Town of Ancram

Subdivision and Highway Construction Standards

December 16, 2014

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SECTION I - INTRODUCTION

These standards are issued as guides for design and construction of facilities by private developers. They are formulated so that all facilities may eventually be accepted for maintenance by the Town. With this objective, adequate design life, ease of operation and maintenance, and standardization have been given primary consideration. Each facility shall be designed and constructed as part of a future complete system.

Any standard or specification referred to shall be understood to be the current version of that standard or specification. The Planning Board may require higher standards where it believes they are justified. The Board will also consider approval of a design or construction method which is not included in these standards.

The list of approved materials is under constant review by the Board and submission of requests for inclusion of new material is encouraged. Such requests should be substantiated by test results, specifications and other data. Listing of a material or component in the list of approved materials or approval of a new material does not prevent the Board from requiring inspections or tests deemed by the Board to be necessary before such material or component is installed.

In general, the Subdivision Plat, development map, and the plan/profiles included in the final submission shall include enough detail to show compliance with design standards. The Board may require the submission of design calculations for review by the Board's Engineer. In some cases, at the reasonable discretion of the Board, construction methods shall also be shown.

Compliance with construction standards, approved materials list and the approved Final Submission shall be required during construction. Final approval of the development construction and release of the Letter of Credit shall be dependent upon such compliance. Construction methods shall conform to manufacturers' recommendations unless otherwise specified in these standards.

SECTION II– DESIGN STANDARDS

1. SURVEYING AND MAPPING

1.0 General

Procedure shall include temperature and slope corrections to distance measurements; adjustment of closed baseline traverses; presentation of all necessary data clearly and completely; and the use of proper methods to obtain the required standards of accuracy.

1.1 Surveying Accuracy

The position closure of a traverse after distribution of azimuth errors shall not exceed 1:5,000. Discrepancies in levels between forward and backward runs shall not exceed one tenth of a foot times the square root of the length of section in miles.

1.2 Mapping Accuracy

The limits of error in any map shall not exceed 1/10 inch between points as scaled on the original map. The elevation error shall not exceed one half the contour interval.

1.3 Monuments and Bench Marks

Monuments shall be located in sufficient number to control the subdivision but as minimum they shall be located at every point of tangency, point of curvature, point of deflection, and all intermediate points necessary to provide visibility between adjacent monuments along one right-of-way line of each street. All easements shall be similarly monumented. Iron pipes shall be located at all lot corners and shall be located by reference to monuments.

Bench marks shall be set and marked with U.S.G.S. elevation unless an assumed datum is allowed by the Board. One bench mark shall be required for every 25 acres developed.

Monuments and bench marks shall be carried from existing monuments or bench marks and their origin noted on the subdivision plat. Suitable primary control points shall be shown on the plat and all other dimensions, bearings, angles and similar data shall be referred to them.

1.4 Certification

The following certification accompanied by the imprint of the New York registration seal of the land surveyor and his name shall be included on the subdivision plat; "I hereby certify this map to be substantially correct and in accordance with the accuracy required by the Town of Ancram Subdivision Standards."

2. STORM DRAINAGE

2.0 General

In designing for storm drainage the Water Pollution Control Federation Manual of Practice on Design and Construction of Sanitary and Storm Sewers (MOP-9) shall be used as a guide. The procedures of the Manual are not binding and other generally accepted engineering practices may be accepted by the Town.

2.1 Design Criteria

All components shall be designed for runoff from the entire contributing watershed taking future development into account. In addition, the design shall be considered as part of a larger storm drainage system and shall provide drains to the limits of the subdivision.

The following criteria shall be used in designing for storm drainage:

1. Rational method shall be used for all drainage areas smaller than one (1) acre. SCS TR55 "Urban Hydrology for Small Watershed" shall be used for larger areas.

2. Runoff coefficients as described in the appropriate methods shall be utilized. In no case shall a runoff coefficient of less than 0.35 be used.

3. Inlet time not greater than 20 minutes from the farthest point to the first inlet.

4. Rainfall-intensity-duration-frequency curves of the U.S. Weather Bureau for the Albany area shall be used.

   a. Ten (1O) year storm for Local and collector streets and residential districts.

   b. Twenty-five (25) year storm for arterial highways, potentially highly developed commercial or industrial districts, and culverts carrying major streams.

5. Surface flow on streets shall be limited to a maximum of 350 feet and discharge shall be carried to a stream with bed and banks.

6. Gutter profiles may be required at intersections which involve steep grades.

2.2 Pipe

Required pipe sizes shall be determined by use of the Manning formula. Full pipe velocities shall not be less than three feet per second. Full pipe velocities greater than 10 feet per second shall be avoided whenever possible. If such velocities are unavoidable, measures shall be taken to protect pipe from scour. The minimum size of pipe to be used shall be 12 inches. All

pipe shall be installed with a minimum of three feet of cover. Pipe shall be designed for the overburden and live loads it will be subject to. Type and class of pipe and bedding conditions shall be specified. All pipe junctions shall be in manholes or catch basins. Storm drainage shall be designed to the limits of the Subdivision and the upper end shall terminate at a catch basin or manhole.

2.3 Catch Basins and Manholes

Catch basins, manholes, frames, covers and grates shall conform to Town standards.

Storm inlets shall be located to intercept runoff before it enters an intersection and at all low points. Catch basins on storm mains shall be provided with sumps where required by the Board.

2.4 Trash Racks

Trash racks may be required where the intake of branches, or debris to the storm system may clog the line. The design of the trash rack shall be based on conditions and requirements of each particular case.

2.5 Grading

Lots shall be graded so that runoff from roofs, drives and other impervious surfaces flows toward a street except that such runoff may flow to the rear where a watercourse abuts the rear of a lot. If it is not practicable to direct runoff to the street, a grading plan for the area may be required by the Board. Such grading plan shall show that grading is designed to prevent pending and to direct water away from all buildings.

Lots having driveways sloping away from streets shall have driveways paved so as to provide a "high-point" at or near the R.O.W. It is intended that this high point prevent street runoff from entering the lot.

3. SANITARY SEWERAGE

3.0 General

All components of sewage collection and disposal systems shall be designed in accordance with the following standards whichever is applicable.

1. Recommended Standards for Sewage Works adopted by Great Lakes - Upper Mississippi River Board of State Sanitary Engineer.

2. Standards for Waste Treatment Works - municipal sewage facilities and Standards for Waste Treatment Works - Institutional and Commercial Sewerage Facilities published by the

New York State Department of Environmental Conservation.

3. Waste Treatment Handbook for Individual Household Systems published by the New York State Department of Health.

3.1 Collection System

A collection system consisting of house services and mains designed for the ultimate tributary population shall be provided within the entire Subdivision. The requirement for an active collection system may be waived by the Planning Board if the proposed subdivision lies in the Agriculture District as defined in the Town of Ancram Zoning Law. A dry collection system shall be provided, however, within the road right-of-way or sewer easement for future use when service becomes available, if central sewers have been identified for that area in the Town's master plan or a map, plan, and report.

3.2 House Service

A typical house service shall be shown on the plans. In cases where a house is served by an individual septic tank, the drawing shall show how the house service is to be connected to the sewer main and describe the method to be used to transfer sewage disposal from septic tank to public sewer. The method is subject to Planning Board approval.

3.3 Individual Household Systems

Where an existing sanitary collection system is unavailable and where the Board deems it appropriate. Individual on-site sanitary disposal may be utilized. Regardless of the size or classification of the subdivision by other agencies, percolation tests and test pits must be performed for each proposed lot. With no exception, ALL percolation tests and test pits must be field witnessed and results certified by both the Columbia County Health Department and the Columbia County Soil and Water Conservation District. The results of all tests with accompanying certification must be submitted to the Board as part of preliminary approval. The Owner will be responsible for all costs and fees for this inspection and certification.

Where percolation rates are determined to be from one (1) to forty (40) minutes per inch, a standard absorption field system shall be utilized as set forth in the waste treatment handbook. Seepage pits, drywalls and similar structures and will be allowed only where a standard absorption field system has been determined to be unworkable based upon soil and geologic conditions. Where percolation rates less than forty (40) minutes are encountered but high groundwater levels are evident, fill systems may be utilized to maintain the required separation to groundwater as approved by the Columbia County Health Department.

Where percolation rates are determined to be from forty (40) minutes to sixty (60) minutes, or

less than one (1) minute. Absorption beds or fill systems shall be utilized as approved by the Columbia County Health Department.

Where percolation rates are greater than sixty (60) minutes and construction of a sanitary sewer system is not feasible, no development shall be allowed.

An appropriately sized system must be designed for ALL lots that will use on-site sewage disposal. Supporting calculations must be compiled for each individual sewage disposal system and submitted to the Planning Board and the Columbia County Health Department for review and approval prior to issuance of final approval by the Board. This submission shall include but not necessarily be limited to the location and alignment of the sanitary disposal system for each lot and should include the location and alignment of the septic tank, distribution box, and absorption field. Also, the total length of the absorption field lines must be clearly stated together with the length and number of individual lines. A detail for all components including but not necessarily limited to the septic tank, distribution box, and absorption field together with appropriate grade elevations and inverts must be included as part of the plans.

In any regard, seepage pits (drywalls) or evapo-transpiration absorption (Transvap) type systems will not be allowed except at the discretion of the Board on recommendation of the Columbia County Health Department and Town Engineer.

4. WATER SYSTEM

4.0 General

All components of the water system shall meet the Recommended Standards for Water Works Adopted by the Great Lakes ·Upper Mississippi River Board of State Sanitary Engineer (New York State Department of Health Bulletin No. 42), latest edition, including all addenda thereto. Water fines, valves and hydrants shall, in addition meet the Recommended Water System Design Standards of the Insurance Services Office of New York. The design shall provide that additions to the system can be constructed without interrupting normal service or decreasing fire flows. All components shall be designed to provide present and future service as required by the Town of Ancram Comprehensive Plan, the Official Map and any water system plan adopted by the Town of Ancram. Subdivision water systems shall be connected to the Town system if feasible.

4.1 Water Supply

A source for public water supply shall be developed and tested in accordance with recommended standards for water works and all New York State Department of Environmental Conservation, and New York State Department of Health Standards.

For a residential subdivision of five (5) or more Jots using individual wells, the Owner shall. prior to final approval of any phase, drill one (1) well for every five (5) lots proposed, and have an eight (8) hour pumping test run by a licensed professional Engineer or hydrogeologist and a water quality analysis on each well. Such pumping test should measures the draw-down and recovery of the well and an analysis of the test data shall be made to demonstrate a long term safe aquifer yield capability of at least three (3) gallons per minute (gpm) per well. Once the subdivision is approved individual pump tests are required for each lot prior to the issuance of a building permit.

For a single family home on an individual lot, a four (4) hour pumping test certified by a licensed professional Engineer or hydrogeologist shall be performed and shall yield a minimum of three (3) gpm to demonstrate a minimally adequate yield.

For a multi-family home, an eight (8) hour pumping test shall be performed and shall yield a minimum of three (3) gpm to demonstrate an adequate yield.

4.2 Water Quality

Water supplies shall meet all requirements of the New York State Public Drinking Water Standards. All wells shall have a complete water analysis performed in accordance with the New York State Sanitary Code, Part 5, Community Water Supplies.

4.3 Hydro-Pneumatic Pressure System

Pumps, tanks and accessory equipment shall provide adequate pump capacity and pressure with one day storage.

4.4 Chlorination

Chlorination equipment shall be provided which will supply a minimum of eight and one-third pounds of chlorine per million gallons of water supplied.

4.5 Water Mains

Pipe and fittings shall be of approved materials and class. Class of pipe and type of material shall be specified according to ground conditions, external loading using specified bedding, and internal pressure as determined by immediate conditions and Town of Ancram water system plans. Main sizes shall be as required by the Town in accordance with Town water system plans with no main less than eight (8) inch size. Dead end mains shall be avoided whenever feasible. When permitted, however, a hydrant shall be installed.

In subdivisions where on-site water supply systems will be utilized, a dry water supply system shall be provided within the road right-of-way or utility easement for future use when service

becomes available.

4.6 Valves

Valves shall be AWWA gate valves of a type approved by the Town. Valves shall be installed on every branch of an intersection, at every stub provided for future expansion at every hydrant, and as required by the New York Fire Insurance Rating Organization, Recommended Water System Design Standards. The Owner may be allowed to omit the valve on one branch line at intersections of lines of minor importance. Valve boxes shall be installed for each valve.

4.7 Hydrants

Hydrants shall be of a type approved by the Town and shall be provided at each street intersection and at intermediate points between, as recommended by the New York Fire Insurance Rating Organizations' Recommended Water System Design Standards. Generally, hydrant spacing may range from 350 to 600 feet depending on the area served.

4.8 Service Connections

Services shall be of approved material at least 3/4 inch inside diameter.

SECTION III - CONSTRUCTION PRACTICES

1. GENERAL CONSTRUCTION PRACTICES

1.0 General

These construction standards shall govern all construction indicated in Final Submission of Subdivisions within the Town both on private land and on public land. Construction not covered by these standards shall be in accordance with recognized good practice such as that contained in the State of New York's Department of Transportation Specifications or recommendations of manufacturers' associations. All such methods not covered by these standards require approval of the Town before construction begins.

1.1 Maintenance and Protection of Traffic

The Owner shall maintain traffic and protect the public from damage to person and property while construction is being performed in any public right-of-way or any private street. Travel shall be maintained over a reasonably smooth traveled way which shall be marked as necessary for the type of street so that a person who has no knowledge of conditions can safely, and with a minimum of discomfort and inconvenience drive or walk over all or any portion of the street. The Town shall determine whether one-way or two-way traffic shall be maintained. See paragraph 6.2 for related information concerning excavation.

1.2 Clean Up and Repair

The Owner shall clean up all debris or materials left as a result of his work and completely repair damage caused by him to any public or private property including any existing street he may have used. Resetting of surveying points and reseeding roadside areas are included in repairs required.

1.3 Restoration of Paved Street Surfaces

All utilities within street rights-of-way shall be installed before streets are paved. However, repairs or reconstruction after paving may require pavement restoration which shall be accomplished as follows:

Backfilling shall be as required for backfill within a street right-of- way. The edge of the pavement shall be cut evenly with a chisel or saw at least one foot beyond the edge of the excavation. Base material and paving equal in thickness and quality to that of the original

paving shall be constructed in accordance with the standards for pavement construction. The joint between original pavement and the patch shall be sealed with a crack sealer approved by the Town.

Additionally, construction within existing Town Road right-of-ways will require a permit for construction from the Town Highway Department. It will be the responsibility *of* the owner to comply with all conditions and restrictions set forth in said permit.

1.4 Land for Public Usage

Land which the Owner has offered for cession to the Town for recreation purposes shall be cleared of all debris, construction shanties or materials belonging to the Owner. Earth disturbed by the Owner's operations shall be graded and restored to a neat and acceptable condition.

The Owner shall also clear all dead trees and situations which constitute a public hazard or nuisance as determined by the Town. The amount of clearing, grubbing and grading should be included in the Bond, Letter of Credit or other security as approved and authorized by the Town or the Chairman of the Planning Board.

1.5 Construction Modifications in Field

The Town may require construction of a type not contemplated at the time of FINAL Review provided such requirements are for a higher type of construction. This is to allow for proper construction to meet conditions not known at the time of Final Review. Such construction changes shall be shown on "as built" drawings.

2. STORM DRAINAGE SYSTEM

2.0 General

The construction of storm drainage facilities shall be controlled by these standards and all other applicable Town standards.

All corrugated metal pipe shall have rerolled ends with coupling bands. All joints shall be wrapped in filter fabric.

All catchbasin frames shall be set or adjusted to be level with road grades. All grates shall be bicycle safe.

Appropriate erosion control methods shall be utilized to avoid siltation of storm system prior to establishment of lawns.

3. SANITARY SEWERAGE SYSTEM

3.0 General

Construction of sanitary sewerage facilities shall be controlled by these standards and all other applicable Town standards.

3.1 Maintaining Existing Services

The Owner shall maintain full service in the existing sewer system continuously. No discharge of sewage to a point outside the system shall be permitted at any time.

3.2 House Service

A "Y" branch and house service extending to the edge of the right-of-way or beyond at a minimum grade of 2.0% shall be installed for each lot. A hardwood stake extending from the sewer to the ground surface shall be installed at the end of each house service before backfilling. The end of the house service shall be sealed with an approved stopper manufactured for the purpose and the stopper shall be wedged in place with stone or masonry before backfilling. The house service shall eventually be connected to the building it serves before the Town approves the building construction. The house service shall be a minimum ten feet (10') from any water service (horizontal). No house service shall be connected to any building until all testing is completed.

3.3 Tests

It is the intention of these construction standards to secure a system with a minimum amount of infiltration. To check the amount of infiltration, the Town shall require infiltration, exfiltration tests or low pressure air tests, depending upon the existing site condition.

These tests must be completed before House Services are connected to the system.

Infiltration Tests: Infiltration testing is an acceptable leakage test only when the ground water level is suitably higher than the pipe. The Owner shall furnish and maintain a "V" notch sharp crested weir in a wood frame tightly secured in the sewer system at the locations directed by the Town. The maximum allowable infiltration shall be 50 gallons per mile, per inch of diameter of sewer main, per 24 hour day at any time. The period of testing shall be a minimum of one hour.

Exfiltration Tests: Exfiltration testing is an acceptable leakage test only in dry areas or when the ground water level is suitably low. The Owner shall furnish and maintain the

necessary plugs, stoppers, water supply and measuring devices at locations required by the Town. All openings in the section of the system to be tested shall be securely stopped and the section filled with water to provide a minimum of two (2) feet of head over all sewers in the section, or two (2) feet higher than the ground water level, whichever is higher.

After filling, the system shall be allowed to stand a minimum of twelve (12) hours before conducting the tests. The maximum allowable exfiltration shall be 50 gallons per mile per inch diameter of the sewer per 24 hour day at any time. The maximum internal pressure at the lowest point may not exceed 25 feet of water.

Low Pressure Air Tests: The owner shall furnish and maintain the necessary plugs, fittings, gauges and pumping system at locations directed by the Town. The duration of the testing shall be determined by the Town Engineer from Table 4.3.1, taken from UNI-BELL recommended practice for low pressure air testing of installed sewer pipe. The prescribed pressure drop shall not exceed 0.5 psi from 3.5 psi to 3.0 psi in excess of the ground water pressure above the top of the pipe.

General: Any section of the sewer system that shows leakage in excess of the allowable limits shall be repaired by means satisfactory to the Town. When the system has been demonstrated to be within allowable limits the Owner shall remove all plugs, stoppers and weirs.

Deflection Tests: Sewers must be straight between manholes, and shall be tested for straightness by flashing a light from manhole to manhole, lamping, or by other suitable means. Sections found to be unacceptable shall be subject to further deflection testing by means of pulling an appropriately sized mandrel through the pipe. The Town Engineer may also require this type of deflection testing where construction encountered unstable trench walls or bottoms, heavy rainfall, frozen soil, high groundwater levels, deep lines, or improper compaction.

The owner shall furnish and maintain the appropriate size mandrel for the pipe size being tested, as determined from Table 3.3.2 based on seven and one half percent (7.5) percent allowable deflection. All necessary rope, fittings and labor shall also be the owner's responsibility. Any sections found to be unacceptable will be repaired or replaced to meet Town standards.

TABLE 3.3.2

SPECIFIED MANDREL SIZE FOR PIPE-DIAMETER INDICATED

PIPE DIAMETER (IN.)	MANDREL O.D. (IN.)
6	5.31
8	7.09
10	8.85
12	10.51
15	12.86
18	15.70
21	18.50
24	20.80
27	23.43

4. WATER SYSTEM

4.0 General

All components shall be of approved, unused materials: manufacturers recommended procedures shall be employed.

4.1 Water Mains

The full length of each section of pipe shall rest solidly upon the pipe bed, with adequate recesses excavated for the bells and joints. The interior of all pipes shall be thoroughly cleaned of all foreign matter before being placed in the trench, and shall be kept clean during the laying operations by means of plugs or other approved methods.

The pipe shall not be laid in *water* or when trench conditions are unsuitable for the work, except by permission of the Engineer. Water shall be kept out of the trench until the joints have been completed. When work is not in progress, open ends of the pipes shall be securely closed so that no trench water, earth or other substances will enter the pipes or fittings.

Any section of pipe found to be defective before or after laying shall be replaced with new pipe. Lines shall be installed with a minimum of five feet (5') of cover.

a. Handling: Pipe and accessories shall be handled in such a manner as to insure delivery on the work site in sound, undamaged condition. Particular care shall be

taken not to injure pipe coating. Rope or canvas slings shall be used in unloading, loading and installation of pipe which cannot be placed by hand. The use of chains or tongs shall not be permitted. All surface areas of coated pipe that are damaged shall be recoated with hot bituminous material equal to that used to factory coat the pipe.

b. Cutting: Cutting of pipe shall be done in a neat and workmanlike manner without damage to the pipe or pipe lining. Unless otherwise authorized by the Town all pipe cutting shall be done by means of an approved type of mechanical cutter. Wheel-type cutters shall be used when practicable.

c. Placing and Laying: Before being lowered into the trench, all sections of pipe shall be inspected for defects and tapped with a light hammer to detect cracks. Defective, damaged or unsound pipe shall be rejected.

   Deflections from a straight line or grade, as required by vertical curves, horizontal curves or offsets, shall not exceed that recommended by the appropriate specifications or if not specified, then by the manufacturer's recommendations. If the alignment requires deflections in excess of these limitations, the Owner shall provide special bends or a sufficient number of shorter lengths to provide angular deflections within the limn set forth.

   Before jointing, all lumps, blisters, excess coating material oil and grease that will interfere with proper jointing shall be removed from the ends of all pipes.

d. Mechanical Joints: Mechanical joints shall be made in accordance with the manufacturer's recommendations. Rubber gaskets shall be used. Torque wrenches, calibrated in accordance with the manufacturer's instructions, shall be used on the joint assembly.

e. Slip-Type Joints: Slip-type joints shall be made in accordance with the manufacturer's recommendations.

f. Anchoring: All tee connections, bends and lead ends shall be securely anchored in place by means of tie-rods and pipe clamps or concrete thrust blocks resting against undisturbed soil.

g. Testing: After the installation of the water distribution system, or sections thereof, the water lines shall be filled and all air blown off. The system or parts thereof shall then be subjected to hydrostatic test. All testing shall be performed in the presence of the Town and shall be under the Town's supervision. Hydrostatic test and leakage allowances shall conform to Section 9903 of NBFU No. 24. If any section of the distribution system

shows a leakage greater than specified, the leaks shall be located and repaired until the leakage is within the specified limns.

h. Disinfection: Mains shall be disinfected in accordance with AWWA C601, after house services have been connected, but prior to the issuance of a Certificate of Occupancy. Water containing not more than 50 parts per million of free available chlorine shall be allowed to stand in all lines and systems for at least 24 hours, after which time there shall be at least 25 parts per million residual chlorine remaining in the water. All new valves and hydrants shall be operated while the lines are filled with heavily chlorinated water. Following chlorination to the satisfaction of the Town, all disinfecting water shall be flushed from the lines until the chlorine residual does not exceed 1.0 part per million. When all lines have been flushed clean to the Town Engineer's satisfaction, the Owner or his representative shall collect samples of the water at locations directed by the Town Engineer and under his supervision. The samples shall be sent to an approved testing laboratory for bacteria analysis and two (2) copies of the test results shall be sent to the Town. The Owner shall bear all costs for such sampling and testing. Certificates of Occupancy may not be issued until chlorination results are satisfactory.

4.2 Valves

Valves shall be set with the stems vertical. After valves have been installed and adjusted they shall be tested for operation under maximum operating pressure, shall be watertight and shall operate easily.

Valve boxes shall be installed so that covers are flush with the finish ground surface. Boxes shall be set vertical and centered over the valve.

All valves shall be shown on the As-Built drawings.

A valve record card shall be completed for each valve installed. The card shall be furnished by the Town and shall be returned to the Town when completely filled out.

4.3 Hydrants

Each hydrant shall be set vertical and shall be anchored as indicated on the standard detail. Hydrants shall be set so that the distance between the finish grade line and the hose connections is between the limits indicated on the standard detail. That portion of each hydrant below finish grade shall be given a coat of hot bituminous material prior to installation. This coating shall be equal to that used for coating of cast iron fittings and water lines.

A hydrant record card shall be completed for each hydrant installed. The card shall be

furnished by the Town and shall be returned to the Town when completely filled out.

The Owner shall perform under the supervision of the Town fire flow tests in accordance with the "Guide for Determination of Required Fire Flow" published by Municipal Survey Service, Insurance Services Office.

4.4 Services

All service taps shall be made with a service clamp installed unless factory installed. The corporation stop shall be inserted as recommended by the manufacturer for the type pipe installed.

The service shall be installed in accordance with backfilling requirements of these standards and in accordance with standard details.

5. PIPELINE CONSTRUCTION

5.0 General

All labor, materials, equipment, tools and services required for the furnishing and installation of any type of pipe shall conform to the following specifications:

5.1 Pipe

All pipe shall be installed in the sizes and to the lines and grades shown or the approved subdivision drawings. The type and specifications of pipe to be furnished and installed in each location shall be as designated on the subdivision drawings. Pipe shall be new pipe and shall be rejected if found not to meet the minimum requirements set by the Town.

All pipe lines and appurtenances of whatever type or description shall be constructed in an approved manner to the complete satisfaction of the Town.

Where lift holes are provided in concrete pipe they shall be tilled with a stiff mortar mix alter the pipe is installed in the trench.

The Owner, at his own expense, at all times during the progress of the work, shall keep the trenches and excavations tree from water. Water from trenches and excavations shall be disposed of in such a manner as will neither cause injury to the public health nor to the surface of streets, nor cause any interference with the use of public rights-of- way. Water shall not be allowed to flow away through newly laid sewers.

All pipe shall be installed to the limits of the approved subdivision section and shall terminate

in a manhole, catch basin, hydrant or blowoff as appropriate. Stubs shall be installed in manholes and catch basins to provide for Mure extension of pipe lines.

5.2 Excavation General

Necessary arrangements shall be made by the Owner with all persons, firms, or corporations owning or using any poles, pipes, tracks, or conduits, etc. affected by his construction to maintain and protect such facilities during construction. In the event any existing gas pipes, water pipes, conduits, sewers, tile drains or poles are blocked or interfered with by the excavation required on his project, the Owner shall maintain them in continuous operation and restore them to the same condition as they were prior to the start of construction.

Sidewalks and pavements must be in no case blocked or obstructed by excavated material except with the approval of the Town and then only when adequate provisions have been made for a satisfactory temporary passage of pedestrians and vehicles. Adequate bridging and planked crossings must be provided and maintained across all open trenches for pedestrians and vehicles then so ordered by the Town. Barriers, lights, flares and watchmen shall be provided and maintained by the Owner at all trenches, excavations and embankments as required by the Town.

The excavating of the trench shall not advance more than 200 feet ahead of the completed masonry or pipe work except where it is necessary to drain wet ground. The width of trenches in which pipe is to be installed shall be such as to provide adequate space tor workmen to place and joint the pipe properly and shall be generally the outside pipe diameter plus three (3) feet.

The Owner shall furnish, put in place and maintain such sheeting and bracing as may be required to support properly the sides and ends of excavations, and to prevent injury to the structure built or to persons or property.

If at any time the Town so orders, the Owner shall install such additional sheeting and bracing as may be required by the New York State Department of Labor, by adverse soil conditions, or by the Town; but compliance with such orders or failure on the part of the Town to exercise its right to give such order shall in no way release the Owner from liability for damage caused by weak or insufficient sheeting nor from his responsibility to protect the work and adjacent property. Voids appearing outside the sheeting shall be immediately and compactly filled with suitable material and to the satisfaction of the Town.

All sheeting and bracing shall be in accordance with the Industrial Code Rule No. 23 of the New York State Department of Labor Board of Standards and Appeals.

Trench bottoms shall be excavated to conform to the type of bedding specified for the project.

'Where excavations are opened and, in the opinion of the Town, the materials in place are not adequate for structural stability of the completed work, the Town may order the Owner to carry the excavation to an additional depth, furnish and place concrete cradles, sand or gravel refill and/or timber and piling foundations.

The Owner is responsible to call U.F.P.O. (1-800-962-7962) forty eight (48) hours prior to digging, drilling or blasting to ascertain all available information on subsurface structures and utilities.

5.3 Rock Excavation

Excavation and trenches in rock shall be carried below the pipe bottom with of one-fourth the diameter of the pipe but in no case less than 6 inches below the pipe bottom, and shall be made by any acceptable method, including use of explosives.

Where blasting is necessary, it shall be done by licensed personnel experienced in such work. All blasts shall be well covered, and provisions made to protect pipes, conduits, sewers, structures, persons and property adjacent to the site of the work. Prior to blast, all persons in the vicinity shall be given ample warning. Blasting will not be permitted between the hours of 6:30 p.m. and 6:30 a.m., except with special permission, nor within twenty-five (25) feet of the completed work.

All handling and use of explosives shall be in accordance with Industrial Code Rules No. 23 and 30 of the New York Department of Labor, Board of Standards and Appeals and Article 16 of the New York State Labor Law.

The Owner shall secure all permits required by law for blasting operations and any additional hazard insurance required.

5.4 Lines and Grades

Gravity pipe shall be laid with a laser to assure compliance with approved lines and grades, except house laterals which may be laid to grade with a surveyor's transit, level or other appropriate surveying instrument.

5.5 Bedding

The class *of* bedding to be used shall be as specified in the final submission drawings. There shall be excavation for bells and flanges in all classes of bedding. Beddings for pipe shall conform to one or more of the following:

a. First Class Bedding

First Class Bedding is that method of laying pipe in which the pipe is carefully bedded in compacted granular materials placed on a flat trench bottom. The granular material shall be crushed stone, pea gravel or sand and maximum particle size shall be 3/4". The depth of the granular bedding below the bottom of the pipe shall be one-fourth the outside pipe diameter or six (6) inches, whichever is greater and shall extend to a point twelve (12) inches over the top of the pipe. If mechanically tamped, material may be placed in 6" layers; 3" layers if tamped by hand. All materials up to 12" over the top of the pipe shall be placed by hand.

Where crushed stone bedding is used in wet material or when the pipeline is below the groundwater table, the bedding shall be graded to daylight to a catchbasin or drainage course as directed by the Engineer.

b. Concrete Cradle Bedding

Concrete Cradle Bedding is that method of bedding pipe in which the lower part of the pipe exterior is bedded in plain or reinforced concrete of 2,500 psi or greater, having a minimum thickness under the pipe of one-fourth the nominal inside diameter and extending up the sides of the pipe for a height equal to one-fourth of the outside diameter.

The cradle shall have a width at least equal to the outside diameter of the barrel of the pipe plus 8 inches and it shall be constructed monolithically without horizontal construction joints. The remainder of the bedding to a point four (4) inches over the top of the pipe shall conform to "First Class Bedding".

c. Concrete Encasement

Concrete Encasement is that method of bedding pipe in which the entire pipe is jacketed by plain or reinforced concrete having a compressive strength of 2,500 psi or greater. The encasement width and height shall be at least equal to the outside diameter of the barrel of the pipe plus 8 inches, or as shown on the approved subdivision drawings. Normally stronger pipe should be used with concrete cradle or encasement being permitted only in unusual cases.

5.6 Pipe Laving

Pipe shall be protected during handling against impact shocks and free fall. Pipe shall be kept clean at all times.

The laying of pipe in prepared trenches shall be commenced at the lowest point with the spigot ends pointing in the direction of flow.

All pipe shall be laid with ends abutting and true to line and grade. They shall be carefully

centered, so that when laid they will form a uniform invert.

Preparatory to making pipe joints all surfaces of the portions of the pipe to be jointed or of the factory made jointing material shall be clean and dry. Lubricants, primers, adhesives, etc. shall be used as recommended by the pipe or joint manufacturer. The jointing materials or factory fabricated joints shall then be placed, fitted, joined and adjusted in such a workmanlike manner as to obtain the degree of watertightness required.

Trenches shall be kept water-free and as dry as possible during bedding, laying and jointing and for as long a period as required. As soon as possible after the joint is made, sufficient backfill material shall be placed along each side of the pipe to offset conditions that might tend to move the pipe off line and grade.

All ends of pipe runs shall be capped with standard stoppers or with a fitting provided with an approved joint. If stoppers are used they must be wedged in place with boulders or masonry blocks. Large lines may be bricked off at the ends or otherwise sealed in a manner approved by the Engineer.

5.7 Backfilling

All backfilling to the centerline of the newly laid pipe shall be as specified under "Bedding." To a point 18" over the top of the pipe there shall be no stones larger than two (2) inches.

No frozen material shall be used for backfill.

When backfilling in open-cut across or within the right-of-way limits of any street, road, highway or railroad, the remainder of the backfill shall be select granular material. Backfill shall be placed along the sides of the pipe in six (6) inch lifts and compacted by hand or in twelve (12) inches over the top of the pipe, the entire trench shall be compacted by mechanical means. Placing of backfill shall continue in twelve (12) inch lifts each lift being compacted by mechanical means until subgrade elevation is reached.

When backfilling in unpaved areas outside the right-of-way, the excavated material may be used to complete the backfilling, provided all deleterious contents if any, are removed as directed by the Town. The backfill shall be rounded off over the trench not higher than eight (8) inches. Materials shall be compacted in layers not more than two (2) feet thick by approved mechanical means.

No pipe shall be covered before permission is given by the Town. The Town may require any pipe covered without adequate notification be uncovered for inspection at the Owner's expense.

Under no circumstances shall water be permitted to rise in trenches before they are backfilled. Backfilling shall be completed to a point two (2) feet above the top of all pipe laid each day.

Operations shall be scheduled so that the trench is completely backfilled to within two hundred (200) feet of the end of the completed, installed sewer at the end of each day.

Whenever timber sheeting is driven to a depth below the elevation of the top of the pipe, that portion of the sheeting below the elevation of the top of the pipe shall not be disturbed or removed. Whenever timber sheeting is driven for the protection of trench walls in water-bearing soil, no portion of such sheeting below a level four (4) feet over the top of the pipe shall be removed.

5.8 Tunnels

Methods of excavation support and backfill in tunnels made beneath existing structures, railroads, pavements and sidewalks for the installation of pipe or conduits, shall be subjected to approval of the Town before work is begun.

5.9 Jacking and Boring

Methods of jacking or boring to install pipe shall be approved by the Town before such work is started.

5.10 Manholes and Catch Basins

All manholes and catch basins shall be precast concrete construction (Fort Miller or equal). Sanitary manholes shall utilize press wedge fittings. All connections shall be made per manufacturer's specifications.

All manhole joints between sections shall utilize butyl rope joint sealer or approved equal. Precast concrete rings shall be laid with full mortar joints.

Mortar shall consist of one part Portland cement and two parts clean torpedo sand with 10% hydrated lime added.

Pipe placed through manhole or catch basin sidewalls, and stubs installed for future extensions shall extend through the walls a sufficient distance to allow connection on the outside. Such pipes shall be struck smooth on the inside in line with the Inside wall of the manhole. The manhole or catchbasin masonry shall be carefully constructed around all pipes, so as to prevent leakage along the outer surfaces.

Frame castings shall be set in full mortar beds on top of masonry. Frames shall be set to the same grade as the roadway.

The top four (4) to twelve (12) inches of the manhole or catchbasins directly under the casting shall be constructed of precast concrete grade rings to provide for adjustment to grade and future construction. Field cutting of precast manhole or catchbasin sections shall not be allowed for grade adjustment.

5.11 Connections

Connections of new lines to existing lines when encountered in construction and not shown on the subdivision drawings shall be made where ordered by the Town. Such connections shall be made within a manhole or catch basin in the case of sewers or storm drains except for house sewer and drain connections. In all such cases, the existing line shall be located prior to laying any new pipe to insure proper alignment and straight continuation of existing lines.

Junctions for future sewer connections indicated on the final subdivision drawings shall be sealed as specified in paragraph 6.6 Pipe Laying.

6. PLAIN AND REINFORCED CONCRETE

6.0 General

Concrete used in any type of construction shall meet the strength and durability requirements of these standards as determined by testing procedures specified herein. Materials used shall meet the requirements of these standards and shall be approved by the Board for the intended use.

6.1 Materials

a. Cement: Cement shall be one of the types approved by the Board and the type selected shall be the proper one for its intended use.

b. Aggregate: Aggregates shall be approved by the Planning Board. Aggregates failing to meet these requirements but producing concrete of the required quality as shown by special tests or actual service may be used with the permission of the Board.

The maximum size of the aggregate shall be one-fifth of the narrowest dimension between sides of the forms within which the concrete is to be cast, and three-fourths of the minimum clear spacing between reinforcing bars, or between forms and reinforcing bars. For unreinforced slabs, the maximum size of aggregate shall be one-third the slab thickness.

c. Mixing Water: Water used in mixing concrete shall be clean and free from injurious amounts of oils, acid, alkalies, organic materials, salts or other substances that may be

deleterious to concrete or steel.

6.2 Quality of Concrete

a. Class of Concrete: Concrete installed in various structures or units shall be one of the three classes defined in the following paragraphs. The class to be installed shall be as specified in the Subdivision Final Approval.

CLASS OF CONCRETE

Class I	4000 psi @ 28 days
Class II	3000 psi @ 28 days
Class III	2500 psi @ 28 days

b. Water Cement Ratio: All concrete shall be proportioned on the basis of water-cement ratio which is defined as the ratio of the total quantity of water in the mixture including the surface water carried by the aggregate, to the quantity of cement. The ratio is expressed in U.S. gallons, 8 1 /3 pounds to the gallon, per 94 pound sack of cement.

Concrete that is subject to freezing temperatures while wet shall have a water-cement ratio not exceeding 6 gallons per bag and shall contain entrained air.

c. Concrete Proportions and Consistency: The proportions of the concrete shall produce a mixture that will work readily, with the placement method used, into the comers and angles of the forms and around reinforcement. Neither segregation of materials in the mixture nor the collection of excess free water on the surface shall be permitted.

The slump of concrete shall be the minimum that is practicable. When vibrators are used in consolidate the concrete, the slump shall not exceed four (4) inches, otherwise the slump shall not exceed six (6) inches.

The methods of measuring the concrete materials shall be such that the proportions can be accurately controlled and easily checked. Measurement of materials for ready-mixed concrete shall conform to Specifications for Ready-Mixed Concrete (ASTM C94).

6.3 Tests on Concrete

a. Sampling: As the work progresses, concrete shall be sampled in accordance with ASTM method of sampling fresh concrete (ASTM C172).

b. Slump Test: Slump tests shall be made according to ASTM Method of Test for Slump of Portland Cement Concrete (ASTM C143).

c. Compression Test: Compression test specimens shall be made and cured according to ASTM Method of Making and Curing Concrete Compression and Flexture Test Specimens in the field (ASTM C31). Not less than three specimens shall be made for each test at each age nor less than one test for each 150 cu. yd. of concrete of each class. At least one test per day shall be made of each class of concrete used that day.

Specimens shall be taken by the Owner or his representative under the direction of the Town and the tests made by a laboratory approved by the Town. The cost of transportation to the laboratory and of testing the concrete cylinders shall be borne by the Owner. The Owner shall furnish 2 copies of all test results to the Town.

Additional specimens cured under job conditions may be required when, in the opinion of the Town, there is a possibility of the surrounding air temperature falling below 40 degrees F or rising above 400 degrees F.

The standard age of test specimens shall be 28 days, but 7 day specimens may be used, provided that the relationship between the 7 and 28 day strengths of the concrete is established by test for the materials and proportions used.

If after testing, the average strength of test cylinders is found to be more than 10 percent below the required strength the Town may elect either to permit such concrete to remain in place and require the Owner to forfeit from his performance bond an amount agreeable to both the Owner and the Town or require the Owner at his own expense, to remove the concrete area deficient in the specified strength and replace it with concrete of satisfactory quality.

6.4 Mixing and Placing Concrete

a. Preparation of Equipment and Place of Deposit: Before placement, all equipment for mixing and transporting the concrete shall be cleaned and all debris and ice shall be removed from the places to be occupied by the concrete. Forms and sub-base shall be thoroughly wetted (except in freezing weather) or oiled. The reinforcement shall be thoroughly cleaned of ice, dirt, rust, scale or other coatings.

Standing water shall be removed from place of deposit before concrete is placed unless otherwise permitted by the Town. All laitance and other unsound materials shall be removed from hardened concrete before additional concrete is added.

b. Mixing of Concrete: For job-mixed concrete, the mixer shall be rotated at a speed recommended by the manufacturer. Each batch of one (1) cu. yd. or less shall be mixed for at least one (1) minute after all materials are in the mixer. The mixing time shall be increased 15

seconds for each additional cubic yard or part thereof. The entire batch shall be discharged before the mixer is recharged.

Ready-mixed concrete shall be mixed and delivered in accordance with Specifications form Ready-Mixed Concrete (ASTM C94).

c. Conveying of Concrete: Concrete shall be conveyed from the mixer to the place of final deposit by methods that will prevent separation or loss of materials.

Equipment for chuting, pumping and pneumatically conveying concrete shall be of such size and design as to achieve a practically continuous flow of concrete at the delivery and without separation of materials.

d. Placing of Concrete: Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. The placing of concrete shall be carried on at such rate that concrete is at all times plastic and flows readily into the spaces between the bars. No concrete that has partially hardened or been contaminated by foreign material shall be deposited on the work, nor shall retempered concrete be used.

When concreting is once started, it shall be carried on as a continuous operation until concreting of the panel or section is completed. When construction joints are necessary, they shall be made in accordance with accepted practice or as approved by the Board.

All concrete shall be thoroughly consolidated by suitable means during placement. It shall be thoroughly worked around reinforcement and embedded fixtures and into the corners of the forms. Tools used shall be such that they will not cause segregation of aggregates.

e. Curing of Concrete: Provision shall be made for maintaining concrete in a moist condition for a period of at least five (5) days after placement. For high-early-strength concretes, however, moist curing shall be provided for at least the first two (2) days, when concrete and air temperatures are above 50 deg. F., longer periods of curing shall be required when temperatures are below 50 deg. F.

f. Cold Weather Concreting: Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. No frozen materials or materials containing snow or ice shall be used in the concrete.

All reinforcement, forms, fillers and ground with which the concrete is to come in contact shall be fee from snow and ice. Whenever the temperature of the surrounding air is below 40 degrees F., all concrete placed in the forms shall have a temperature of 45 degrees F., or higher after placement.

Adequate means shall be provided for maintaining this temperature for four (4) days. When high-early-strength concrete is used, a temperature of 45 deg. F., shall be maintained for three (3) days. In either case, any additional time necessary to ensure proper curing of the concrete shall be provided as directed by the Town.

The housing, covering, or other protections used in connection with curing shall remain in place and intact at least 24 hours after the artificial heating is discontinued. No dependence shall be placed on salt or other chemicals for the prevention of freezing.

g. Hot Weather Concreting: In hot weather, suitable precautions shall be taken to avoid drying of the concrete prior to finishing operations. Use of windbreaks, sunshades, fog sprays, or other devices shall be provided as directed by the Town.

Concrete deposited in hot weather shall not have a placing temperature that will cause difficulty from loss of slump, flash set or cold joints. Concrete temperatures shall be less than 90 degrees F.

h. Forms: Forms shall conform to shapes, lines and dimensions of the members as called for in the Subdivision Final Submission and shall be sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shape.

Forms shall be removed in such a manner as to ensure the complete safety of the structure. Where the structure is supported on shores, the removable floor forms, beams and girder sides and column and similar vertical forms may be removed after 24 hours provided the concrete is sufficiently hard. In no case shall the supporting forms or shoring be removed until members have acquired sufficient strength to support their weight and imposed loads safely.

i. Placing and Splicing of Reinforcements: The reinforcement shall be protected by the thickness of the concrete indicated in the Subdivision Final Approval. Where not otherwise shown, the thickness of concrete over the reinforcement shall be as follows:

(i) Where concrete is deposited against the ground without the use of forms - not less than three (3) inches.

(ii) Where concrete is exposed to the weather or to the ground but placed in forms - not less than 2 inches for bars larger than No. 5 and 1 1/2 inches for No. 5 bars or smaller.

(iii) In slabs and walls not exposed to the ground or to the weather- not less than 3/4 inches.

(iv) In beams, girders and columns not exposed to the ground or to the weather - not less than 1 1/2 inches.

(v) In all cases - at least equal to the diameter of bars or 1 1/2 times the side dimension of a square bar.

7. CABLE AND CONDUIT

7.0 General

Underground cable for telephone and/or electric service shall be installed in conformance with requirements listed herein and other sound installation practices.

7.1 Sequence of Construction

Installation of cable and conduit shall be subsequent to R.O.W. grading but prior to any paving operations. Grading shall be within 6" of proposed final grade.

7.2 Conduit

Rigid conduit shall be placed under all roadways prior to the installation of the cable. Conduit of appropriate size shall conform to the "National Electric Code". Conduit installation to conform to excavation and backfilling items under Section 206, N.Y.S.D.O.T. specifications with the sand backfill to be at least 6" below and 6" above the conduit.

7.3 Identification

To protect from inadvertent cuts into any cable any buried cable shall have placed approximately one foot above such cable a continuous ribbon of brightly colored, nonreactive plastic.

7.4 Documentation

The developer shall indicate all cable and conduit locations on the "as built" drawings when submitted to the Town.

SECTION III– APPROVED MATERIALS FOR SUBDIVISION CONSTRUCTION

1. GENERAL CONSTRUCTION

1.1 Plain and Reinforced Concrete

Portland Cement	N.Y.S. D.O.T. 701-01 TYPE
Air-Entraining Admixtures	N.Y.S. D.O.T. 711-08
Aggregates	N.Y.S. D.O.T. 703 TYPE
Water	N.Y.S. D.O.T. 712-01
Bar Reinforcement for Cement Concrete	N.Y.S. D.O.T. 709-01
Welded Steel Wire Fabric for Concrete Reinforcement	N.Y.S. D.O.T. 709-02 (ASTM A185)

1.2 Guard Railing

3 Cable Railing	N.Y.S. D.O.T. 710-22
Posts	(ASTM A36) (ASTM A123)
Completed Assembly with End Anchors	Drawing 67-14 (A&B)

1.3 Topsoil and Seeding

Topsoil	N.Y.S. D.O.T. 713-01
Seed	N.Y.S. D.O.T. 713-04

2. PAVING CONSTRUCTION

Subbase Course	N.Y.S. D.O.T. Sect. 304 TYPE 4
Bituminous Concrete Binder Course	N.Y.S. D.O.T. Sect. 403 TYPE 3 (Binder Course)
Bituminous Concrete Wearing Course	N.Y.S. D.O.T. Sect. 403
Concrete	TYPE 7 Sec. 1.1 Plain & Reinforced Concrete
Perforated PVC SDR 35 Underdrain	ASTM D3034
Corrugated Polyethylene Tubing Underdrain	ASTM F405
Perforated Corrugated Metal Pipe Underdrain with Bituminous Coating	N.Y.S. D.O.T. 707-07 Coating to Federal Spec. WW-P-405 Type A Coating

3. STORM DRAINAGE SYSTEM

3.1 Pipe

Corrugated Steel Pipe and Coupling Bands	N.Y.S. D.O.T. 707-02
Reinforced Concrete Pipe Class III, IV and V	N.Y.S. D.O.T. 706-02

Corrugated Aluminum Alloy Pipe and Coupling Bands	AASHO M196
PVC SDR 35	ASTM D3034

3.2 Pipe Joints

Flexible, Watertight Rubber Gasket Joints for Concrete Pipe	ASTM C443
Clay Pipe Joints	ASTM C425
Asbestos-Cement Pipe Joints	Manufacturer's Specifications subject to Planning Board Approval

3.3 Catch Basins and Manholes

Precast Concrete Manhole Section	ASTM C478
Mortar	ASTM C270
Frames, Grates and Covers	N.Y.S. Sect. 715

4. SANITARY SEWERAGE SYSTEM

4.1 Pipe

PVC SDR 35	ASTM D3034
Ductile Iron Pipe	AWWA C151

4.2 Manholes

Precast Concrete Manhole Sections	ASTM C478
Mortar, Type M with Air Entrainment	ASTM C270
Frames and Covers	N.Y.S. Sect. 715

4.3 Services

Cast Iron Soil Pipe and Fittings	ASA No. A40.1
PVC SDR 35	ASTM D3034

5. WATER SYSTEM

5.1 Pipe

Ductile Iron Pipe	AWWA C151
Reinforced Concrete Pressure Pipe	AWWA C300, AWWA C301, AWWA C302
PVC Polyvinyl Chlorine SDR 26	ASTM D2241

5.2 Fittings

Cast or Ductile Iron	AWWA C110

5.3 Joints

Cast Iron Mechanical Joint	AWWA C111
Cast Iron Push-On Joint	AWWA C111
Flexible, Watertight Rubber Gasket Joint for Concrete Pipe	ASTM C443

5.4 Gate Valves

Cast Iron Body, Bronze Mounted Double Disc, Hud End Non-Rising Stem, Square Operating Nut Opening Left, Rensselaer 13A	AWWA C500

5.5 Hydrants

Five Inch Size with Two - 2 1/2" Hose Nozzles and One - 4 1/2" Steamer Nozzle; National Standard Threads; Six Inch Hub Connection and Five Foot Bury; Pentagon Operating Nut Opening Left - Rensselaer L-90B	AWWA C502

5.6 Valve Boxes

Cast Iron Screw Type; "W" or "Water" Cast in the top; the Standard Catalog Product of a Reputable Manufacturer

5.7 House Services

Corporation Stop	As Approved by Board
Curb Stop (Open Left)	As Approved by Board
Curb Box	As Approved by Board
Copper Tubing Type K	ASTM B88

5.8 House Meters

Rockwell 5/8" x 3/4", Sealed Register, Magnetic Drive Recording in Gallons

SECTION IV. ROAD CONSTRUCTION SPECIFICATION

A. General Provisions

Purpose: These specifications are adopted for the construction of highways. roads, streets or other traffic ways in the Town of Ancram to accommodate expected travel conveniently and safely, and to provide access for firefighting, emergency medical care, snow removal and other road maintenance equipment and tor all community services and activities.

1. Dedication: No highway, road, street or other traffic way will be considered tor formal dedication and acceptance by the Town Board, or for maintenance with town funds -

a. Unless the construction is in accordance with these specifications as certified by the Town Engineer or designate, and

b. Until 12 months have elapsed since completion thereof as certified by the Town Engineer or designate, and

c. Unless the highway, road, street or other traffic way is in a condition acceptable to the Town Highway Superintendent.

2. Grades: Grades of all streets shall conform in general to the terrain, and shall not be less than one-half (1/2) nor more than six percent (6%) for major or collector streets, or ten percent (10%) for minor streets in residential zones, but in no case more than two percent (2%) within 50 feet of any intersection.

3. Prior to any construction, a sediment and erosion control plan must be developed and approved by the Town Highway Superintendent and/or Town Engineer.

B. Procedure

1. No new highway, road, or street shall be constructed until design plans for the highways, roads or streets, including necessary drainage systems, have been completed and approved by the Town Engineer or designate.

a. If any bridge work is required, specifications must be obtained from the Columbia County Department of Public Works Commissioner.

b. Intersection plan approval and all necessary permits must be obtained from the proper agency of the governing body maintaining the road intersected.

c. Prior to starting excavation, an inspection and approval of the proposed roads and right-of-ways must be made by the Town Highway Superintendent and/or Town Engineer.

d. The Planning Board shall be provided with a minimum of ten (10) copies of a certified map made by a licensed land surveyor showing the proposed right-of-ways and any necessary drainage _easements together with existing easements/ restrictions.

e. Prior to the start of construction, the proposed twenty foot (20') travelled way, with two foot (2') shoulders on each side shall be laid out with temporary wooden grade stakes. These stakes shall be placed every fifty feet (50'). All proposed lot entrances shall be marked with stakes. Detailed specifications showing limits of all cuts and fills shall be shown on the subdivision plans and marked on the grade stakes. The aforementioned stakes shall be reviewed and approved by the Town Highway Superintendent and1or Town Engineer prior to the beginning of construction.

f. A set of cross sections of the proposed road section and its relationship to the existing ground shall be provided for the Town Highway Superintendent and/or Town Engineer. Cross sections shall be developed at a seventy five foot (75’) interval and at stations where abrupt changes in topography occur. Any areas requiring more than a fifty foot (50') right-of-way shall be noted on the subdivision plans and cross sections.

C. Right-of-Way

The rights-of-way for all local highways, roads and streets shall be a minimum of fifty feet (50') in width at all points. The Town Highway Superintendent and/or Town Engineer may require additional width or drainage way requirements.

D. Pavement Widths

1. The paved section of any local highway, road or street shall not less than eighteen feet in width at all points, unless otherwise directed by the Town Engineer or designate.

2. All highways, roads, and streets shall be centered in the right- of-way, unless otherwise specified by the Board.

E. Utilities in Streets

The Planning Board shall, wherever possible, require that underground utilities be placed in the street right-of-way between the paved roadway and street line to simplify location and repair of lines when they require attention. The subdivider shall install underground service connections to the property line of each lot within the subdivision for such required utilities before the street is paved.

All underground utilities which are to be in the right-of-way, including water, sewer, drain, gas, electricity, telephone, cable television, including junction boxes, riser, manholes, catch basins, and all pole boxes, shall be completely installed prior to the construction of the sub-base. When underground utilities must cross the road, they shall be run through conduit for electric and plastic for all other utilities, so removal and repairs may be made without disturbing the road. All excavations shall be suitably firmed and tamped with vibratory tampers. All utility lines shall be buried a minimum of thirty inches (30") to the top of the pipes and cables and eighteen inches (18") to the top of the boxes except for culverts designed to carry storm water. Manhole and catch basin frames shall be a minimum of six inches (6") deep and shall be designed to carry H- 20 loading.

F. Utility Easements

Where topography is such as to make impractical the inclusion of utilities within the street right-of-way, perpetual, unobstructed easements at least twenty feet (20') in width shall be otherwise provided with satisfactory access to the street. Wherever possible, easements shall be continuous from block to block and present as few irregularities as possible. Such easements shall be cleared and graded as required.

G. Intersections

See Diagram No. 2 "Intersection Detail".

H. Clearing of Trees and Brush

All trees shall be cleared at a minimum distance of eight feet (8') on each side of the proposed roadway (total thirty six feet (36') for a twenty foot (20') travel way) and all brush throughout the required right-of- way. On curves, an additional amount shall be cleared wherever necessary to maintain a minimum visibility of one hundred fifty feet (150') at the paving edge along the inside of the curve. The Town Highway Superintendent and/or Town Engineer or designate may require more stringent or may waive completely the requirement of clearing certain trees within the right-of-way. All debris must be disposed of in a legally, environmentally safe manner at the owner’s or developer's expense.

I. Rough Grading

1. All topsoil shall be stripped from the bed of the proposed paved section, shoulder section and under the width of all fills. All stumps, loose stones, debris and brush shall be removed from beneath the travelled way, eighteen feet (18') each side of centerline, and the shoulder to a depth of two feet (2') below the finished grade.

2. The subgrade shall be prepared by excavating and/or filling, removing unstable materials

and replacing them with a foundation course, as required by the Town Highway Superintendent, and thoroughly compacted. Material to be used in fill sections shall consist of run-of-bank material free from all organic material, as approved by the Town Highway Superintendent.

3. Prior to sub-base placement, a geotextile fabric (Exxon GTF 200 or equal) shall, as required by the Town Engineer, be placed in accordance with Section 207-Geotextile-of the New York State Department of Transportation Standard Specification Manual (current edition).

4. Embankments should be no steeper than four horizontal to one vertical (4:1). Steeper embankments require approval of the Town Engineer.

5. Excavated slopes should be no steeper than three horizontal to one vertical (3:1). Every effort shall be made to blend in cuts and fills with the adjacent properties (even to the extent of cutting and filling out of right-of-ways prior to sale of lots).

6. Maximum centerline grades shall not exceed ten percent (10%) and driveway entrances shall not exceed a two percent (2%) grade in the first fifty feet (50').

7. All changes in grade shall be connected by vertical curves of such length and radius as meet with the approval of the Town Highway Superintendent and/or Town Engineer so that clear visibility shall be provided for a safe distance.

J. Sub-base

1. DESCRIPTION: This item shall consist of a sub-base course composed of NYS DOT Type 3 gravel or crushed stone meeting NYS DOT Table 703-5 size 3 designation as specified by the Town Highway Superintendent and j or Town Engineer, laid on a property prepared subgrade to a finished thickness of not less than twelve inches (12") followed by a six inch (6") finished course composed of fine gravel meeting NYS DOT Type 4 specifications and shall conform to the lines, grades and typical cross section as shown on the approved drawings. The road shall be allowed to settle for at least twelve (12) months or the contractor may elect to compact the gravel in six inch (6") lifts with a ten (1O) ton vibrating roller. If the contractor elects to waive the twelve (12) month settling period and compact the gravel, the contractor will assume full responsibility for any additional underdrainage needed that would have been detected during the twelve (12) month settling period.

a. Total thickness of the rolled, compacted and finished sub-base course shall not be less than eighteen inches (18").

b. All culverts within the road area must be completed and proper drainage provided before any sub-base aggregate is placed upon the subgrade.

c. Equipment materials may be substituted upon approval of Town Engineer and/or Town Highway Superintendent.

2. MATERIALS: All materials shall be secured from approved, legal sources. The gravel or broken stone shall consist of clean, durable, uniform quality and grading and shall be free from thin or elongated pieces, soft or disintegrated stone, soil or other objectionable features.

3. CONSTRUCTION METHODS

a. Preparation of the subgrade - All boulders, organic material, soft clay, spongy material and other objectionable material shall be removed and replaced with approved material. The subgrade shall then be properly shaped, rolled and uniformly compacted to the approved cross section and grade.

b. Placing and rolling aggregates -All sub-base material shall be deposited and spread by means of spreader boxes or approved mechanical equipment or from moving vehicle equipped to distribute the gravel or crushed stone in a uniform layer. Each layer shall not be less than six inches (6") in thickness after compaction and shall be constructed as follows:

1) Immediately following the spreading of the gravel or coarse aggregate, all material placed shall be compacted to the full width by rolling with a minimum ten (10) ton vibrating roller. At all places not accessible to the roller, the sub-base course material shall be tamped thoroughly with mechanical tampers or with hand tampers.

2) If any irregularities or depressions appear during the twelve (12) month settling period or while rolling, they should be remedied by loosening the material at these places and by removing or adding gravel or coarse aggregate, as may be required, after which the area disturbed shall be rolled until compacted satisfactorily to a smooth and uniform surface.

3) If subgrade material shall become churned into or mixed with the sub-base course, such mixture of subgrade material and gravel or crushed stone shall be removed and replaced with gravel or clean aggregate of the proper size and compacted as specified above.

c. Seasonal limits: No sub-base course material shall be deposited or shaped when the subgrade is frozen, thawing, or during unfavorable weather conditions.

d. Protection of sub-base course: After completion of sub-base course, as specified above, no traffic shall be allowed over its surface other than that absolutely necessary to haul material for the surface course.

K. Pavement

1. All paving materials shall conform to the latest edition of New York State Department of Transportation Standard Specifications in quality, application, and construction.

2. In preparation for paving, the twenty foot (20') minimum travelway shall be free of any holes, dips, or bumps, etc.

3. The two course pavement shall consist of two and one-half inches (2 1/2") compacted NYS DOT item 403.13 asphalt-concrete type 3 binder, and one and one-half inches (1 1 /2") compacted NYS DOT item 403.17 asphalt-concrete type 6F course (high friction).

4. At the Board's discretion, the asphalt pavement may be waived for one of the following:

a. Double course bituminous surface treatment in accordance with NYS DOT Standard Specifications section 410 - Bituminous Surface Treatment The asphalt emulsion shall be grades RS-2, NYS DOT 702-3101. First course aggregate shall be size 1, NYS DOT table 703·4 Second course aggregate shall be size 1A, NYS DOT table 703-4. All aggregates shall contain no more than five percent (5%) chert. Application rates for the bituminous material shall be equal to 0.4 gallons per square yard. Application rates for the aggregates shall be equal to 25 pounds per square yard. After application of the aggregate, the surface shall be rolled with a minimum of 3 passes of a pneumatic tire roller. Excess material shall be swept from the surface with a broom as directed by the Town Highway Superintendent and/or Town Engineer.

All application equipment, methods, and installation shall conform to NYS DOT section 410, unless otherwise specified.

b. Gravel surface consisting of six inches (6") compacted layer material meeting NYS DOT type 2 specification or equivalent as approved by Town Engineer and/or Highway Superintendent. The type 2 material will be used in place of the six inches (6") of type 4 material specified under section J1, Sub-base. The type 2 material shall be placed on grade, in a manner to minimize segregation, using equipment and procedures as approved by the Town Highway Superintendent and/or Town Engineer. Uncontrolled spreading from piles dumped on the grade resulting in segregation will not be permitted. The course shall not be placed in excess of 500 linear feet without being compacted. Compaction shall be achieved using a ten (1O) ton vibrating roller.

L. Shoulders shall be compacted gravel or crushed stone, not less than two feet (2') in width or as may be required by the Town Engineer. Shoulders shall be a slope of five-eighths inch (5/8") per one foot (1').

M. Drainage

1. A complete system of surface drainage shall be installed to dispose of stormwater.

When discharge of stormwater shall be onto, upon or through private property, proper easements shall be granted and shall convey the perpetual right to discharge stormwater runoff from the highway and from the surrounding areas onto and over the affected premises by means of pipes, culverts or ditches, or a combination thereof, together with the right to enter such premises for the purpose of making such installations and doing such maintenance work as deemed necessary to adequately drain the highway and the surrounding area. Where a drainage easement discharges onto or terminates at the property of a third party, the consent for an easement, properly executed, to channel or discharge stormwater from such third party must be obtained by the owner of the road or street. All drainage easements shall be a minimum of twenty feet (20') in width. The center of all ditches with a (0.5) percent to (4.99) percent grade shall have a nine foot (9') setback from the edge of the shoulder of the road. The center of all ditches with a five percent (5%) to ten percent (10%) grade shall have a nine and one-half foot (9 1/2') setback from the edge of the shoulder of the road to allow for a three foot (3') "V" on each side of the center of the ditch. The "V" is to be filled with a minimum of six inches (6") of gabion stone to prevent erosion. On a ten percent (10%) grade, road ditches shall have a water run-off a minimum of every one hundred feet (100') to insure proper drainage from the ditches. The use of check dams shall be considered for placement in road ditches and stream channels where diversion of water is restricted. See Diagrams No. 1, 1A and 1B - Typical Road Sections - for ditch details.

2. Watercourses

Where a watercourse separates a proposed street from abutting property, provision shall be made for access to all lots by means of culverts or other structures of design approved by the Town Engineer.

Where a subdivision is traversed by a watercourse, drainage way, channel or stream, there shall be provided a stormwater easement or drainage right-of-way as required by the Town Engineer, and in no case less than twenty feet (20') in width.

3. All culverts shall be designed to handle a storm of ten (10) years frequency, unless otherwise required by the board. Culvert pipes shall be fully coated corrugated steel pipe (CMP), reinforced concrete pipe (RCP), High Density Polyethylene Pipe (HOPE), or Corrugated Aluminum Pipe (CAP) not less than fifteen inches (15") diameter. Pipes shall be installed in a straight line and at a uniform rate of grade between points to match grade and direction of drainage swales. Any changes in grade or direction may require the placement of a catch basin which will be determined by the Town Engineer. All culvert head walls shall be laid-up stone

and concrete or gabion baskets filled with gabion stone. No culvert head walls shall extend above the shoulder of the road. Metal flared culvert end sections may be installed in lieu of headwalls at the discretion of the Town Engineer. A cross section view of each culvert crossing under all proposed subdivision roads shall be included in the final plans. (See Diagram No. 4 - Typical Culvert Pipe).

4. If underdrainage is needed, a complete set of plans shall be submitted to the Town Engineer tor approval. Underdrainage shall be a minimum of two and one half feet (2 1/2') below subgrade surface and shall be at least six inches (6") diameter ADS perforated pipe or equivalent with proper manufactured couplings. Underdrainage shall have a minimum of six inches (6') of three- quarter inch (3/4') drainage stone completely surrounding the pipe, under laid with Filter Fabric (Exxon GTF 125D or equal) and lapped a minimum of twelve inches (12') on top of the underdrain stone. If an open ditch is required due to excessive run-off, one and one half inch (1 1 /2") quarry stone shall be installed from the level of the 3/4 inch stone and filled to the grade of the ditch. Underdrainage pipe shall have a minimum pitch of six inches (6") in a hundred foot (100') span.

5. All culverts shall be a minimum of six inches (6") below subgrade surface and shall have a minimum of six inches (6") of bank run gravel completely surrounding the pipe.

N. Delineators

1. Delineators shall be placed in accordance with the minimum standards of section 646 - Delineators- of the current edition of the New York Department of Transportation Standard Specifications and Subchapter G - part 291 - Delineation Device - of the New York State Manual of Uniform Traffic Control Devices. Additional delineators shall be placed by order of the Town Highway Superintendent.

2. All culverts, driveways, and curves shall be marked with plowable markers. Markers shall be a maximum of twenty-five feet (25') apart on curves and straightaways shall have markers every one hundred twenty-five feet (125') where possible to mark the shoulder of the road, Marker type shall be approved by the Town Highway Superintendent.

0. Finish Grade and Seeding

All slopes shall be finished graded from the edge of the shoulder to the toe or top of the slope with a minimum of four inches (4") of topsoil and shall be sown with hearty grass seed and mulched in sufficient quantity to produce turf that will stabilize the slope unless otherwise directed by the Town Highway Superintendent.

Streets shall be graded and improved with pavements, curbs, and gutters, sidewalks, storm

drainage facilities, water mains, sewers, street lights and signs, street trees and fire hydrants, except - where waivers may be requested, and the Planning Board may waive subject to appropriate conditions, such improvements as it considers may be omitted without jeopardy to the public health, safety, and general welfare. Pedestrian easements shall be improved as required by the Town Engineer. Such grading and improvements shall be approved as to design and specifications by the Town Engineer.

P. Monuments

Sufficiently reinforced concrete or granite markers, at least four inches (4") square on top and four and one half feet (4 1/2') long must be set located at all changes in direction of right-of-ways, including points of tangent of curves and points of tangent at corners, and at the intersection of lot lines with right-of-ways. Monuments shall also be placed every one hundred feet (100') on tangents and every fifty feet (50') on curves.

Q. Inspection

1. Agents of the Town shall have access to all parts of the work while under construction at all times. No portion of the work which will not be exposed upon final completion shall be covered until reasonable opportunity for inspection after written notice has been given. Approval under these specifications shall be made by the Town Engineer.

2. It shall be required at the owner's or developer's expense that a New York State licensed professional engineer certify to the Town Board and the Town Engineer that the roads have been constructed true to line and grade and that the drainage system has been constructed in accordance with the road construction plans. A reproducible copy and four (4) prints of the plans for any drainage system shall be submitted to the Town Engineer upon completion of the road and utility work unless the supplying of same is specifically waived in writing by the Town Engineer.

R. Completion

Approved road sign names shall be installed when the road has been completed. Mailboxes shall be installed in accordance with the U.S. Postal regulations. The mailbox pull-off shall be topped with the same material used on the travelled way of the road and the ditch line shall be set back four feet (4') from the edge of the pull-off or the water may be piped under the pull-off with approved culverts. Any additional right-of-way necessary for the construction of mailbox clusters shall be provided by the developer and shown on the subdivision plans (See Diagram No. 5 - Mailbox Cluster Detail).

S. Curve Radii

In general, street lines within a block, deflecting from each other at any one point by more than ten degrees (10°), shall be connected with a curve, the radius of which for the centerline of street shall not be less than four hundred feet (400') on major streets, two hundred feet (200') on collector streets, and one hundred feet (100') on minor streets.

T. Service Streets of Loading Space in Commercial Development

Paved rear service streets of not less than twenty feet (20') in width, or in lieu thereof, adequate off-street loading space, suitably surfaced, shall be provided in connection with lots designed for commercial use.

U. Free Flow of Vehicular Traffic Abutting Commercial Developments

In front of areas used and zoned for commercial use, or where a change of zoning to a zone which permits commercial use if contemplated, the street width shall be increased by such amount on each side as may be deemed necessary by the Planning Board to assure the free flow of through traffic without interference by parked or parking vehicles, and to provide adequate and safe parking space for such commercial or business district.

V. Fire Safety and Street Lighting

1. Installation of fire hydrants shall be in conformity with all requirements of standard thread and nut as specified by the New York Fire Insurance Rating Organization and the Division of Fire Safety of the State of New York and conform to town equipment. Stand pipes are necessary and must be designed according to the Town Engineer and/or Fire Department.

2. Lighting facilities shall be in conformance with the lighting system of the Town. Such lighting standards and fixtures shall be installed after approval by the appropriate power company and the authorized Town electrical inspector.

W. Street Names

1. All street names shown on a Preliminary Plat or Subdivision Plat shall be approved by the Planning Board. In general, streets shall have names and not numbers or letters.

2. Proposed street names shall be substantially different so as not to be confused in sound or spelling with present names except that streets that join or are in alignment with streets of an abutting or neighboring property shall bear the same name. Generally, no street should change direction by more than 90 degrees without a change in street name.

X. Access

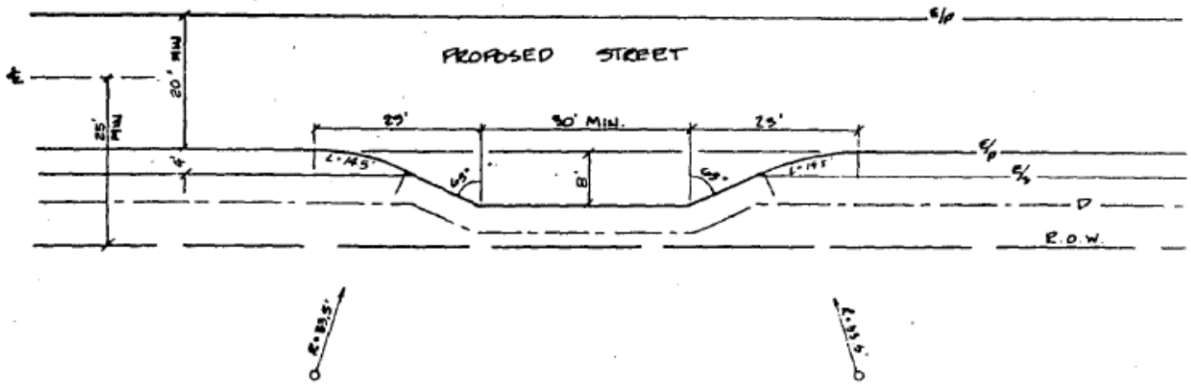
Access from private streets shall be deemed acceptable only if such streets are designed and improved in accordance with these regulations. Driveway grades between the street and the setback line shall not exceed twelve percent (12%). The grade for the first fifty feet (50') from the edge of the road being entered shall not exceed two percent (2%). On intersecting roads and driveways the shoulder grade of the thru road should continue to the back of the ditch providing a low point in the vertical curve to prevent water, snow melt or eroded gravel from entering the road surface.

Y. Performance Bond

Performance Bonds may be required at the discretion of the Planning Board.

DIAGRAM NO. 5
MAILBOX CLUSTER
TOWN OF ANCRAM

1" = 20'



NOTES

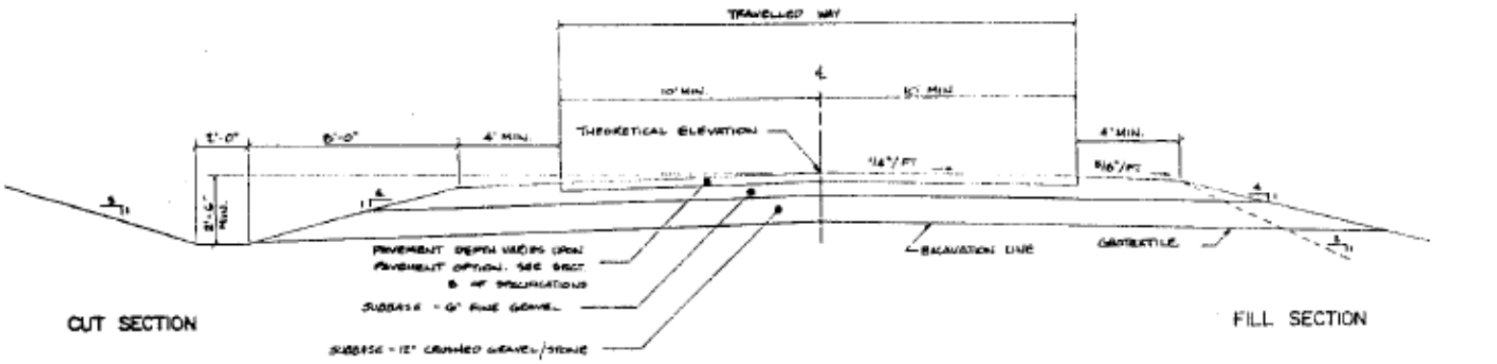
1. SURFACE OF MAILBOX CLUSTER SHALL BE OF THE SAME PAVEMENT TYPE AS THE PROPOSED STREET.
2. DRAINAGE OF MAILBOX CLUSTER SHALL BE AS ORDERED BY THE TOWN HIGHWAY SUPERINTENDENT.

DIAGRAM NO. 1

TYPICAL ROAD SECTION

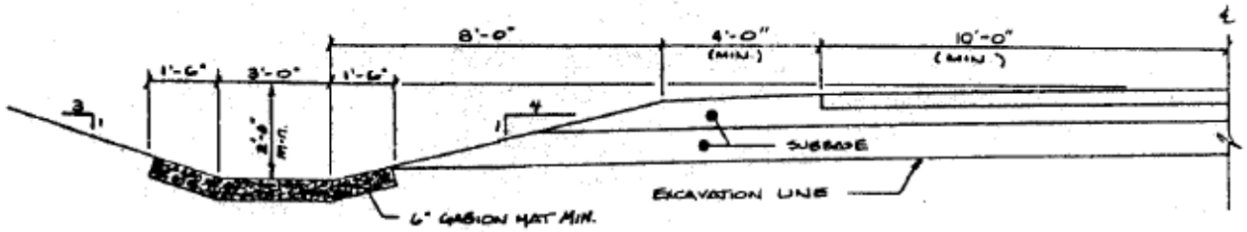
TOWN OF ANCRAM

1/4" = 1'-0"



NOTE: FOR FILLS GREATER THAN 10', USE A 1 ON 2 SLOPE WITH GUIDERAIL.

DIAGRAM NO. 1A
LINED DITCH DETAIL
(5 - 10% DITCH GRADE)
TOWN OF ANCRAM
1/4" = 1'-0"



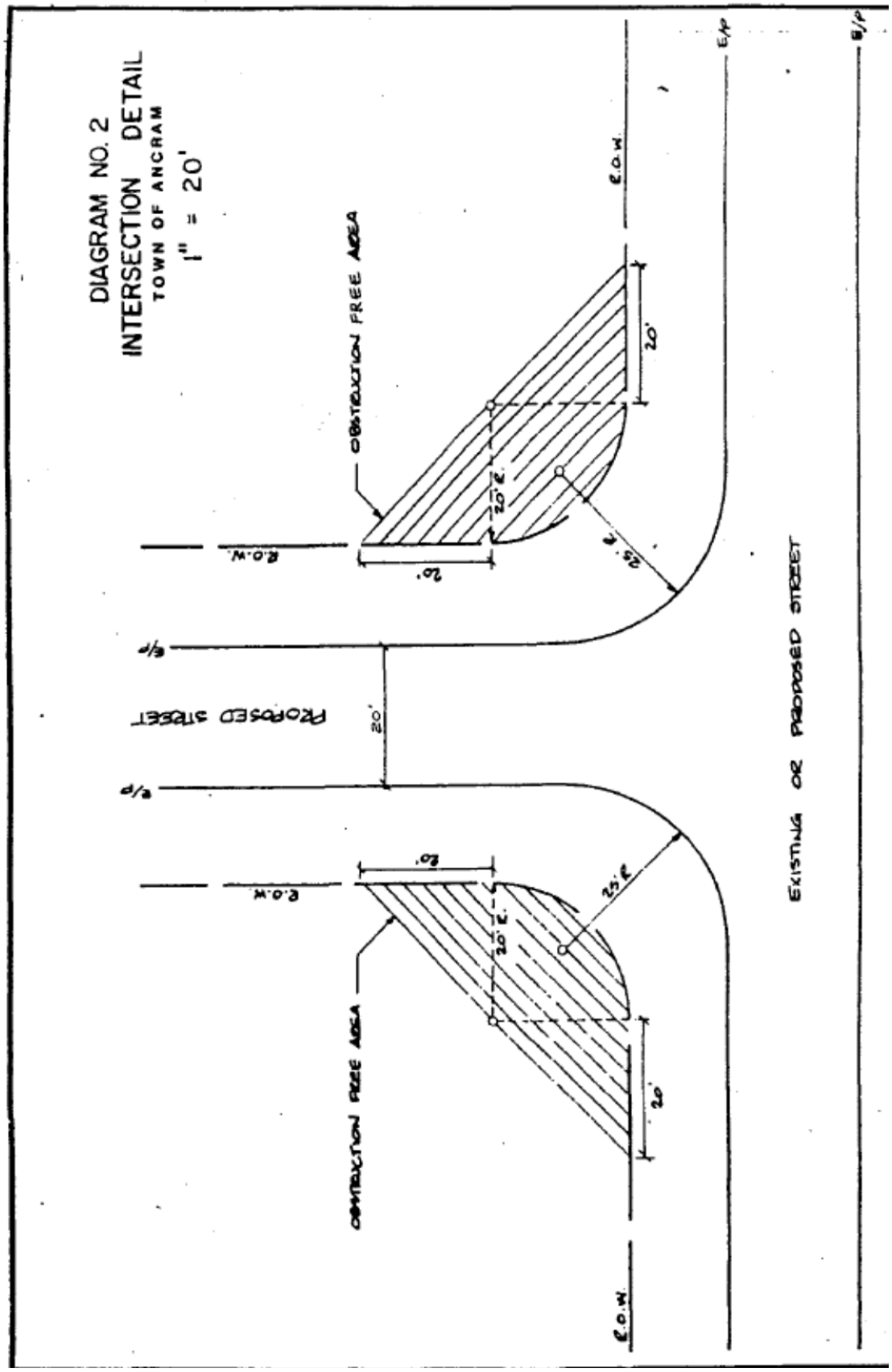
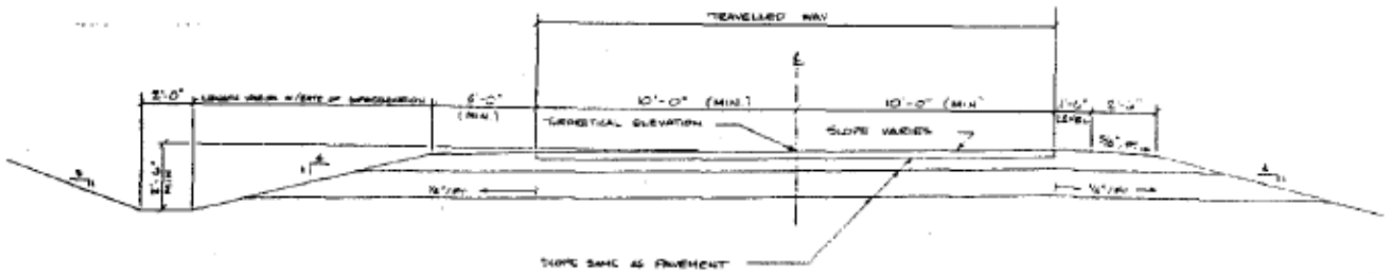


DIAGRAM NO. 2
INTERSECTION DETAIL
TOWN OF ANCRAM
1" = 20'
OBSTRUCTION FREE AREA
E.O.W.
E/P
20'
20' E.
25' E.
PROPOSED STREET
EXISTING OR PROPOSED STREET

DIAGRAM NO. IB
SUPERELEVATED SECTION
TOWN OF ANCRAM



NOTE: ALL MATERIALS & SLOPES ARE AS SHOWN ON THE TYPICAL ROAD SECTION UNLESS OTHERWISE NOTED.

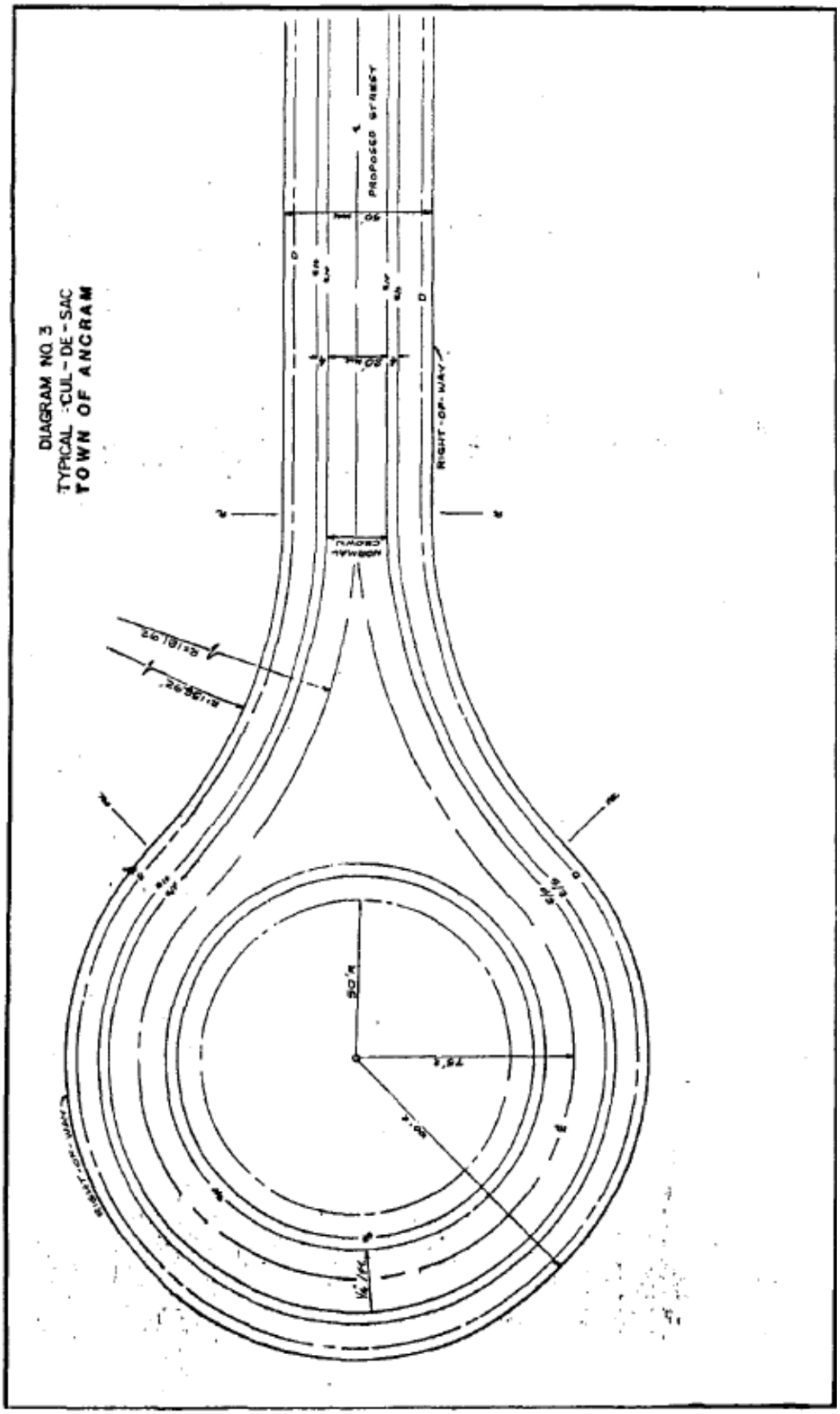
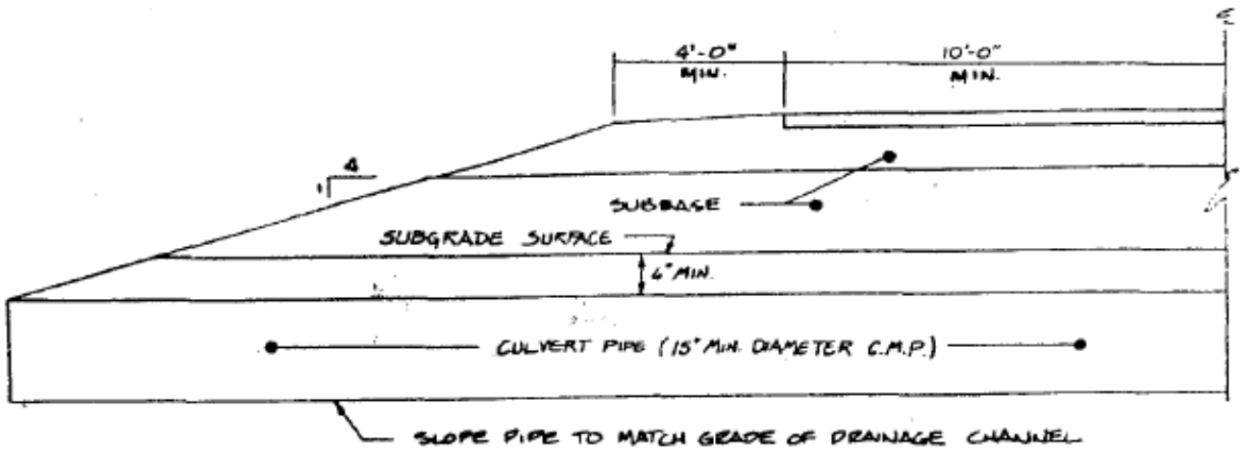


DIAGRAM NO. 3
TYPICAL CUL-DE-SAC
TOWN OF ANCRAM
PROPOSED STREET
RIGHT-OF-WAY
NORMAL CROWN
50'R
75'R
90'R

DIAGRAM NO. 4
TYPICAL CULVERT PIPE SECTION
TOWN OF ANCRAM

N.T.S.



NOTE: METHOD OF TREATMENT OF END SECTIONS SHALL BE AS ORDERED BY THE TOWN HIGHWAY SUPERINTENDENT.