences and other improvements to a condition at least equal to the original. The above work is to be included in the Developer's scope.

Any damage to property outside of the limits of the right-of-way or other easements or construction strips, as the case may be, shall be repaired or replaced by the Developer at their own expense.

.04 Construction along State Highways

It is necessary that every precaution be taken to insure the safety of the public and to provide for uninterrupted travel along state highways and county roads. During the prosecution of the work,

the Developer shall conduct its operation in conformity with this requirement, without additional compensation beyond the price bid for the work.

Portions of the work under a contract may be performed in highways and roads under jurisdiction of the Maryland Highway Administration. The Contractor shall obtain all insurance and shall comply with all requirements of the State Highway Administration.

Construction Permits for the installation of water and sewer line to be placed in the right-of-way of State roads will be obtained by the Town. When such installation is part of an approved subdivision, the permit shall be obtained by the Developer or their representative. A copy of the permit shall be placed on file with the Town Engineer.

NOTICE: The Maryland Route 27 By-Pass is a Controlled Access highway. Longitudinal underground utilities are not permitted to be installed within the right-of-way line of this through highway.

.05 Storage of Materials

Materials shall be stored so as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms, or other hard, clean surfaces and not on the ground, and shall be placed under cover when directed. Stored materials shall be located so as to facilitate prompt inspection. Lawns, grass plots, or other private or public property shall not be used for storage purposes without written permission from the Town.

.06 Protection of Existing Public Utility Structures

At least three days prior to starting work in the vicinity of gas mains, telephone and electric conduits and other underground utility structures or their appurtenances, the Contractor shall notify the public utility having jurisdiction of their intent so that the utility may have representatives present. The Contractor shall support and protect the structure as these representatives shall require and shall take any other steps that may be necessary to protect the structures from disturbance or damage.

Call “Miss Utility” 1-800-257-7777 for any or all notifications. (See Section 10.05.05)

Any damage to these structures resulting from the Contractor’s operations shall be at this responsibility and any expense to which the Town may be put by reason of any such damage will be charged against the Contractor and deducted from any monies due or to become due. All of the

provisions contained in this section shall be strictly adhered to by the Contractor at no additional compensation beyond the price bid for the work.

.07 Adjustment of Utility Structures

The adjustment of all utility structures in the limits of construction shall be the responsibility of the respective utilities, unless otherwise specified by special conditions and/or the plans.

The Contractor shall notify any and all involved utility companies prior to starting work in the streets in which there are utilities, so that these organizations may have sufficient time for their work relocation or adjustment and prevent delays to the Contractor. The Contractor shall have no claim for any delay that may occur in the changing or relocation of any of the services.

Any damage to utilities that may result from the Contractor's operations shall be made good by the Contractor. The Town will charge any expense to which it may be put by the operations of the Contractor to themselves, and deduct same from any monies due or to come due.

.08 Structures to be Kept Clean

During the progress of the work, until the completion and final acceptance thereof, all structures, including pipelines and their appurtenances, shall be kept entirely clean throughout. Obstructions or deposits, at any time discovered, shall be removed at once by the Developer without extra compensation. After the completion of the work the structures, pipelines and their appurtenances shall be kept clean, free and in good order.

.09 Protection of Trees

The Developer shall not be permitted to cut any trees beyond the limits of area to be disturbed as shown on the contract drawings, unless they obtain written permission of the MLDP and the Town Engineer.

If, in the course of construction the Developer damages any trees, they shall obtain the services of a reputable tree surgeon to repair such damage and the cost of such damage shall be borne by the Developer.

The Developer shall contact the local State Forest Ranger at least three (3) working days before starting construction work in State right-of-way. If in the opinion of the MLDP, the Town or

the State Forest Ranger, the Developer fails to conform to the requirements while working in the vicinity of trees, work may be suspended. No work shall be re-commenced until specified procedures are complied with and assurances given in writing protecting the State, County, and private property Owner interests.

Those trees which are identified on the preliminary landscape plan to be retained shall be marked and protected during construction. (See Tree Preservation section of the Landscape Manual)

Any and all cost related to protecting trees, securing permits or inspection fees shall be included in the Developer's scope.

.10 Obstructions Shown on Drawings

Certain information regarding the reputed presence, size, character and locations of existing underground structures, may be shown on development drawings. There is no certainty of the accuracy of this information and it shall be considered by the Developer in this light. The location of underground structures shown may be inaccurate and other obstructions than those shown may be encountered. The Developer shall hereby distinctly understand that the Town is not responsible for the correctness or sufficiency of the information given; that they shall have no claim for delay or extra compensation on account of incorrectness of information given, or on account of the insufficiency or absence of information regarding obstructions.

.11 Removal of Obstructions

Should the position of any pipe, conduit, pole or other structure, above or below ground, be such as, in the opinion of the Town Engineer, to require its removal, realignment or change, due to work to be done under the contract, the work of removal, realignment or change will be done without extra cost to the Town.. The Contractor shall uncover and support the structure, at its own expense, before such removal, and before and after realignment or damage or extra compensation on account of the presence of said structure or on account of any delay in the removal or rearrangement of the same.

The Developer shall, without extra cost to the Town, break through and reconstruct, if necessary, the invert or arch of any sewer, culvert, or conduit that may be encountered if said structure is in such position, in the judgment of the Town Engineer, as not to require its removal, realignment or complete reconstruction.

The Developer shall not interfere with any person, firm or corporation, or with the Town, in protecting, removing, changing or replacing their pipe, conduit, poles or other structures. The

Developer shall suffer said person, firms, or corporations, or Town to take all such measures as they may deem necessary or advisable for the purpose aforesaid. The Developer shall thereby be in no way relieved of any of their responsibilities under the development documents.

.12 Guarantee

The Developer hereby guarantees all of the work performed under this development for a period of one (1) year after the date of final acceptance by the Town, as follows:

1. Against all faulty or imperfect materials and against all imperfect, careless and/or unskilled workmanship.
2. That all pipelines and structures shall be water tight and that leakage will not exceed the limits set forth in the specifications.
3. The Developer agrees to replace with proper workmanship and materials, and to re-execute, correct, or repair without cost to the Town any work which may be found to be imperfect or improper.
4. To restore and maintain all roads, shoulders, ditches and crossings to their original condition and in accordance with the terms of the State Highway Administration and County Road Permits.

5. No use or acceptance by the Town of the work or any part thereof, nor any failure to use the same, nor any repairs, adjustments, replacements or corrections made by the Town due to the Developer's failure to comply with any of their obligations under the development documents, shall impair in any way the guarantee obligations assumed by the Developer under these documents.

.13 Final Clean Up

Within ten (10) days after the completion of the work and before final acceptance, the Developer shall, without charge, tear down and remove all temporary buildings and other temporary structures built by themselves, shall remove all rubbish of all kinds from any ground which they had occupied, and shall leave the site of the work in a clean and neat condition.

10.04 CONTROL OF THE WORK

.01 Town Supervision and Direction of the Work

The work shall be under the general supervision of the Town Engineer and Developer's Superintendent, with a broader Town Supervision of the Town's Engineer. While it is intended that the Developer shall be allowed to carry on the agreement in accordance with such general plans as may appear to themselves most desirable, the Town Engineer, at their discretion, may from time to time direct the order in which, the work shall be prosecuted; at any time or place, as shall be required, in their opinion to safeguard the interest of the Town. The Developer shall have no claim for damages or extra compensation because it may be necessary to carry on the work in a different sequence from that which they may have contemplated. The Developer shall immediately comply with any and all orders and instructions given by the Town Engineer, but nothing herein contained shall be considered such an assumption of control over the work by the Town or the Town Engineer as to relieve the Developer of any of their obligations or liabilities under the development documents.

.02 Cooperation by Developer

The Developer shall conduct operations so that they will interfere as little as possible with those of other contractors, sub-contractors or the public on or near the work. During the absence of the Owner from the work, they shall have a competent superintendent or foreman capable of supervising the work. This agent shall receive instructions from the MLDP with a broader oversight by the Town Engineer. The Developer shall have full authority to execute without delay and to supply promptly such materials, tools, plant equipment, and labor as may be required.

.03 Notice to Developer

The mailing, in a United States Post Office box, of a written communication, notice or order, addressed to the Developer at the business address filed with the Town, or to its office at the site of the work, shall be considered as sufficient service upon the Developer of such communication, notice or order, and the date of service shall be the date of such mailing.

.04 Town Engineer's Authority

Except as otherwise specified, the Town Engineer shall inspect and provide a broader Town supervision over the development project. The Town Engineer shall provide direction and decisions related to the develop requirements of the Town, which shall be final and conclusive, except as herein otherwise expressly provided.

In case any question shall arise between the parties here to relative to said development documents, the determinations or decision of the Town Engineer shall be a condition precedent to the right of the Developer to receive any bond releases for work under this development affected in any manner or to any extent by such question.

The Town Engineer shall decide the meaning and the intent of any portion of the Town specifications and of any plans or drawings where the same may be found obscure or be in dispute.

.05 Decisions and Interpretations by the Town Engineer

The Town Engineer shall make all interpretations as to the meaning and intent of the Town related specifications and drawings. The Town Engineer shall provide direction and/or work with the MLDP in every case in which a difficult or unforeseen condition arises during the prosecution of the work. Should there be any discrepancies in or between the drawings and specifications or should any misunderstanding arise as to the intent of anything contained therein, the decision of the Town Engineer shall be final and binding. Any errors or omissions on the drawings or in the specifications may be corrected by the MLDP when such corrections are for the proper fulfillment of their intent as construed by the MLDP, and such revised drawings shall be approved by the Town Engineer.

.06 Drawings

Drawings show the intent, extent, and class of work included under the development. Any deviations from the drawings must be submitted to the Town Engineer in writing.

The Developer is required to furnish working drawings such as shop, erection, assembly, method, and materials; the cost of which shall be included in the cost of the work to be done and shall not be paid for separately.

(See Section 10.06.04 Shop Drawings, and Section 10.01.09 As-Built Drawings)

.07 Interpretation of Plans

On all plans the figured dimensions shall govern in case of discrepancy between the scales and figures. The Developer shall not take advantage of any error or omission in the plans or of any discrepancy between the plans and specifications. The MLDP shall make such corrections and interpretations as may be deemed necessary for the fulfillment of the intent of the specifications and of the plans as construed by themselves. In all cases of doubt as to the true meaning of the drawings and/or specifications, the decision of the Town Engineer will be final and conclusive.

If the Developer, in the course of the work, discovers any discrepancies between the drawings and the conditions of the ground, or any error or omission in the drawings, or in the layout given by stakes, points or instructions, it shall be their duty to inform the MLDP and the Town Engineer immediately in writing and the MLDP shall promptly verify the same. Any work done after such discovery, until authorized, will be done at the Developer's risk.

.08 Release of Bonding Determination

Upon receipt of the Developer's request for release of bonding, the Town Engineer shall in all cases verify the amount, quality and the acceptability of the bonding to be released for under the agreement, and shall decide all questions in relation to said work. A recommendation shall be made by the Town Engineer to the Town Council and the Council shall make a final decision at the next public meeting regarding a release amount. In case any questions shall arise between the parties regarding the bonding, such decision shall be decided by the Town Council.

.09 Inspection of the Work

Access to the Work: The work at all times shall be subject to inspection by the Town Engineer, the MLDP, and duly authorized representatives of the governing authorities, bodies, or departments having jurisdiction over the work being performed and facilities being provided in the project. They shall have access to the work whenever it is in preparation or progress, and the Developer shall provide proper and safe facilities to secure convenient access to all parts of the work as may be required for inspection. The authorized representative of all federal and state agencies shall also have access to the work, and shall be permitted to inspect all work, materials, and other relevant data.

Notification: When the specifications, laws, ordinances, or any public authority requires any work to be specially tested or approved, the Developer shall give the inspecting authority timely notice (MINIMUM of forty-eight (48) HOURS) of its readiness for inspection. Every effort will be made by the Town of Mount Airy to see that inspections are promptly made where they would unduly delay the progress of the work being performed by the Developer.

Work not Inspected: If any work should be covered up without approval or consent of the Town Engineer or the inspection authorities, it must, if required by the Town Engineer, MLDP, or inspection authorities, be uncovered for examination and properly restored at the Developer's expense.

Re-inspection: Re-inspection of any work may be ordered by the Town Engineer, MLDP, or the inspecting authorities, and if so ordered, the work must be uncovered by the Developer.

Request for Final: The request for final field inspection shall be made in writing and delivered to the Town Engineer seventy-two (72) hours prior to the desired date for the final.

Final Inspection: Final inspection at the time of acceptance of the work, will be made under the supervision of, and in such manner as directed by, the Town Engineer, MLDP and other representatives of the Town of Mount Airy. All items required by the Development shall be completed and the project operational prior to Final Inspection. The Developer shall furnish all appliances and all materials and labor which may be required to fully demonstrate the operation of the project for such an inspection.

Compensation: No compensation will be made to the Developer for labor, tools, or appliances which may be used or expended in such inspection.

.10 Inspectors

Authority: Inspectors employed by the MLDP or the Town shall be authorized to inspect all work done and materials furnished. Such inspection may extend to all or any part of the work and to the preparation or manufacture of the materials to be used. An inspector or inspectors may be stationed on the work to report the progress of the work and the manner in which it is being performed; also, to report whenever it appears that the materials furnished and work performed by the Developer fails to fulfill the requirements of the development documents, and to call to the attention of the Developer any such failure or other defaults.

In case of any dispute arising between the Developer and any inspector as to materials furnished or the manner of performing the work, the inspector shall have the authority to reject materials or suspend the work until the question at issue can be referred to and decided by the MLDP and approved by the Town Engineer.

The inspectors shall perform such duties as are assigned to them. They shall not be authorized to revoke, alter, enlarge, relax, or release any requirements of these specifications, nor to approve or accept any portion of work, nor to issue instructions contrary to the plans and specifications.

Inspectors shall in no case act as foremen to perform any duties for the Developer, nor interfere with the management of the work by the latter. Any instructions which the inspector may give the Developer shall in no way be construed as binding the MLDP or the Town in any way, nor release the Developer from fulfilling the terms of the development documents.

Absence of Inspector: Neither the absence of an inspector nor the failure to inspect, at any time or place, shall relieve the Developer from any obligation to perform all of the work strictly in accordance with the requirements of the specifications.

.11 Workmanship

All materials furnished and all work done shall be of the quality and character required by the drawings and specifications. When a standard is specified for such work or materials, they shall be of a kind acceptable to the Town Engineer. Upon the completion of the development, the entire work shall be delivered complete and in satisfactory working condition.

.12 Skilled Labor Only Shall Be Used

Qualified and competent labor only shall be used. Any employee of the Developer who shall use profane or abusive language to the Town Engineer or other employees of the Town, or is otherwise disorderly and interferes with them in the performance of their duties, or shall disobey or evade their instructions, or who is careless and incompetent, shall be discharged on request of the Town Engineer and shall not again be employed on any project within the Town except with the Town Engineer's consent.

.13 Defective Work

Neither the inspection nor supervision of the work, nor the presence or absence of any employee of the Town during the execution of any part of the work, shall relieve the Developer of any of its obligations under the development documents or of conforming its work to the line, grade, and elevations which are required.

Defective work shall be made good and unsuitable material will be rejected, notwithstanding that such work and material may have been previously overlooked and accepted or estimated for payment. If the work or part thereof shall be found defective within one year of final acceptance or to have been damaged at any time before the final acceptance of the whole work, the Developer shall correct the defect or damage, in a manner satisfactory to the Town Engineer, without cost to the Town. The Developer is responsible even though said defect or damage may not have been due to any act, default or neglect on the Developer's part.

.14 Quality of Materials

All materials furnished and all work done in carrying out the development shall be of the best quality and especially adapted to the service required. Whenever the characteristics of any material

are not particularly specified, such material shall be used as a customary in first-class work of the nature for which the material is employed.

.15 Material Samples and Test

Prior to the starting of any construction and upon request, the Developer will be required to furnish a complete statement of the origin, composition, and manufacture with shop drawings of any or all materials and equipment intended to be used in the development for approval by the MLDP and Town Engineer.

Samples may be required and subjected to tests provided for in these specifications to determine their quality and fitness.

All materials used in the construction of the project shall be subject to inspection and testing in accordance with accepted standards. All costs of inspection and test shall be at the expense of the Developer. The Owner, the MLDP, or the Town Engineer may require a notarized statement certifying conformance with the independent testing laboratory.

.16 Equal or Approved Equal

Where any Town related item or material is specified by proprietary name, trade name, and/or name of manufacture, with or without the addition of such expressions as “or equal” or “approved equal” it is to be understood that the item or material named or the equal thereof is intended, subject to the approval of the Town Engineer as to the equality thereof and it is distinctly understood that:

The Town Engineer is to use their own judgment in determining from time to time, whether or not any item or material proposed to be substituted is the equal of any item or material so specified;

The decision of the Town Engineer on all such questions of quality shall be final;

In the event of any adverse decision by the Town Engineer, no claim of any sort shall be made or allowed against the Town Engineer of the Town of Mount Airy.

If it becomes necessary or desirable, because of the inability of the Developer to obtain promptly any items or materials as specified, or the equal thereof, the Town Engineer, in their discretion, may authorize use of substitute item or materials of the same, greater, or less cost than those specified.

Specific reference in the Town-related specifications to any article, device, product, material, fixture, form or type of construction, etc., by name, make or catalog number, with or without the words, “or equal”, shall be interpreted as establishing a standard of quality only and shall not be construed as limiting competition, and the Developer may at its option use any article, device, product, material, fixture, form or type of construction, which in the judgment of the Town Engineer, expressed in writing, is equal to that named.

.17 Use of Sections of Work

Whenever, in the opinion of the Town Engineer, any portion of the work is completed or is in acceptable condition for use, it may be used for the purpose for which it was intended. Such use shall not be held to be in any way an acceptance of that portion of work used, or as a waiver of any of the provisions of the development documents. (10.06.06)

.18 Access to Work

The Town Engineer or their duly authorized representative may at any time enter upon the work and the premises used by the Developer. The Developer shall provide proper and safe facilities to secure convenient access to all parts of the work as may be required by the Town Engineer. (Section 10.04.09)

.19 Test

Prior to final acceptance, all work installed under the development shall be tested as specified herein. All effects shall be corrected and the work left in the condition satisfactory to the Town Engineer, or inspecting authority.

.20 Approval of Testing Agencies

All laboratory or testing agencies employed by the Developer relative to the work shall be approved by the Town Engineer prior to any testing. Copies of test results shall be submitted to the Town Engineer for approval and for their records.

10.05 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

.01 Laws and Regulations

In all operations connected with the work, all Local Ordinances and Regulations, and all Federal, State or County laws, which shall be or become applicable to, and control or limit in any way the actions of those engaged as principle or agent, must be respected and strictly complied with. The Developer shall protect and indemnify the Town and its officers and agents against any claim or liability arising from or based on the violation of any such law, ordinance or regulation, whether by themselves or their employees.

.02 Public Work's Agreement (PWA)

Prior to commencement of work the Developer shall enter in a Public's Works Agreement to provide security for the guarantee of improvements as shown in the development plans. The PWA shall be prepared by the Town attorney and included securities as described in Section 98 in the Town Code, Subdivision of Land and Site Plan Review.

.03 Licenses and Permits

Such licenses, permits, insurance policies, etc. as may be necessary in order to comply with Federal, State or Local Laws in conducting the work, shall be provided by the Developer at this own expense.

The Developer shall also give all notices necessary and incidental to the due and lawful prosecution of the work.

.04 Patents

The Developer shall indemnify and hold harmless the Town of Mount Airy, the officers and agents from all suits, actions and damages or cost to which they may be subjected by reason of the use of any patented article or process in the work under development.

.05 Miss Utility

Before digging begins, the Developer must call Miss Utility forty-eight (48) hours ahead of time to protect vital facilities that are underground such as: electric and telephone cables, gas and water pipes, and sewage and drainage systems. The number to call is 1-800-257-7777. This does not preclude notifying non-participating companies or local municipalities.

.06 Water Supply

The Developer shall provide at its own expense such quantities of clean water as may be required for any and all purposes under the development. All sources of water supply to be used by the Developer in connection with the work shall be subject to the approval of the Town Engineer. These sources shall be indicated to the Town Engineer by the Developer five (5) days before beginning work, so that an examination can be made.

At any time there shall be no water use from a fire hydrant connected to the Town of Mount Airy's water system for construction purposes in accordance with Section 109-12 of the Code of the Town of Mount Airy.

.07 Sanitary Arrangements

Sanitary conveniences, or portable sanitary facilities, for the use of laborers and others employed on the work, properly secluded from public observation, shall be provided and maintained by the Developer, in such a manner and at such points as shall be approved or directed and their use shall be strictly enforced. The collection in the same shall be disinfected and/or removed when and as directed.

The Developer shall provide and maintain in a neat and sanitary condition such accommodations for the use of their employees as may be necessary to comply with the requirements and regulations of the Maryland Department of Health and Mental Hygiene or of other bodies or tribunals having jurisdictions thereof. They shall create no public nuisance.

.08 Electric Power (Temporary)

The cost of electric current used for the construction of any project, including the current furnished for the Developer's field office, MLDP's field office, pumping of water, electric tool operations and other purposes shall be borne by the Developer up to the date of the final acceptance.

.09 Lights, Barricades and Watchmen

The Developer shall place sufficient lights on or near the work and keep them burning from twilight to sunrise. They shall erect suitable railings, fences, or other protection about open trenches, and provide all watchmen on the work, by day or night that may be necessary for public safety. They shall place proper guards and lights for the prevention of accidents during and after delivery of materials and supplies.

The Developer must at all times take all necessary precautions to avoid accidents or injury to persons or property. The Developer shall upon notice from the Town Engineer that they has not satisfactorily complied with the foregone requirements, immediately take such measures and provide such means and labor to comply therewith as the Town Engineer may direct. However, the Developer shall not be relieved of their obligations under the agreement by any such notice or directions given by the Town Engineer, or by their neglect, failure or refusal to give such notice or direction. In case the Developer does not comply with any order with respect to safety, or in case of emergency, without notice to the Developer, if the Town Engineer deems it necessary, the Town Engineer shall provide the required protection and the cost thereof will be charged to the Developer. The Developer shall not be relieved of their obligations under the development documents by any such action of the Town.

.10 Extension of Time

Any extension of time granted the Developer in which to complete the development shall not relieve themselves or their surety from their responsibility.

.11 Sunday and Holiday Work

No work will be permitted Sunday, except in case of emergency, and then only to such extent as it is absolutely necessary and with written permission of the Town Engineer. Legal holidays are those defined in Section 10.06.01 of this document. The Developer will not be permitted to work on any days which are legal holidays unless granted permission by the Town Engineer. In case the Developer desire to work upon any such legal holiday, they shall request permission from the Town Engineer in writing at least two (2) days in advance of such holidays, stating the place where such work will be conducted. In addition to normal inspection costs, the Developer shall be responsible for overtime costs incurred for inspection services. (See Section 10.06.01 Normal Work Week and Holidays)

.12 Explosives

The Developer shall have a licensed blasting contractor in accordance with the Public Safety Article, Title 11, of the Maryland Code and COMAR Section 29.06.01.10, *Control of Air Overpressure and Ground Vibration for Blasting Operations*. The contractor shall store all explosives and conduct all operations as regards explosives in accordance with the aforementioned regulations.

The Developer and blasting contractor shall be jointly responsible for injury to persons or property that may result from the use of explosives. The exercise of or failure to exercise control on the part of the Town, shall in no way relieve the Developer and contractor responsibility for injury or damage resulting from the use of explosives.

Blast shall be properly and securely covered.

Under no circumstances shall blasting operations be performed without the use of blasting mats and earth cushion. Such provisions are mandatory and are for the purpose of protecting lives and property.

The Developer shall notify the Town Engineer and all nearby land owners of any use of explosives not less than seventy-two (72) hours in advance.

.13 Injury to Property

In case any direct or indirect damage is done to public or private property by or because of the work, or in consequence of any act of omission on the part of the Developer, blasting contractor, their employees or agents, the Developer and/or blasting contractor shall at their own expense, restore such property to a condition equal to that existing before such damage was done, by repairing, rebuilding or otherwise making good such damage in a satisfactory manner.

In case of failure on the part of the Developer and blasting contractor to promptly restore such property, or make good such damage, the Town may, upon forty-eight (48) hours written notice to the Developer proceed to repair, rebuild or otherwise restore such property as may be necessary. The cost thereof will be deducted from any bonding due or to become due the Developer under the Public Works Agreement or other Security.

The Town may instead elect to deduct from any bonding due the Developer, or any related agreement, a sum sufficient in the judgment of the Town to reimburse the Owner of the property so damaged.

.14 Indemnification of Town

The Developer shall indemnify and hold harmless the Town from all suits, actions and damages or cost, of every name and description, arising from injury to persons or property as a result of the work, whether caused by negligence or carelessness on the part of the Developer, their servants or agents. Any portion considered necessary by the Town of the monies due or to become due to the Developer under the agreement may be retained until such suits or claims for damages have been settled or otherwise disposed of, and satisfactory evidence to that effect is furnished to the Town.

.15 Public Safety and Convenience

The Developer shall so conduct their work at all times as to insure the least possible obstruction to traffic. The convenience of the general public and the residents along the project and the protection of persons and property are of prime importance and shall be provided for by the Developer in an adequate and satisfactory manner.

.16 Safety and Maintenance of Traffic

The Developer will be responsible for the safety and maintenance of traffic throughout the entire period of construction by providing a reasonably smooth and even surface satisfactory for use of public traffic.

On all major, minor, arterial, collector, and any other roads deemed necessary by the Town Engineer, all roadway work and lane closures shall be limited to the hours of 9am to 3pm, Monday through Friday. Any other times must be approved by the Town Engineer.

All work shall be in accordance with the latest issue of the Manual on Uniform Traffic Control Devices (MUTCD). The Developer shall submit a copy of the appropriate MD SHA Standard to the Town Engineer at least one (1) week in advance for review and approval.

No roadway, sidewalk or crossings shall be closed without written consent of the Town Engineer.

In the event of authorized lane or shoulder closings, the Developer shall provide, erect and maintain all necessary barricades, warning lights, danger signals and signs and provide sufficient watchmen and take all precautions necessary for the protection of the work and the safety of the public and their employees.

The cost of the work and materials necessary for safety and maintenance of traffic shall be taken into account and covered by the Developer without any cost to the Town.

.17 Accident Prevention

Precaution shall be exercised at all times for the protection of persons and property. The safety provisions of applicable laws, building and construction codes shall be observed by the Developer. The Developer shall be aware of and comply with all Federal, State, and local laws pertaining to the occupational safety and health of all individuals.

.18 Protection and Restoration of Property

The Developer shall not enter upon Town property, or private property not owned by Developer, for any purpose without obtaining written permission (in writing) from the Owner. A copy of the permission shall be placed on file with the Town Engineer. The Developer shall be responsible for the preservation and restoration of all public and private property, trees, monuments, etc., and shall use every precaution necessary to prevent damage or injury thereto. The Developer shall be responsible for damage to pipe, conduit, and service mains and other underground structures, and shall protect carefully from disturbance or damage all landmarks and monuments.

.19 Protection of Structures from Bituminous Materials

It shall be the responsibility of the Developer to adequately protect the curb, gutter, and other adjacent structures when bituminous materials are being applied to the street surfaces. The may use any method that is normal practice; protective paper, courses of sand, etc. If any structures are defaced, they shall be repaired at Developer's expense. The Developer shall protect all manhole frames and covers, roadway valve boxes and other similar utility structures with paper or other means before applying bituminous materials to the street.

After a bituminous paving course has been completed, it shall be the Developer's responsibility to remove the protective covering and examine the various structures to see that they are unimpaired and that manhole covers are free and properly seated and that they have not been moved out of alignment.

Any bituminous materials inadvertently placed in inlets or other roadway structures shall be removed immediately.

.20 Developer's Responsibility for Work

Until final acceptance of the project by the Town, the Developer shall be held responsible for any injury or damage to the construction, or to any part thereof, by the actions of the elements, or from any cause whatsoever.

Necessary repairs or renewals made in any section of the work under instructions from the Town Engineer due to defective materials or work, natural causes, or ordinary wear and tear, or otherwise, pending final completion and acceptance of the work shall be performed at the Developer's expense.

.21 Character of Workmen and Equipment

The Developer shall employ only competent, skillful men to do or supervise the work, and whenever the Town Engineer shall, in writing, notify the Developer that any one employed on the work is, in their opinion, incompetent, disobedient, unfaithful, disorderly, discourteous, or otherwise unsatisfactory, such a person shall be immediately removed from the project and shall not again be employed on further work within the Town limits.

The character, condition, adaptability and quality of equipment used by the Developer shall be adequate for the proper execution of the work within the specified working time. Power shovels, power cranes, compressors, tampers, power rollers, pavement breakers, material handlers and all other equipment used shall be maintained in good condition and shall be subject to approval of the Town Engineer prior to and during its use in connection with work to be performed under the development.

.22 State Permit for Water and/or Sewer Construction

Any new water and or sewer construction to be added to the Town system will require a construction permit from the Maryland Department of the Environment. Application and associated engineering drawings are to be submitted by the Developer to the State for review and approval.

10.06 PROSECUTION AND PROGRESS OF WORK

.01 Normal Work Week and Holidays

Normal Work Week: The normal work week shall be five (5) days and the Developer will not be permitted to work on holidays or on Saturdays or Sundays unless otherwise authorized by the Town Engineer in writing.

Normal Work Hours: The normal number of working hours per day will be limited to a maximum of eight (8), unless otherwise authorized by the Town Engineer in writing.

Holidays: The Town observes the following holidays: New Year's Day, Martin Luther King, Jr. Day, President's Day, Good Friday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving Day, Day after Thanksgiving Day, Christmas Eve (half day) and Christmas Day (see Section 10.05.11 Sunday and Holiday Work). If any holiday falls on a Saturday then the preceding Friday will be a holiday, and if any holiday falls on a Sunday then the following Monday will be a holiday.

Emergency Work: In case of emergency, which may require that work be done on Saturdays, Sundays, holidays or longer than eight (8) hours per day, the Developer shall request permission of the Town Engineer to do so. If in the opinion of the Town Engineer, the emergency is bona fide, they will grant permission to the Developer to work such hours as may be necessary. Also, if in the opinion of the Town Engineer, a bona fide emergency exists, they may direct the Developer to work such hours, as may be necessary whether the Developer requests permission to do so or not.

.02 Cost for Overtime Inspection Services

In the event working times exceed those specified above, for reasons stated above or at the Developer's request, and the services of inspection personnel are deemed necessary, as determined by the Town Engineer, the Developer shall bear all cost for overtime inspection. If applicable, such cost shall be periodically deducted from monies due the Developer, otherwise, final approval of the project will be withheld until the Town of Mount Airy has been reimbursed by the Developer for all overtime inspection expenses.

.03 Responsibility of the Developer

It is the responsibility of the Developer to construct the work under the development documents so that it will be complete and finished in every detail. Omissions in the development documents of any item of work or materials, which are necessary for the completion, or proper functioning of the construction, shall be corrected without extra payment.

If damage is done to any existing work or work place under this development, such as cutting masonry, concrete work, paving damage to existing utilities, etc., such damage must be repaired and made good without extra payment to the full satisfaction and approval of the Town and any agency having jurisdiction whose work has been affected.

.04 Shop Drawings

The review of the shop drawings and data for general conformance with the design concept of the project can only be accomplished when related structural, equipment, materials, mechanical, and electrical drawings and data are submitted as a system. Failure of the Developer to furnish all related drawings and data in one submission will be justification for rejection of the drawings submitted.

Any acceptance given by the MLDP to the Developer shall be considered as in conformance with the above purpose and shall in no manner be construed as to relieve the Developer from any liability or responsibility for the proper design, fabrication, installation or compliance with the requirements either expressly stipulated for implied by the Development Documents for the work to be performed.

.05 Review Time for Shop Drawings (for subdivision developers)

The shop drawings will only be reviewed by the Town Engineer as deemed necessary. Any review time of the shop drawings by the Town Engineer will be accounted for and billed by the Town to the Developer.

.06 Use of a Portion of the Work

Whenever in the opinion of the Town Engineer any portion of the work is completed or is in acceptable condition for use, it may be used for its intended purpose. Such use shall not be held to be in any way an acceptance of that portion of the work used or as a waiver of any of the provisions of the Development Documents.

.07 Telephone Numbers

The Developer shall furnish the Town with names, addresses and telephone numbers of all responsible personnel who can be contacted at any time in the event that the Developer's services are required by the Town.

Developer shall obtain and post in a convenient place adjacent to their telephone, emergency Town and other telephone numbers as required by Maryland Occupational Safety and Health.

.08 Existing Utilities and Services

All cost related to repair or replacement of services and/or utilities shall be included without compensation by the Town.

.09 Interruption of Existing Utilities and Services

If it becomes necessary to interrupt these services and/or utilities, the Developer shall provide written notices to the Town Engineer and to the individual property owners at least twenty-eight (28) hours in advance of actual interruption.

In no case shall an individual service be interrupted for a period exceeding four (4) hours.

.10 Conformance to Maryland State Highway Administration

The Developer's attention is directed to the fact that on Maryland State or Federal Highways, all work within the right-of-way limits shall be performed in strict conformance to the State Highway Administration Standard Specifications and Details as if they were set out herein in their entirety, in addition to any requirements which are furnished by inclusion herein or by addendum to the Development Documents.

DIVISION II - MATERIAL DETAILS

20.01 GENERAL

This division of the general specifications establishes the requirements governing the quality of the various materials specified for use in the construction details.

Whenever reference is made to the requirements of the A.S.T.M. (American Society for Testing Materials), A.W.W.A. (American Water Works Association), A.S.A. (American Standards Association) or other standards specifications of codes, the latest modifications or revisions of such specifications shall be applicable for use unless otherwise indicated.

.01 Approval of Materials

The materials and the source of supply for each material, to be supplied by the Developer, shall be reviewed by the MLDP and approved by the Town Engineer before delivery is started.

Representative samples of materials intended to be incorporated in the work, shall be submitted when indicated or directed, for examination and/or test. Qualities of such samples shall be as herein indicated or required.

.02 Storage of Materials

Materials shall be stored in such a manner as to insure preservation of their specified quality and suitability for the work. When necessary, they shall be placed on suitable platforms or other hard and clean surfaces and not on the ground. They shall be placed under cover when directed by the MLDP or the Town.

The Developer shall regulate the amount of materials in storage so that there will always be a sufficient quantity of tested and accepted materials available for the work to progress without interruption.

.03 Testing and Materials

All materials and equipment used in the construction of the project shall be subject to adequate inspection and testing in accordance with accepted standards. Unless otherwise specified the Developer will pay for all laboratory and field inspection services as part of the development.

Materials of construction, particularly those upon which the strength and durability of the structure may depend, shall be subject to inspection and testing to establish conformance with specifications and suitability for used intended.

All testing of materials shall take place under the direction of the Town Engineer, at the testing laboratory, or such other place as may be designated by the Town Engineer. Test will be made in accordance with the standard methods of testing of the A.S.T.M., A.W.W.A, A.S.A. or other standard specifications.

The Developer shall furnish on demand to the MLDP and the Town, certificates from each manufacturer or from approved testing laboratories that all materials used in the work is in accordance with these and all reference specifications.

.04 Defective Materials

All materials not conforming to the requirements of these specifications, in the opinion of the MLDP or the Town Engineer, shall be considered as defective and rejected for use, and shall be removed from the site of the work.

20.02 CONCRETE/PRECAST CONCRETE

The Developer shall provide all materials, equipment and labor necessary for the satisfactory completion of the work as herein specified. At the request of the Town Engineer, the Contractor shall provide proposed design mixes for the review and approval of the Town Engineer.

.01 Portland Cement

Portland Cement shall meet the requirements of the latest specifications of A.S.T.M. Designation C-150, for Type II.

Air-Entrained Portland Cement shall meet the requirement of A.S.T.M. Designation C-175, Type 1A.

Only one (1) brand or type of cement, per type designation, shall be used except by specific written permission from the Town Engineer.

Certified mill test shall be furnished for all cement delivered to the site in bulk. Certified mill test may be required by the Town Engineer from time to time as they deem necessary.

.02 Aggregate

Fine Aggregate: Fine aggregate shall consist of natural sand or, subject to the approval by the Town Engineer, other inert materials with similar characteristics, or combinations thereof. It shall be free from injurious amounts of organic materials. Aggregate subjected to the color metric test for organic impurities and producing a color darker than the standards shall be rejected unless they pass the mortar strength test.

Coarse Aggregate: Coarse aggregate shall be crushed stone consisting of particles of clean, hard, tough, durable rock free from adherent coating.

Aggregate Grading: Fine and coarse aggregate shall be in accordance with Standard Specifications for Concrete Aggregate ASTM, Designation C33, including latest amendments and graded as follows:

Fine Aggregate Grading

Sieve size 3/8	(%) Percent Passing 100
No. 4	95 to 100
No. 16	45 to 80
No. 50	10 to 30
No. 100	2 to 10

Coarse Aggregate

Size 1 inch to No. 4

Sieve Size 1 ½	(%) Percent Passing 100
1 inch	95 to 100
½ inch	35 to 70
No. 4	0 to 10

Size 3 inch to No. 4

	(%) Percent Passing 100
3 inch	95 to 100
1 inch	35 to 70
½ inch	10 to 30
No. 4	0 to 5

.03 Admixtures

Concrete with compressive strength of 2500 psi or greater shall be air entrained unless otherwise indicated. Concrete exposed to weathering and/or freeze-thaw cycles shall be air entrained unless otherwise indicated. Air entraining admixtures shall be in accordance with Section 902.06 of the Maryland State Highway Administration Standard Specifications for Construction and Materials.

Water reducing and retarding admixtures may be used with the permission of the Town Engineer. The Developer is responsible for the compatibility of admixtures. The Town requires a copy of each delivery ticket.

THE USE OF CALCIUM CHLORIDE WILL NOT BE ALLOWED.

.04 Water

Water shall be clean and free from acids, alkalis, or organic materials in deleterious amounts and be potable.

.05 Appurtenance Materials

Vapor Barrier: Building paper shall be Sisal Kraft building paper, conforming to requirements of FD-UUB 790A

Polyethylene sheeting: shall be 0.006 mil thick, conforming to requirements of ASTM D 2103

Curing Materials: Curing paper shall conform to requirements of ASTM C171, Type I and shall be flame resistant. Use only non-staining material over all surfaces to remain permanently exposed.

Curing compound shall conform to requirements of ASTM C309, white pigmented Type II.

Burlap cloth for curing shall be jute, knead, or hemp and shall conform to requirements of AASHTO M-182, Class I.

Expansion Joint Filler: Filler not exposed to traffic or weather shall conform to requirements of ASTM D994.

Filler exposed to traffic and/or weather shall conform to requirements of ASTM D1751 or ASTM D1752.

Joint Sealer: Sealer shall be hot applied and conform to requirements of ASTM D6690.

.06 Manholes, Vaults and Inlets

_____ Precast concrete manholes shall meet the requirements of ASTM C478 with configurations as shown on the Plans and Standard Details and with joints meeting requirements of ASTM C443.

Precast concrete vaults and inlets shall meet the requirements and configurations indicated on the Plans.

Each manhole and precast structure shall be clearly marked on the inside near the top with the following information where applicable: (1) ASTM Designation, (2) Standard Detail or Drawing Number, (3) Station Location and Designation, (4) Date of Manufacture, and (5) Name or Trademark of Manufacture.

.07 Box Culverts

Precast box culvert sections shall meet requirements of ASTM C789 and ASTM C850 as modified herein, with configurations as shown on the Plans.

Box section shall be substantially free of surface roughness. The interior walls shall be substantially a smooth surface and be free from noticeable and harmful ridges, corrugations, elevations and depressions. The finished surface shall be free of any material which is not an integral part of the compacted concrete such as loose aggregate, cementitious slurry coats, silt, cement and non-required markings.

Box sections shall have ends suitable for standard mortar or mastic joints.

Each box culvert section shall be clearly marked on the inside of the side wall at its top section with the following information: (1) span, (2) rise, (3) design table number, (4) design earth cover, (5) ASTM Designation, (6) date of manufacture, and (7) name or trademark of the manufacture.

20.03 STREETS AND ROADS

This section includes providing streets and roads specifications including asphalt, raised pavement markers, and striping.

.01 Hot Mix Asphalt Materials

Hot Mix Asphalt Pavement – shall meet Maryland State Highway specifications and as provided below.

- Base Course: Hot mix asphalt Superpave 25mm base (PG 64-22)
- Binder Course: Hot mix asphalt Superpave 9.5mm surface (PG 64-22)
- Surface Course: Hot mix asphalt Superpave 9.5mm surface (PG 64-22)
- Depths of paving per Standard Details

Tack Coat – shall consist of a light application of asphalt material to an existing road surface before placing a hot mix asphalt course. It is important that the tack coat be applied very thinly and that it uniformly covers the entire surface of the area to be treated. The tack coat shall be applied to a clean surface, free of dust and debris, and once applied, shall be kept clean and untouched prior to the next hot mix asphalt layer.

The quantity applied shall cover at least 90% of the clean surface, however, shall be the minimum that will provide bond between contiguous courses. Film thickness greater than necessary will not be absorbed into the lower course, which may result in a loss of stability and act as a lubricant instead of a bonding agent.

Hot Mix Asphalt Patches – shall meet MD SHA specifications and Town Standard Details for Construction.

Milling Hot Mix Asphalt Pavement – shall meet MD SHA specifications.

.02 Raised Pavement Markers (RPM)

All materials meet Maryland and National Cooperative Highway Research Program (NCHRP) 350 Standards. The RPM shall be at least 10 mm (0.4 in.) mounted in a road surface. Must be a retroreflective RPM and not internally illuminated, in a bidirectional configuration and safe for snowplowing.

In accordance with MUTCD Sections 3A.04 and 3B.11. RPMs must be installed in center of each travel lane on same side of double yellow as fire hydrant. Placement of the marker should be 5 feet from the double yellow line. For fire hydrants placed near the corner of two roads, follow the procedure for RPMs on the two adjacent streets.

.03 Striping / Street Markings

Striping and street markings shall meet MD SHA specifications, the Manual on Uniform Traffic Control Devices (MUTCD), and as otherwise directed by the Town Engineer.

20.04 MASONRY MATERIALS

.01 Clay or Shale Brick

Face Brick: Solid masonry units made from clay or shale shall conform to the requirements of ASTM C216, grade SW, Type FBS, as amended. Color to be selected by Owner and approved by the Town. Exposed face shall contain no visible cracks.

Building Brick: Solid masonry units made of clay or shale shall meet the requirements of ASTM C55, Grade SW when used below grade or exposed to weather, as amended. Use Grade MW above grade and not exposed to the weather.

Average dimensions for face or building brick shall be within the range of 2-1/8 to 1-1/2 inches high, 3-3/8 to 4 inches thick and 7-1/2 to 8-1/2 long.

.02 Concrete Masonry

Hollow load-bearing concrete masonry units: Shall conform to ASTM C-270-64T, Grade N when used below grade or exposed to weather or view. Sizes to be as called for on the drawings.

Hollow non-load-bearing concrete masonry units: Shall conform to ASTM C-90.

Solid load-bearing concrete masonry units: Shall conform to ASTM C90 (Load Bearing Concrete Masonry Units).

Concrete building brick: Shall conform to ASTM C55, Grade N to be; used below grade or when exposed to weather, as amended. Grade S to be used when above grade and not exposed to weather.

.03 Masonry Mortar

Portland Cement: ASTM C150, Type I (Use non-staining waterproof type in exterior work).

Masonry Cement: ASTM C91, Type II. (Use non-staining waterproof type in exterior work).

Lime: Hydrated lime, ASTM C207, Type S.

Quicklime, ASTM C5

MASONRY MORTAR TYPE AND USES (ASTM – C270)

Mortar Type	Use
M, O, R, S	Foundation walls or piers
M, S, N	Exterior walls above grade, Interior load-bearing walls
S, N, O	Non-load-bearing walls
M	Sewer, Inlet, Manhole and Retaining Walls

All mortar shall be composed of cement and sand of the character elsewhere specified. For brick masonry, the proportion by volume shall be one part of cement to two of sand. One volume of cement shall be 94 pounds net. One volume of sand shall be 0.9 cu. ft.

.04 Aggregate

To shall be clean, washed, sharp, natural sand, properly graded, conforming to ASTM C144.

.05 Water

The water used in mixing shall be potable, clean and free from injurious amounts of oil, acid, alkali or organic matter or other deleterious substances.

.06 Masonry Reinforcement

Reinforcement to be standard weight ladder design, as manufactured by Dur-O-Wall or equal.

.07 Storage of Materials

Store all masonry materials, masonry units, mortar, cement, lime, etc., in a manner that prevent damage, excessive absorption of moisture or freezing.

Protect reinforcement from the elements or any foreign matter which will reduce the bonding effect. Reinforcing shall be free from loose rust.

20.05 STORM/CULVERT PIPE

All storm/culvert pipe within a road right of way shall be reinforced concrete pipe. All other areas may be RCP or high-density polyethylene (HDPE) as noted below. Corrugated steel or aluminum or other metal pipes will not be allowed for storm/culvert piping.

.01 Reinforced Concrete Pipe

Reinforced concrete pipe (RCP) shall conform to the Maryland State Highway Administration Standard Specification AASHTO M170/ASTM C76.

Class 3 – 2'-13' of fill depth

Class 4 – 1'-2' or greater than 13' of fill depth

.02 HDPE Pipe

Type S – full circular dual-wall cross section, with an outer corrugated pipe wall and a smooth inner liner.

20.06 METALS

.01 Reinforcement

Bar Reinforcement: Reinforcement steel for concrete structures and concrete roadways inclusive of dowel and tie-bars shall conform to ASTM A615, Grade 60 and to the requirements of the Maryland State Highway Administration Standard Specifications.

Welded Wire Fabric: Welded wire fabric shall conform to ASTM A185.

Two #5 rebar in sidewalks where crossing water and sewer service lines. General requirements include a minimum length of 10-ft for each rebar centered over utility. Additional requirements may be required by Town Engineer or Town Inspector where other utilities or project specific needs exist.

.02 Structural

Materials: Unless otherwise specified, structural steel shall conform to ASTM Designation A36 for carbon structural steel.

Galvanized: All steel called to be galvanized shall be hot-dipped galvanized to minimum thickness of 3.4 mils in accordance with ASTM A123.

Welding: Welding electrodes shall conform to the requirements of the American Welding Society Specification for the specific work and work conditions.

.03 Castings

Castings shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage distortion or other defects. Castings shall be smooth and well cleaned by shot blasting or other approved method and shall be coated with asphalt paint which shall result in a smooth coating, tough and tenacious when cold, not tacky, not brittle. Materials shall be in conformance with ASTM Designation A48, "Grey Iron Casting", and Class 30B.

Castings shall be manufactured true to pattern; component parts fit together in a satisfactory manner. Round frames and covers shall be of non-rocking design or shall have machine bearing surfaces to prevent rocking and rattling under traffic.

Manhole frames and covers shall be Town of Mount Airy Standard as shown on the standard details.

.04 Manhole Steps

Manhole steps shall be aluminum alloy conforming to ASTM C478 for Precast Reinforced Concrete Manhole Sections or steel rod encapsulated in polypropylene plastic conforming to ASTM D4101 Type II, Grade 43758.

20.07 WATER MAINS

.01 General

The Developer shall furnish all materials for and shall construct the pipelines and all required appurtenances at the points and to the lines and elevations shown on the drawings or designated by the Town Engineer.

The size of the water mains shall be on the drawings. Water mains, unless otherwise noted on the drawings, shall be cement lined, ductile iron pipe. All valves and fittings for the ductile iron pipe shall be constructed of cast iron.

.02 Ductile Iron Pipe

All ductile iron pipe shall be Class 52, minimum, centrifugally cast not less than twelve (12) feet nor more than twenty (20) feet in length. Joints shall be standardized mechanical joint with MEGALUG Series 1100 or equal restraint system, or push-on joint with Field Lok 350 gasket or equal for buried applications and flanged joint for interior applications. All ductile iron pipe and fittings shall be cement lined and bituminous coated inside and outside.

Thickness design shall be in accordance with the American Water Works Association (AWWA) C150 (ANSI A21.50).

Cement-mortar lining shall be in accordance with AWWA C104

(ANSI A21.4)

Ductile iron pipe shall be in accordance with AWWA C151

(ANSI A21.51)

Fittings shall be in accordance with AWWA C110

(ANSI A21.10)

Rubber-gasket joints shall be in accordance with AWWA C111

(ANSI A21.11)

Flanged joints shall be in accordance with AWWA C115

(ANSI A21.15)

.03 Gate Valves

Gate Valves shall be resilient wedge valves, Mueller or equal, to include iron-body, parallel seat, bronze-mounted, nut operated and non rising stem in accordance with AWWA C500. Joints shall be as hereinafter specified for CIP and DIP fittings. Valves shall be manufactured by Mueller Company or equal.

Valves sixteen (16) inches and larger shall be as provided by the Town Engineer.

.04 Valve Boxes

Roadway valve boxes and curb stop boxes shall be gray cast iron Class No. 30 in accordance with ASTM A48 and shall be of uniform quality, free from blow holes, porosity, hard spots, shrinkage distortions or other defects. They shall be smooth, well cleaned by shot blasting and coated with asphalt paint.

Roadway valve boxes shall be the Buffalo Type, two-piece, 5 ¼ inch shaft, complete with lid, screw type shaft for elevation adjustment. (Mueller Model H-10360)

Curb stop (valve) boxes shall be the Buffalo Type (Mueller Model H-10350), Arch Pattern Base, with 1 ½ inch shaft, screw type for elevation adjustment, complete with lid and brass screw, stationary rod and guide ring (Mueller Model H-10347)

.05 Fire Hydrants

Fire Hydrants shall be Super Centurion or equal. Add concrete box to be formed around all fire hydrants just below grade. Conform to the requirements of the AWWA Standard for Dry-Barrel Fire Hydrants C502 for Ordinary Water Works Service and shall have two 2 ½ inch outlets and one 4 ½ inch streamer nozzle. All connections shall have national standard threads. Threads for all new hydrants shall be verified by the local fire company. Hydrants shall be nut operated and shall be opened by turning to the left.

Standpipe of hydrant shall have safety flange with breakable coupling or frangible bolt to prevent loss of water in the event of damage. Hydrants shall be prime painted, then enameled above the ground line with an approved grade of hydrant paint.

Fire hydrants shall be compression type, traffic type, and shall have a minimum of five (5) inch valve opening, and shall be provided with six (6) inch mechanical joint inlet connection.

Hydrant shall be of dry top construction, i.e., operation threads shall not be submerged whether hydrant is open or close. Hydrant shall be manufactured by Mueller Company, Model Number A-24007, "Super Centurion" or equal.

Installation, Field testing for hydrants shall be in accordance with AWWA Manual M17 (1980).

.06 Air Release Valves

Air release valves shall be the combination type that combines the properties of an air release valve, which vents small pockets of air, and air vacuum valve, which vents large amounts of air and prevents the formation of a vacuum.

Size and operating pressure shall be calculated and submitted for approval. Material selection shall avoid galvanic action.

.07 Corporation Stops and Curb Valves

Water house connection line valves and fittings shall be Ford or Mueller or equal. Casting materials shall be copper alloy conform to the requirements of ASTM B62 or ASTM B584.

Corporation stops to be ground key type, with standard AWWA C800 regarding corporation stop inlet thread, and outlet to having flared type compression connections for type K tubing that must be used for underground. For 1-inch service, Ford F1000-4-G-NL and for 3/4 inch service Ford F1000-3-G-NL, or approved equal.

Curb Valves to be ground key type and have a compression connection for type K tubing. For services 1 inch, Ford B44-444-G. For services 3/4 inch, Ford B44-333-G or approved equal.

For clarification: Water house connection piping from the main to inside the building must be Type "K" copper P.E. pipe. (See Specifications)

Curb valves with drains will not be permitted.

.08 Detection Tape

Detection tape for water lines shall be blue and marked continuously "Caution: Water Line Below". It shall contain a metallic element capable of being located by an electronic locator without excavation. Tape to be placed approximately eighteen (18) inches above all mains and water house connections.

.09 Mechanical Joint Restraint

MEGALUG Series 110 Mechanical Joint Restraint or equal

Field Lok 350 Gasket Joint Restraint or equal

20.08 SANITARY SEWERS

.01 General

The Developer shall furnish all material and shall construct the pipe lines and all required appurtenances at the points and to the line, slopes and elevations shown on the drawings or designated by the Town Engineer. All pipe and fittings shall be laid true to lines, slopes and elevations.

The type, size, and class of pipe for sewer shall be as shown on the drawings and in accordance with the requirements herein specified.

The various types of pipe are to be designated on the drawings by the following symbols:

Reinforced Concrete O-Ring Pipe R.C.P. (Sanitary)

Reinforced Concrete Low-Head Pressure Pipe, reference to ASTM C361

Reinforced Concrete D-Load Culvert, Storm Drain, and Sewer Pipe, reference to ASTM C655

Ductile Iron Pipe (Specifications in section .03) D.I.P.

PVC Pipe (Specifications in section .04)

Gravity Sewer Pipe, 46 psi, (PS46)

Pressure Sewer Pipe

.02 Reinforced Concrete O-Ring Pipe

Reinforced concrete sewer pipe shall be designated by its interior diameter and shall be full diameter.

Reinforced concrete sewer pipe and fittings shall be furnished in accordance with AWWA C-302 "Reinforced Concrete Pressure Pipe, Non-cylinder Type". Reinforced concrete sewer pipe manufactured by the method described in the Concrete Pipe Handbook, 1967 Edition, Section 3.4 machine made packer head pipe will not be accepted.

Cement for concrete work shall conform to ASTM C150, Portland Cement Type II.

Pipe shall be designed in accordance with ASTM C76, "Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe". All pipe shall have circular reinforcement which shall extend from end to end, including the bell and the spigot of the pipe. The clear distance of the end coil or ring shall not be less than ½ inch not more than one (1) inch from the end of the pipe unit. Longitudinal reinforcement shall extend the full length of the pipe and shall support the end coils or rings of the circumferential reinforcement.

Reinforced concrete sewer pipe shall be designated by the appropriate class in accordance with ASTM C76.

In addition to AWWA C-302, the following sections of ASTM C76 shall apply:

Physical Test Requirements, Section 19, 20, 21, and 22.

Permissible Variations, Section 23.

Marking, Section 25.

Inspection and Rejection, Section 26 and 27.

Repairs, Section 28.

Pipe shall be manufactured without lifting holes.

Certification: The Developer shall furnish the Town statements that the materials furnished comply with all applicable provisions of these specifications.

.03 Ductile Iron Sewer Pipe

All ductile iron sewer pipe shall be used (1) where coverage exceeds 20 ft., (2) where coverage is less than 4 ft. and under road or drive way access. Heavy-use driveways may also be required to use DIP sewer pipe. Joints shall be push-in joints for buried applications.

Thickness design shall be in accordance with ANSI A21.50 (AWWA C150)

Cement-mortar lining shall be in accordance with ANSI A21.4 (AWWA C104)

Ductile iron pipe shall be in accordance with ANSI A21.51 (AWWA C151)

Fittings shall be in accordance with ANSI A21.10 (AWWA C110)

Rubber gaskets joints shall be in accordance with ANSI A21.11 (AWWA C111)

A certification of compliance shall be submitted.

.04 PVC Pipe

Gravity Sewer Pipe, 46 psi:

Product Standard: SDR35, 4"-15", reference to ASTM D3034

Product Standard: PS46, 18"-36", reference to ASTM F679

Pipe Compound: ASTM D1784 Cells Class 12454 or 12364

Gasket: ASTM F477

Integral Bell Joint: ASTM D3212

Pipe Stiffness: ASTM D2412

Pipe Length: 14 or 20 feet laying length

Gravity Sewer Pipe, 115 psi:

Product Standard: SDR26, 4"-15", reference to ASTM D3034

Product Standard: PS115, 18"-36", reference to ASTM F679

Pipe Compound: ASTM D1784 Cells Class 12454 or 12364

Gasket: ASTM F477

Integral Bell Joint: ASTM D3212

Pipe Stiffness: ASTM D2412

Pipe Length: 14 or 20 feet laying length

.05 Detection Tape

Detection tape for sanitary sewer lines shall be green and marked continuously "Caution: Sewer Line Below". It shall contain a metallic element capable of being located by an electronic locator without excavation. Detection tape shall be laid continuously over sewer lines.

20.09 INSPECTION OF WATER AND SEWER PIPE

.01 General

The Town Engineer may inspect and test all pipe, fittings and joint material upon delivery to the site or at the factory. The pipe manufacturer or supplier shall furnish materials to be tested and labor as required to assist the Town Engineer with test.

.02 Stockpiling of Pipe

Manufacturer or supplier shall provide ample space between rows of stockpiling pipe to facilitate adequate inspection.

.03 Pipe Order

The pipe manufacturer or supplier shall provide to the Town Engineer prior to commencing the inspection of an order of pipe, with the complete contract number, contractor's name, pipe diameter, class and designs and footage of pipe needed to fill the order.

.04 Quantity of Pipe

The manufacturer or supplier shall provide evidence to the Town Engineer prior to inspection, that there is an adequate quantity of pipe available of the required diameters, classes and designs for inspection.

.05 Load Bearing Test

The manufacturer or supplier shall provide facilities and competent personnel for the preparation and for conducting of hydrostatic and load bearing test. The Town Engineer and/or Inspector has the right to be present during all phases of testing.

.06 PVC Pipe Deflection Test

PVC pipe shall be subjected to a test to detect deflection. At any time beyond thirty (30) days after final backfilling of the trench and prior to the extension of one (1) year the sewer line shall be checked for deflection. (A) The Town Engineer may require this test to include cleaning and testing by Contractor prior to one year warranty. At same the Town may opt to video the line.

The deflection shall be checked by pulling a cylinder, sphere, or measuring device through the pipe.

Vertical deflection tests shall be performed on at least ten (10) percent of the total footage of PVC pipe on the project unless additional test are required by the Town Engineer.

Each test section shall be not less than two hundred (200) feet. The Developer shall conduct the test under the observation of the Town Engineer and shall furnish all test equipment and labor.

Deflection of five percent (5%) or greater of the outside pipe diameter shall be considered unacceptable and such pipe shall be replaced by the Developer at their expense.

DIVISION III - CONSTRUCTION DETAILS

30.01 GENERAL REQUIREMENTS

This division of the general specifications establishes the requirements governing the execution of standard construction details. Construction materials are specified in Division II.

30.02 GRADING & SEDIMENT CONTROL

Construction Details for Grading & Sediment Control are to conform to the requirements of the latest issue of The Grading & Sediment Control Ordinance of The Town of Mount Airy Code. Chapter 47, Section 47-10. (Ordinance No. 1989-15 dated 7-10-89)

30.03 STORMWATER MANAGEMENT

Construction Details for Stormwater Management are to conform to the requirements of the latest issue of the Stormwater Management Ordinance of the Town of Mount Airy Code, Chapter 94.

At a minimum all areas surrounding and within the Stormwater Management (SWM) Facility shall not exceed a 4:1 slope (run: rise) to provide adequate means for mowing and maintenance. This includes, but is not limited to, all side slopes of the pond, areas around the inlet pipe and outfall, and all other areas within the SWM fence. Anything steeper than a 4:1 slope (2:1, 3:1, etc.), whether permitted by the County Ordinance or not, will not be permitted in these facilities within the Town. All non-movable and non-maintainable areas will be minimized. A minimum 20-ft wide paved access to all SWM ponds shall be required for new construction with a maximum 20% slope and 4% cross slope.

30.04 WETLANDS PROTECTION REQUIREMENTS

Wetlands identification, delineation and protection requirements shall be in accordance Section 98-15 of the Town Code.

30.05 LANDSCAPING

Landscaping and planting to conform to the latest requirements and standards of the Town of Mount Airy Code, Chapter 98.

30.06 EARTHWORK

.01 General

The Developer shall furnish all plant, labor, material and equipment and do all excavation of every kind required for the work under the development documents. The Developer shall do all filling and backfilling, construct all embankments, do all grading, remove all water, and satisfactorily dispose of all unsuitable and excess materials. The Developer shall also furnish, install and remove all sheeting, bracing, and shoring necessary to hold the sides of the excavations and to protect the work and existing structures and utilities, shall furnish, and shall do all incidental and appurtenant work required to satisfactorily complete the work as shown on the drawings and as specified. A Geotech must be present onsite as needed for testing to include daily compaction reports, soils tests, and backfill tests.

DIRT AND TRASH ON HIGHWAYS

The Developer's attention is called to Chapter 96, Article III, Section 96-13 Dirt and Trash on Highways, of the Code of the Town of Mount Airy Maryland. Particular attention is called to Paragraph 96-13 (A).

Paragraph 96-13 (A) states in part that no person engages in excavation, repair to structures or grounds or construction or having charge or control of conveying materials, shall deposit or permit to be deposited upon the surface of any street, alley, highway, sidewalk, public space, within the corporate limits, either by placing, spilling, dropping or tracking from wheels, mud, sand, gravel or other materials.

If any such deposit occurs, every person whose duty it is under this section to prevent such deposit shall promptly remove the same.

.02 Clearing and Grubbing

This section includes clearing and grubbing of all areas within the development limits of right-of-way and other areas indicated in accordance with Section 201 of the State Highway Administration Standard Specifications for Construction and Materials.

Topsoil: Strip existing topsoil from areas where excavation or grading is to be performed prior to commencement of grading or excavation. Topsoil shall be removed to a minimum depth of 6-inches and stockpiled for subsequent use. Place the topsoil in well drained stockpiles in locations shown or in locations approved by the Town Engineer. (See Article VIII, E of the Subdivision Regulations relating to use of topsoil).

Sod: Where shown, sod shall be cut in suitable strips and carefully removed and stored for subsequent use.

Trees and Shrubs on State Owned Land: Trees and shrubs on state owned lands and right-of-ways are controlled by the Maryland Forest Service via the Roadside Tree Permit. All work including replacement shall conform to the Maryland Forest Service standards and requirements as set forth in the permit. (Contact Foresters Office, 8602 Gambrill Pike Road, 301-473-8417).

PROTECTION OF TREES

It shall be the Developer's responsibility to clearly mark all trees or groups of trees to be left or saved prior to starting any clearing or grubbing. If a conflict exists between trees or groups of trees to remain and other site work or improvements, such shall be brought to the attention of the Town Engineer for resolution. All work in the area of conflict shall cease until a resolution of the condition has been reached.

DESTRUCTION OF TREES TO BE SAVED

If any tree or group of trees that are designated to remain are destroyed, without written permission from the Town Engineer, they shall be replaced by like kind and size by the Developer at no expense to the Town.

DAMAGE TO TREES TO BE SAVED

If in the course of construction the Developer damages any trees, so designated to remain, they shall obtain the services of a reputable tree surgeon to repair such damage and the cost of such damage shall be borne by the Developer.

PROTECTION OF PROPERTY MONUMENTS

Protect property corner pipes, stones and monuments. Replacement, if required, shall be by a registered surveyor, at no cost to the Town.

PROTECTION OF EXISTING IMPROVEMENTS

Remove fences, curb gutter and flagstone, where required, and replace in original position or as indicated. Replace damaged facilities in kind at no cost to the Town. Protect other plants and existing improvements and facilities from damage.

.03 Excavation General Requirements

Excavation shall consist of all excavation necessary to form roadways, drainage ditches and structures; all excavation necessary for installation of storm drainage culverts, water mains, sanitary sewers and associated work and excavation as described under the Grading and Sediment Control Ordinance (Section 30.02) and the Stormwater Management Ordinance (Section 30.03) of this Specifications.

All excavation shall be in accordance with the applicable Sections of the Standard Specifications for Construction and Materials of the Maryland State Highway Administration, current issue and as stated hereinafter.

Excavation shall be to the lines, grades and sections as shown on the plans and/or as approved by the Town Engineer.

Unclassified: All excavation shall be unclassified, unless and except as shown on the drawings, no subsurface explorations have been made to determine the character of the materials at the work. Excavation is to include all material of any kind encountered, whether earth, rock, concrete, old foundations or other obstacles, hard or soft materials, wet materials, silt or other materials.

Existing Paved Areas: When excavation is required in existing roadways, parking lots, sidewalks, etc., the paved areas shall be saw cut. Unless otherwise directed, the repair of existing paved areas shall be performed in accordance with the Standard Detail of these specifications. The pavement materials which are to be removed as a result of excavating shall be disposed of by the Developer as hereinafter specified.

Test Pit: Test pit excavation shall be performed with extreme caution and in such a manner that no damage occurs to the facility being test pitted.

Unsuitable Materials: The Town Engineer may direct removal of unsuitable materials. The depth of removal of such material will be determined by the Town Engineer. Soft yield areas which are removed shall be filled with suitable materials and re-compacted.

Unauthorized Excavation: Where unauthorized excavation are made below indicated elevations under slabs, footings, pipes, or structures, the Developer must restore to proper elevations with fill materials as specified hereinafter and as directed by the Town Engineer at no cost to the Town.

Roadway: Roadway excavation shall be in accordance with Section 202, Roadway Excavation of the State Highway Administration Specification.

Structural: Structure excavation shall be in accordance with Section 203, Structure Excavation of the State Highway Administration Specification.

.04 Trench Excavation

All excavation for pipe shall be in open trenches, except where and to such extent as the Town Engineer may authorize or direct the same be done by tunneling, or boring, or where such is specified herein or shown on the Development Drawings. Trenches may be, in general, excavated and backfilled either by machinery, or by hand as the Developer may elect. However the Town Engineer shall be empowered, if they decides that such necessity exists, to direct that hand excavation be employed, and provided further, that excavation and backfilling by hand shall be done to the extent herein specified. The Developer shall have no claim for extra compensation due to the fact that hand excavation instead of machine excavation may be made necessary from any cause.

Excavate trenches to the width and depth indicated on the Standard Details and on the plans. Provide uniform and continuous bearing and support for pipe or structure on granular bedding. Remove rock, when encountered, to a minimum depth of six (6) inches below the pipe and the same depth below the bell. (Bell holes shall be excavated in the bottoms of trenches whenever necessary to permit the proper making of joints.) If the external shape of the trench cannot be preserved or the trench varies from the shape of the structures, the space between the desired trench dimensions and the bottom of the excavation as made, shall be filled with gravel backfill, allowing for placement of granular bedding where specified.

Sides of trenches in improved public ways and adjacent to other structures shall be practically plumb. Where permitted by the Town Engineer, sides of trenches in other areas may be sloped from a point one foot above the top or the pipe to grade. Such slope shall be made at no additional cost to the Town. Slopes shall be such as will not allow displacement of material or danger to personnel.

Trench excavation shall proceed no more than 75 feet in advance of the placing of backfill to

the width and depths shown on the Standard Details, unless otherwise authorized by the Town Engineer. The Town Engineer may require backfilling and subsequent re-excavation on trenches left open an unreasonable amount of time in advance of pipe, at no expense to the Town. Trenches left open overnight, or during periods when the Developer's forces are not present shall be no protected or enclosed and marked as to cause no danger to the public or others.

Material deemed unsuitable by the Town Engineer in the bottom of the trench shall be removed and replaced with gravel backfill. Depth and width of removal shall be as directed by the Town Engineer.

All material that is excavated that cannot be used as backfill or cannot be stored within the limits of the right-of-way, shall be removed to some convenient place provided by the Developer. The Developer shall at their own expense, return all materials so removed, that is required to properly complete the work. The Developer shall also, at their own expense and cost, furnish all other suitable materials required to properly complete the work.

When it is necessary to haul soft or wet materials over the streets or roads, the Developer shall provide suitable watertight vehicles, of a type approved by the Town Engineer for this purpose.

Perform excavation in the vicinity of adjacent and contiguous facilities by means that will not damage the facility. Damage caused to existing facilities by the Developer's operations shall be repaired at no expense to the Town.

The Developer shall saw cut and remove paving of such width only as is necessary for the excavation of the trench and related roadway repairs, unless otherwise specified. In the case that the Developer removes paving for a greater width than is deemed necessary by the Town Engineer or in the case that they remove or disturbs any paving because of settlement, slides, or cave-ins, the Town may retain from any monies due or to become due the Developer, the cost of permanently replacing the paving so removed.

Sheathing, shoring and bracing, when used in trenching, shall be placed so as not to interfere with the construction work and shall be entirely independent of all footings and structures.

Where sheathing is used, the trench width as shown on the Standard Details shall be applied between the interior faces of the sheathing.

The requirements for sheathing, bracing, and shoring as stated hereinafter in Section 30.06.09 Sheathing, Bracing and Shoring, shall apply fully to this section.

.05 Rock Excavation

Whether or not rock is shown on the plans, the Developer is responsible for making their own investigation to determine if rock is present. The presence or absence of rock shall not entitle the Developer to additional compensation.

Rock in Trenches: Unless otherwise directed by the Town Engineer, rock in trenches shall be fully taken out at least twenty-five (25) feet in advance of pipe laying, and to a point at least six (6) inches below the bottom of the pipe and to a width not to exceed the maximum specified width of the trench, for the size of pipe to be laid therein. Drilling for blasting in excess of two (2) feet below a proposed pipe invert will be considered excessive drilling and will require the removal of the so drilled.

Rock in Structural Excavations: Rock in excavation for structures shall be removed to subgrade or below as directed by the Town Engineer. Rock shall be removed a minimum of five (5) feet past the terminus of laterals, manhole stubs and future connections. The over excavation resulting from rock removal shall be backfilled with suitable material. Excavation for manholes in rocks shall be carried to point twelve (12) inches outside the exterior lines of the manhole wall, and to the depth of twelve (12) inches below the outside bottom of the manhole.

Excessive Drilling and Blasting: If rock below the specified grade is shattered due to excessive drilling or blasting, and, if in the opinion of the Town Engineer it is unfit for foundations, such shattered rock shall be removed and the area backfilled to the proper grade with 2500 psi concrete or other materials acceptable to the Town Engineer, at the expense of the Developer.

Unsuitable Materials: All excavated materials which are unfit for use as backfilling must be immediately removed from the site of work.

.06 Removal of Water

The Developer shall, at all times during construction, provide and maintain proper and satisfactory means and devices for the removal of all water entering the excavations. The Developer shall remove all such water as fast as it may collect in such a manner as shall not interfere with the prosecution of the work or the proper placing of concrete or other work and in such a manner as to protect against the floatation of any structure or pipe and without flooding such structure or pipe.

The Developer shall build all dams and other devices necessary and provide and operate pumps or well-point systems of sufficient capacity for continuous dewatering of the excavations. The

Developer shall provide for the disposal of the water removed from the excavations in such a manner as shall not cause injury to the public health, to public or private property to any portion of the work completed or in progress, or to pollute any stream or watercourse.

.07 Accommodation of Drainage

Gutters, sewers, drains and ditches shall be kept open at all times for surface drainage. No damming or ponding of water in gutters or other waterways will be permitted, except where stream crossings are necessary and then only to the extent which the Town Engineer considers necessary.

The Developer shall not direct any flow of water over pavements except through approved pipes or properly constructed troughs. The Developer shall, when so required and at their own expense, provide pipe or troughs of such size and length as may be required and place the same effectively or as directed.

.08 Responsibility for Conditions of Excavations

The Developer shall be responsible for the condition of all excavations made by themselves. All slides and caves shall be removed without extra compensation at whatever time and under whatever circumstances they may occur.

The neglect, failure or refusal of the MLDP or Town Engineer to order the use of bracing or sheeting or to order a better quality or larger sizes of timber, or to order sheeting, bracing, or shoring to be left in place, or the giving or failure to give orders directing as to the manner or methods of placing or driving, sheeting, bracing or shoring, shall not in any way or to any extent relieve the Developer of any responsibility concerning the condition of excavations or of their obligations under the development.

Delay, whether caused by any action or lack of action on the part of the Developer or by any act of the Town or its agents or employees as a result of keeping open an excavation longer than would otherwise have been necessary shall not relieve the Developer from the necessity of properly and adequately protecting the excavation from caving or sliding. Nor shall they be relieved from any of their obligations under the development related to injury of persons or property nor entitle themselves to any claim for extra compensation.

.09 Sheathing, Bracing and Shoring

General: The Developer shall furnish all labor, materials, and equipment and perform all operations required for sheeting, bracing, and shoring of excavations and for construction of timber foundations as ordered by the Town Engineer and as shown on the drawings and as specified.

Responsibility: The Developer shall be responsible for properly supporting the side of all trenches and excavations with sheeting, timbering or other supports so as to furnish SAFE and acceptable working conditions.

The work under this section is to be performed by persons skilled in such work.

Materials: Materials used for sheeting, sheet piling, shoring, bracing, stringers, or waling strips shall be sound, straight, and free from cracks, shakes and large or loose knots and of the required dimensions throughout. Plans shall be tongued and grooved and splined if required.

Installation: The installation of sheeting, bracing and shoring shall be so arranged that they may be withdrawn as the excavation is backfilled, without injury to sewers, pipes or other structures and appurtenances, and without injury to structures and pavements.

Bracing shall be arranged so as not to place any stress on portions of the completed work until the general construction thereof has proceeded far enough to provide ample strength. Bracing shall be placed so as not to interfere with the construction work and shall be entirely independent of all existing footings and structures.

If the Town Engineer is of the opinion that any point sufficient or proper bracing or supports have not been provided or not properly placed to insure the safety of the work or adjacent structures and property, they shall give such notice to the Developer. Upon notice from the Town Engineer, the Developer shall forthright provide additional or stronger supports at their own expense. The furnishing of such additional supports shall not relieve themselves from their responsibility for their sufficiency.

If the Developer fails or neglects to provide and set in place satisfactory additional or stronger supports, the Town Engineer may order all or any part of the work to be stopped until such materials are so furnished and satisfactorily set in place. There will be no compensation or allowance to the Developer of any kind whatsoever for, or on account of, any damage or delay resulting from such stoppage of the work. The Developer shall not be entitled to claim, demand or receive any compensation for the use of larger size, better quality, or different disposition of materials as ordered by the Town Engineer.

Withdrawal and Removal: All sheeting, sheet piling, bracing and shores shall be withdrawn and removed as excavation is being backfilled, except where and to such an extent as the Town Engineer shall order, in writing, that the same be left in place. The Town Engineer may permit the Developer to leave the same in place at the Developer's own cost and expense.

With withdrawing sheeting and sheet piling, special care shall be taken to insure all voids or holes remaining after the planks are withdrawn that are filled with satisfactory material and then thoroughly rammed with thin rammers provided especially for that purpose.

The Developer shall cut off any sheeting or sheet piling left in place whenever and at such points as the Town Engineer shall order and shall remove from the work the portion cut off. They shall not be entitled to any compensation for such cutting off or removal.

.10 Removal of Obstructions

Should the position of any pipe, conduit, pole, or other structure above or below ground be such as, in the opinion of the Town Engineer, to require its removal, realignment, or change, due to work to be done under the development. The work of removal, realignment or change will be done as extra work or will be done by the Owner of the obstructions without cost to the Town.

When an obstruction is removed, realigned, or changed by the Owner, the Developer shall not be entitled to any claim for damages or extra compensation on account of the presence of such an obstruction or on account of any delay in the removal or realignment of the same.

The Developer shall in no way interfere with any person, firm or corporation involved in the protecting, removing, changing or replacing of their pipes, conduits, poles, or other structures. They shall be allowed to take all such reasonable measures as they deem necessary or advisable to accomplish such protection, removal, realignment or change. But in any case, the Developer is in no way relieved of any of their responsibilities per the design drawings.

When trees are in the right-of-way or in the immediate proximity to the work, they shall not be cut down or removed except by authorization of the Town Engineer. The Developer shall have no claim for extra compensation owing to the fact that they may be required to excavate by hand or tunnel in the vicinity of trees that are to be left standing.

.11 Protection of Property and Structures

The Developer shall, at their own expense, sustain in their place and protect them from direct or indirect injury or harm, all pipe, tracks, walls, building or other structures or property in the vicinity of their work, whether above or below the ground, or that may appear in the trench or excavation. The Developer shall at all times have a sufficient quantity of timber and planks, chains, rope, etc., and shall use them as necessary for sheeting their excavations and for sustaining or supporting any structures that are uncovered, undermined, endangered, threatened or weakened.

The Developer shall be responsible for all damages and assume all expenses for direct or indirect injury caused by their work to any property or structure or to any person by reason of injury to them. They shall be responsible whether such structure or property is or is not shown on the drawing.

In the event of encountering quicksand, subsurface streams or similar dangerous conditions or where passing especially heavy buildings or any structures which, by their construction or position might bring great pressure upon excavation or trench walls, the right is reserved by the Town Engineer to direct that such building or structure shall be underpinned and that the excavation walls be supported and protected. The right is also reserved by the Town Engineer to require such underpinning, support and protection be designed by a Professional Town Engineer. Design calculations for such design are to be submitted to the Town Engineer for review.

In less critical circumstances, the Town Engineer may permit only short lengths of trench to be open at one time. These lengths shall be securely sheeted and braced on all sides after the manner of a shaft. The permanent work shall be constructed in the protected trench and backfilled before another section of trench is opened. The Town Engineer reserves the right under such conditions to stop excavation or any other part of the work and to require the Developer to complete the work to a given point before proceeding further with the excavation.

Any work done as above directed shall be at the cost and expense of the Developer. They shall not thereby become entitled to demand or to receive any allowance or compensation.

.12 Accommodation of Vehicular, Pedestrian and Traffic

NOTICE TO FIRE DEPARTMENT

The Developer shall notify the Mount Airy Volunteer Fire Company (MAVFC) at (301) 829-0100, in advance, of any street closings, lane closures, or obstructions created by the work which will affect the use of a street as a fire emergency route.

Roadways, streets and alleys shall not be unnecessarily obstructed. Unless the appropriate regulating authority shall authorize, in writing, the complete closing of a roadway, street or alley, the

Developer shall take such measures at their own expense as may be necessary to keep the road open and safe for traffic. Roadways shall be kept clean and free for the passage of vehicles and pedestrians.

No Outlet Streets: The roadway on one side of the line of work shall be open to traffic at all times.

Narrow Streets: In narrow or congested streets or alleys, the Developer may be required by the Town Engineer to complete their work up to a designated point before opening the work ahead in order to give access to garages and other places. The Developer shall, in all cases, so arrange their work as to cause the least inconvenience to property owners consistent with the proper prosecution of the work as determined by the Town Engineer.

Sidewalks, Passageways and Crosswalks: Unless otherwise authorized by the regulating authority, in writing, a straight and continuous passageway on sidewalks and crosswalks, at least three feet (3') in width, shall be preserved free from all obstruction. Where deemed necessary by the Town Engineer, an additional or temporary passageway shall be provided and maintained free of obstruction.

The Developer shall construct and maintain, without extra compensation, such adequate and proper bridges over excavations as may be necessary to provide the safe accommodation of pedestrians, vehicles, or livestock. They shall furnish and erect, without cost to the Town, substantial barricades and fences at crossings of, and along trenches, to protect the traveling public and or livestock.

Traffic Control: The Developer shall provide, erect and maintain all necessary barricades, suitable and sufficient lights, danger signals, signs and other control devices and shall take all necessary precautions for the protection of the work and safety of the public.

Such warning signs shall be constructed and erected in accordance with the Manual on Uniform Traffic Control Devices or as directed. (Section 7, SHA.)

The Developer shall provide, at all times, such flagmen as required for traffic control. Flagging shall be as specified in the Manual on Uniform Traffic Control Devices for Streets and Highway. (Section 7, SHA.)

Traffic may be detoured with written permission of the Town Engineer. When detours are used, they shall be clearly marked and maintained by the Developer. Payment for the installation,

maintenance and removal of work involved in connection with detours shall be included in the bid price.

.13 Use of Explosives and Blasting

The Developer shall exercise utmost care in the use of explosives necessary for the protection of the work so as not to endanger life or property. All blasting operations shall be conducted by experienced persons only.

The handling and storage of explosives shall be done in conformity with provisions of the statutes of the State of Maryland and local laws and ordinances. Failure to observe necessary precautions will be sufficient grounds for temporary suspension of the work.

All explosives shall be transported and stored in a secure manner and in accordance with local and state laws.

All vehicles and storage places shall be clearly marked “DANGER – EXPLOSIVES” and shall be in the care of competent watchmen at all times.

.14 Backfilling

Preparation: All lumber, rubbish and debris shall be carefully removed from spaces and areas around structures to be backfilled. All trenches and excavations shall then be backfilled to the original ground or designated elevation. (The elevations shown on the drawings refer to finished surfaces, and allowances should be made for these specifications.) The surface of the backfilled area shall be neatly graded.

Structural excavations and trenches shall not be used as a dumping ground for any refuse or unsuitable materials.

Materials: Backfilling and filling shall be made with suitable earth materials, suitable for the purpose and free from rocks over six (6) inches in any dimension. It shall be free from injurious amounts of organic materials and contain no frozen materials or debris.

Should there be a deficiency of proper materials for refilling, the Developer shall furnish the same at their own cost and expense.

No bituminous paving material, metals, and/or wood materials shall be used in filling or backfilling of trenches or general excavations in improved or in open unimproved areas. No concrete material shall be used in filling or backfilling of trenches, or under planned building excavations. However, concrete material can be used for filling and backfilling of open unimproved areas if crushed as approved by the Town Engineer.

No highly plastic material shall be used in filling or backfilling of trenches or general excavations in improved or in open unimproved areas. All highly plastic materials shall be hauled out of town and disposed of properly.

No house ashes, putrescible refuse or other material of any unsatisfactory character shall be used in filling or backfilling.

Placing Fill: Every precaution shall be taken in the backfilling of excavations to prevent materials being placed from falling directly upon or against any pipe, conduit or other structure in such a way as to cause the displacement, movement of, or injury to work being backfilled.

Backfilling and filling shall be done by placing the material in horizontal layers, not to exceed 6-inches in thickness, and by keeping the material properly moistened and thoroughly tamped in such a manner as to prevent settlement. The material shall be brought up evenly and all eccentric loading shall be avoided.

Initial Backfill: (pipe embedment) Pipe should be installed with proper bedding, providing uniform support under the pipe. Trenches shall be filled for their entire width and with a minimum of four inches (4") of granular material below the underside of the barrel of the pipe on both sides and above the outside barrel of the pipe, a minimum distance of twelve inches (12") with compacted granular material in accordance with the requirements for _____ (1/4" – 3/4" grade stone) or _____ (max. 3/4" coarse sand and gravels), embedment material as specified in ASTM C2321-72, except that puddling of trenches will not be allowed.

Final Backfilling: Trenches shall be carefully performed for the twelve inches (12") or to a distance of two feet (2') above the top of the pipe, without shock, with suitable earth material as herein before specified. This backfilling must be done before any backfill is deposited directly from or by machine.

No mechanical tamper shall be used within the two foot (2') dimension directly above the pipe.

Backfilling of Trenches in State and Town Roadways: Shall be in accordance with the requirements of the State Highway Administration and of the Town, respectively, as stipulated in the applicable permits.

Inspection: Pipe, fittings, house connections, taps or other points designated by the Town Engineer for inspection shall not be covered or filled around until the same has been inspected by the Town Engineer and permission given by themselves to fill or refill the trench at such points.

Density Requirements: Backfill shall be compacted to a minimum of 95 percent maximum density as determined by AASHTO T180 at a moisture content within two percent of optimum for the material as determined by AASHTO T180 except in unimproved open areas where a minimum of 90 percent maximum density shall be attained. (This requirement applies to both structural and trench backfill.)

Density Test for Pipe Trenches: One acceptable in place density test shall be performed on each lateral installation and on each section between manholes by a testing laboratory approved by the Town Engineer. All costs incurred in providing the test shall be at the Developer's expense.

Surplus Materials: As the trenches are filled in and the work completed, the Developer shall, at their own cost and expense, remove and dispose of all surplus earth, stone or other material in such a manner and to such place or places as they may select or provide, subject to the approval of the Town Engineer. The Developer may also deposit the same, either with or without re-handling, at places within the construction limits of the work covered by the development, if so directed by the Town Engineer.

Section 30.06.14 must be added to the site plan General Notes in its entirety.

.15 Maintenance of Refilled Excavations

The Developer shall maintain, at their expense, all excavations in proper condition until the end of the ONE-YEAR PERIOD following the date of acceptance of their work by the Town. All depressions appearing in the refilled excavations shall be properly refilled, resurfaced and/or seeded as specified elsewhere herein. If the Developer shall fail to do so within a reasonable time (30 days) from the receipt of written notice from the Town, the Town may refill said depressions and the cost thereof shall be deducted from any monies due or to come due the Developer under the agreement.

In case of emergency, the Town may refill any dangerous depressions without giving previous notice to the Developer, and the cost of so doing shall be retained from any monies due the Developer.

The Developer shall be responsible for any injury or damage that may result from improper maintenance of any refilled excavations at any time prior to the end of the above mentioned one-year period.

.16 Embankment

Embankments shall be constructed in accordance with Section 206 'Embankment' of the State Highway Administration Specifications.

.17 Frozen Material

Frozen materials shall not be placed in embankments, fills or backfills. Any material which freezes after being placed in the embankment, fill or backfill shall not be covered over until it has completely thawed out.

The Developer may remove any frozen material from embankment, fills, or backfill at their discretion. Any frozen materials thus removed from the work shall be stockpiled outside the immediate work area for future use at a time when its conditions is satisfactory to the Town Engineer. Handling and re-handling of frozen materials shall be done at the Developer's expense.

.18 Pipe Trenches in Fill

Where pipes are to be laid in areas of fill or embankment, the fill or embankment shall be made prior to laying the pipe. After the fill or embankment is in place, the pipe trench shall be excavated.

.19 Bored Pipe

This section includes provisions for the boring and/or jacking carrier or casing pipe beneath roadways and railways and preparation of boring holes for insertion of carrier pipe.

a. Submit working drawings, including proposed method of boring and advancing casing or proposed method of preparing bored holes for installation of carrier pipe, size, capacity and arrangement of equipment, method of dewatering, and the size and location of pit.

Submit shop drawings including bulkhead details and proposed positive method of anchoring carrier pipe to prevent floatation.

b. Casing Pipe: Casing pipe shall be mill-type steel water pipe, Grade A. Wall thickness shall be as indicated on the Standard Detail and/or the plan. Ends for field butt welding shall meet the requirements of AWWA C202 and shall be fully welded around the full circumference of the pipe.

c. Carrier Pipe: Carrier pipe shall be ductile iron as specified in the Material Detail section for Water Mains.

d. Boring Preparation: Excavate pits as required in accordance with the drawings and perform preliminary work including construction backstop, placing guide timbers and placing boring apparatus.

When water is known or expected to be encountered, maintain at the site pumps of sufficient capacity to handle the flow on a twenty-four (24) hour basis until, in the judgment of the Town Engineer, operation can be safely halted. Bore so as not to interfere with, interrupt or endanger the roadway or railway operations.

Maintain close observation to detect settlement or displacement of surface facilities. Should settlement or displacement be detected, notify the Town Engineer immediately and take such action as necessary to maintain safe conditions and prevent damage.

e. Boring Operation: When utilizing augers or similar devices, the front of the pipe shall be provided with mechanical arrangements that will positively prevent the auger and cutting head from leading the pipe and allowing unsupported excavation ahead of the pipe.

The auger and cutting head shall be the removable type. The arrangement of the auger and cutting head shall provide reasonable obstruction to the free flow of soft or poor material. Push the pipe into the fill with boring auger rotating within the pipe to remove the spoil. (Use of water or other liquids to facilitate casing implement and spoil removal is prohibited.)

When boring for casing pipe or preparing boring hole for insertion of casing pipe, maintain the line and grade indicated on the plan.

f. Installation of Carrier Pipe: Carrier pipes are to be installed as shown on the Standard Detail. Fill complete void between carrier pipe and casing with blow sand or other material approved by the Town Engineer prior to completing the bulkheads. Close the ends of the casing pipe with bulkheads. Sand shall conform to the requirements of ASTM C33.

30.07 CONCRETE

.01 Mixes

Class 2500 concrete shall be used for cradles, encasements, buttresses, and other unreinforced concrete specified or as directed. Class 4000 concrete shall be used for all other concrete work as specified and directed by the Town Engineer. Class 2500 and 4000 concrete shall be air entrained and mixed as follows:

	<u>4000</u>	<u>2500</u>
Minimum quantity of cement per cubic yard (bag)	6.5	5.0
Maximum water per bag of cement (including moisture content of aggregate in gallons)	4.0	6.1
Maximum slump (inches)	4.0	5.0
Air Entrainment	4% - 8%	4% - 8%
Minimum compressive strength (at 28 days) lbs. per. sq. in.	4000	2500
Maximum size of aggregate	1"	1"

See Section 20.02. CONCRETE for Cement, Aggregate and Admixture contents.

.02 Forming

Materials: Forms shall be of lumber, exterior grade plywood, steel or other approved materials. The type, size, shape, quality and strength of all materials of which the forms are to be made shall be subject to the approval of the Town Engineer.

Design Criteria in Section 608.030.4 of the *Standard Specifications for Construction & Materials*.

Construction: Forms shall be built true to line and grade, dimension, mortar tight, sufficiently rigid to prevent displacement or sagging between supports and to properly withstand action of vibrators.

Surfaces of all forms for exposed concrete shall be evenly matched, free from irregularities, dents, loose knots, sags and other defects that would show defects on the finished concrete surfaces.

Forms for circular tanks and structures shall be constructed to a true circle shape, using mill cut ribs and bent plywood or steel panels. The use of a number of flat panels will not be permitted except by written permission of the Town Engineer.

Oiling of Forms: Forms may be oiled in an acceptable manner to facilitate removal. Take special care to prevent oil from contacting reinforcing steel. Oil shall not be applied to forms after reinforcing has been placed. (Form Release Compounds, Section 919.09).

Earth as Forms: Earth forms may be used upon approval of the Town Engineer provided the banks are made with neat cuts and to correct dimensions. Make all necessary provisions to prevent cave-in during placement.

Removal of Forms: Developer shall assume all responsibility arising from form removal. Forms shall remain in place a sufficient time to allow the concrete to set properly, and the Developer shall assume all responsibility for removing same. Supports under beams, girders and slabs shall remain in place undisturbed for at least seven (7) days. After removal of forms, slabs shall be reshored. Shoring shall not be removed until it is evident that the load will be properly supported without shores.

NOTE: (The Developer may wish to make additional compression test samples for the purpose of determining the time when falsework, forms, etc. may be removed, when backfilling may begin, or loads applied to concrete structures. The number of test specimens to be made and tested to be determined by the Town Engineer.)

Special care shall be taken not to break concrete edges during form removal. Any portion of concrete damaged while stripping forms may be, at the discretion of the Town Engineer, ordered torn down and recast.

Upon removal of forms, the Town Engineer shall inspect the surfaces and designate what honeycombed and slightly damaged parts may be repaired or replaced.

.03 Reinforcement

Place reinforcement in accordance with specifications and recommendations of Concrete Reinforcing Steel Institute.

Reinforcement shall be placed accurately and held firmly with approved standard support, accessories and ties. Reinforcing steel shall not be gas cut or bent for any reason. In lieu of cutting, any bar or bars that interfere with pipe, sleeves, boxes, etc. may be located to prevent cutting.

Reinforcing shall be thoroughly cleaned.

.04 Embedded Items

All anchor bolts, inserts and other embedded items furnished under other sections of these specifications are to be installed under this Section.

.05 Conveying and Placing of Concrete

Notice to Town Engineer: Notify the Town Engineer at least forty-eight (48) hours before placing concrete.

Cleaning: Before placing concrete, all debris and foreign materials shall be removed from the forms or other places of deposit, forms may be oiled in an acceptable manner, and the reinforcing shall be thoroughly cleaned.

Frozen Forms or Ground: In no instance shall concrete be placed in frozen forms or on frozen grades.

Conveying and Placing: Concrete shall be conveyed to the place of final deposit by methods that will prevent the separation or loss of the materials. Deposit the concrete as close as possible to its final position. Maximum vertical drop of four feet (4').

Concreting shall be carried on as to ensure a practically continuous flow and at such a rate that the concrete is at all times plastic and flows readily into the formed spaces and between bars.

Maximum vertical drop of four feet (4').

Placement in Wall Forms: In placing walls of heights greater than ten feet (10'), openings in forms, elephant trunk tremies, or other approved shall be used concrete placement and protection of reinforcement and form walls from premature hardened concrete.

06. Compaction of Concrete

All concrete shall be thoroughly consolidated and compacted by suitable means during the operation of placing and shall be worked around reinforcement, embedded items and into the formed spaces. Internal vibrators shall be used under experienced supervision and kept out of contact with forms and reinforcement.

Vibrators shall be used to aid in the placement of the concrete. The vibrators shall be flexible electric type or compressed air type. At least one (1) vibrator shall be kept in readiness as a spare for emergency use.

07. Placement of Concrete in Hot or Cold Weather

The methods described in the following ACI Standards shall be used for protecting and curing concrete in cold and in hot weather: ACI-306 for cold weather and ACI-305 for hot weather concrete placement.

Generally, concrete placed in hot weather shall conform to the requirements of ACI-305 and not have an in-place temperature higher than 80 degrees F.

Generally, concrete placed during cold weather shall conform to the requirements of ACI-604 and shall not have calcium chloride added to the mix. Other add mixtures must be approved by the Town Engineer in advance. Cold weather concreting to come off the truck and no forecasted temperatures below 32°F for 7 days and nights; 7 days required per 30.08.08 (curing); use of blankets shall be used if temperatures are below 50°F anytime during the 7 day period. Town Engineer or Town Inspector may require strength tests at 7, 14, 21, and 28 day intervals to confirm concrete adequacy where conditions may be questionable. All strength test certificates shall be submitted by an approved testing lab. Slump tests are required on all concrete projects.

The use of heated conditions to maintain adequate temperatures shall be submitted to the Town Engineer with a minimum 7 days to review the plan. The Town Engineer shall deny any such requests not clearly meeting the cold weather concreting requirements.

.08 Curing

Before actual concrete placement begins, the Developer shall have all equipment needed for adequately curing of the concrete on hand and ready to install.

All concrete shall be cured for not less than seven (7) days.

When wood forms are left in-place for curing, they shall be kept wet at all times to prevent opening at the joints and drying out of the concrete.

Water used for curing shall be generally clear and entirely free from any elements which might cause staining or discoloration of the concrete.

The recommended practice as described in ACI Standards shall be followed for protecting and curing of concrete in cold weather and in hot weather. Refer to ACI-306 for cold weather and ACI-305 for hot weather.

Concrete, when placed during cold weather, shall be kept moist and provided with adequate protection for a period of not less than seven (7) days as stipulated above and subject to the approval of the Town Engineer so that the air in contact with concrete will be maintained at temperatures between 50 degrees F and 70 degrees F for at least the first five (5) days following the curing period.

Concrete shall be cured with a spray-on membrane curing compound, Cure-N-Seal product, or other curing method for the concrete to achieve its full potential strength and durability. Curing by means of a commercial membrane curing compound conforming to ASTM C-309 will be permitted providing the compound will not permanently stain exposed surfaces and is applied in accordance with manufacturer's recommendations. Compound shall not be used on areas where bonding is to occur. It shall be applied to the concrete surface immediately upon form removal.

.09 Concrete Finishing

General: All concrete surfaces, both exposed and unexposed, shall be finished as follows:

Avoid over-finishing. The most durable surface will be achieved by simple screeding, floating, edging, jointing, and light broom-texturing of the surface. Steel troweling exterior concrete

is not recommended. Never work the surface while bleed water is present and don't sprinkle water on the surface during finishing.

Immediately following the removal of the forms, all fins and irregular projections shall be carefully chipped off of all surfaces.

On all surfaces, the cavities produced by form ties and all other pits or openings shall be thoroughly saturated with water, after which all such cavities, pits or openings shall be neatly stopped with pointing mortar consisting of one (1) part cement and two (2) parts fine aggregate, neatly finished to match surface texture.

In the Town Engineer's opinion, areas too large or unsatisfactory for mortar patching shall be cut out to solid surface, keyed, and packed solid to produce a firm bond and surface. Patch to match existing surface texture. The resulting surface shall be left true and uniform.

Remedial Work: All work in connection with the correction of damaged sections, voids, honeycomb, etc. shall be performed under the direction of the Town Engineer and shall be repaired or replaced at Developer's expense.

Exposed Interior Surfaces: Exposed interior vertical surfaces shall be finished as follows:

Immediately after forms are stripped, patch honeycombs, form-tie holes, and other defected areas. Remove ledges and bulges. Patch defected areas with patching mortar consisting of one (1) part cement and two (2) parts fine aggregate. Compact mix into place to provide a neat finish to exactly match existing surface texture.

In the Town Engineer's opinion, where defects are too large and unsatisfactory for mortar patching as described above, areas shall be cut out to solid surface, keyed and packed solid with matching concrete so as to produce firm bond. Where applicable, patch to match existing surfaces texture. The resulting surface shall be left true and uniform.

Grind or fill surfaces to produce level and true plains.

After the pointing up has sufficiently set, with within an eight-hour (8) period following the stripping of the forms, the entire surface shall be thoroughly wet with a brush and rubbed with a No. 16 Carborundum stone or an abrasive of equal quality, bringing the surface to a paste. The paste shall

be carefully spread or brushed uniformly/ over the entire area and allowed to 'reset'. No additional mortar shall be added during this operation. The rubbing shall be continued to remove all form marks and projections, producing a smooth dense surface without pits or irregularities.

The final finish shall be obtained by a thorough rubbing with a No. 30 Carborundum stone or an abrasive of equal quality. This rubbing shall continue until the entire area of the surface is of a smooth texture and uniform in color.

After the final rubbing is complete, 'curing' shall proceed as herein described.

Interior Floor Slabs: The top surface of exposed interior slabs shall be screeded to the proper profile and smoothed with a wood float and steel trowel finish.

Dry cement or dry mixture of cement and sand shall not be sprinkled directly upon the surface during the finishing process.

Delay the steel troweling sufficiently to prevent excessive water from being worked to the slab surface. Steel troweling shall be accomplished in two passes.

Exercise care at all joints to prevent humping. Power grind to a smooth, level surface humps which may impair installation of finish floor material.

Sidewalks: The surface shall have a broom finish. No plastering of the surface will be permitted. All edges and all joints shall be edged with a ¼-inch edging tool.

Handicapped Ramps: The surface shall have a broom finish. All outside edges and all joints shall be edged with a ¼-inch edging tool.

Curb and gutter: Concrete shall be struck off to the cross section specified after which it shall be finished smooth and even by means of a wooden float. All exposed edges shall be tooled with a ¼-inch edging tool. All honeycomb and damaged areas shall be repaired immediately after form removal.

.10 Construction Joints for Walls and Slabs

Construction joints shall be made and located as indicated on the drawings. Where a joint is to be made, the surface of the concrete shall be thoroughly wetted and slushed with coat of grout immediately before the placing of new concrete. Approved key shall be used at all joints. Any proposed changes in joint location shall be approved by the Town Engineer.

All construction joints in the completed work shall be left carefully tooled and free from all mortar and concrete.

.11 Expansion Joints for Walls and Floors

Provide pre-molded expansion joints to full depth of walls or slabs where indicated on the drawings. Install with top ½-inch below the surface and tool adjacent concrete edges to a 1/8-inch radius. Expansion joint material is to be held firmly in-place and in alignment during placing and finishing of the concrete. After curing, fill tops of expansion joints with sealer to 1/8-inch below surface.

.12 Chemical Floor Hardener

Where called for, chemical floor hardener is to be Kemplate RM by CHEM-MASTER Corp, or equal. Apply to all concrete slab floors in accordance with the manufacturer's specifications and application instructions. Floors shall be thoroughly cleaned before applying sealer. There shall be no marks or stain of any kind on the concrete at the time of applying the sealer.

Option: Developer shall call for manufacturer to provide job service at no extra cost to the Town.

.13 Concrete Testing

Compression Test Specimens: During the progress of the work, compression test specimens shall be made and cured in accordance with ASTM C31. Not less than three specimens shall be made for each test. There shall be at least one test for each day's pour for each structure and at least one test for each one hundred (100) cubic yards of concrete or fraction thereof in the job.

Samples shall be taken at the forms and shall be representative of the concrete being placed.

Specimens shall be cured under laboratory conditions except that when there is a possibility of the surrounding air temperature falls below 40 degrees F, the Town Engineer may require additional specimens to be cured under job conditions.

Specimens shall be tested in accordance with ASTM C39. The cost of making and testing of the samples will be paid by the Developer. Testing facilities shall be approved by the Town Engineer.

The Developer shall furnish test sample forms and storage. Samples shall be moist cured at approximately 70 degrees F in an approved concrete cylinder curing box.

The standard age of test shall be twenty-eight (28) days, but seven (7) day test may be used to provide that the relation between the seven (7) and twenty-eight (28) day strengths of the concrete is established by test for the materials and proportions used.

No more than ten percent (10%) of the specimens shall test below the minimum design strength, and none shall test below ninety percent (90%) of the minimum design strength.

If the strength of the job poured test cylinders falls below the required strength, the Town Engineer shall have the right to order a change in the proportions of the water for the remaining portion of the structure. If the strength of the job-cured cylinders falls below the required strength, the Town Engineer shall have the right to require conditions of temperature and moisture necessary to secure the required strength and may require test in accordance with ASTM C-42 or order load test to be made on the portions of the structure so affected. If the concrete placed after proper curing still does not reach the required strength and/or the load test are unsatisfactory, then the Developer shall remove and rebuild that part of the structure affected at no extra cost to the Town.

Slump Test: Slump test shall conform to ASTM C143. Slump test shall be made for each set of concrete specimens as called for above. Slump test shall be conducted throughout any pour as required to maintain constant quality of fresh concrete. Slump shall be as called for in Section 30.07.01.

Air Entrainment: Air entrainment test shall conform to the latest ASTM requirements. Test shall be made for each set of concrete specimens as called for above. Concrete shall be installed at a medium consistency 3"-5" slump on a moist, damp subgrade. Slump shall be as called for in Section 30.07.01.

Property owners shall be encouraged to avoid use of deicers during the first two winters. Sand or cinders can be used instead.

30.08 MASONRY

.01 General

Refer to drawings for type of material to be used. Unless otherwise noted, all brick and concrete masonry units shall be laid in running bond.

All masonry units must be carefully cut and fitted around structural steel members.

Perform masonry work using experienced, qualified workmen only.

Sample Wall: Developer shall lay-up a sample panel not less than 2'-8" wide by 1'-4" high at the job site for approval of brick and mortar color by the Town Engineer.

Protection of Work: Adequately protect masonry work from damage by the elements until mortar has completely set. Brace walls laterally and protect against freezing. Cover top two feet (2') of wall with non-staining waterproof membrane at the end of each work day or whenever the work is not in progress.

Temperature: Perform all masonry work in an ambient temperature above freezing, unless adequate protection is provided and maintained. During hot weather when the temperature reaches 80 degrees F or above protect newly constructed masonry from too rapid drying.

.02 Mortar

Prepare mortar materials as specified in strict accordance with manufacturer's instructions. Mix thoroughly but not less than three minutes in mechanical batch mixer.

Use mortar within one half hour after mixing when the air temperature is 80 degrees F. If necessary, mortar may be re-tempered within these time limits by replacing water lost due to evaporation by thorough remixing.

.03 Laying

Lay all masonry plumb and true to line. Head joints to be in vertical alignment. All face shell and end joints shall be filled with mortar and joints shall be squeezed tight.

Lay all brick, sills, copings and solid units with full bed and head joints. Fill all joints with mortar or grout.

Joints: Tool all exposed joints and those which will be in contact with earth, as initial set takes place, with approved round jointer slightly larger than width of mortar joint.

All exposed joints shall be cut flush except just above those that will be in contact with earth.

Weep holes: Provide 3/8" open weep holes just above all flashing. Space weep holes approximately four feet (4') on center.

.04 Control Joints

Control joints shall be located where shown and as detailed on the drawings. Joints shall form a continuous vertical break from top to bottom of wall or from bond beam to bond beam. Joint shall be filled with pre-molded rubber control joint filler and pointed with a non-hardening plastic filler.

.05 Reinforcement

Reinforce walls shown on the drawings using specified wire reinforcing. Reinforce exterior brick walls and block walls in the first and second bed joints above and below openings. Use prefabricated corners and intersections and lap splices as recommended by the manufacturers.

06. Embedded Item

Set in place and bond into masonry all bolts, sleeves, anchors, inserts, doors, windows, flashings, loose lintels, etc., specified under other sections. Consult with other trades as well as the drawings for exact locations and dimensions. Allow space for proper sealing and caulking around frames and openings.

07. Cleaning

Before cleaning, carefully examine masonry surfaces, repair and/or replace broken or defective units. Thoroughly clean, repair or replace work of any trade that may be soiled or damaged during execution of work under this section at no additional cost to the Town.

Remove all mortar stains, streaks, etc. from all masonry surfaces by soaking with water; then, immediately apply a solution of muriatic acid or approved masonry cleaner, mixed in proportions stated in the manufacturer's printed instructions for type of masonry involved.

30.09 ROADWAYS

.01 Standards and Conditions

The Town of Mount Airy has adopted the State of Maryland State Highway Administration Standard Specifications for Construction and Materials. All present and future errata and addenda are hereby made a part of these Standard Specifications.

All references to the State of Maryland, State, State Highway Administration, or S.H.A. in the Specifications for Materials, Highways, Bridges and Incidental Structures of the State Highway Administration shall be construed to refer to the Town of Mount Airy, Maryland.

All references to the Chief Engineer or Assistant Chief Engineer shall be interpreted to refer to the Mount Airy Town Engineer.

Any reference to Office of the Administration or any other State Highway Administration official shall be interpreted to refer to the functionality corresponding Town of Mount Airy official.

The Maryland State Highway Administrations Standard Specification will apply to all work except as noted herein. In the event of any discrepancy between this specification and the parent specification, this specification will govern.

Detail drawings will be those of the Maryland State Highway Administration and/or of the Town of Mount Airy as specified.

.02 Plan Review Procedure

Any individual, developer, or corporation desiring to construct a road or street to be incorporated into the Town Road System shall follow the procedures described hereinafter for both design and construction.

The applicant shall comply with the following requirements and review schedule:

Comply with the land use requirements for the appropriate zoning district as set forth in the Town Zoning Ordinance.

Comply with the review procedure as set forth in Article VI, PROCEDURE, and the design standards and improvement requirements of Article VII and Article VIII respectively of the Subdivision Regulations.

Comply with the design, review procedure and construction requirements as set forth in the Town of Mount Airy Standard Specifications and Details for Construction.

.03 Design Criteria

Highway and Street Type: There are four general high street types (major arterials, minor arterials, collect, and local streets). The type of highway or street to be constructed shall be as called for in the Transportation Section of the Mount Airy Master Plan.

Highway and Street Design: Streets will be designed in accordance with the criteria outlined in the Maryland State Highway Administration Specifications and Detailed Drawings and conforming to the requirements of the Mount Airy Subdivision Regulations and applicable ordinances.

Existing Highway and Street Up-Grade: The design criteria also applies when developing a property bordering on an existing street which does not conform to the criteria stated herein and to the standards of the Subdivision Regulations. The street shall be upgraded from property line to property line along its full frontage and from the centerline to the right-of-way to include any additional right-of-way, curb and gutter, grass space and sidewalk. In some cases, work may be required beyond the limits of the front property line for the construction of entrances to turn lanes.

Traffic Study: A traffic study may be required to determine the extent of up-grading of an existing street. When the potential increase in traffic for the existing street or road is determined to be such, the full width of the highway or street is to be upgraded to conform to the design standards for the type of highway or street as called for in Article VII of the Subdivision Regulations, plus such turn lanes as may be required as a result of traffic study.

Monuments: The accurate location and description of all permanent monuments shall be based on the Maryland Coordinate System (Lambert Conformal Conic Project, adopted by act of General Assembly 1939, Chapter 628).

.04 Plans and Profiles

Plans and profiles shall be developed on 24 x 26 inch sheets with a maximum scale of 1" = 50' horizontal and 1" = 5' vertical. The profile shall show the existing ground along the center line.

All elevations shall be based on the U.S. C. S. datum.

The plans and profiles shall be augmented by showing:

Complete horizontal alignment including stations, locations of PI's, PT's, and PC's, degree of curve, radius, tangent distance, length of curve, I angle, etc.

Complete vertical alignment showing stationing, locations of PI's, PT's, and PC's, length of curve E distances, grade transitions, rates of super elevation, elevations, SSD, etc.

Cross sections shall be submitted at 100 foot intervals and at critical changes of grade or pavement transitions.

Provide typical cross-sections for all streets at a scale not smaller than 1" = 5' showing width of pavement, curbs, sidewalks, grass strips.

Drainage pipe, ditches and structures shall be shown on both plan and profile and cross section sheets. The size and type of pipe shall be indicated with the grade, invert elevation and other necessary construction information.

The plans shall show all existing topographical features and survey baseline information. The location of bench marks and their elevations shall be noted on the plans.

.05 Preparation of Subgrade

Preparation of Subgrade shall consist of the preparation of the surface of the area to receive paving and shall be done in accordance with the provisions of Section 301 – SUBGRADE PREPARATION of the *Maryland State Highway Administration Standard Specifications*.

.06 Adjustment of Utility Structures

Unless otherwise directed, all manholes, valve boxes and/or other structures in the area to be surface shall be adjusted to ¼” – ½” below final grade prior to paving operation. During or after completing the paving operation, the Developer shall remove the covers and visually check all manhole, valve boxes and other structures for their continued proper alignment. Any found to be out alignment shall be correctly realigned, and the Developer shall remove any paving materials which may be inadvertently entered the Manhole, valve box or structure. See Section 10.03.07 Adjustment of Utility Structures.

.07 Weather Restrictions

Bituminous concrete shall only be placed when the surface temperature at the construction site is 40 F (4C) and rising for surface and intermediate binder courses or 32 F (0 C) and rising for base courses.

.08 Subbase/Base Courses

Gravel Subbase Requirements: Grated aggregate base (GAB).

Bituminous Concrete Base Requirements: Bituminous concrete base course shall be hot mix asphalt super pave 25 mm, PG 64-22.

Approval: No material shall be placed on a frozen Subgrade or until the Subgrade has been approved by the Town Engineer.

.09 Bituminous Pavement

The Town of Mount Airy’s roadway design standards indicate the pavement sections to be used for the various types of roads and streets in the Town.

Standard Detail No. R-2 Residential, Local Streets and Parking Lots.

Standard Detail No. R-3 Commercial and All Other Streets.

Mix Temperatures: The temperature of the mixture shall not be less than 225 F (107C) at time of placement.

Mechanical Paver: Unless otherwise permitted by the Town Engineer, mixtures shall be placed by means of a mechanical paver capable of spreading them to true line and grade.

Compaction: Materials shall be compacted as specified in Section 401.03.07 of the State Highway Administration Standard Specifications.

Joints: All joints between old and/or new paving shall be neatly made, well bonded and sealed. All longitudinal and transverse joints shall be painted with asphalt. Joints in successive courses shall be staggered a minimum of six inches (6"). Longitudinal joints in the top course shall be located at the line(s) dividing traffic lanes.

.10 Binder Courses

See .12 Surface Course.

.11 Tack Coat

The surface and exposed edges of the existing pavement, whether old or new, shall be clean and dry prior to the application of the tack coat.

A tack coat of residual asphalt shall be uniformly applied at a rate of .01 and .05 gallons per square yard of surface area. Material shall be in accordance with AASHTO M140.

.12 Surface Courses

Bituminous concrete base course shall be hot mix asphalt super pave 9 mm, PG 64-22.

.13 Bituminous Surface Treatment

Bituminous surface treatments of Prime and/or Seal Coats, as specified on the Standard Details on the plans or as directed by the Town Engineer for the protection of stone subbase, shall

conform to the requirements for materials and construction application as stated in Bituminous Surface Treatment, of the State Highway Administration Standard Specifications.

.14 Provisions for Future Street Connections to include Storm Sewer System

When the construction of a new street or road terminates at the property line of a subdivision and a proposed street or road is to intersect or to continue into a yet unplanned subdivision, provisions shall be made to deny access to the adjacent property with adequate W Beam Barrier.

If public water and/or sewer are constructed in the street or road, they shall terminate at the property line along with the sidewalk, curb and gutter, and grass area.

The Subgrade shall be prepared for its entire length for paving. The full depth of all paving shall stop a minimum of ten feet (10') away from the property line and a W Beam Barricade erected at the end of the pavement. The remaining ten feet (10') are to be constructed and graded to pavement elevation with GAB stone on a vegetation barrier.

The storm sewer system shall be provided and prepared for continuation once the future street is ready to be constructed.

.15 Maintenance of Traffic

The maintenance of traffic shall be in accordance with the latest issue of the Manual on Uniform Traffic Control Devices, Specifications, Plans, Special Provisions, and as directed by the Town Engineer. It shall be the Developer's responsibility to include furnishing of traffic managers and flaggers, relocating, maintaining and removing traffic signs and other traffic devices, and implementation of a Traffic Control plan (MUTCD), Manual on Uniform Traffic Control Devices.

Also, see Section 10.05.15 Maintenance of Traffic and Section 30.07.15, Stripe Markings for Maintenance of Traffic.

.16 Concrete Structures

Concrete structures such as entrances, pavements, curbs, curbs and gutter, sidewalks and ditch lining shall conform to the Standard Details of these specifications. In the absence of a Standard Detail herein, the applicable standard detail of the State Highway Administration shall be

used. All materials and methods of construction shall be in accordance with the State Highway Administration Specifications.

Concrete Curb and Gutter: The construction of curbs or combination curb and gutter may be performed with sectional metal forms or slip-form method. Curb and gutter shall conform to the Standard Detail incorporated into this specification.

Construction requirements shall conform to Section 806 Curb, Combination Curb and Gutter and Monolithic Median as called for in the *State Highway Administration Standard Specifications*.

Concrete Sidewalks and Walkways: Unless otherwise stated, all sidewalks and walkways shall conform to the Standard Details incorporated into this specification. Two (2) Standard Details for sidewalks have been provided.

Standard Detail No. R-5 'Normal Construction' is the standard to be used in all new subdivision planning unless otherwise directed.

Standard Detail No. R-4 is primarily for commercial application. It is allowable in closed sections areas and in previously constructed areas to permit new sidewalks construction adjacent to the curb so as to agree with existing sidewalk construction (on written approval only).

Provide sidewalk ramps at all street intersections. Provide ramps in all other public or private sidewalks as required for handicap access. Maximum ramp slope of one inch per foot.

Construction requirements shall conform to the Sidewalk Section, for the construction of concrete sidewalks of the *State Highway Administration Standard Specifications*.

CONSTRUCTION NOTE

No electrical conductors or communication cable shall be constructed longitudinal in the area set aside for sidewalk construction.

Transformer Pads: Concrete pads for transformer installation, when adjacent to a proposed sidewalk, are to be constructed at the same elevation or slightly above the adjacent sidewalk elevation. The transformer pad is to be no closer than two feet (2') to the property lien side of the sidewalk.

Transformer pad elevations and locations are to be established and set by the developer's MLDP.

Concrete Driveway Entrances: Concrete paving for driveway shall conform to the Standard Details as incorporated in this specification. Materials and construction methods shall conform to the State Highway Administration Standard Specifications.

The apron or ramp portion of the driveway entrance from the gutter pan to the property line side of the sidewalk shall be constructed of concrete.

Minimum driveway width: 10'-0"; Minimum depressed curb: 12'-0"; Minimum Driveway opening: 16'-0" (see Standard Detail R-8).

.17 Signing

General: Street name and traffic control signs shall be installed at all street intersections. Traffic signing shall be installed in accordance with a design submitted and approved on a preliminary plat or the preliminary site plan.

Standards: Unless otherwise stated, all traffic, street name, and handicap signs shall conform to the Town Standards for signing (shape, materials, and colors).

Procurement: Unless otherwise stated, signs and associated hardware shall be purchased and installed by the Town. All labor and material cost for the installation of signs shall be billed to and paid for by the developer.

Time of Installation: All traffic and street name signs shall be installed from the entrance(s) of the new subdivision to the end of all paved street surfaces prior to the issuance of the first use and occupancy certificate of the subdivision. The developer shall notify the Town thirty (30) days prior to the time they desire to have the traffic and street name signs in place (See Section 10.3 (k) of the Subdivision Regulations).

Maintenance of Non-Standard Signs: (Note: All traffic and street name signs on public right-of-way automatically become the maintenance responsibility of the Town at the time of dedication and acceptance by the Town.)

Non-Standard signs (those not conforming to the shape, materials and colors of the standard signs) shall not be used except by permission of the Town Council.

The maintenance of non-standard is the responsibility of the developer. The developer may transfer this responsibility to the homeowners association through its covenant. If the homeowner desires, at any time in the future, they may request the installation of standard signs. The cost of this installation shall be paid for by the homeowners requesting such change.

.18 Stripe Markings for Maintenance of Traffic and RPMs

Street line and lane strip marking shall be required for all road improvements in commercial and industrial zones.

Submit as part of the Improvement Plans a traffic line painting layout for acceptance by the Town Engineer. Thoroughly clean the areas where striping will be applied and locate all striping in accordance with accepted drawings.

Apply the striping paint in strict accordance with the manufacturer's recommendations, using all means necessary to protect the painted surfaces until dry.

Temporary pavement tape marking for maintenance of traffic shall conform to the State Highway Administration Standard Specifications.

Raised Pavement Markings (RPM's) shall be bi-directional, blue raised reflectors on the pavement marking locations of fire hydrants. Install one blue reflector in the center of each travel lane on the same side of the double yellow as the fire hydrant. RPM's shall be designed to be safe for snow plowing and in accordance with MUTCD Section's 3A.04 and 3B.11. Blue reflectors must be visible by traffic in both directions.

.19 Street Lighting

A street lighting configuration shall be submitted as a part of the Improvement Plans for review and approval by the Town Engineer. The plan shall distinguish between public and private street lighting systems. All lighting design, both public and private, shall be prepared in accordance with the minimum standards of the Illumination Engineering Society and submitted showing location of each lamp post, post construction material, luminaire type and size, the voltage and location of conductor road crossings for power circuits (See Section 112-18 of the Zoning Code).

Lighting of Non-Public Streets and Spaces: The design shall be as stated above and as directed as a result of Improvement Plan reviews.

Lighting of Public Streets and Spaces: Under the current agreement, 'Street and Highway Lighting Service Agreement', The Potomac Edison Company owns, installs, and maintains the lighting facilities on streets and highways within the Corporate Limits. The developer shall therefore coordinate the lighting requirements, design, and lamp post locations for all streets to be dedicated with The Potomac Edison Company.

The Potomac Edison
10802 Bower Ave
Williamsport, MD 21795

CONSTRUCTION NOTE

NO ELECTRICAL CONDUCTORS FOR POWER OR LIGHTING SHALL BE CONSTRUCTED LONGITUDINALLY IN THE AREA SET ASIDE FOR SIDEWALK CONSTRUCTION.

.20 Guard Rail W Beam

Guard rails shall conform to the appropriate State Highway Administration Standard Number MD-601.01 through MD-605.52 and of the Standard Specifications.

.21 Roadside Developments

The area between the curb and the right-of-way or limits of construction, whichever is the greater distance from the curb, shall be top soiled, seeded and mulched. An acceptable stand of grass shall be evidenced in this area before consideration can be given by the Town Engineer regarding acceptance of the roadway into the Town System.

There is to be a minimum four foot (4') grass strip between the rear face of the curb and the sidewalk (R-5). This distance minimizes the rate of driveway apron incline. If a shorter distance is approved, the sidewalk will need to be depressed to allow ground clearance for compact cars.

.22 Driveway Construction

Driveways shall be constructed of bituminous or reinforced concrete materials.

(b) Single-Family Resident: All single-family residential driveways shall provide for three off-street parking spaces including garage area. All driveways shall contain a landing area which extends from the property line or driveway apron. The landing area shall extend a minimum of twenty-five feet (25') with a maximum grade of twelve percent (12%).

.23 Road Repair over Utility Trenches

When it becomes necessary for an existing roadway to be trench cut for the construction of utilities, it shall be repaired in accordance with the Standard Detail for road repair over utility trenches (Standard Detail R-15 and R-16) unless otherwise directed by the Town Engineer.

30.10 STORM DRAINAGE

.01 General

The Developer shall construct storm drains of the shape and dimensions and kind shown to the line and the elevation indicated on the drawings and specified herein or designated by the Town Engineer.

Plans and profiles of the stormwater drainage system are required. The design information shall be developed in accordance with the MD SHA Highway Drainage Manual established herein.

Drainage ditches, underground drainage pipes, drainage systems including manholes, inlets, headwalls, and other structures shall be constructed where required, simultaneously with other road, street, alley, or driveway construction. Plans for drainage construction shall be prepared by the MLDP. Construction shall not begin until plans have been found acceptable by the Town's Engineer and approved by the Town.

.02 Culvert Pipe Installation

Culvert pipes under roadways and right-a-ways that are to be dedicated to the Town shall be reinforced concrete pipe (RCP) and shall be installed in accordance with Maryland State Highway

Administration Specifications. Corrugated or other metal storm/culvert pipe will not be allowed in Town and reinforced concrete culvert pipe shall be installed in accordance with Section 602, Pipe, Structural Plate Pipe and Pipe Arch Culverts, of the Maryland State Highway Administration Specifications.

All cross drainage pipes not terminated in a drainage structure shall be installed with end walls and/or standard end sections on each end.

.03 Structures

All storm drain structures and appurtenances shall be constructed in accordance with applicable Sections of the Maryland State Highway Administration Specifications.

Preferred drainage structures see details_____, _____, _____. For all other storm drainage structures see MD SHA Highway & Incidental Structures, or other MD SHA specifications, as amended.

.04 Channel Protection

This work shall consist of protecting channels with coverings of stone and filter blanket, unless otherwise specified. Channel protection shall conform to the applicable Standard Specifications (818 and 905.01.02).

DESIGN NOTE

The use of stone or riprap for storm drainage ditch channel protection is prohibited in all residential zoning districts, with the exception of limited storm drain outfalls.

.05 Ditches

Ditches shall conform to the Standard Details. All surface drain ditches constructed on a grade of 4% or more shall use approved erosion control blankets, i.e. curled, for slightly deeper slopes installed. When concrete liners (berm ditches) are required, they shall be constructed in accordance with appropriate sections of the Maryland State Highway Administration Specifications (301, 808, 8097 and 213).

All ditches shall be sodded when ditch paving is not required.

.06 Concrete Berm Ditches

Concrete berm ditches are to be designed and constructed in accordance with standard details (Concrete Berm Ditch Standard No. MD-201.01 for Type “A” and “B”).

When required by design, energy dissipating devices shall be installed in concrete berm ditches (See 5” concrete energy dissipating gutter Standard No. MD-389-11.).

.07 Disturbed Areas

All other disturbed areas between the edges of the road shoulder or curb and the right-of-way line or limits of construction shall be top soiled, seeded and mulched. Topsoil, sodding, seeding shall be in accordance with applicable sections of the Maryland State Highway Administration Specifications.

An acceptable stand of grass shall be evident in these areas before consideration can be given to accept the road, street or other associated construction.

.08 Vehicle Accessibility

The Town shall have vehicular access to all storm drain pipe, manholes, inlets, outlets, etc. A 4:1 grading maximum slope and 4% cross slope (20’ wide) will be allowed.

30.11 WATER MAINS

.01 General

This section includes design, construction, testing and disinfection of permanent water supply, fire protection and distribution pipe to the limits indicated in accordance with the development documents and or the Improvement Plans.

Plans and profiles shall be developed for each new water line. Hydraulic design calculations and design criteria shall be submitted for review and acceptance by the Town Engineer.

.02 Distribution System Design

Water distribution system design shall be in accordance with acceptable engineering practices. All design calculations, development drawings and specifications shall be sealed by a Professional Engineer registered in the State of Maryland. Standard specifications of the American Water Works Association and the National Sanitation Foundation generally set the level of quality and workmanship to be accepted in the water distribution system (See Section 20.07 for Materials).

Loop Configuration: Water system distribution lines configurations shall be looped to take advantage of increase flow characteristics. Exceptions may be made where future expansion lines have no taps after the last loop. Other exceptions may include short cul-de-sacs. Exceptions must go through the Town Engineer, such as short cul-de-sacs or courts where looping is not reasonable.

Upgrading of Existing System: The Town Engineer shall be consulted for any required or planned upgrading of the system or for other design criteria not herein contained.

Minimum Working Pressure: The minimum working pressure during flow in the distribution system should be 20 pounds per square inch measured at the highest point of the service connection. A minimum of 20 pounds per square inch should exist at any point in the distribution system during periods of fire flow.

Distribution systems shall maintain positive pressure during all conditions of flow.

Fire Hydrant Supply Lines: The minimum size of pipe should be six inches in diameter for runs not to exceed 600 feet in length in any residential district. The standard grading schedule of the National Board of Fire Underwriters should be followed in all other instances.

Dead End Mains: The dead end of a main shall have a fire hydrant, flushing hydrant for flushing purposes. No flushing device shall be connected directly to any sewer. A hydrant will be required at all dead end mains including the end of each future expansion line installed.

Main Separation: Where possible, a water main should be laid at least ten feet (10') horizontally from any existing or proposed drain or sewer line. Should local conditions prevent a lateral separation of ten feet (10'), a main may be laid closer than ten feet (10') to a storm or sanitary line, provided that it is laid in a separate trench.

Main Crossing: When water mains must cross house sewers, storm drains, or sanitary sewers, the water main should be laid at such an elevation that the bottom of the water main is 18

inches above the top of the drain or sewer. This vertical separation should be maintained for that portion of the water main located within ten feet (10') horizontally of any sewer or drain it crosses.

Where conditions prevent the minimum vertical separation set forth above from being maintained, or when it is necessary for the water main to pass under a sewer or drain, the water main should be laid with a slip-on or mechanical joint ductile iron pipe. The pipe should extend on each side of the crossing for a minimum of ten feet (10'). In making such crossing, it is preferable to center at (20 ft.) length of water main joints will be equidistant from the sewer and as remote there from as possible.

Where a water main must cross under a sewer. A vertical separation of 18 inches between the bottom of the sewer and the top of the water main should be maintained, with adequate support for the larger-sized sewer lines to prevent them from settling on and breaking the water main.

No water main shall pass through or come into contact with any part of a sewer manhole.

Minimum Pipe Cover: A minimum of 4'-0" cover shall be required over all water lines. (This includes water house connections.) This minimum depth was established to provide adequate separation from other utilities.

Gate Valves: Gate valves shall be installed at all line junctions to facilitate maximum isolation of any given section of the distribution system.

Fittings and Valves: All appurtenances such as fittings and valve bodies shall be cast or ductile iron regardless of the pipe material utilized.

Water Service Plumbing: Water service shall conform to the local plumbing code and to the configuration shown in the Standard Details. In addition to applicable codes, the water service from the main to the property line shall be designed in accordance with AWWA Manual M-22 "Sizing Water Service Lines and Meters". Valve boxes for water service house connections shall not be located in the sidewalk.

Vehicle Accessibility: The Town shall have vehicle access to all water mains, air release valves, fire hydrants, etc. 4:1 grading maximum slope (run: rise) and 4% maximum cross slope (20' wide).

.03 Pipe Installation

Water mains and appurtenances shall be installed in accordance with the Standard Details and the following American Water Works Association Standards and Manuals for the various types of pipe. All fittings (elbows, tees, valves, etc.) shall be installed with Megalugs, or approved equal. A minimum 4-foot pipe length shall be connected on each side of all fittings (elbows, tees, valves, etc.).

Installation of Ductile-Iron Water Mains and Their Appurtenances (AWWA Standard C600-82).

Underground Service Lines and Valves and Fittings (AWWA Standard C800-84).

Dry-Barrel Fire Hydrants (AWWA Standard C502-85).

Earthwork involved in installation of water mains shall be as hereinbefore specified.

.04 Buttresses and Anchors

Buttresses shall be placed behind all caps, horizontal bends and branches, and anchors shall be placed beneath all vertical bends. These buttresses and anchors shall be of concrete and steel as required. They shall extend to solid, undisturbed soil and shall be constructed in accordance with the Standard Details.

.05 Laying of Pipe in Cold Weather

No pipe shall be laid upon a foundation into which frost has penetrated nor at any time when the Town Engineer shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation unless all required precautions as to minimum length of open trench and promptness of refilling are observed.

.06 Installation of Fire Hydrants

Fire hydrants shall be installed in accordance with the Standard Details, applicable sections of the Standard Specifications, and AWWA Manual No. 17. All fittings and connections to fire hydrants and valves shall be installed with Megalugs, Mueller aqua-grip clamps, or approved equal.

.07 Testing of Mains

All water mains and hydrant connections shall be tested in sections by the Developer and witnessed by the Town Engineer as the work proceeds for hydrostatic pressure and leakage in accordance with applicable sections in the Standard Specifications and with AWWA C600-82.

Hydrostatic Pressure Test. Prior to the testing all water mains shall be preliminarily flushed & cleaned in an approved manner and witnessed by the Town Engineer. At a minimum all water mains shall be hydrostatically pressure tested at 200 psig for 2 hours AND at 150 psig for 24 hours and witnessed by the Town Engineer. If the pressure changes by more than 1 psig, then make-up water may be added through the pressure test pump into the pipe line until the pressure rises to the initial testing pressure. The amount of make-up water added shall be accurately measure (in gallons per hour) by suitable methods and shall not exceed the applicable testing allowance as specified in the table below.

Examination. Any exposed pipe, fittings, valves, hydrants, and joints shall be examined carefully during the pressure test. Any damaged or defective pipe, fittings, valves, hydrants, or joints that are discovered during or following the pressure test shall be repaired or replaced with reliable material and the test shall be repeated until satisfactory results are retained.

Testing allowance. Testing allowance shall be defined as the maximum quantity of make-up water that is added into a pipe line undergoing hydrostatic pressure testing, or nay valve section thereof, in order to maintain pressure within +/- 5 psi of the specified test pressure (after the pipe line has been filled with water and the air has been expelled). No pipe installation will be excepted if the quantity of make-up water is greater than that determined by the following formula.

$$L = (SD \sqrt{P}) / 148,000$$

Where:

L= testing allowance (make-up water), in gallons per hour

S = length of pipe tested, in feet

D = nominal diameter of the pipe, in inches

P = avg. test pressure during the hydrostatic test, in lbs per sq. inch (gauge)

Hydrostatic Testing Allowance per 1000' of pipeline (gph)						
Avg. Test Pressure (psi)	Nominal Pipe Diameter (inches)					
	4	6	8	10	12	14

200	0.38	0.57	0.76	0.96	1.15	1.34
150	0.33	0.50	0.66	0.83	0.99	1.16

The Developer shall furnish at their own cost and expense all necessary bulkheads, caps, plugs, or other fittings required to stop off, temporarily, the main for test purposes. They will also furnish at their own cost and expense all necessary equipment, material and labor to perform pressure and leak test as directed by the Town Engineer.

All leaks that appear under testing shall be repaired and any defective pipe, special castings, valves or other appurtenance shall be replaced and the line retested. Should any leak develop after the main is tested, it shall be repaired and retested before the acceptance of the work.

Hydrostatic and leakage testing shall be witnessed by the Town Engineer. Any failures shall be corrected and retested and likewise witnessed by the Town Engineer until acceptable results are achieved.

After the main is satisfactorily tested and disinfected, the Developer shall remove the buttresses and caps and connect the new main with the existing main by means of sleeves and spaces or other approved methods.

.08 Disinfection

The Developer shall disinfect all new water main installation before connecting them to the existing system. The Town Engineer shall determine the length of the line to be disinfection at any one time.

Disinfection of water main shall be conducted in accordance with AWWA Standard C651-86. At a minimum all water mains shall be disinfected at 50 ppm Chlorine for 24 hours. An acceptable chlorine residual must be present after the disinfection period. The Town Engineer must witness and accept the disinfection procedure.

The Developer shall be responsible for the containment of the disinfectant to the section of pipe being tested and for the removal of the excess disinfectant from the water main after the Town Engineer deems the main disinfected.

Flushing of disinfectant shall be collected by the Developer. Discharge may utilize the Town's sanitary sewer system with request and approval by the Town Engineer or Town Inspector. If used, a basket must be used with not greater than 1-inch holes.

The Developer will be held liable for any damage or injury caused by their neglect or failure to perform as so stated above.

.09 Connection to Existing Water Mains

Connections: The Developer shall make all connections to existing water mains of whatever nature without additional compensation.

Approval: The Developer shall obtain approval from the Town at the time at which such connection may be made. The Town may without its approval if, in its judgment, the Developer is not prepared with labor, tools, machinery and pumps to complete the connection with all possible speed.

The Developer shall not be entitled to any claim for additional compensation for delay in receiving approval for such connection.

Public Notification: The Developer shall notify all affected water consumers twenty-four (24) hours in advance of the time of any proposed shut-off.

NOTIFICATION OF FIRE COMPANY: The Developer shall notify the local fire company in advance of any shut-off which affects fire hydrants or the flow of water to be used for fire suppression. Such notice shall be given twenty-four (24) hours in advance and again just prior to the shut-off.

Public Notification and the NOTIFICATION OF FIRE COMPANY must be added to the site plan General Notes in its entirety.

Shut-Off: Unless otherwise arranged, the Town will cause all necessary shut-Offs to be made.

.10 Installation of Water House Connections

All water house connections shall be tapped after mains have been tested and chlorinated.

The Developer shall furnish all materials and lay all water house services as shown on the plans and in accordance with the Standard Details or as directed by the Town Engineer.

Water house services shall be jacked or driven under any type of existing pavement unless otherwise directed by the Town Engineer.

When a house connection cannot be installed by jacking or driving, and it becomes necessary to trench the street, pavement repair shall be performed as shown on the Standard Detail for road repair over utility trenches.

Provide saddle for all new house connections into existing mains. Where existing mains are asbestos-cement (transite) pipe, a Ford FS1-xxx-125-CCx repair clamp with outlet thread or approved equal shall be required.

All water meters will be provided by the town and installed by the Developer inside the building where it can be easily accessed by Town staff when maintenance is required. No vault installations will be allowed.

30.12 SANITARY SEWERS

.01 General

This section includes all work necessary to provide sanitary sewer systems complete in place in accordance with the development documents and/or the Improvement Plans.

.02 Force Main and Collection System Design

Design Criteria: Sanitary sewerage collection system and force mains shall be designed in accordance with the Maryland Department of the Environment “Design Guidelines for Waste Water Facilities”. All design calculations, development drawings and specifications shall be sealed by a professional engineer registered in the State of Maryland.

Plans and Profiles: Plans shall show profiles together with pipe size, grade, inverts, lengths and topography.

Design Calculations: Design calculations shall be submitted with development plans and specifications.

Gravity Service: Collection system design should allow for gravity service to all basements. Any deviations shall be approved by the Town Engineer. Basement elevations, or first floor elevations in absence of a basement, shall be shown on the development drawing.

Vehicle Accessibility: Vehicle accessibility shall be provided to all manholes and sanitary sewer pipe. The Town shall have vehicle access to all manholes, sanitary sewer pipe, etc. 4:1 grading maximum slope (run: rise) and 4% cross slope (20' wide).

.03 Upgrading of Existing Sanitary Sewers:

The Town Engineer shall be consulted for any required or planned upgrading of the existing collector system, forced mains, or sewerage pump stations for other design criteria not herein contained.

.04 Trench Excavation

Trench excavation and backfill shall be as herein before specified (Section 30.06). Developer shall test pit sufficiently in advance of trench construction so that reasonable change in line and grade can be made where necessary.

Keep trench excavations free of water during construction and until final inspection.

Minimum Cover: Provide a minimum of three feet (3') of cover over all sanitary sewer lines.

.05 Pipe Installation

All pipe between structures shall be of the same size and material and shall be furnished by the same manufacturer. Each pipe length and all fittings shall be clearly marked with the manufacturer's name or trademark and pipe type of strength.

Lay pipe to a true uniform line via laser and grade as indicated with continuous bearing of barrel on cradle or bedding material. Handle pipe and fittings with care so as to avoid damage.

Lay pipe upgrade with the bell pointing in the direction of upstream. Lay each section of pipe in such a manner as to form a close concentric joint with the adjacent section and to prevent sudden offsets in the flow line.

When work is not in progress securely, close open ends of pipe and fittings to prevent trench water, earth or other substances from entering the pipe or fittings.

Clean out the interior of the pipe as the work progresses. Utilize a suitable swab or drag in small diameter pipe and pull forward past each joint immediately after the joint has been completed.

Bedding: Provide granular bedding material under all sanitary sewer pipe in accordance with the Standard Details. Ensure that pipes are well bedded.

Encasements: Where concrete encasements are to be placed, special precautions shall be taken in freezing or inclement weather to protect all concrete against injury.

Backfilling: Backfilling shall be as heretofore specified (Section 30.06).

.06 Laying Pipe in Cold Weather

No pipe shall be laid upon a foundation into which frost has penetrated nor at any time when the Town Engineer shall deem that there is danger of the formation of ice or the penetration of frost at the bottom of the excavation, unless all required precautions as to a minimum length of open trench and promptness of refilling are observed.

.07 Joints

Ductile Iron Pipe: Joints for ductile iron pipe for main line sewers shall be as specified heretofore.

Polyvinyl Chloride Pipe: Joints for polyvinyl chloride pipe shall be elastomeric gasket joints assembled with manufacturer's recommendations.

.08 Manholes, General Requirements

Installation: Manholes shall be watertight. Construct manhole precast sections in accordance with Standard Details and the plans. Make watertight connections between base and risers. Place axis of manhole directly over the centerline of the pipe unless otherwise shown. Manholes shall be located not more than 400-feet apart. All manholes shall be factory-coated, mortared and tarred in the field per Town detail, and not more than one rite-height added prior to acceptance. Manholes in paved areas must be at least 5-feet from street storm flow (curb & gutter pan).

Pipe Connections: Pipe connections to manholes shall utilize watertight flexible connections cast-in-place and of a design approved by the Town Engineer.

Channels: Construct appropriate flow channels in the bottom of the manholes as shown on the Standard Details and plans and specified herein below. Channels shall be constructed with cast-in-place concrete Class A using Type II cement with silica sand and GP aggregate. Channels shall slope smoothly and evenly from the main pipe entering the manhole to the outlet pipe. Manholes in paved area must be at least 5-feet from storm flow (gutter pan).

Manhole Steps: Install additional steps and cast iron watertight frame and cover for each manhole and adjust the frame and cover to proper grade by the use of grade rings, if required.

Cover Grade: The cover shall be 12” – 24” above grade for non-paved areas not subject to snow removal by plow. The top grade shall be one-quarter (1/4”) of an inch to half inch (1/2”) for paved areas to prevent snow plows from catching on frame.

Drop Manholes: Drop manholes shall be constructed with outside drop connection. Due to the unequal earth pressure that would result from the backfilling operation in the vicinity of the manhole, the entire outside drop connection shall be encased in concrete per the Standard Detail.

.09 Specifications for Grease Traps, Interceptors and Oil Separators

Grease traps, interceptors, and oil separators shall be provided per the latest International Plumbing Code requirements. Refer to Section 91-22 of the Town Code for additional requirements on grease, oil, and sand interceptors.

.10 Connection to Existing Sewers

The Developer shall make all connections to existing sewers of whatever nature without additional compensation; however, the Developer shall obtain the Town’s approval for time at which such connection may be made. The Developer shall not be entitled to any claim for additional compensation for any delay in receiving approval for such connection.

.11 Force Mains

Sanitary sewer force mains and appurtenances shall be ductile iron pipe or C900 PVC pressure pipe, minimum 200 psi, and shall be laid on a firm bed true to line and grade in accordance with these specifications.

.12 Sewer House Connections

Provide sewer house and drop house connections where indicated in accordance with the Standard Details. Where possible, place house connections simultaneously with construction of new main line sewer before backfilling main line sewer.

Lay house connection pipe at a two percent (2%) grade unless otherwise approved by the Town Engineer.

The sewer house connection is to be provided with a clean out at the property line for all sewer house connections in accordance with the Standard Details. Cleanouts shall be provided every 75-feet. At a minimum two cleanouts shall be provided in every installation. One cleanout shall be installed within 5-feet of the entrance to house for the homeowner's use.

.13 Sewer House Connection Renewals

Where design permits, utilize existing tap at main line unless otherwise directed by the Town Engineer. Where not permitted, abandon the existing tap and retap utilizing proper size saddle or thimble or cut in wye branch, or remove the existing tap and cut in an additional wye, as determined by the Town Engineer, resulting in a watertight joint without jointing collars.

Plug abandoned existing house connections and taps which have been replaced, utilizing approved watertight plugs, or cut out existing pipe with tap in main line and provide new pipe with sewer claims and encase in concrete.

Retapping the Mains:

Tap all pipe with power operated tapping machine and cutter or equal with a diamond tip cutter. Tapping shall be performed only by qualified personnel.

Install Romac style CB cast iron sewer saddles with Styrene Butadiene Rubber (SBR) with SBR gasket in accordance with ASTM D 200 MBA 710 and Type 304 stainless steel wide strap around pipe for corrosion resistance. Installation of saddles shall be performed only by qualified personnel.

Where sewer house connection is of the same size as the existing sewer, cut in additional wye branch as appropriate, using sewer repair clamps shown on the Standard Details.

Only when directed by the Town Engineer, tap directly into the manhole for sewer house connections.

Provide clean outs installed at property line and/or as indicated on the plans for all sewer connection renewals in accordance with the Standard Details.

.14 Cleaning of Pipelines

Prior to placing new pipelines in service, all pipes shall be checked for elevation, aligned, cleaned, and successfully tested. After the elevation and alignment checks have passed, but prior to performing the hereinafter air test, sewers shall be cleaned of all construction debris to the complete satisfaction of the Town Engineer/Inspector.

Mandrel Test

The mandrel shall be made before the air test and permit the Town to integrate into their system a clean sewer, free from dirt and obstructions.

The pipeline and all branches within the test section shall be cleaned by passing a snug fitting mandrel of the same diameter as the pipeline and passing this through the pipeline using a rope or similar conveyance method. The mandrel is to be furnished with a recoverable tag line in case the pull rope breaks. The mandrel shall be placed into the pipe at the upper manhole or lateral house connection end. The plug from the previous air test of the upper pipe section shall be left in place in the manhole or pipe end previously tested.

If the passage of the mandrel is impeded by any obstruction in the line, appropriate corrective measures shall be taken to clean or fix the line.

.15 Disposal of Water and Debris from Cleaning of Existing Lines

The disposal of all debris and water resulting from the cleaning and mandrel testing shall be in accordance with approved procedures and shall be the full responsibility of the Developer. Debris shall be hauled away from the site to an approved disposal area and water shall be carefully disposed of in the natural watercourses in an approved manner. In no case shall test water be of excessive quantity that shall create erosion or damage. They shall be disposed of in a manner that will not cause any damage to the Town's other public or private property owners adjacent to or downstream from the work. Any such litigation resulting from disposal methods used shall be the full responsibility of the Developer.

.16 Sanitary Sewer Field Test

Sanitary sewers shall be tested after completion of backfilling and approved compaction. The Developer may perform preliminary tests at their own discretion for their information without the presence of the Town Engineer at no cost to the Town.

Scheduling of Test: The Developer shall schedule the proposed final test with the Town Engineer which shall be performed in the presence of the Town Engineer or their duly authorized representative. All material, equipment and labor required shall be provided by the Developer. Sewers shall be tested from manhole to manhole or from manhole to terminal manhole.

Low Pressure Air Test: Test shall be conducted as follows: Test plug shall be provided at each manhole and be securely braced. No personnel shall be allowed to remain in the manhole after the air pressure has been increased.

A suitable means of determining depth of groundwater level above the invert immediately before testing shall be provided and gauge pressure shall be increased accordingly.

Air shall be slowly added to the portion of the pipe being tested until its internal air pressure is 4 psi above the groundwater pressure at the invert or above the groundwater table, whichever is greater.

If, in the opinion of the Town Engineer, there is any indication of leakage at the test plug, the pressure shall be relieved by taking steps to eliminate the leak.

Test pressure shall be maintained for a minimum of two minutes between 4 and 3.5 psi, after which time the supply of air shall be disconnected. If pressure decreases to 3.5 psi, record the time required for the pressure to drop one psi from 3.5 to 2.5 psi. Pipe failing to maintain minimum acceptable holding time calculated from the air test table included herein will not be accepted.

AIR TEST TABLE

Minimum Test Time for Various Pipe Sizes

Nominal Pipe Diameter (inches)	Ratio of Test Duration (min/100ft)	Length of Pipe (feet)	Time, T Duration of Test* (min)
4 to 8	5	L	5 x L/100
10 to 18	10	L	10 x L/100
Over 18	Coordinate testing with Town Engineer		

* Note: If the length, L, of pipe is less than 100 feet, then assume L=100 feet to calculate the minimum duration of test.

The Air Test Table shows the required test time, T, in minutes per 100 feet for each nominal pipe size. Test times are for a 1.0 psi (7-kpa) pressure drop from 4.0 to 3.0 psi (24 to 17 kpa).

If the section of the line to be tested includes more than one pipe size, calculate the test time for each size and add the test time to arrive at the total test time for the section.

Testing Options: Water testing options may be allowed or ordered by the Town Engineer.

Leakage Test: Leakage test is to be performed on the complete sewer. Leakage test, whether infiltration or exfiltration, shall not exceed the rate of one hundred (100) gallons per inch of pipe diameter per mile of sewer per twenty-four (24) hours in any section of pipe between manholes.

Infiltration Testing: Infiltration testing shall take place when the natural groundwater table is above the crown of the pipe at the higher end of test section. The amount of leakage shall be measured by a suitable weir or other device as directed.

A section of sewer line shall be prepared for testing by plugging the upper side of the downstream manhole and all openings in the next upstream manhole, except the downstream opening. The maximum head on any section under test will not exceed ten feet (10') for clay pipe (existing pipe only) and thirty feet (30') for DIP or PVC pipe. Branch sewer running from Y-branches on the mains shall be plugged at the upper end (C.O. location) if the test head would cause them to overflow.

A section of sewer line prepared as above shall be tested by filling with water to an elevation of one foot above top of the pipe in the upstream manhole, in mains without laterals or the test head must exceed the highest house service elevation, whichever is greater.

(Existing Clay Pipe Only) The water should be introduced into the test section at least four hours in advance of the official test period to allow the pipe and joint material to become saturated with water.

All entrapped air shall be removed prior to performance of the test.

At the beginning of the test, the elevation of the water in the upper manhole shall be carefully measured from a point of reference near the water level such as a manhole ring. After a period of six (6) hours or more, with the approval of the Town Engineer, the water elevation shall be measured

from the same point of reference and the loss of water during test period calculated. Sewer sections showing leakage in excess of that allowed shall be repaired or reconstructed as necessary then retested.

.17 Manhole Field Test

When air testing of lines is used, or when required by the Town Engineer, manholes shall be tested separately from the lines.

Leakage Test: All sewer connections to each manhole to be tested shall be plugged and the manhole filled with water to cover the bottom of the rim. The test duration shall be twenty-four (24) hours and the allowable leakage for this duration shall be one gallon per foot of vertical depth of the manhole tested.

Vacuum Test: Vacuum Manhole Testers may be used in lieu of the leakage test. Manholes shall be tested at 10" Hg. (mercury) vacuum with an allowed maximum of 1" Hg. drop during the test period. Test time is one minute (maximum) for all sizes, types, and depth of manholes.

.18 Pressure Test for Force Mains

The Developer shall provide equipment, material and labor at their own expense for the conducting of pressure tests under pressures indicated on the plans. Test to be performed in the presence of the Town Engineer.

Test pipe after completion of backfill operations in lengths directed by the Town Engineer. Close ends of test sections with valves or plugs where possible or provide test plugs.

Fill the length of force main under test with water and subject it to the maximum of 150 psig for 2 hours and 100 psig for 24 hours sustained initial pressure plus water hammer at the point as indicated in the development documents.

Should the test results show any visible leakage, displacement or damage, the Developer shall repair the leakage, displacement or damage and retest until specified conditions are met, to the satisfaction of the Town Engineer, at no cost to the Town.

The maximum allowable leakage shall be determined from the following formula:

L = 25DM/24

L = allowed leakage in gallons per hour

D = nominal diameter of pipe in inches

M = miles of pipe

.19 Defects to Be Made Good

If, at any time before the completion of the installation, any broken pipe or any defects are found in the lines or in any of their appurtenances, the Developer shall cause the same to be removed and replaced by proper material and workmanship without compensation for the labor and material required, even though such injury or damage may not have been due to any act, default, or negligence on the part of the Developer.

All material shall be carefully examined by the Developer for defects just before placing, and any found defective material shall not be placed in the line.

30.13 CLEANUP

.01 General

The Developer shall frequently remove all refuse, rubbish, scrap material and debris caused by construction operations so that the project area shall present a neat, orderly, safe and workmanlike appearance.

Cleanup shall be performed during construction as required to prevent accidents to personnel, protect all work in place, and to affect completion of the project in an orderly manner.

Construction cleanup shall consist of the removal of all mud, oil, grease, sand, gravel, dirt, trash, scrap, debris, and excess materials from any floor space or walking surface that may cause the tripping or sliding of workmen, ladders, or equipment or cause the project area to have a disorderly appearance.

Final Cleanup: Immediately prior to the Developer's request for final inspection of the project or any part thereof, a final cleanup shall be made. The Developer shall cleanup and restore the work site to condition satisfactory to the Town Engineer in all respects.

Final cleanup shall consist of the removal of all debris, excess materials, construction plant, equipment, etc. and restoring all disturbed areas, pavement and structures to a clean and orderly condition equal to that which existed before commencing work under this development.

The Town Engineer at any time may require the Developer to cleanup if the area is considered unsafe or is their opinion unsightly.

.02 Restoration of Construction Areas

Restoration of Construction Areas: Unless otherwise directed, the Developer shall restore all disturbed surfaces to their original condition or better. Top soiling, seeding, mulching, sodding, planting and other applicable landscaping shall be performed in accordance with the appropriate sections of the State Highway Administration Specifications.

DIVISION IV - PROCEDURES

40.01 General

This division of the Standard Specifications Manual establishes procedures for use by residents and developers to coordinate various activities with Town Authorities.

When published procedures are not followed, the desired results may not be obtained.

Additional procedures will be prepared and added to this Division from time to time.

40.02 Conditional and Final Acceptance of New Town Roads

Initial conditional acceptance of new Town roads built by developers is based on assurance that the roadways, curbs, gutters, sidewalks, sewers, manholes, valve accesses, and all other aspects of the road construction, utilities, and public improvements, which can be inspected have met at least a minimum standard of quality. This assurance of quality is determined by the conduct of a joint, physical inspection of such improvements. When feasible, this inspection will utilize any available inspection equipment and be conducted jointly by representatives of the developer and the Town.

If faults are found to exist, a list of the faults will be prepared from which the developer can direct or perform any necessary corrective action. When all faults have been corrected, a new inspection will be conducted in the same manner. At the option of the Town, the inspection may cover only the faulty items or may be a complete re-inspection of the work.

Failure to meet standards at this re-inspection will cause the production of another list, conduct of another inspection, etc. In this case, the Town may, at its option, charge the developer for the costs of the re-inspection and associated work.

When an inspection shows that the inspected work has met the established standards for acceptance, the Town will notify the developer by letter that the roads and associated work have been 'Conditionally Accepted' and that a one-year warranty period has begun, starting the day following the satisfactory inspection.

At or about the end of the warranty period, a final joint inspection will be conducted covering the same work and using the same process as before. Satisfactory results will result in acceptance by

the Town of the inspected road and work and the release of any further obligation by the developer. This acceptance will take affect the day following the acceptance of the work by the Town Council. A letter to this effect will be provided to the developer by the Town.

Failure of the final inspection will result in the preparation of a list of work to be done, establishment of a reasonable period of time in which to perform the work (usually 30 days), and a subsequent re-inspection.

As before, satisfactory results will result in acceptance; failure will result in re-work and re-inspection at the expense of the developer.

40.03 Standards of Road Repair for New Development

We have often found that, by the time of final inspection of a new street or road, multiple repairs have already been made and the result is of a patchwork appearance and provides an uneven surface on which to drive. This level of work will not be acceptable to the Town after the date of this procedure.

In the case of new development, this should be borne in mind by the developer when they are scheduling the application of the topcoat in completion of their new streets and roads. Multiple repairs, properly done, may be applied to the undercoat without limit, this permitting the installation of new utilities or the repair of existing ones and the repair of damage caused by construction vehicles.

After the topcoat has been applied, however, all repairs will be subject to the approval of the Town Engineer and will be performed in such a manner that the finished surface will be level with and indistinguishable from the rest of the road surface. Any subsequent sinking or other failure will be cause for a complete re-do of the repair.

If it should be impossible or impractical for the developer to perform repair at this high level of quality, or if multiple repairs are required within a single block, the Town may require that the full block (from intersection to intersection) of the new road be milled and the topcoat replaced so that the road not only is of high quality but also gives that appearance.

(Developers are strongly encouraged to delay the application of the topcoat on new roadways until all construction is essentially complete to minimize the re-work which may be required because of subsequent road damage.)

Since road repair is often required as a result of the inspection of sewers, manholes, and other underground utilities, the Town will, at the request of a concerned developer, participate in a joint inspection of these facilities prior to the application of the topcoat. This could permit the correction of such faults before the topcoat is applied, thus avoiding the possible requirement for re-topping of the roadway due to underground faults.

40.04 Repair of New or Recently Resurfaced Roads

It has often been the case that, shortly after a new road has been built or an existing road has been resurfaced, it becomes necessary for a homeowner, builder, or other agency to open the surface of the new road for repair or installation of some utility. This situation will be exacerbated by the installation of gas mains in our Town to which individual homeowners may wish to connect. It is the desire and intent of the Town that no new or recently resurfaced roadway shall be disturbed until a period of five years has elapsed since the surface coat was applied.

Effective immediately, the Town will not permit the opening of newly surfaced roads for any purpose except in an emergency for a period of five years since the surface coat was applied.

An individual, agency, or company (hereafter referred to as the applicant) wishing to open/repair a roadway which has been built or resurfaced during the past five-year period must apply in writing to the Town Engineer giving a complete justification for the proposed action and requesting authority to proceed.

The Town Engineer shall consult with the designated representative of the Town Council and they will jointly determine whether an emergency exists and whether the requested action will be permitted.

NO WORK SHALL BE BEGUN UNTIL AND UNLESS THE REQUESTED AUTHORITY IS GRANTED IN WRITING TO THE APPLICANT.

If the requested authority is granted, before any work is begun, a bond in cash or letter of credit shall be deposited with the Town in an amount to be determined by the Town Engineer to ensure the completion of the necessary repair meeting the established standards (never less rigid than restoration without blemish to the level and quality of the then-existing road surface at that point).

The amount of the bond is to be equal to 110% of the total estimated cost of the required repair. The estimated cost of the repair will be set by the Town Engineer, taking into consideration the work to be done, the condition of the existing road surface, and the possible cost of re-doing the

repair work if it should not meet standards when complete. The bond is to be retained until one year after the initial (conditional) acceptance of the completed repair. At the end of the one-year period, the repair will be inspected and, if it then meets the standard, the bond will be released. If the repair is not then satisfactory, the Town, at its sole option, may require the work to be re-done or may itself do the work or have it done to the established standards.

If, at time of initial repair, the Town has contracted with a road construction company to do this kind of work on demand, the applicant may ask that the Town complete the repair and accept the responsibility for the work. The Town may, at its sole option, accept this responsibility. If the Town does accept this responsibility, the bond may be released after full payment, repair cost plus 10%, is made to the Town for the repair work.

The quality of the repair shall be that required of a developer performing repair on a newly surfaced road. The repair shall be of the highest possible quality, resulting in a level surface that is essentially indistinguishable from the surrounding roadway. No subsequent sinking or separation will be accepted.

After the expiration of the five-year period after the surface coat was applied, these restrictions shall cease to apply, but all subsequent repair must meet or exceed the quality of the then-existing roadway.