



SITE DESIGN AND DEVELOPMENT CRITERIA

As adopted by the Town Board on

July 9, 2019

Resolution #55 of 2019

Original Date: July 9, 2019

Amended Dates:

Prepared by



THE CULVER ROAD ARMORY
145 CULVER ROAD, SUITE 160, ROCHESTER, NEW YORK 14620
TELEPHONE: (585) 381-9250 FACSIMILE: (585) 381-1008

Amendment Record

[illegible]

**Town of Geneva
Site Design & Development Criteria Manual**

Table of Contents

Section 1

General Information

- 1.01 Purpose
- 1.02 Responsibility
- 1.03 Building Permits
- 1.04 Dedication of Improvements
- 1.05 Utilities
- 1.06 Road Construction
- 1.07 Haul Roads
- 1.08 Driveway Culverts
- 1.09 Financial Guarantees
- 1.10 Methods of Release of Funds
- 1.11 Applicability of Regulations
- 1.12 Record Information (As built drawings)
- 1.13 Review of Plans

Section 2

Design Criteria

- 2.01 Sewage Disposal Systems
- 2.02 Storm Drainage Systems
- 2.03 Water Mains
- 2.04 Grading
- 2.05 Driveway Design Requirement
- 2.06 Driveway Culverts
- 2.07 Roads

- 2.08 General Road Design Considerations
- 2.09 Road Design
- 2.10 Concrete Gutters
- 2.11 Sidewalks
- 2.12 Monuments
- 2.13 Reserved Land for Future Use

Section 3 Material Specifications

- 3.01 General Information
- 3.02 Sanitary Sewers
- 3.03 Storm Drains
- 3.04 Manholes and Manhole Ladders
- 3.05 Frames and Covers
- 3.06 Water Mains
- 3.07 Concrete Gutters and Sidewalks
- 3.08 Road Materials
- 3.09 Monuments
- 3.10 Street/Site Lights
- 3.11 Equivalents

Section 4 Installation

- 4.01 General Information
- 4.02 Grading
- 4.03 Trench Excavation

- 4.04 Pipe Installation
- 4.05 Manhole Construction
- 4.06 Catch Basins
- 4.07 Sewer Laterals and Water Services
- 4.08 Hydrants and Valves
- 4.09 Backfilling and Finishing
- 4.10 Compaction
- 4.11 Testing of Underground Utilities
- 4.12 Surface Improvements
- 4.13 Roads/Streets
- 4.14 Concrete Gutters and Sidewalks
- 4.15 Monuments
- 4.16 Final Grading
- 4.17 Landscaping Requirements
- 4.18 Final Cleaning
- 4.19 Signs
- 4.20 Crosswalk Requirements

Section 5 **Requirements for Dedication and Project Acceptance**

- 5.01 General
- 5.02 Monuments
- 5.03 Grading
- 5.04 Landscaping

- 5.05 Lighting
- 5.06 Street Signs
- 5.07 Road and Easement Dedications
- 5.08 Dedication Process
- 5.09 As-Build Requirements
- 5.10 Letter of Credit Approval Procedure
- 5.11 Letter of Credit Release Procedure
- 5.12 Maintenance Guarantee
- 5.13 Final Release of Funds

Appendices See Blue Sheets for List of Appendices

SITE DESIGN AND DEVELOPMENT CRITERIA

TOWN OF GENEVA, ONTARIO COUNTY, NEW YORK

SECTION 1 - General Information

1.01 Purpose

The purpose of these Specifications is to provide minimum criteria for the design and construction of improvements within the Municipality perpetual operation and maintenance. The information contained in this document is to be used in conjunction with the subdivision and site plan regulations provided in the Town Code.

The criteria established is intended to provide minimum standards, which may be upgraded or varied to serve the best interests of the municipality. The information in this booklet is provided to aid in the submission of material in a uniform manner and attempt to expedite the various review and approval procedures.

These criteria shall govern in all areas of private, public, industrial and commercial development and/or areas that will involve the connections to existing municipal systems.

It should be noted that the Town of Geneva currently has inter-municipal agreements with the regarding sanitary sewer and districts, which are to be complied with as well.

1.02 Responsibility

It is the responsibility of the Developer to insure preparation of Plans sufficient to meet the standards and requirements herein incorporated. Said Plans shall be prepared by a professional, licensed in the State of New York, who shall have experience in design of land development.

The municipality and/or its representatives shall review the proposed Plans as to their compliance with the standards and conditions encountered while meeting the best interests of the Municipality.

It is the responsibility of the Contractor, acting for the Developer, to construct the facilities in conformance with the approved Plans, Town standards and MS4 requirements.

Construction observation shall be provided by the Municipality or its designated representative to review construction as it is being performed.

The final results of the project remain the prime responsibility of the Developer and until the development is satisfactorily approved by the Municipality and/or its representatives, said development shall not be accepted for dedication.

The Design Engineer shall provide a certificate of completed construction to the Department of Health upon completion of construction (i.e. completed works for water).

1.03 Building Permits

As per section §165-73 of the Geneva Town code, site plan approval is required prior to the issuance of building permits for the following:

1. Any new or additional construction for which the proposed improvements will be commercial or industrial in nature
2. Improvements which would require a special use permit
3. Construction of manure storage facilities
4. Construction of manufactured home parks within the R-2 Residence District
5. Properties located within the B General Business District, or I-1 Industrial District

1.04 Dedication of Improvements

All utilities (water, sanitary, storm sewer systems and stormwater management facilities), sidewalks and landscaping in the right-of-way shall be completed, tested and dedicated to the Town prior to any hookups being made. Utilities subject to the above dedication requirement shall not include laterals and service lines.

All public streets shall be dedicated to the Town prior to issuance of any Certificate of Occupancy for a structure located on that street.

1.05 Utilities

If sewer, water, gas, electrical, street lighting or other public utility facilities are to be located within street right-of-way, their location and installation shall be coordinated so that they may be added to, repaired or enlarged at minimum cost.

Lighting districts may be required by the Town. Where required by the Planning Board, the developer shall first be responsible for the installation of street lights in accordance with the Board's condition of final approval. Once installed and operational, the Town Board shall thus be requested to take action to create the necessary lighting district.

Where proposed development abuts adjacent lands (identified in the comprehensive plan as being) suitable for future development, then the utilities shall be installed within the site seeking approval up to the property line and an easement granted to the Town for access and maintenance purposes.

1.06 Road Construction

Due to the general soil conditions within the Town and normal construction sequences for development, it is deemed to be in the best interests of the Town that the following procedures be followed:

- a) Binder material shall not be placed prior to the completion and approval of all underground utilities and inspection of the base by the Highway Superintendent.
- b) The weather and seasonal limitations as specified under the Standard Specifications of New York State D.O.T. shall apply for placing of bituminous mixtures.

Restrictions (a) and (b) imply completion of all underground systems well in advance of the Developer's schedule for paving.

- c) No Certificates of Occupancy will be approved unless a proper road surface as herein specified has been constructed.
- d) Should construction sequences not allow the required road construction to be completed in the current construction season, the Developer shall provide a temporary road surface as herein specified over which proper ingress and egress throughout the development can be obtained by the residents, school buses, emergency vehicles and highway plows.

The temporary road surface shall only be accepted should the Developer and/or Builder desire Certificates of Occupancy for any residences within the development.

- e) Upon the completion of the binder pavement and all other items related to the completion of a project, the Town may elect to accept for dedication the completed facilities if (1) a two year maintenance agreement (letter of credit or certified check) is submitted to and accepted by the Town (2) the Developer presents a sum of money to complete the top pavement course by Town in the future. The amount of money to be transferred to the Town will be established by the Highway Superintendent. This sum shall include the cost of the Town's labor and material to cause the proper installation of the top course.

It is the intent of this option by the Town to allow the Developer to offer the project for dedication before the final pavement is installed. In the opinion of the Town and when the Developer has substantially completed the related construction in the developed area, the Town will install the final pavement top. In this manner the

area will receive a new pavement top that has not been marred or patched as a result of normal construction activity.

Before the expiration of the maintenance agreement and before the final top is applied, the Town and the developer will hold the final site review to assess any damages or repairs that may be necessary by the developer under the maintenance agreement.

1.07 Haul Roads

Haul roads are temporary roads built to facilitate the movement of people, materials and equipment along the route of a job off of existing public roads. Haul roads may be required by the Planning Board, when applicable upon review with the Town Highway Superintendent, Town Code Enforcement Officer, Town Board and/or Town Engineer. All vehicles 10 tons or more are required to use the haul roads. Performance bonds may also be considered as an option in lieu of construction of a haul road for necessary repair and maintenance of existing public roads.

1.08 Driveway Culverts

New driveway culvert installation shall be the responsibility of the landowner. The Town Highway Superintendent shall approve the proposed location, size and material of such culverts. See Section 2.05 and associated Appendices for additional design information regarding driveways.

The Town reserves the right to remove and/or install driveway or roadway culverts along existing Town roads to properly transmit surface drainage as determined by the Highway Superintendent.

1.09 Financial Guarantees

The following guarantees will be required: (see also Section 136-26 of the Town Subdivision Regulations regarding these and additional forms of surety required by the Town.)

A) Letter of Credit

An irrevocable letter of credit shall be submitted by the developer to insure the installation of improvements in an amount determined by the Developer's Engineer and approved by the Town Board.

The amount shall include but not be limited to the following items (see Appendix G-2.0 Letter of Credit Release Form):

- 1) Total estimated construction cost of all utilities, laterals, water services, roads, gutters, earthwork, sidewalks, stormwater management facilities, etc.
- 2) Minimum 10% contingency factor
- 3) Engineering and inspection charges
- 4) Street signs and surveyor's monuments
- 5) Record Maps/ GIS Information

B) Maintenance Guarantee

An irrevocable Letter of Credit, bond, cash, or a certified check shall be provided guaranteeing the total construction value of the project against faulty workmanship or materials for a period of two (2) years after acceptance by the Town. Individual portions of the project, i.e., sanitary system, water system, can be guaranteed after their individual acceptances by the Town. The financial guarantee for the pavement, gutters, street lights and/or sidewalks will not be accepted until the entire project is ready for dedication (see Section 5.08 and 5.09 for procedural requirements).

1.10 Methods of Release of Funds

A) Surety Release Procedure

The procedure required for the release of funds is referenced in Section 5.08 of this manual. Please refer to Appendix G-2.0 for the approved Letter of Credit Release Form.

B) Release of Retainage

Retainage release shall be considered only after a two-year maintenance bond has been accepted by the Town Board and after the systems have been tested, approved and dedicated to the Town (see Section 5.09 Final Release of Funds of this manual for additional procedural requirements).

C) Release of Maintenance Guarantee

Release of Maintenance Guarantee shall be authorized in writing by the Town Supervisor upon final inspection of the project site and signing off by the Town Engineer or designee of the Planning Board. This inspection shall be completed at least one month before the expiration of the Maintenance Guarantee (see Section 5.08 Maintenance Guarantee and Section 5.09 Final Release of Funds of this manual for additional procedural requirements).

1.11 Applicability of Regulations

The regulations contained in Sections 2, 3, 4 and 5 of these Specifications, for the Design and Construction of land development, shall **apply to all improvements** within the Town of Geneva.

1.12 Record Information

The Town reserves the option to complete the record drawings themselves and draw from the letter of credit, bond, or other surety the appropriate monies to complete them.

Record Information shall be provided in accordance with the New York State Department of Transportation (NYSDOT) Land Surveying Standards and Procedures Manual, latest revision. Standards procedures, Control Network Densification and Extensions Surveys are performed to Federal Geodetic Control Subcommittee Standards and Specifications approved by NYSDOT and the National Geodetic Survey.

The Base Mapping Digital Terrain Models and Geometry shall conform to the NYSDOT CADD Software Standards and the NYSDOT CADD Standards and Procedure Manual (see Section 5.05 for additional Record Information requirements).

1.13 Review of Plans

Final site plan approvals with conditions shall expire six months from the date of the decision granting conditional approval unless all conditions therein are satisfied. Approved final site plans also shall expire six months from the date of approval unless a site plan permit is issued.

Unless the authorized work is commenced within six months of the date of issuance of a site plan permit, the site plan permit shall become invalid. Site plan permits shall expire 12 months after the date of issuance. Invalid or expired permits may be renewed upon application to the Code Enforcement Officer in accordance with Section 165-84 of the Town Code.

SECTION 2 - Design Criteria

2.01 Sewage Disposal Systems

A. Individual On-Site Wastewater Treatment Systems

Individual On-Site Wastewater Treatment Systems must conform to the minimum requirements established by the New York State Department of Health per Appendix 75-A of Part 75 Chapter 11 of Title 10 effective 12/1/90 or the latest revisions thereof and/or the Department of Environmental Conservation Design Standards for Wastewater Treatment Works (2014, or latest revision), Recommended Standards for Wastewater Facilities (Ten State Standards) and Geneva Sewers Law, Chapter 118 and the Wastewater Treatment Facilities, Individual, Chapter 159 and as noted herein:

1. Provisions may be required to make the individual house plumbing for connection to future sanitary sewer system. (See detail Appendix S-2.0).
2. Maximum number of lots to be developed with individual on-site wastewater treatment systems shall be 49 within one subdivision "Realty Subdivision".
3. Leach lines shall not cross over or under water, gas or storm laterals, nor be located underneath the driveway area.
4. Minimum total leach line lengths shall equal two hundred feet (200'), or as required by other standards or regulations as defined above.
5. Must be designed by a Licensed Professional Engineer.

B. Alternate Systems

Alternate systems may be submitted for review by the New York State Department of Health with the following additional restrictions by the Town of Geneva:

1. Any fill or built-up system shall have a taper section ending a minimum of 100 feet from any property line.
2. Fill limits shall include a future expansion area.
3. Evapo-transpiration areas are not acceptable for new construction.
4. Fill systems require professional certification of percolation tests in the in-situ fill and placed fill after it has been in place for at least six months and over at least one winter season.

C. Public Sanitary Sewers (see also Appendices S-1.0 thru S-11.0)

A minimum 25-foot sanitary sewer easement shall be provided to the Town and may be greater where conditions necessitate additional width (i.e. sewers deeper than 12 feet) as determined by the Town. Additionally, no structures shall be within 5-feet of the easement.

Minimum requirements shall be as established by the New York State Department of Health and/or the Department of Environmental Conservation, the Town of Geneva Sewers Law(s) except as noted herein:

1. Gravity Sewers

- a. Sewer mains shall be a minimum of 8-inch diameter except in those areas where the sewer shall be of the diameter outlined in the Town of Geneva Sewer Master Plan.
- b. Manhole spacing, maximum of 350 L.F.
- c. The sewer shall be designed at such a depth to provide basement drainage. If site conditions are such that basement drainage cannot be provided to all units, a specific note to that effect shall be placed on the plan.
- d. Water mains, sewer mains and sewer laterals shall not be allowed in a common trench. There shall be at least a ten-foot (10') horizontal separation between the water service and this sewer lateral all the way to the basement wall with a minimum eighteen-inch (18") vertical separation.
- e. All necessary mains and laterals required to connect to the public sewage system as shown on the final approved plan shall be installed by the Developer.
- f. Elevations - Where other utilities parallel or cross the sanitary system, vertical clearance between the systems shall be provided to permit the satisfactory installation of all services.
- g. Laterals for each individual lot shall be:
 - i) Minimum of 4 inches in diameter.
 - ii) Minimum slope of 1/8"/L.F. (1%).
 - iii) Cleanouts shall be provided at a maximum distance of 100 feet and one shall be located on the right-of-way or easement line.
- h. Sanitary Manholes – for sewer 8"- 12", minimum 4'-0" inside diameter; over 12", minimum 5'-0" inside diameter; three or more pipes in a manhole requires a 5'-0" inside diameter. Larger pipes may require special design.

- i. Connections to existing manholes shall utilize core boring with no impact tools and rubber boots with stainless steel snap locks or screw-wedge or sand collars epoxied in place.

2. Pressure Sewers

- a. Pressure sewer systems shall be laid out in a configuration that is hydraulically efficient.
- b. Access shall be provided at the upstream end of each forcemain branch.
- c. All appurtenances and fittings shall be compatible with the piping system designed and shall be full bore with smooth interior surfaces.
- d. Building service connections shall have a minimum diameter of 1-1/4 inches and shall tap into the forcemain with a corporation stop. A check valve shall be provided near the service pump.
- e. The required pipe size shall be determined on the basis of these principal criteria:
 - i) Velocities adequate to assure scouring should be achieved
 - ii) Size should be determined on the basis of the required flow rate
 - iii) Head loss should not exceed pumping pressure capabilities
- f. A velocity of two to five feet (2' – 5') per second must be achieved at least once and preferably several times per day based on design flows.
- g. Design shall be for peak sewage flow rate and negligible infiltration
- h. Four-inch (4") diameter pipe shall be the smallest used for raw sewage forcemains. Smaller pipe may be considered if grinder pumps or similar equipment are installed. These instances will be reviewed on an individual basis.
- i. Automatic air-relief valves shall be provided at high points and major changes in slope in the forcemain to prevent air locking.
- j. Forcemains shall enter a gravity sewer at the bottom of a manhole in line with the flow. If this is not possible, the forcemain shall not enter the receiving manhole more than two feet (2') above the flow line.
- k. Forcemains in systems that operate on a seasonal basis shall be provided with draining capability.
- l. Normal operating pressure shall be in the range of 40-60 psi and shall not exceed 60 psi for any appreciable amount of time.

- m. Cleanouts shall be placed at a maximum spacing of 400 feet, at major changes in direction and where one collector main joins another main. These cleanouts shall include an isolating valve and capped Y-branch fitting located on either side of the isolating valve and pointed upstream and downstream for access during maintenance procedures.

D. Sewage Lift Stations (See Appendix S-9.0 thru S-11.0)

1. Design

- a. Certain geographic areas or topographic constraints may require the use of a sewage lift station to transmit proposed effluent to the appropriate gravity collector sewer. Once the Town of Geneva Sewer Department deems the use of a sewage lift station is appropriate and meets the intent of the sanitary sewer master plan, the Town and developer shall agree on the most advantageous location for said lift station. In general, sewage lift stations shall be located and sized so as to provide the maximum benefit to not only the new development but also adjacent unsewered areas and provide for ease of access and maintenance.
- b. Once the location of the sewage lift station has been determined, the developer's engineer shall prepare an Engineering Report that identifies the following design parameters:
 - 1. Anticipated flow rates (initial and full build out): Average Day, Maximum Day, Day Peak Hour
 - 2. Number of parcels served
 - 3. Total static head
 - 4. Total dynamic head (TDH)
 - 5. Operating set points
 - i) Pump Off
 - ii) Lead Pump On
 - iii) Lag Pump On
 - 6. High Level Alarm
 - 7. High point in forcemain
 - 8. Elevation at forcemain discharge
 - 9. Flow capacity of forcemain from high point to end under gravity flow conditions
 - 10. Wet well sizing calculations
 - 11. Net positive suction head required

12. Net positive suction head available
 13. System curve
 14. Pump performance point
 15. Anticipated storage time based on average and peak flows including corresponding liquid level elevations related to the lowest floor
 16. Anticipated cycle times per hour (initial and full build out)
 17. Map of design service area and any other lands that are tributary to the pump station
 18. Demonstrate the ability of the pump station to be upgraded for future expansion
 19. Need for odor control
 20. Power requirements
 21. Velocity in forcemain at pump design point, 2.0 fps (minimum)
 22. Retention time in forcemain based on pump cycle time and design point.
- c. This hydraulic data shall incorporate the following minimum standards:
1. The pump station shall be sized to accommodate gravity sewer service for the fully developed contributing drainage basin, based on current zoning.
 2. Pump station invert elevations shall comply with the "Town of Geneva Sanitary Sewer Collection System Master Plan".
 3. The pump station capacity shall incorporate the following parameters:
 - a. Cycle times to be between one (1) start per hour minimum and ten (10) starts per hour maximum.
 - b. Wet well shall be sized to hold a minimum of two (2) hours of average design flow and one (1) hour of peak design flow from "high water alarm" to lowest inflow pipe invert elevation.
 4. Compliance with the current policies and directives of the New York State Department of Environmental Conservation, New York State Health Department, and applicable sections of the "Recommended Standards for Wastewater Facilities," latest revision.
 5. Compliance with the standard details contained herein.

- d. Once the specific hydraulic data has been determined, the developer's engineer shall submit to the Superintendent of Sewers a report, sealed by a professional engineer, which recommends a specific pumping system based on pump performance curves and substantial conformance to the preceding "Pump Station and Equipment" specifications.
- e. The Superintendent and Town Engineer will review and approve the report. Approval of the report shall in no way relieve the design engineer of responsibility or liability for the project.
- f. The report shall be accompanied by a utility plan and profiles which relate all pump station appurtenances to the proposed development as a whole including any offsite force main locations and all easements.

2. General

- a. It is not the intent of these specifications to provide standardization of pumping systems. The specifications contained herein are deemed, by the Geneva Sanitary Sewer Department and Geneva Town Board, most suitable to meet the anticipated service requirements. Proposed equipment that may be considered as an equivalent to these specifications will be evaluated on the basis of substantial compliance to these specifications. The Town of Geneva reserves the right to accept or reject products, systems and/or manufacturers based on substantial compliance to these specifications.
- b. The pump station supplier shall furnish one (1) factory pre-assembled, above ground, automatic sewage lift station with integral electrical control panel as specified herein. The pump station shall be equipped with two (2) factory pre-mounted, self-priming, horizontal shaft, non-clog, centrifugal, V-belt driven sewage pumps.
- c. The pump station enclosure shall be manufactured of reinforced fiberglass designed to allow access to the pump station components for service.
- d. Valves and all internal piping shall be factory pre-mounted inside the station enclosure.
- e. The electrical control panel shall be factory pre-mounted in the pump station enclosure inclusive of conduit and common terminal strip for field connection of power supply.
- f. The electrical control panel shall be equipped with a sanitary pressure sensor liquid level sensing and control system utilizing an electronic pressure switch.

- g. The pump station enclosure shall be equipped with factory installed heater, dehumidifier, sump pump, fresh air blower, and lighting.
- h. The electric distribution equipment shall be located above grade and shall include a transfer switch, fused disconnect and an emergency generator.

3. Pump Station Enclosure

- a. The station enclosure shall be made of molded reinforced orthophthalic polyester resins with 30% fiberglass and 70% resin.
- b. The enclosure shall slide in either direction with locks and latches, which permit routine maintenance without exposing equipment to inclement weather. For major maintenance, the enclosure shall be removable.
- c. The enclosure shall have provisions for and be supplied with a ventilation blower capable of exchanging the air in the enclosure once every two minutes.
- d. The enclosure base shall be constructed of pre-cast reinforced concrete bonded inside a fiberglass form. The base shall have internal drainage provisions.
- e. The pump station shall be provided with a suitably sized electric heater with cord, thermostat, and grounding plug. Ungrounded heaters shall not be acceptable.
- f. The pump station shall be insulated.
- g. Pump station shall be supplied with a thermostat, which shall monitor interior station temperature. The control shall incorporate a control relay and an un-powered dry contact wired to terminal blocks for field connection to a remote alarm device in the event that the temperature within the enclosure falls below a preset point between 35 – 100 degrees F.
- h. The pump station enclosure shall be equipped with the following environmental systems:
 - 1. Fluorescent light fixtures each having (2) 20-watt tube.
 - 2. Dehumidifier with % relative humidity and temperature settings.
 - 3. Fresh air blower with automatic and timer modes.
- i. Where determined that odor control is needed, the station enclosure shall be sized to also house the odor control system.

4. Pumps

- a. Pumping system will be equipped with two (2) identical factory mounted non-clog pumps of a horizontal self-priming type,

specifically designed for handling raw, unscreened, domestic sewage.

- b. The pump shafts shall be sealed against leakage by a double-floating, self-aligning mechanical seal. The seal cavity shall have an oil level sight gauge.
- c. All openings and passageways in the pump, including the priming re-circulation port shall be capable of passing the same size spherical solid as the pump impeller and any trash or stringy material, which can pass through the average residential collection system. Pump volute casing shall be gray iron Class 30.
- d. Pumps must be equipped with a removable cover plate, allowing complete access to pump material to permit the clearance of stoppages and to provide simple access for service and repairs without disturbing suction or discharge piping or the drive end of the pump.
- e. Pump shall also be fitted with a replaceable wear plate. Adjustment of the impeller face clearance (distance between impeller and wear plate) shall be accomplished by external means. Clearances shall be maintained by external shimless cover plate adjustment, utilizing collar and adjusting screw design for incremental adjustment of clearances by hand.
- f. Pump shaft shall be covered and protected with a removable sleeve.
- g. The pump shall incorporate a suction check valve, which can be removed or installed through a removable cover plate opening without disturbing the suction piping.
- h. Pump shaft shall be high strength carbon steel, ASE #1045 minimum, accurately machined and of sufficient size to transmit full drive output. It shall be protected from the pump mechanical seal by a renewable shaft sleeve in the stuffing box area. Shaft shall be sealed by a synthetic rubber O-ring between the sleeve and the impeller hub and a suitable gasket between the impeller hub and the adjoining shaft shoulder.

5. Motor

- a. The pump motors shall be standard horizontal NEMA T frame, open drip-proof, induction type, with normal starting torque and low starting current characteristics suitable for the available power. Motors shall be cast iron frame with copper windings. Designs requiring the use of motors other than standard horizontal NEMA T frame motors will not be acceptable.

- b. For owner flexibility and interchangeability, pumps shall be v-belt driven. Each drive assembly shall have a minimum of two belts and a safety factor of 1.5 or greater.

6. Unit Base

- a. The unit base shall comprise a base plate, perimeter flange, and reinforcements. Base plate shall be fabricated of steel not less than 1/4" thick, and shall incorporate openings for access to all internal cavities to permit complete grouting of unit base after installation. Perimeter flange and reinforcements shall be designed to prevent flexing or warping under operating conditions. Base plate and/or flange shall be drilled for hardware used to secure unit base on concrete pad as shown on the contract drawings. Unit base shall contain provisions for lifting the complete pump unit during shipping and installation.

7. Valves and Piping

- a. Each pump shall be equipped with a full flow type check valve, capable of passing a 3" spherical solid, with flanged ends and be fitted with an external lever and spring. Valves shall have a replaceable stainless steel seat, resilient flapper, and be fitted with an access plate large enough to clean out the check valve and replace all internal parts including the flapper without removing the valve from the piping system.
- b. The discharge header shall include plug valves on each pump to permit either or both pumps to be isolated from the common discharge header. Three way valves shall not be used. The valves shall pass a 3" spherical solid. Plug valves shall be non-lubricated with 125-pound standard flanges.
- c. Emergency bypass piping shall be provided and shall include a valve and quick connect fitting. The bypass piping shall terminate outside the enclosure.
- d. Each pump shall be equipped with a minimum 4" diameter glycerin filled compound suction gauge and a 4" diameter glycerin filled pressure gauge. They both shall be calibrated in feet of water column. They shall be mounted on a resilient panel and provided with stainless steel tubing and shut-off valves.
- e. The pump shall be equipped with automatic air release valves. Valves shall close upon completion of a priming or re-priming cycle and prevent re-circulation. Valves shall provide visual indication of valve closure and operate solely on pump discharge pressure and not the presence of liquid. The valve shall be constructed of cast iron and stainless steel, include a 3" clean-out port, and be field

adjustable for varying discharge heads. Discharge piping shall be stainless steel with unions on both sides of the valve.

- f. Each pump shall have a drains hard pipes to the wet well with stainless steel piping and shutoff valves.

8. Piping

- a. Flanged header pipe shall be centrifugally cast, ductile iron, complying with ANSI/AWWA A21.51/C115 and class 51 thickness. Suction pipe shall be Class 53 thickness.
- b. Flanges shall be cast iron class 125 and Comply with ANSI B16.1.
- c. Pipe and flanges shall be threaded and suitable thread sealant applied before assembling flange to pipe.
- d. Bolt holes shall be in angular alignment within $1/2^0$ between flanges. Flanges shall be faced and a gasket finish applied.
- e. Station piping that terminates below the station for connection to below grade pipe and fitting shall be provided with flanged connections.

9. Control Panel

- a. Each pump shall have an open frame, across-the-line, NEMA rated magnetic motor starter. All motor starters shall be equipped to provide under voltage release and overload protection on all three phases.
- b. Overload relays shall be block type, and shall be manual reset only. Trip setting shall be determined by heater element only and not by adjustable settings.
- c. A properly sized heavy duty air circuit breaker shall be furnished for each pump motor. All circuit breakers shall be sealed by the manufacturer after calibration to prevent tampering. A pad locking operating mechanism shall be installed on each motor circuit breaker. Operator handles for the mechanism shall be located on the exterior of the control compartment door, with interlocks which permit the door to be opened only when the circuit breakers are on the off position.
- d. A duplex ground fault indicating utility receptacle providing 115 volt, 60 Hz, single phase current shall be mounted on the side of the control enclosure. Receptacle circuit shall be protected by a 15 ampere thermal magnetic circuit breaker.
- e. The control panel shall be equipped with circuitry to override the level control system and shut down the pump motor when required to protect the pump from damage caused by excessive temperature. A thermostat shall be mounted on each pump to detect its

temperature and a magnetic switch shall be supplied for each thermostat. An indicator, visible on the front of the control panel shall indicate the pump motor has been stopped because of high temperature conditions. Pump shall remain locked out until it has cooled and the circuit has been manually set.

- f. The control panel shall also be supplied with HOA switches, alternator relay, pump run indicators, elapsed time indicators, and sequence selector switch.

10. Level Control

- a. The level control shall be a Multi-Trode level Control. A pressure sensor contained within an electronic pressure switch which shall sequence the pumps and alarm.
- b. The electronic pressure switch shall have a digital panel meter with a 3-1/2" display of wet well level or set points.
- c. The level control shall incorporate automatic pump alternation independent lag pump, high water alarm, and alarm silence.
- d. The level control shall have pressure sensors, electronic comparators, and output relays to perform its function reliably.

11. Operational Test

- a. The pump manufacturer shall design and manufacture the entire pumping system. The pumps, motors, piping, valves, and controls shall be totally factory assembled and be given an operational test in accordance with the standards of the Hydraulic Institute. The test shall substantiate the correct performance of the equipment at the design head, capacity, suction lift, speed and HP as herein specified.

12. Electrical Supply Equipment

- a. All electrical supply equipment shall be placed above grade, mounted in a freestanding NEMA 4X enclosure installed by a Licensed Electrician and inspected by the New York State Board of Fire Underwriters.
- b. Electrical supply equipment shall include the following:
 - 1. 1 - 480V/3ph meter receptacle
 - 2. 1 - 480V/3ph double throw transfer switch
 - 3. 1 - 480V/3ph fused disconnection
 - 4. 1 - 480V/3ph Emergency generator connection including weather tight panel compatible with the Town's generator.
- c. Electrical enclosure shall include but not be limited:
 - 1. supply equipment,

2. strip heaters,
 3. terminals,
 4. indicating contacts,
 5. breakers,
 6. dead front panel,
 7. back panel,
 8. padlock handle
 9. power block,
 10. din rails,
 11. GFI service receptacle,
 12. transformers.
- d. This equipment shall have the proper ampacity rating as determined by the manufacturer, site engineer and the Sewer Department.
 - e. Emergency generator connection shall be compatible with the Town's generator. A fixed mounted emergency generator is required at all locations.
 - f. At locations where 480V/3ph power is not available, Developer may propose a 240V/3ph service. Prior approval from the Town is required.
 - g. All equipment and installation shall conform to the most recent publication of the National Electric Code and standard details attached.
 - h. The developer shall make application to Rochester Gas & Electric and Frontier Communications for new service. Billing accounts will be turned over to the Sewer Department after acceptance of the pump station.

13. Wet Well and Suction Lines

- a. The lift station shall utilize a pre-cast concrete wet well having a minimum inside diameter of eight (8') feet and coated inside and out. Six (6') foot wet wells will be considered based on wet well sizing calculations. The wet well shall have a standard pre-cast top slab adequately reinforced to provide H-20 loading with penetrations needed for the pump station a standard opening for a twenty-four (24") inch manhole cover.
- b. The final depth of the wet well bottom shall be determined as a function of anticipated flow from a fully developed service area and volumetric storage capacity as outlined in the previous Design section. The inside diameter of the wet well specified above is a

minimum dimension and may need to be increased due to required storage volume and re-prime lift considerations.

- c. The pump station suction lines (2) and bypass suction line (1) shall be fastened to the wet well with "core 10" or stainless steel hardware. This piping shall be adequately braced per the standard detail contained herein. Submittals verifying material of this hardware shall be required.
- d. Penetrations through the wall of the wet well shall be made in the field by means of core bore after an accurate location of the lines has been determined.
- e. The auxiliary suction line for bypass pumping shall be completely vertical and exit through the top slab of the wet well and terminate per the standard detail. Pipe shall be cast iron or PVC with mechanical fittings.
- f. All three (3) suction lines shall have a ninety (90) degree increasing elbow mounted at the bottom of the wet well. The size of the increased diameter shall be determined based on maximum allowable entrance velocities as determined by the pump station manufacturer.

14. Bypass Pumping Provisions

- a. The pump station shall be designed and equipped with provisions for isolating the pump station and utilizing a portable pump to draw from a separate, auxiliary suction line and pump directly into the force main. The isolation valve shall be installed on the forcemain outside the pump station.
- b. Bypass connections shall include CL-51 D.I.P. suction and discharge lines that terminate through the wall of the enclosure. Terminations shall include male end quick coupler.

15. Testing

- a. All field installed piping shall be pressure or vacuum tested.
- b. The entire length of the force main shall be pressure tested with water. The force main shall hold one and one-half (1.5) x the working pressure of the pump system or fifty (50) PSI minimum for a thirty (30) minute period with a loss of pressure not to exceed five (5) PSI.
- c. The full length of all suction lines shall be vacuum tested. The suction lines shall hold negative ten (10") inches of Hg. (Mercury) indefinitely. Special attention shall be given to this test because of its relationship to re-prime performance.
- d. The pump station distributor shall include a one half (1/2) day start up procedure with the pump station. A factory- trained

representative shall be present to witness all functions of the station and approve their installation in accordance with the manufacturer's warranty.

- e. Upon completion of installation, the lift station shall be tested by continuous operation as directed by the Superintendent of the Sewer Department. The lift station shall also be tested using the Town of Geneva's portable generator. Stations with a fixed mounted generator shall be tested with the generator. The supplier shall be responsible for the complete installation of the pump station.

16. Warranty

- a. The pump station manufacturer shall supply warranty certificates as follows:
- b. Station Enclosure – Five (5) years from defects in material and workmanship and corrosion.
- c. Mechanical equipment and apparatus shall be fully warranted from defects in material and workmanship for a period of one 1) year from the date of acceptance.
- d. The date of acceptance shall be the date of startup witnessed by the factory-trained representative together with submittal of warranty certificates.

2.02 Storm Drainage Systems (See Appendices ST-4.0 through ST-8.0 for design details, Appendix ST-3.0, 3.1 for required notes, and also refer to Appendix ST-1.0 through ST-2.1 for SWPPP and Stormwater Permit Process)

A. General Design Criteria

This section is to provide guidance for the design of storm drainage facilities. These facilities shall be designed to collect and transport the run-off from streets, lawns, paved areas, roof areas, and upstream areas while meeting Town, regional, state, and federal requirements. The developer is required to file for latest version of the State Pollutant Discharge Elimination System ("SPDES") General Permit for stormwater discharges from construction activities and submit a Notice of Intent (NOI) form to obtain permit coverage.

The town encourages the use of green infrastructure and other stormwater management practices within new developments, and as part of redevelopment activities, where possible. In general, the preservation of natural watercourses is preferable to the construction of drainage channels and wherever practical such natural watercourses should be preserved. Storm sewers and drainage facilities shall be based upon a design flow with the minimum return interval of ten (10)

years. The design of natural watercourse channels shall depend upon the drainage area according to the following table:

DESIGN RETURN INTERVALS FOR NATURAL WATERCOURSES

<u>Drainage Area</u>	<u>Recurrence Interval</u>
Above 20 square miles	100 years
Between 4 to 20 square miles	50 years
Less than 4 square miles	25 years

Storm drains and channels shall be designed and provided to adequately convey the anticipated runoff from the development, as well as, all contributing area upstream or uphill from the development in question. The minimum size piping used for storm drains shall be twelve (12") inches in diameter, except that catch basin crossovers may be eight (8") inch diameter piping.

The rainfall intensity curve shown in Appendix ST-8.0 of this manual shall be used for computing anticipated rainfall. The minimum coefficient of runoff to be used is 0.2. Runoff within the subdivision shall be computed by the Rational Formula, TR-20 or other computer modeling software using the "10 year storm". Design of major channels or piping systems conveying water through the subdivision shall be designed using the "25 year storm". Time of concentration to first inlet shall be taken as not less than five (5) minutes and not more than fifteen (15) minutes. The design engineer shall give particular attention to time of concentration in hilly areas. Analysis of the time of concentration shall be submitted to the Town for review and approval.

Open channels serving as main drainage ways are generally not encouraged where, by engineering design, it has been established that the future flow (under conditions of full development) could be conveyed in a pipe system, up to and including a size of forty-eight (48") inches in diameter or equivalent, and the town may require that such drainage areas be conveyed by a pipe system. Where a forty-eight (48") inch diameter pipes system is not adequate, the town may require an eight (8") inch thick concrete gutter of adequate width, based on required capacity of the drainage way, to substantially contain flows (the concrete gutter shall be constructed as per the standard details provided herein). The developer's engineer bears the responsibility of providing technical design data in this regard, which shall be submitted to the Town Engineer for approval.

The developer's engineer shall be responsible for furnishing, as part of their plans to be presented before the Planning Board, full and sufficient calculations and details of all hydraulic structures. This includes, but is not limited to, cross sections

of drainage channels, special manholes and all such other items as may be necessary to establish fully the methods and materials to be followed in construction.

The developer's engineer shall design the vertical control of their subdivision so that surcharge of storm drainage systems will not cause a backup or flooding of basements. This will normally require that cellar drains not be connected to the storm drainage system unless (a) the cellar floor is higher than pavement grade in order that the street drainage system can run fully surcharged or (b) that basements drainage discharges through a sump pump and check valve.

In the design of storm drainage piping systems, an "N" of 0.013 shall be used for smooth pipe and an "N" of 0.024 shall be used for corrugated metal pipe, unless the corrugated metal pipe has an approved "smooth" lining where "N" of 0.013 may be used.

Where open swales or creeks are involved, the banks shall be constructed with slopes no steeper than one (1) horizontal on three (3) vertical. If for any reason this cannot be achieved, the watercourse may be required to be piped.

B. Accommodations for House and Lot Storm Drainage

Finished ground level adjacent to house foundation wall shall be a minimum of one (1') foot higher than the edge of pond or shall provide a minimum slope of 2% away from the foundation to a swale, culvert, or other collection system. Provisions shall be made for draining positively the surface of each lot by proper grading and construction of swales, ditches or drains. These items shall receive the same careful design attention as the street drainage system (see Appendix H-13.0).

Provisions shall be made for disposing of roof and basement drainage into the street drainage system. This shall be accomplished with the use of storm sewer laterals. When positive discharge from the basement drain cannot be obtained, sump pumps with appropriate check valves shall be installed.

Where storm sewers are not available, roof and basement drainage shall be discharged to splash blocks.

No laundry, sanitary, or kitchen wastes shall be discharged to a storm drainage system. No drain connections from garage floors shall be permitted to enter drainage swales.

Storm drain laterals shall have outside cleanouts.

Rear yard swales shall have a minimum grade of 2%. Where this cannot be provided, a concrete gutter is required. Under no conditions will a grade of less than 1% be allowed for drainage swales.

Yard inlets shall be provided along swales to collect runoff from a maximum distance of three (3) lots or four hundred (400') feet (in any one direction), whichever is less.

C. Stormwater Management Facilities

Stormwater management facilities, sedimentation basins, and erosion control measures in all new land development shall be provided where, in the judgment of the Town Engineer and compliance with the Town and NYSDEC requirements; it is felt necessary in order to provide proper drainage and/or erosion control.

Plan view and details are required to show the pond location, size, inlet structures, and outlet structures as well as any appurtenances. All stormwater management facilities shall be constructed with a minimum 1:3 side slope from base of pond to top of bank. If to be dedicated to the Town, a twenty-five (25') foot access easement shall be provided around all portions of said pond and pond maintenance road to allow access or the pond shall be located on lands dedicated to the Town of Geneva. If the facilities are not to be dedicated to the Town, then a permanent access easement over the maintenance road and pond is required to be provided in accordance with Chapter 75 of the Town Code, along with providing a maintenance plan and schedule to the Town of Geneva for review and approval. The owner/operator of any stormwater management facilities will be required to enter into a legally binding stormwater maintenance agreement, and/or provide the Town of Geneva with an irrevocable letter of credit to allow the town to perform maintenance on the facility should the owner/operator fail to maintain said facility.

In designing the detention facility, attention shall be given to the types of soils found in the site. The Town may require that the pond bottom be lined or constructed of impervious soils or manufactured sealants (i.e. Bentonite) to prevent seepage or piping of stored water along the underlying bedrock.

During design, the Town may require the Developer to provide a soils report done by a professional soils engineer to determine if the onsite material meets the requirements for infiltration capacity or as a pond liner.

The Developer's engineer shall submit, with his final plans, drainage calculations justifying the size of pipes, channels, impoundment basins, and related structures.

Stormwater management facilities shall be required to mitigate the impact of land development to downstream properties, drainage system and water bodies. The increased rates of stormwater run-off may cause environmental problems downstream such as highly erosive velocities, flooding and over-topping of banks, and nutrient and pollution runoff. The Town may require stormwater basins where deemed appropriate and to have these basins designed in a manner compatible with these specifications. The purpose of this regulation is:

1. To establish the basic general philosophy for these facilities;
2. To set forth a series of parameters or rules governing the design.

While the Town reserves the right to establish particular parameters in each individual instance, the general philosophy is to encourage green infrastructure, and to permit runoff from any particular development to an amount no more than would normally occur under a natural, undeveloped condition, for the particular design storm. The discharge from these facilities shall be at a rate equivalent to the discharge from the upstream area under a natural, undeveloped condition.

The Developer shall design all storm drainage improvements in conformance with the Town's watershed drainage studies. Where on site detention/retention is not required, the Developer shall submit the equivalent fees for their share of any off-site facilities.

The Town reserves the right to establish other more restrictive parameters. For example, if the downstream area has been subject to floods in the past, even while the upstream areas were not developed, and if the Town deems it desirable and appropriate to remedy this situation, they may at their discretion, require an impoundment area of the size and type, which can assist in rectifying the downstream flooding situation.

The following represents the basic philosophy regarding stormwater discharge:

1. No developed area shall discharge more stormwater into adjacent culverts and channels than occurs under a natural undeveloped condition.
2. The flow capacity of channels and culverts immediately downstream from a development does not necessarily govern the adequacy of the total drainage system downstream.
3. As one travels downstream in any given drainage basin (and, therefore, from any given development) the area contributing to any drainage channel is increasing.
 - a) Culverts and channels downstream from any development may be able to handle the total runoff from that development alone, but this does not imply that said channels and culverts can handle the total runoff to that location.
 - b) The fact that downstream facilities are inadequate prior to the development and, therefore, flood at certain times, does not imply that this flooding condition or any greater frequency flooding is desirable.

D. Engineering Procedures

In order to arrive at an engineering estimate of storm flows and proposed detention pond size, the engineer should proceed according to the steps listed herein. The

Design Engineer may also be required to identify impacts of particular site drainage on the watershed as a whole. The use of computer modeling by developer's engineers is permitted. However, proper documentation of the variables and procedures for the software should be submitted to the Town Engineer for review and approval.

1. The design engineer shall design the stormwater facility in accordance with the following regulations:
 - a) Ponds located on streams shall be designed using the recurrence interval specified in the design criteria section.
 - b) Ponds located off stream shall be designed as per the following:
 - 1) With a direct discharge to the stream, use a ten (10) year storm
 - 2) With no direct discharge to the stream (i.e., discharge into piped system, culvert, etc.), use a twenty-five (25) year storm.
 - c). All ponds shall have an emergency spillway designed such that a one hundred (100) year storm can be routed through the pond without overtopping the banks.
 - d). Requirements of the New York State Department of Environmental Conservation shall be considered and shall be used in cases where they are more stringent than these regulations.
 - e). All detention/retention facilities shall be designed to address the impacts of a 2 year, 10 year, 25 year, and 100 year storm.
2. The developer's engineer shall use existing topographic maps and the appropriate rainfall charts and graphs to determine the maximum expected natural rate of runoff ($C=0.2$) for the design storms from an undeveloped site. Factors affecting this rate include slope of land, surface cover, area of drainage basin and the presence of lack of well-defined natural channels. This rate of runoff shall be the controlling allowable discharge from any development in the area under question for the given design storm. If downstream sewers, culverts or channels have a capacity of less than the derived rate, this downstream capacity shall control as the allowable discharge rate. The runoff coefficient for developed conditions shall be a weighted number based upon area of impervious surfaces.
3. Design the collection system using the standard rational method, TR-20, or other methods as approved by the Town Engineer.
4. With an area designated for the location of the pond, determine the maximum depth of the pond.
5. Bench marks shall be set on outfall structure elevations.

6. Design an outlet structure, which discharges water as a continuous function of head and which will discharge the maximum allowable flow at maximum pond depth. Lesser storms should discharge approximately proportional lesser flows.
7. Provide inflow hydrographs for a number of design storms of different durations and make a straight line approximately to an outflow hydrograph starting with $Q_o=0$ at $t=0$ and assuming that good pond design is based on the outflow reaching its peak just as the inflow equals the outflow.
8. Calculate the accumulated volume for each of the above cases. The one giving the greatest volume is the critical storm for this retention pond.
9. If desired, make a more detailed analysis using the now determined critical storm and standard flood routing techniques. Otherwise, use the above estimated volume and size the area of the pond.

E. Flood Hazard Prevention

Flood hazard prevention shall include the control of soil erosion of land surface and drainage channels and the prevention of inundation and excessive ground water seepage by comprehensive site grading and the establishment of adequate elevations of buildings, building openings and roadways above the observed, anticipated or computed water levels of storm sewers, streams, channels, floodplains, detention basins and swales.

All development proposed within the special Flood Hazard Area as delineated by the National Flood Insurance Program and defined by the Federal Insurance Administration shall comply with the various regulations set forth by the Federal Insurance Administrator and the Town of Geneva (Chapter 80 of the Town Code).

Any filling within a floodplain shall be compensated with an excavated area that is 1.25 times the volume filled within the designated floodplain. The compensatory storage area shall be located in an area adjacent to the affected floodplain. No filling within a floodplain shall be allowed without a Floodplain Development Permit first being issued by the Town Code Enforcement Officer (CEO).

Where developments are located in the lower reaches of a watershed, the Town Engineer may elect to waive all requirements for detention/retention facilities to allow runoff to pass through the area before impact of upstream runoff is observed.

F. Erosion Control

1. General

In order to ensure that the land can be developed without danger of flooding or erosion of downstream areas, the Town shall require the developer to follow the latest version of the New York State Standards and Specifications

for Erosion and Sediment Control and Town requirements. The Town Engineer shall verify that the required procedures are being put into practice. Such procedures may include:

- a) Exposing the smallest practical area of land at any one time during development; no more than 5 acres of disturbance is permitted at one time without written authorization from NYSDEC.
- b) Installation of temporary vegetation and/or mulching to protect critical areas as soon as grading is complete;
- c) Installation of adequate drainage facilities to accommodate the increased runoff caused by changed soil and surface conditions during and after development. The developer's engineer shall show, as part of their submitted plans, the interceptor swales and sedimentation basins along the lower edges of all developments. Significant topographic data and design grades for the swales shall be shown on the plans;
- d) Fitting of the development plan to the topography and soils so as to minimize the erosion potential;
- e) Retention and protection of natural vegetation wherever possible;
- f) Installation of adequate protective measures when slopes in excess of 1 on 3 are graded; and minimizing such steep grading. This shall include geotextiles with organic material matting;
- g) Installation and maintenance of geotextile fabrics over catch basin, yard inlet, or outlet structures;
- h) Installation of other protective measures as required by the Town Engineer.

2. Design and Implementation

It shall be the sole responsibility of the developer's engineer to incorporate into the subdivision and/or site plans adequate methods of erosion abatement for approval by the Town Engineer.

This design shall be shown on the approved grading plan and consist of, but not limited to staked straw bale buffers, sediment basins and silt fence. The Town Engineer, or other field representative, reserves the right to modify these erosion control measures, if deemed necessary. Adequate funds shall be held in the Irrevocable Letter of Credit, Bond or Surety to assure that these systems are installed and maintained during the completion of all site work.

The design of an erosion control plan shall be in accordance with "Guidelines for Urban Erosion and Sedimentation Control" published by the NYS Chapter of the Soil and Water Conservation Society. The Town

Engineer, or other field representative, reserves the right to modify or order periodic maintenance of said erosion control measures.

If when determined by the Town Highway Superintendent and the Town Engineer, that any part of the erosion control plan has not been implemented; the Town Code Enforcement Officer may place a STOP WORK ORDER on the project until the deficiency has been brought into conformance.

If any portion of the erosion control devices fail, causing downstream siltation, the developer shall bear the cost for any associated clean up or removal of silt from drainage ways, culverts, or ponds. The Town reserves the right to hold contingency money to insure proper remediation.

G. Storm Drains

1. Minimum pipe size - 12 inch diameter*
2. Minimum velocity when flowing full - 3 fps
3. Maximum manhole and catch basin spacing - 300 lineal feet.
4. In general, only natural waterways may be continued in open channels. Street drainage and other parts of a storm sewer system shall be in closed conduit. When gradient and tributary runoff require conduit greater than 36 inches in diameter, then open channel design may be considered after review by the municipality.
5. All pipes shall be smooth bore.

*Any drains less than 12" must be justified with drainage calculations and shall be subject for review by the Town of Geneva Highway Superintendent and forwarded to the Town Engineer.

H. Storm Laterals

Laterals installed to the right-of-way or easement line shall be a minimum of 6 inches in diameter. Sump pumps and roof runoff will be required to discharge to storm laterals or, in the absence of storm sewers, to splash pads directed to side or rear yard drainage swales.

I. Catch Basins

Catch basins shall be placed at all low points and intersections with maximum spacing of 300 feet. Catch basin leads shall only be connected to the storm sewers at manholes except in those areas where the storm sewer is 24 inches in diameter or greater. In these instances the catch basin leads can connect directly to the pipe.

J. Storm Manholes

Storm manholes shall be designed to accommodate the pipes entering and exiting the structures.

A schedule of manhole diameters shall be provided on the final plan.

K. Drainage Easements

Drainage easements shall be provided when requested by the Town. The minimum easement width shall be 20 feet. Where open channel drainage is permitted, easements shall be of a proper width to permit adequate maintenance as approved by the Town.

2.03 Water Mains (see also Appendices W-1.0 through W-14.0)

All work performed and materials furnished for the purpose of supplying the development with potable water shall comply with the Regulations and Recommended Standards for Water Works (2012) and the applicable standards as established by the Town of Geneva.

A. Design

Water supply system shall be designed to provide adequate domestic usage and fire protection. Where public water supply is not accessible, an alternate private supply shall be furnished, which conforms to the New York State Health Department regulations (Subpart 5).

All main sizing shall be substantiated by the Design Engineer for the review and approval by the Town. All water mains shall be a minimum of 8 inches except:

1. Where watermains are part of a major transmission distribution network, the Town may require a larger size watermain.
2. Where project demands allow a smaller watermain while still providing adequate fire and domestic flows. In no case will the Town accept for dedication a watermain smaller than 8" inches in diameter. All such exceptions are subject to review and approval of hydraulic calculations to justify sizing.
3. In all cases the watermains shall be capable of providing maximum design flows with a residual pressure not to be less than 20 psi.

B. Hydrants

Hydrants shall be spaced to comply with ISO and New York State Department of Health requirements but at maximum 600-foot intervals.

Hydrants are to be placed close enough to all buildings to meet New York State Fire Code and Town code. The Town requires that hydrants be placed within 500 feet of all buildings which is measured from the furthest point of the building from the nearest fire hydrant.

Hydrants are to be placed at all intersections.

C. Valves

Valves shall be located such that no more than 30 dwelling units and no more than two hydrants need be out of service for repair of a water main. Valves shall be provided at intersections and shall be no more than 1200 feet apart along the watermain.

Additional valves may be required at creek and/or railroad crossings depending on network configuration and permit requirements.

D. Dead End Mains

Provide hydrants or 2-inch blow-off units at the end of all "dead end" mains.

E. Water Services

Provide minimum of 1-inch water service or as approved by the Town of Geneva Water Superintendent. Services shall be extended to approximately two feet from the lot line of all individual lots. All services shall be PE 3306 Ultra-High Molecular Weight with a pressure rating of 160 pounds per square inch, or type K copper.

F. Meter Pits (for individual services)

Meter pits shall be installed when required by the Water Superintendent. Specific applications shall be subject to review by the Town of Geneva Water Superintendent for a determination of need for an individual meter pit.

2.04 Grading

A. General

The finished grading on developed lands shall provide for the effective removal of storm water runoff to a drainage system.

In general, the Design Engineer shall try to establish a finished grade at the structure line to permit a minimum of 2.0 percent grade away from the structure to the drainage system.

Drainage shall generally be to side or rear lot swales provided:

1. Swales are of a proper cross-section to permit ease of maintenance by the individual owner.
2. Easements are provided for access and/or maintenance where necessary.
3. Where multi-lot grading is proposed, all swales required for positive drainage will be installed prior to the issuance of a building permit. Easements will be required in this instance to cover all affected lots.

B. Grading Plan

A Grading Plan shall be submitted, with the final plan for any development, showing at a minimum the following items:

1. Existing contours.
2. Proposed finish contours.
3. Spot elevations of proposed finish grades at key locations.
4. Garage floor elevations.
5. Minimum elevations of any architectural opening where flood hazard areas exist.
6. Culvert invert elevations.
7. All elevations shall be established from USC&GS datum and the plan shall show a site benchmark.
8. Drainage flow directional arrows.
9. See Appendix H-13.0 for Typical Grading Plan

2.05 Driveway Design Requirement

Design and location of driveways shall be in accordance with applicable Town Standards contained in these regulations and requirements of the New York State Department of Transportation Policy and Standards for Entrances to State Highways. Approval of the design and location of driveways shall be contingent upon the approval of the Highway Supervisor and/or the Code Enforcement Officer. These standards shall also apply to driveways entering on County and Town roads and streets.

A. Vertical Alignment

1. Maximum grade shall not exceed 10%.
2. Finish grade at right-of-way line shall be not more than 2 feet above finish grade at the centerline of the roadway and the driveway slope within the lot shall not be greater than 10 percent.

3. A leveling area of 3 percent maximum adjacent to the right-of-way shall be provided which is a minimum of 30 feet in length from the edge of the street pavement.
4. Driveway shall slope away from the edge of road pavement at the same slope as the road shoulder, and the slope shall extend at least the full width of the shoulder so as not to create a bump or depression in the shoulder area unless shown otherwise in Standard Details.
5. All driveways shall be designed so as to avoid the sheeting of surface water runoff onto an adjacent highway.

B. Horizontal Alignment

1. Minimum radius along the centerline of driveways shall be 60 feet.
2. Minimum radius along the inside edge of driveway shall be 35 feet unless shown otherwise in Standard Details.
3. Driveway pavement shall extend at least 10 feet back from the edge of the travel lane.
4. Driveway turnaround areas, when practical, should be incorporated into all plans.
5. All driveways shall be designed so as to avoid the sheeting of surface water runoff onto an adjacent public highway.
6. All driveways are to be a minimum 5 feet from the property lines.
7. All driveways are to be a minimum distance of 43 feet or twice the width of the driveway (14') plus 15 feet from all intersections as measured from the shoulder.

C. Application Requirements

Written application including a plan and a profile of the driveway may be required by the Highway Superintendent for approval.

D. Fire Department Requirements

All common driveways regardless of length and individual driveways, which are longer than 500 feet, shall be constructed to support HS-20 loading and provide an emergency pull off area that is 30' x 80' at intervals of 250' for emergency access clearance from the edge of the driveway to any obstruction. Plans and details of such driveways shall be submitted to the Fire Department for review.

2.06 Driveway Culverts

Design and location of driveway culverts shall be in accordance with applicable Town Standards and requirements of NYSDOT Policy and Standards for Entrances to State

Highways. These standards shall apply also to driveways entering on County and Town roads and streets.

- A. Shall be provided along existing road frontage lots to properly convey roadside drainage. The culverts shall be set to the proper grade to allow the natural flow of water. All culverts set shall be subject to the review of the Highway Superintendent having jurisdiction on the road (see Appendices H-4.0 and H-5.0 for driveway culvert installation requirements).
- B. Minimum of 12-inch diameter unless they are a part of a larger drainage course, which may require larger diameter pipes.
- C. The culverts shall extend a minimum of 3 feet beyond the edge of the driveway pavement and be provided with end sections or headwalls. Riprap material or other energy dissipation material should be used as determined by the Highway Superintendent.
- D. Elevations to be set by U.S.C. & G.S. datum.
- E. Culverts shall have a minimum of 12 inches of cover. If High Density Polyethylene (HDPE) pipe is utilized, 12 inches of cover per 12-inch diameter of pipe shall be provided.
- F. If CMP is used, culverts shall be bituminous coated inside and out.

2.07 Roads

The following designations will be used by the Town to classify roads and their respective design criteria (see Appendices H-1.0 through H-1.2):

- A. Town Collector
- B. Local (subdivision)
- C. Private (non-dedicated)
- D. Industrial road

The basic considerations of each road classification are as follows:

- A. Town Collector
 - 1. Provides connections to major roads and represents major traffic pattern throughout the Town
 - 2. Design speed of 55 MPH
 - 3. High volume traffic
 - 4. Provides access to local roads

5. Relatively low density of development abutting such a road
 6. Represents typical road built or reconstructed by the Town Highway Department
- B. Local (Subdivision)
1. Densities as permitted by the zoning ordinance
 2. Design speeds of 30 MPH or less
 3. Low volume of traffic
 4. Individual driveways at regular intervals
 5. Usually no effect on overall Town traffic pattern
- C. Private (non-dedicated)
1. Has a minimum of 40-foot fee ownership on a dedicated street
 2. Low volume of traffic
 3. Has no effect on overall Town traffic pattern
 4. Design speed of 30 MPH or less
 5. Maintenance covered by deed agreement or Homeowner's Association depending on number of units
- D. Industrial Road
1. Provides access to established and future commercial and industrial areas
 2. Provides access to local roads
 3. Relatively low density of residential traffic
 4. High volume truck/tractor trailer traffic

Each of these roads has basic characteristics that may be varied to be consistent with unique proposals of development and construction. The individual variations of the conditions will not be permitted if they sacrifice design safety or maintenance of a proposed road type. Standard roads shall comply with the typical cross sections shown on Appendix H-1.0, H-1.1 and H-1.2.

2.08 General Road Design Considerations (see Appendix H-1.0, H-1.1 and H-1.2)

A. Right-of-Way

1. Minimum width 60 feet for dedicated roads.
2. Minimum width of 40 feet for private roads.
3. Private underground utilities to be located on easements beyond right-of-way limit.

4. All dead end streets shall be constructed to the property line and have either: a “K” turnaround, or a hammerhead turnaround designed in accordance with the standards in Appendix H-9.0 of this manual.

B. Horizontal Alignment

The following factors shall be incorporated into the design of each road type:

1. Sight distance must conform to minimum safe stopping sight distance per "Geometric Design of Highways and Streets" AASHTO Latest Edition.
2. Clear sight at intersections
3. No centerline intersection angles less than 75 degrees.
4. Minimum centerline radius of 150 feet.
5. Road pavement intersections shall have a minimum of 35-foot radius.
6. Cul-de-sacs shall not exceed 1,000 feet in length and end with either a cul-de-sac or a hammerhead turnaround (See Appendices H-8.0 through H-9.0 for design and radius requirements).
7. Access to future developments will be provided to property lines.
8. Tangent sections shall be used between curves to maintain the proper flow of traffic at design speeds.

C. Vertical Alignment

The minimum length of vertical curves shall be based upon current AASHTO distance, passing sight distance, riding comfort, and headlight sight distance. Vertical curves are required whenever changes in grade exceed 1 percent.

D. Sight Distance Requirements

Refer to the most current edition of AASHTO, *A Policy on Geometric Design of Highways and Streets*, for sight distance and stopping distance requirements.

E. Road Grades

1. Minimum - 0.7 percent with shoulders; 0.5 percent with gutters.
2. Maximum - 8 percent - Maximum grade may exceed 8 percent for short distances with engineering justification.

F. Leveling Areas

Leveling areas shall be incorporated at all street intersections for a minimum distance of 100 feet from the edge of the pavement and the grade shall not exceed 3 percent.

Leveling areas for driveways shall be a minimum distance of thirty (30) feet from the edge of highway right-of-way and the grade shall not exceed three percent (3%).

G. Road Widths

<u>Class</u>	<u>Pavement Width</u>	<u>Edge Treatment</u>	<u>Drainage</u>
Town Collector	22 ft. min.	3 ft. Shoulder	Roadside Swale
Local (Subdivision)	22 ft.	30" Concrete Gutters	Underground Conduit
Private	14 ft.	3 ft. Shoulder	Roadside Swale
Commercial/Industrial Roadway	24 ft.	Optional 30" Concrete Gutters	Roadside Swale/ Conduit
Roadway with Hydrants	26 ft. min.		

H. Special Considerations

1. Roadside Swale - Where grades exceed 5 percent and/or unstable soil conditions warrant, the swales shall be designed to control flow velocities.
2. Underdrains / Stone Weeps – Will be required on all Town Collector, Local, and Industrial roads, unless proven to be unnecessary. The method used shall be subject to the review of the Town Highway Superintendent.

All pipe shall be perforated and shall be a minimum of four inches (4") in diameter.

3. Frontage Development - Where frontage development is to be approved along collector roads, the Planning Board may require that the roadside swale be enclosed in conduit along the fronts of the development. Such conduits shall be of the proper size to accommodate anticipated flows as previously outlined. A parallel access road may also be considered by the Planning Board and discussed during sketch plan submittal.

2.09 Road Design

A. General Requirements

The Design Engineer shall consider the proposed use of the road or street when preparing a design. The following criteria is listed as minimum standards to be

considered by the designer. It is the intent of these requirements to obtain a road and a base that is stable and capable of supporting H-20 loading to the sites.

B. Minimum Design Standards for Each Road Type (see Appendix H-2.0)

1. Town Collector

- a. Two 6-inch lifts of Type 2 crusher-run stone equally mixed.
- b. One 3-inch lift of Type 1 crusher-run stone.
- c. Geotextile fabric shall be used in all areas of unstable sub-base per discretion of the Highway Superintendent.
- d. Asphaltic concrete courses shall be 3 inches compacted of Type 3 binder and 1 ½ inch compacted of Type 7F top.
- e. Stabilized shoulder constructed of crushed stone with a single seal of 0.4 gal/S.Y. hot bituminous liquid with 25#/S.Y. of 1st stone.

2. Local/Subdivision

- a. Two 6-inch lifts of Type 2 crusher-run stone equally mixed.
- b. One 3-inch lift of Type 1 crusher-run stone.
- c. Geotextile fabric shall be used in all areas of unstable sub-base per discretion of the Highway Superintendent.
- d. Asphaltic concrete courses shall be 3 inches of Type 3 binder and 1 ½ inch of Type 7F.
- e. Concrete gutter per Appendix H-6.0.

3. Private

- a. One 3-inch lift of No. 1 crusher-run stone.
- b. A minimum of one 6-inch lift of No. 2 crusher-run stone mixed equally.
- c. Fabric shall be used in all areas of unstable sub-base.
- d. A private drive off a dedicated road shall:
 - 1) Be designed to keep surface water flows from entering the travelway of the dedicated street.
 - 2) Provide soil erosion measures on the site as it is being developed.
 - 3) Provide an adequately sized culvert with end sections or headwall treatment.

- 4) Finish grade and seed the area immediately upon completion of the private drive base.
- 5) Provide a hard surface from the edge of the existing pavement at least 30 feet toward the developed site.
- 6) No private drive should exceed a slope of 3 percent from the edge of the pavement to a point 30 feet into the property being developed to provide a leveling area.
- 7) Maximum grade within the development site shall be 10 percent.

4. Industrial Road

- a. Two 6-inch lifts of Type 2 crusher-run stone equally mixed.
- b. One 3-inch lift of Type 1 crusher-run stone.
- c. Geotextile fabric shall be used in all areas of unstable sub-base per discretion of the Highway Superintendent.
- d. Asphalt concrete courses shall be 3 compacted inches of Type 1 Base, 3 compacted inches of Type 3 binder and 1 ½ compacted inches of Type 7F top.
- e. 5' paved shoulders constructed of two 6 inch lifts of No. 2 and 3 crushed stone, one 6 inch lift of Type 2 crusher-run stone, 3 inches of compacted Type 3 binder, and 1 ½ inches of Type 7F top. See Appendix H-3.0. Gutters with underground conduit may be installed/required instead of 5' stabilized shoulders. (See Appendix H-6.0).

NOTE: All depths are compacted thicknesses.

2.10 Concrete Gutters

10" thick concrete gutters with a maximum invert depth of 1-1/2 inches below the pavement edge of the gutter shall be provided along the edges of all local roads (and may be required along industrial roadways) to be dedicated to the Town of Geneva. A typical cross-section is shown in Appendix H-6.0.

2.11 Sidewalks

Where required by the Planning Board, sidewalks shall be concrete and installed in accordance with design standards contained in Appendix H-7.0. All sidewalk surfaces are to be continuous in accordance with the Americans with Disabilities Act. Where sidewalks are to cross driveways, the driveways are to be saw cut for the concrete sidewalk.

2.12 Monuments

Monuments per Appendix H-10.0 shall be located at:

- a) Point of Curve and Point of Tangent of all horizontal curves along one side of the right-of-way.
- b) Maximum of 1,000 feet along one side of right-of-way line.

2.13 Reserved Land for Future Use

Where land areas are reserved for future connections to adjacent parcels, all improvements, i.e., sanitary, storm, water, sidewalks, roads, will be constructed to the common property line.

SECTION 3 - Material Specifications

3.01 General Information

The materials intended to establish the degree of excellence are herein included and deemed to be of satisfactory quality for installation within the Town. When new materials may be made available, their use may be permitted in limited test sections with the restriction that should these materials prove unsatisfactory through the test period as established by the Town, they shall be removed and replaced with those herein called for at no expense to the municipality.

3.02 Sanitary Sewers

A. Polyvinyl Chloride (PVC) Pipe for Gravity Sewer

Shall meet the requirements of ASTM D-3034 for Sewer Pipe and Fittings, minimum wall thickness SDR-21. The joints shall be bell and spigot conforming to ASTM D-3212 with elastomeric gasket conforming to ASTM F477. All pipe and fittings shall be made from PVC components as defined and described in ASTM D-1784. Pipe shall be new enough to have manufacturer's specifications still painted on the length of pipe and consist of glossy finish.

B. Polyvinyl Chloride (PVC) Pipe for Sewage Force Mains

Shall meet the requirements of ASTM D-2241 for PVC plastic pipe. Pipe and fittings shall be 160 psi, minimum SDR-21 extruded from clean, virgin, resin compound conforming to ASTM D-1784. Bell and spigot joints are required with elastomeric gaskets conforming to ASTM D-3139. Metallic tracer tape shall be placed over the center of all mains on top of the 18-inch minimum safety cover. Pipe shall be new enough to have manufacturer's specifications still painted on the length of pipe and consist of glossy finish.

C. Ductile Iron (DIP) Pipe for Sewage Force Mains

Shall conform to AWWA C-151, minimum allowable thickness shall be Class 51. Rubber gasket push on joints shall be used in accordance to AWWA C-111. All ductile iron pipe shall be cement-mortar lined in accordance with AWWA C-104.

D. High Density Polyethylene (HDPE) Pipe for Sewage Force Mains

Shall be DR 17, PPI designation PE 3408, and conform to AWWA C906. All joints shall be fuse welded mechanical joints with compression couplings and stainless

steel inserts. No glued joints allowed underground. Metallic tracer tape shall be placed over the center of all mains on top of the 18-inch minimum safety cover.

E. Sewer Connections for Gravity Sewer

Sewer connections on new sewer main installations shall be made with wye fabricated or injection molded fittings. The minimum strength classifications of these fittings shall be equal to that of the pipe and the fitting shall be compatible with the pipe. Connections to an existing sewer shall be made with GENCO cast iron super "o"-ring gasket, with single-wide stainless steel band and stainless steel or bronze bolts for sewers up to 14 inches in diameter and GENCO bolt-on saddles for sewers greater than 14 inches in diameter. Connections to mains must be separated by a minimum of 10 feet.

F. Sewer Lateral Pipe for Gravity Sewer

1. Cast iron sewer pipe shall be extra heavy class with neoprene compression-type gasket joints and maximum lengths equal to 5'-0" per ASTM A-74 and ASA A-40.1.
2. PVC pipe shall be of a minimum wall thickness SDR-35 with elastomeric gasket joints, supplied in standard lengths and conform to ASTM D-3034. All SDR-35 pipe will be bedded in stone as indicated in these specifications.
3. No glued joints will be allowed underground, elastomeric or mechanical joints only will be allowed.
3. All tee connections to be GENCO "T" wye saddle model UH.

*All commercial applications within building walls shall be SCH. 40. Consult with Code Enforcement Officer for further limitations.

G. Sewer Pressure Pipe for Forcemain

1. Polyvinyl chloride (PVC) pipe and fittings shall meet the same requirements as PVC force mains.
2. Polyethylene (PE) pressure pipe and fittings shall conform to ASTM D-2737 with pressure class PE 2305.
3. High Density Polyethylene (HDPE) 3408

3.03 Storm Drain

A. Reinforced Concrete Pipe

Shall be supplied in conformance with ASTM C-76 Class II. Joints shall be of the bell and spigot type with compression type joint ASTM C443.

B. Polyvinyl Chloride (PVC) Pipe

Shall meet the requirements of ASTM D-3034 or ASTM F679, minimum wall thickness SDR 35 with elastomeric gasket joint, ASTM D-3212.

C. Corrugated Steel Pipe

All pipes shall be coated inside and outside and have joints made with connecting bands. Thickness gauge will be dependent on the load conditions, except that 16 gauge shall be the minimum allowable thickness.

D. High Density Polyethylene (HDPE)

All pipes shall be N12 smooth interior and shall conform to AASHTO M-294. All fittings shall conform to ASTM D1248.

E. Storm Laterals

PVC conforming to ASTM D-3034, with a wall thickness of SDR-35 and a minimum pipe diameter of 6 inches.

F. Catch Basin Leads

Shall be a minimum of 12 inches in diameter (see Appendix ST-5.0); cross-over pipes are to be 12 inch perforated.

1. Reinforced Concrete Pipe.
2. Polyvinyl Chloride Pipe (PVC).
3. Corrugated Steel Pipe.

G. Underdrains

1. Shall be a minimum of 4 inches in diameter, perforated polyethylene.
2. Required on all Town Collector, Local and Industrial Roads unless proven to be unnecessary by the Town Highway Superintendent.

3.04 Manholes and Manhole Ladders

A. Manholes (see Appendix S-5.0 through S-5.2)

Precast reinforced concrete sections shall be manufactured in accordance with ASTM Specification C-478. Riser sections shall have tongue and groove ends and super "O" joints and gaskets conforming to ASTM C-443. Manhole bases may be pre-formed or poured in the field. Roof slabs shall be precast structural concrete, reinforced for H-20 loading and 30 percent impact loading. A 24-inch diameter hole shall be eccentrically located in the roof slab. In place of preformed openings in base sections, flexible manhole sleeves (rubber boots/A lok) cast directly into the base walls may be used with compatible pipe material.

All manholes shall be sealed inside and outside completely with two coats of heavy-duty water repellent protective coating which complies with ASTM Specification D-450, Type B.

Manholes constructed of other materials shall be considered for approval following a review of said manhole construction. In specifying these manholes, the Developer's Engineer shall submit adequate design data and/or shop drawings to substantiate the materials.

1. Shallow Sanitary Sewer Manholes (less than 8' deep)

- Refer to Appendix S-5.0 for detail
- Apply epoxy in vicinity of any forcemain connection at the discretion of the Town of Geneva Water and Sewer Superintendent.
- Step alignment less than 1" (vertical) alignment tolerance

2. Deep Sanitary Sewer Manholes (greater than 8' deep)

- Refer to Appendix S-5.1 for detail
- Apply epoxy in vicinity of any forcemain connection at the discretion of the Town of Geneva Water and Sewer Superintendent.
- Step alignment less than 1" (vertical) alignment tolerance
- Eccentric cone riser sections can be used when manhole depth is greater than eight (8) feet
- Safety platform required when manhole depth is over 14' deep. Fiberglass platform by Access Industrial or approved equal.

3.05 Frames and Covers

A. Sanitary Manhole Frames and Covers (see Appendix S-5.2)

Shall be East Jordan Casting No. 1203. The word "Sanitary" in letters not less than two (2) inches high shall be stamped or cast into all sanitary sewer manhole covers. The inside diameter for clearance shall be a minimum of 24 inches. Water tight, as required by the water and sewer superintendent, shall be East Jordan Casting No. 1890.

B. Storm Manhole Frames and Covers

Shall be Neenah R-1723 or East Jordan Casting No. 1203 with a vented cover or other approved equal. The inside diameter for clearance shall be a minimum of 24 inches.

C. Catch Basin Frames and Grates

Shall be rectangular, galvanized (ASTM A-123) and sized to fit gutter inlets or field inlets. The gutter grates shall be NYSDOT size no. 9 to fit the catch basin inside dimensions of 24" x 24". The minimum field inlet shall be NYSDOT size no. 9 to fit a field inlet of 24" x 24" inside dimension.

Catch basin manholes shall be set to allow a NYSDOT size no. 9 grate to be installed.

Frames and grates shall be as specified in NYSDOT Specification Drawing 655-6R1 and Section 655 of the NYSDOT Standard Specification Manual. All grates shall be bolted to the frames.

3.06 Water Mains

A. Ductile Iron (DIP) Pipe

Shall conform to AWWA C-151, minimum allowable thickness shall be Class 52. Pipe shall be cement lined in accordance with AWWA C104 and shall have rubber gasket push-on joint in accordance with AWWA C-111.

B. Polyvinyl Chloride (PVC) Pipe

Shall conform to AWWA C-900, minimum Class 150 (DR18) with elastomeric gasket joints, integral bell and rubber rings locked in place, minimum depth 4'-6" with a minimum of six (6) inches crushed stone bedding and a minimum of twelve (12) inches of crushed stone on each side and over top. Crushed stone shall be NYSDOT 703.02 #1 & #2 or #1 & #1A.

PVC pipe installation shall include either:

1. Six (6) inch wide metallic tape placed over the center of the pipe on top of the 18-inch safety cover as manufactured by Line Guard III, Inc.
2. #10 gauge copper wire attached to the pipe at 5-foot intervals with plastic ties with a minimum of 150 lbs tensile strength. Wire shall be attached to all cast fittings, hydrants and valve boxes to make a continuous traceable system.

C. High Density Polyethylene (HDPE) Pipe

Upon review and discussion with the Town, may be considered for possible use in special circumstances, i.e. road & stream crossings. Shall be SDR-11 fusion weld with mechanical joints.

D. Fittings

1. Ductile iron shall meet AWWA C-111 Specifications, minimum Class 250, with mechanical or push-on joint, except for hydrant branches, which shall be mechanical joint. Fittings shall be cement lined in accordance with AWWA C-104. Bolts and nuts shall be high-strength, low alloy steel.
2. PVC shall meet specifications of AWWA C-905 made from PVC Compound 12454-B (ASTM D1784) with gasket joints meeting ASTM D3139.

E. Hydrants (see Appendix W-1.0 through W-1.3)

Shall be manufactured in accordance with AWWA C-502. Hydrants shall be four-foot six-inch (4'- 6") bury with break-away flange construction and six-inch (6") mechanical joint inlet. Shoe and inlet shall be epoxy coated. They shall open left, with a one and one-half inch (1-1/2") pentagon operating nut. All hydrants shall be painted red with white bonnets and nozzle covers. All valve box covers shall be painted blue. Hydrants shall be three-way with two (2) 2-1/2 inch hose nozzles and one (1) 4-1/2 inch pumper connection with National Standard threads. Main valve openings shall be 5-1/4 inch with the total unit consisting of the tee, guard valve, hydrant and adapters. The main valve seat ring shall be bronze and screw into the bronze drain ring.

1. Hydrant shall be Mueller Centurion.
2. "Hydra-5 Fire Hydrant Marker" with spring and flat bracket 5' fiberglass red-white reflective marker (type A) with plated spring to be provided.
3. Stainless steel fasteners shall be used for all underground connections.

F. Flushing Hydrant – Blowoff (see Appendix W-2.0)

Shall be 2 inch self draining, non-freezing with 4'-6" bury, with all bronze parts designed to connect to a 2 inch main line outlet as manufactured by GIL Industries, Inc., Model Slim Line 2.

G. Gate Valves

Gate valves shall conform to AWWA-C509, Resilient-seated wedge type epoxy coated gate valves with a non-rising stem. They shall be of the 350-psi test class with a minimum working pressure of 200 psi. Valves shall be open left manufactured by Mueller, Kennedy or an approved equal. Stainless steel bolts and nuts shall be utilized.

The valve ends shall depend on the type of pipe used and the particular use intended.

Valves shall be furnished with a screw type valve box, 5-1/4 inch inside diameter with covers marked with "WATER".

If the valves are buried deep they must have an extension stem that can be reached with a 6 foot valve box key.

H. Anchoring Fittings

Anchoring pipe in accordance with ANSI-A21.4 shall be employed to anchor all hydrants to gate valves. The anchoring pipe shall be coal tar coated, cement lined and provided with a rotating gland. There should be a minimum 18 inches between hydrant and gate valve. These anchoring pipes shall be Clow F-1216, Tyler 5-198 or U.S. Pipe.

I. Restrainers

Shall be manufactured of high strength ductile iron pipe and incorporate a full 360 degree support around the pipe. They shall be as manufactured by Megalug or Uni-Flange series 1500, 1300, 1350, or 1390 depending on the specific use.

J. Water Service Material (see Appendix W-4.0)

1. Corporations stop shall be Mueller H-15008 compression type, or Ford F10003Q.
2. Curb stops shall be Mueller H-15209 Mark II compression type, or Ford B44333Q.
3. Curb boxes shall be Mueller H-10334, 5 feet long with stainless steel rods and stainless steel keys.

4. Plastic pipe shall be copper tube size (CTS) at 160 psi, with a minimum 3/4 inch pipe diameter. Provide tracer wire for plastic pipe. Services shall be at a depth of 4'-6", set in bedding of sand or fine crusher run. Backfill with sand or fine crusher run firmly tamped in place to one foot above top of service.
 - a) Polyethylene ASTM D-2737, PE 3306 per AWWA C-901
 - b) Type K copper
5. All services tapped into PVC mains shall utilize two bolt stainless steel saddles or brass saddles with brass U-bolts, with triple "O" ring seals as manufactured by Cascade Style CSC2 or equal.
6. Any services larger than 3/4" shall meet the minimum specifications of the Water and Sewer Superintendent.

K. Meter Pits for Individual Services (see Appendix W-8.0)

Individual meter pits, where required, shall be either Mueller or Ford Plastic 20 inch diameter, Double Lid Style with Wabash cover W2. Cover shall be equipped to receive attachments for radio-read water meters.

L. Thrust Blocks (see Appendix W-11.0)

Shall be cast in place 3000-psi concrete to dimensions as shown in Appendix W-11.0.

M. PRV Vaults (see Appendix W-7.0)

PRV Vaults where required by the Town of Geneva, shall be a minimum of 6'x16'x8' high, Lakeland precast concrete vault provided with 48"x48" aluminum hatch with aluminum ladder, sump recess, openings as required, coated, seals, boots, stainless steel trim, dual pilots and dual strainers. The steel vent pipe is to be painted blue.

The PRV vault shall also be equipped with a Ross 40WR-BP Pressure Reducing Valve and may require a Back Pressure Sustaining feature and reverse flow feature depending on the location in the water system.

3.07 Concrete Gutters and Sidewalks (see Appendix H-6.0 and H-7.0)

A. Concrete

1. Shall be a minimum of 5" thick and 4000 psi (28 day strength) Class A concrete conforming to NYSDOT Specification 609.
2. Air entraining admixture conforming to ASTM Specification C-260.
3. Bituminous expansion material shall conform to NYSDOT Specification 705-07.
4. Curing and sealing compound - conforming to ASTM C-309, Type I, Class B for curing and sealing.
5. Testing is required by the Town as outlined in Section 4.14, C.

3.08 Road Materials (see Appendix H-2.0)

A. Sub-Base and Base Courses

1. Crusher run stone shall conform to NYSDOT Specification Section 304-2.02, Type 2.
2. Aggregate shall conform to NYSDOT Gradation Table 703-4, size as specified.
3. Crushed Stone for Underdrain.
NYSDOT 703-0201, Crushed Stone, consisting of equal parts of Size 1 and 2 washed crushed stone.

B. Bituminous Pavement

1. Binder course shall conform to NYSDOT Specification Section 401, Type 3 (Dense Binder).
2. Top course shall conform to NYSDOT Specification Section 401, Type 7F.

C. Tack Coat

Shall conform to NYSDOT Specification Section 407. The grade shall depend on the specific use intended.

D. Premoulded Bituminous Joint Filler

Shall conform to NYSDOT Specification Section 705-07.

E. Underdrains

Shall be 4 inch perforated SDR-35 PVC per NYSDOT 706-15 or High Density Polyethylene Tubing per AASHTO M-252.

Mirafi is required to be provided under roadways unless determined otherwise by the Town Highway Superintendent.

3.09 Monuments (see Appendix H-10.0)

- A. Monuments shall consist of one-half inch (1/2") diameter reinforcing rod embedded in concrete four inches (4") in diameter by thirty inches (30") deep as shown in Appendix H-10.0. Manufacturer shall be Berntsen, 3/4"x3" rod, cap marked Town of Geneva R.O.W.
- B. All monuments shall be shown on finished plans.
- C. Monuments shall be set as a minimum at all exterior corners of the subdivision, on one side of each street and at all changes of direction in the right-of-way.
- D. Maximum of 1,000 feet at one side of the right-of-way.
- F. Monuments shall be set by a licensed land surveyor before the final Letter of Credit Release.

3.10 Street/ Site Lights (see Appendix H-15.0)

All lighting is to be a Cooper Day, Form100 HPS Dark Sky Post Top fixture. A 17 foot Tapered Block Pole, 100 HPS Mogul Base Lamp, Twist Lock Photo, eyes 120 Volts. Busman VRD Fuse Kit, with 65 amps KTK fuse Fiberglass Street Lighting with a Hand Hole box. Specifications for light energy conservation smart features should consider LED lighting.

3.11 Equivalents

The mention of apparatus, articles or materials by name and such specific description of same as is made herein are intended to convey to the Developer and his Contractor an understanding of the degree of excellence required. The Town shall be the sole judge of the qualifications of the offerings and will determine all questions regarding the conformance of any offer outside the specifications.

For any project it will be assumed that the Developer will furnish the exact materials specified on the plans and specifications unless the Developer files with the Town of Geneva prior to any use in the development, the names and complete description of each article which he proposes to substitute for approval by the Town Board of Geneva.

Any costs incurred by the Town or its representatives associated with the verification of substitute equipment and materials will be the responsibility of the Developer.

SECTION 4 - Installation

4.01 General Information

A. Pre-Construction Meeting

A pre-construction meeting is required and scheduled through the Town Building Department prior to the start of construction of a development. The Developer, his Contractor and Design Engineer shall meet with all utility representatives, Town Department Heads, Town Engineer and project observers to discuss the overall project, its impacts and schedules. A project construction sequence shall be presented in writing and discussed at this meeting.

The following are required to be completed prior to having a preconstruction meeting:

1. The Site Plans are to have final Site Plan Approval and are to be signed by Planning Board Chairman.
2. A final SWPPP is to be completed.
3. All utility companies are to have received a copy of the signed Final Site Plans for review prior to attending the preconstruction meeting.
4. All agency approvals and/or permits are to be received and forwarded to the Town Building Department.
5. The NOI submitted to NYSDEC.
6. A Letter of Credit, Bond, or other Surety accepted by the Town Board.

B. Meaning of Drawings

The Contractor shall abide by and comply with the true intent and meaning of all drawings and of the specifications taken as a whole. If the Contractor believes that the construction indicated on the project drawings will not, when executed, produce safe and substantial results or if it appears that there is any discrepancy in the drawings, it is his duty to immediately notify the Developer's Engineer, in writing, and to thereafter proceed only upon written order.

C. Protection of Property and Work

1. The Contractor shall conduct his operations to prevent damage to trees, garden plots, shrubbery, pipelines, conduits, buildings and other structures. The Contractor shall use all necessary precautions to protect the work and

adjacent structures of all kinds during construction and shall so conduct his operations that at no time shall the work or such structures be endangered.

2. Responsibility and damage - the Developer shall be responsible for all parts of his work, temporary or permanent, until the project is complete and shall thoroughly protect all work, finished or unfinished, against damage from any cause as all work is at the Contractor's risk until the same is accepted by the Developer. The use of part or all of the work by the Town as provided for in these specifications shall not relieve the Developer of this responsibility. The Contractor shall be responsible for damage to life and property due to his operations and shall provide all necessary guards, rails, night lights, etc.

D. Construction Schedule

The Developer shall provide a construction schedule showing the order in which work will be completed at the preconstruction meeting. The schedule shall be reviewed at the preconstruction meeting and revised if necessary. No work will begin until an acceptable schedule is on file with the Town. Hours of Operation within the Town of Geneva are the following:

1. Weekdays from 7:00 am to 7:00 pm.
2. Saturdays from 7:00 am to 6:00 pm
3. Sundays – No work is permitted.
4. No work is permitted on National Holidays

E. Permits

The Developer shall secure all necessary permits from the Town including the Code Enforcement Officer, Highway Superintendent, Water and Sewer Superintendent, and/or any other agency who may have control over any work prior to the start of construction.

F. Existing Utilities or Structures

Before construction begins near any existing utility or structure, the Contractor shall notify the appropriate Owner of his intention and their instructions as to the protection of their property must be followed. Before commencing work, the Contractor shall determine the exact location of any structure or underground utility in order that the Contractor's project will not damage or disrupt these facilities.

The Contractor shall maintain site as needed to prevent entry of mud, debris, etc. into existing utilities or onto streets near the site as required under Section 4.09 (e).

All existing underground facilities shall be checked for damage before backfilling. In the event a facility is damaged, the Owner of that facility shall be notified by the Contractor so as to insure an acceptable repair and/or replacement.

G. Facilities for Observation

The Contractor shall furnish all reasonable facilities and aid to the construction observers for safe and convenient footways, scaffolds, ladders, etc., that may be needed for the examination and review of any part of the work. The Town of Geneva may stop work when the Contractor has no responsible agent on the project or if the Town feels that the Contractor is not performing the work in the best interests of the municipality.

Disorderly, intemperate and incompetent persons shall not be allowed on the project. The employees who neglect or refuse to follow the construction observer's instructions shall be permanently removed from the project by the Contractor. Failure to conform to these controls may warrant refusal of the municipality to consider the development for dedication.

H. Layout

It shall be the responsibility of the Developer to have the work carefully laid out by qualified surveying or engineering personnel in a manner that will assure accurate completion of the work.

I. Defective Work

The review of the work shall not relieve the Developer of any of his obligations to comply with the specifications. Any defective work shall be made good and any unsuitable materials which have been previously overlooked by the Town or its representatives shall be removed and replaced. If the work or any part thereof shall be found defective at any time before the final acceptance of the project, the Developer shall make good such defect in a manner satisfactory to the Town.

4.02 Grading

Completion of grading per the grading plan to within 1 foot of design grade shall precede any trench excavation. Such grading shall include house "pads", removal of enough material to form "box" for road base, surface drainage channels, required temporary situation basins, etc.

Construction brush and debris will not be buried on the site. Wood materials shall be cut, chipped, mulched or removed from the site and deposited in a permitted construction/demolition landfill.

4.03 Trench Excavation

A. Excavation

Under this term will be included all excavation in trenches and pits, together with all backfilling and embankments that may be needed for the laying of the utilities and appurtenances or that may be necessary for the laying, changing and construction of any water, sewers, conduits, culverts, drainage ditches or water courses, or for any other incidental work that may be required or ordered by the Town or its representative.

It is the Contractor's sole responsibility to make sure that all work shall be conducted in strict accordance with the Federal Safety Standards of OSHA.

B. Width of Trenches

The trenches shall be of such width as may be required by the Design Engineer to insure proper laying and handling of the pipes and appurtenances, proper tamping and backfilling operations. In all cases, trenches should be kept as narrow as possible. The Contractor shall be responsible to provide sheeting/bracing or other requirements to insure the safety of his workmen in conjunction with the proper installation of the pipe.

C. Depth of Trenches

In general, the trenches shall be excavated to such a depth to properly install utilities to the grade established in the field by the Design Engineer. The depth of the excavation shall allow the proper bedding material to be placed under the pipe.

Any extra excavated depth by the Contractor shall be filled with compacted crushed stone to the proper grade required.

The trenches for water pipe shall, in general, be excavated to such depth as will provide twelve inches (12") of cover over the top of the pipe from the elevation of the greatest recorded frost penetration. In no instance shall this thickness of cover be less than four feet, six inches (4'-6") or five feet (5'-0") for PVC pipe from finished grade except in places where said pipe is required to pass over or under any existing pipes, other structures or will be within a cut area for future highway widening and as noted on the plans. Minimum cover when crossing under roads or highways shall be six feet (6').

D. Tunneling/Boring

Work shall generally be conducted in open trenches or excavations, with proper protection. Tunneling/ Boring shall be done only in areas specifically called for by the design plans with design details approved by the Town.

F. Bailing and Draining

The Contractor shall furnish a sufficient pumping plant and shall provide and maintain, at his own expense, satisfactory drainage whenever needed in the trench and other excavations during the progress of the work and up to final inspection. No structures shall be laid in water. Water shall not be allowed to flow or rise upon any concrete or other masonry or flow on adjacent lands. All water pumped or bailed from the trench or other excavation shall be conveyed in a proper manner to a suitable point of discharge and may require temporary siltation traps.

G. Bottom of Trench

The bottom of the trench shall be carefully graded and formed according to the directions of the Design Engineer, before any structures are laid thereon. When other instructions or design are not indicated, all trenches shall be excavated in a straight line. The excavation shall extend at least 6 inches below the bottom of the pipe and a carefully compacted bed of crushed stone screenings placed in the bottom of the trench up to the level of the spring line of the pipe. See Appendix W-13.0 for specific material bedding requirements.

It is the intention of this specification to achieve not less than Class "B" pipe bedding.

H. Suitable Bedding and Safety Backfill Material (see Appendix W-13.0)

It shall be the responsibility of the Contractor to generally utilize material excavated from the trench in order to provide the required backfill to meet the listed specifications unless crossing an existing or proposed road. Should the nature of the soil be such that the Contractor is unable to meet the above requirements by selecting, with reasonable care, from the excavated material, he shall provide the following materials, if so ordered by the Town.

Additional twelve (12) inches of crushed stone or concrete cradle when the trench bottom does not provide sufficient bearing capacity or when specification requires specific bedding for certain utilities.

Sand encasement shall be ordered by the Town when the trench is excavated in rock, boulders, or hard pan and none of the material above this level is suitable for backfilling the pipe.

4.04 Pipe Installation

A. Line and Grade

All pipes and appurtenances of whatever character shall, when set, conform to the alignments and grades required by the Design Engineer. All of the required special castings and other fixtures that are indicated upon the plans, or that may be required during the progress of the work, shall be installed in their proper positions. Saddle connections on sanitary sewer shall be concrete cradled. Wye connections may be stone encased with the approval of the Town of Geneva.

B. Laying Pipe and Castings

The Contractor shall use suitable tools and appliances for the safe and convenient handling and laying of all utilities and appurtenances. All pipes and castings shall be carefully examined by the Contractor for defects and no pipe or casting which is known to be defective shall be laid. All PVC pipe shall be glossy with the manufacturer's marks legible. If defective pipe or castings should be discovered after being laid, these shall be removed and replaced with sound pipe or castings. The pipes shall be cleaned before they are laid and shall be kept clean until they are accepted with the completed work. All ends of the pipes shall be watertight capped to exclude water and debris from entering the pipes except during the actual pipe laying.

Sewers shall be built to the lines and grades between manholes as shown on the project drawings. The Contractor shall provide sufficient grade control to properly install the pipe and appurtenances. Sewer pipe shall be laid upgrade with spigots placed in the direction of flow. All pipes shall be fitted together to form a smooth, even invert. Pipes disturbed after laying shall be removed and relaid.

After the pipe has been placed and adjusted to line and grade, the bed shall be trimmed to support the pipe for its entire length. Material used for bedding shall be thoroughly compacted under the bottom and the haunches of the pipe. The trench shall then be backfilled to above the top of the pipe and carefully compacted to hold the pipe in position.

C. Cutting Pipe

Whenever it may be necessary to cut any straight pipe for any purpose, cutting shall be done to the satisfaction of the Engineer by skilled workmen with proper tools, in such manner as will not cause any cracking of the pipe.

4.05 Manhole Construction

A. General

Manholes shall be constructed of the size, type and at the locations shown on the Plans, or as designated by the Design Engineer in the field.

The manhole bed shall be excavated level and include a minimum of 6 inches of crushed stone.

Manhole risers and flat slab covers shall be precast reinforced units. Manhole bases shall be field poured with 4,000 concrete psi to a thickness of 12”.

Eccentric cone sections may be used on the top of manhole riser sections if the inside height dimension from the bench wall to the bottom of the eccentric section exceeds 8 feet.

Interior and exterior concrete surfaces shall be sealed by the supplier and touched up or recoated by the Contractor with like material.

Any pipe entering a manhole shall be neatly cut with proper sharp tools before installation in the manhole. Pipe shall not be "chipped off" after installation.

All openings and joints in the manhole sections shall be completely filled once the sections are set, with approved caulk and enhanced with Xypex Admix, sealed with 2 coats of approved bitumastic coal tar sealer.

*NOTE: When PVC is used all openings around pipes shall be completely filled with 100 percent epoxy non-shrink grout.

Before each barrel of the manhole is set, the joint shall be cleaned.

It is the intent of these specifications to construct first-class manholes, which will exclude all ground water, by means of carefully constructed foundations, tight barrel joints and the coating of the inside and outside of the manholes.

B. Frames and Covers

The frames shall be firmly set in a bed of not less than one full inch of cement mortar and adjusted to the finished grade. The manhole frame shall be set with no less than two courses of brick underneath.

C. Inverts

Inverts shall be constructed in all manholes. The inverts may be constructed of the mainline pipe or brick (Grade SS) and shall be the depth of the pipe. When PVC material is used, all brick, concrete or other masonry material that interfaces with the PVC shall be adhered to the PVC with 100 percent epoxy non-shrink grout. Manholes with 2 or more inverts shall have a smooth transition of flow.

D. Drop Manholes (see Appendix S-6.0)

Wherever the invert of the entering sewer is more than 2 feet above the invert of the outlet sewer, it shall be connected with a vertical outside drop with a clean-out pipe half bricked up. When drops are placed, the entire excavation around the drop pipe shall be filled with stone encasement extending not less than 2 feet along the main sewer.

The clean-out opening in the barrel of the manhole shall be cut in after the manhole wall pipe is in place and the joint between the clean-out pipe and the manhole wall shall be thoroughly sealed with cement mortar on the inside and bituminous joint material on the outside.

E. Shallow Sewer Manholes (see Appendix S-7.0)

Where any manhole is less than 4 feet from invert to bottom of roof slab, the Contractor is to provide a manhole as shown in Appendix S-7.0. The roof slab shall be precast structural concrete reinforced to withstand a concentrated H-20 load plus 30 percent impact. The slab shall be formed to fit into the ends of the vertical pipe and shall have a full bearing for its entire circumference.

F. Sealing of Manholes

All manholes shall be sealed with two (2) coats of approved bitumastic coal tar sealer as applied by the manhole manufacturer to the entire interior and exterior surfaces in minimum dry thickness of 11 mils per coat. Application shall be in accordance with the coating manufacturer's recommendations and shall be certified thereto by the suppliers. Before placement in the field, abraded areas shall be touched up with two coats by the Contractor. Covers and other exposed surfaces shall also be coated in the field. Improper materials or mil thickness shall be cause for rejection of manhole sections.

4.06 Catch Basins (see Appendix ST-5.0)

Catch basins shall be constructed as shown in the Appendix ST-5.0 or as shown on the plans for special conditions. Catch basins shall be constructed of precast concrete.

All catch basins shall be coated inside and outside with two coats of heavy-duty coal tar sealer.

4.07 Sewer Laterals and Water Services (see Appendices S-3.0 and W-4.0)

Sewer laterals and water services shall be installed to approximately two feet from the lot line for all lots. Each service shall be located with a two-inch by four-inch (2"x 4") hardwood or pressure-treated stake extending a minimum of three feet (3') above finished grade. The stakes shall be color coded in conformance with Industrial Code 53 to denote the type of service they represent.

Sewer connections on new sewer main installations shall be made with wye fittings only. Connections to an existing sewer main shall be made with approved saddles.

Select backfill shall be provided for all service trenches. Bedding and backfill quality shall be at the discretion of the Town representatives at the site.

4.08 Hydrants and Valves (see Appendix W-1.0 through W-1.3)

A hydrant unit shall consist of a hydrant, guard valve, mechanical joint tee and anchor pipes.

Before hydrants or valves are installed they shall be checked to determine if they are in the proper working order.

Hydrants shall be set plumb with the break flange 3 inches above the finished grade. Hydrant weeps shall be surrounded by at least 10 cubic feet of crushed stone or gravel. If the ground water is higher than the drainage plug, the plug shall be closed and the crushed stone eliminated.

Valve boxes shall be centered and placed plumb over the operating nut of the valve and adjusted to the final grade.

All hydrants shall be painted red with white bonnets and nozzle covers, and all valve box covers shall be painted blue.

4.09 Backfilling and Finishing

A. General

Trenches shall be immediately backfilled following the installation of utilities unless specifically changed in writing by the Design Engineer. The roadways and sidewalks shall be left unobstructed, with their surface in a safe passable condition. The trench shall be tamped sufficiently to prevent settlement of or damage to existing or newly installed structures.

B. Backfill Immediately After Approval (see Appendix W-13.0)

Utilities shall have a minimum of three (3) inches crushed stone bedding. Crushed stone shall be NYSDOT 703.02 #1 & #1A. The material must not be thrown down from above faster than the workmen below can properly distribute and compact it.

C. Restrictions as to Materials

No rock or frozen materials shall be placed in trenches within existing or proposed streets. Such material may be used in fields where immediate compaction is not necessary and at least 2 feet of select fill has been placed over the pipe.

D. Backfilling Pavement Crossings (see Appendix W-13.0)

All utility lines or laterals that cross existing or proposed streets shall be backfilled with crusher run stone conforming to NYSDOT 304-2.02 Gradation Type 2. Crushed or screened gravel may be used with the approval of the Town.

Material shall be compacted in lifts of 1 foot maximum to the elevation of the road subgrade. From there the backfill shall conform to the material specifications for individual road sections.

In no instance shall spare native material be used for backfill to be excavated at a later date for crusher run stone backfill.

Backfill shall be compacted in accordance with 4.10.

E. Cleaning Up

All roadways, intersections, gutters, and sidewalks shall be routinely cleaned of accumulated debris, sediment and tools throughout the construction process.

As the work progresses or as directed by the Design Engineer, all rubbish or refuse, unused materials and tools, shall be removed at once from along and near the trench line construction.

Rough clean up along the route shall immediately follow installation procedures. Large spoil banks will not be permitted in developed areas.

Final clean up and landscaping shall proceed immediately after the installation, testing and approval of the facility.

Erosion control measures must be maintained throughout the construction process and removed only upon the approval of the Town.

In all cases, the project site shall be restored to a condition equal to or better than that, which previously existed.

4.10 Compaction

Compaction densities specified herein shall be the percentage of the maximum density obtainable at optimum moisture content as determined and controlled, in accordance with ASTM D1557. Field density tests shall be made in accordance with ASTM D6938.

Each layer of backfill shall be moistened or dried as required and shall be compacted to the following densities, unless otherwise specified.

A. Select Fill

Under all existing or proposed roads, driveways, parking areas	95%
All other areas	85%

B. Methods and Equipment

Methods and equipment proposed for compaction shall be subject to the approval of the Town. Compaction by rolling or operating heavy equipment over fill areas shall be conducted in a manner by which injury to existing utilities and structures shall be avoided. Any pipe or structure damaged thereby shall be replaced or repaired as directed by the Town at the expense of the Developer.

C. Testing

1. Field density tests may be ordered by the Town as necessary and will be paid for by the Developer.
2. The Developer shall furnish all necessary samples for laboratory tests and shall provide assistance and cooperation during field tests. The Developer shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.

Any areas found to be below required compaction densities shall be removed and replaced with new material at the Developer's expense. The methods of operation and/or the backfill materials shall be changed to meet required compactions.

Inadequate compaction shall be cause for the Town to issue a stop work order on a project.

4.11 Testing of Underground Utilities

A. General Information

Upon the satisfactory completion of the installation of the underground utilities, the Contractor shall proceed to test each of the installed facilities as herein specified. These tests shall be conducted in the presence of the Town. No test will be accepted unless witnessed by the Town. Records and date of these tests shall be submitted to the municipality as part of the record drawing information.

Water used by the Developer during any testing procedures will be paid for by the Developer - all hydrants for water supply or testing use shall be operated by the Town Water Department.

B. Sanitary Gravity Sewers (see Appendix S-8.0)

1. All sewers shall be flushed clean by the Contractor.
2. All flexible pipe shall be tested for deflection. The deflection test shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system.
 - a. No pipe shall exceed a deflection of 5 percent. If deflection exceeds 5 percent, replacement of the defective sewer will be required.
 - b. The required mandrel test for deflection will be supplemented with a new required videotaping.
 - c. The contractor will flush all new sewer mains and video tape all mains providing a CD of each section clearly labeling manhole to manhole with digital references showing the exact location of each sanitary wye.
3. Leakage test shall also be conducted on the sewer. This test may be either by water or low pressure air testing (see Appendix S-8.0).
4. Each manhole shall be subjected to an infiltration or exfiltration test as determined by the Town.
 - a. Water Testing - Each manhole shall be filled with a maximum of 10 feet of water, subjected to a 24 hour test and show a loss of water not to exceed 4.5 gallons/24 hours for a 4 foot IDMH. Infiltration tests shall adhere to the same limits.
 - b. Vacuum Testing - Each manhole shall be subjected to a vacuum of 10 inches of Hg for one minute with an allowable loss of 1 inch of Hg.

C. Sanitary Pressure Sewer (see Appendix S-8.2)

Pressure tests shall be made only after the completion of backfilling operations and at least 36 hours after the concrete thrust blocks have been cast.

The duration of pressure tests shall be one hour, unless otherwise directed by the Town. Test pressure shall be 100-psi minimum or a pressure of 2-1/2 times the maximum system operating pressure, whichever is greater. All tests are to be conducted in the presence of the Town. Allowable leakage shall be as specified in Appendix S-8.2.

The pipeline shall be slowly filled with water. The specified pressure, measured at the lowest point of elevation, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Town.

During the filling of the pipe and before applying the specified pressure, all air shall be expelled from the pipeline by making taps at the point of highest elevation. After completion of the test, the taps shall be tightly plugged at the main.

D. Storm Drains

All storm sewers shall be flushed clean by the Contractor and in the presence of the Town the lines shall be lamped.

E. Water Mains (see Appendix W-10.0)

Provisions for metering the flushing and testing water shall be made. Water used must be purchased by the Developer.

1. Pressure Tests

Water piping shall be flushed and tested in conformance with the latest revision of ANSI/AWWA C600 standard for ductile-iron pipe, C605 for PVC pipe, or equivalent of C600 and/or C605 for PE pipe.

2. Disinfection

The proposed works must conform to latest revision of ANSI/AWWA C651 standard, tablet method excepted. Following flushing and testing, the engineer shall oversee collection of 2 consecutive days of an appropriate number of bacteriological samples for total and fecal coliform and for standard bacterial plate count after the field free chlorine residual is less than 1.5 PPM and the sampling points have been decontaminated, prior to sampling, the engineer shall coordinate the appropriate number and locations of samples to be collected with the County or State Health Department having jurisdiction.

3. Samples

After flushing of the newly disinfected main and in accordance with the section above, the contractor shall obtain samples of water and submit them to a laboratory approved by the New York State Department of Health. Upon the receipt of a satisfactory laboratory report, this information together with the Design Engineer's Certificate of Construction shall be submitted to the New York State Department of Health for approval. Upon receipt of the Approval of Completed Work from the Health Department, the water system shall be considered complete and may be accepted for service by the Town.

F. Defective Areas

In any areas where satisfactory results of applied tests cannot be obtained, the defective portion of the system shall be located and replaced with new material.

That portion of the system shall then be retested until satisfactory results are obtained. Use of repair clamps will not be permitted by the Town.

4.12 Surface Improvements

General Information

The Contractor shall not proceed to construct any surface improvements, including roads, gutters and/or sidewalks until the underground system has been installed, tested and approved by the Town.

Careful attention shall be given by the Contractor to obtain the necessary compaction densities as specified. In general, the soils in Geneva preclude ultimate compaction in a short period of time due to the high clay content in the soil. Therefore, paving of the top road surface may be delayed by order of the Town of Geneva for a period of seven (7) months or at least until a winter season has passed since the completion of the road binder course.

4.13 Roads/Streets

A. Subgrade

The subgrade shall be graded to remove all unsatisfactory or unstable material. Where material is removed below the subgrade elevation, suitable granular material shall be used to bring the road to proper subgrade. Where ground water or poor soil conditions exist, the Developer shall be required to install perforated underdrain and crushed stone weeps to drain the base. The entire subgrade surface shall be thoroughly compacted according to NYSDOT Specification 203-3.12.

Geotextile shall be required by the Town to stabilize the base or subbase before the Contractor proceeds with installation. This requirement may be waived by the Town Highway Superintendent upon submission of appropriate subsurface soil test results to prove that this fabric is unnecessary.

No movement shall be observed in the subgrade material as the roller passes.

When the subgrade is completed, the Contractor shall notify the Town Highway Superintendent and the Town Engineer for a base determination. Upon the review and written approval of the subgrade by the Highway Superintendent and the Town Engineer, the base material may be placed.

B. Base Material

Approved base materials shall be uniformly deposited and compacted in layers with a roller, according to NYSDOT Specifications. Rolling shall begin at the sides and continue toward the center and shall continue until there is no movement of the course ahead of the roller. After compaction, the top surface of this course shall not extend above the theoretical elevation for this course and when tested with a straightedge 16 feet in length, any bump or depression over 1/4 inch from the theoretical grade line shall be satisfactorily eliminated. When the base has been prepared to the satisfaction of the Highway Superintendent, the Developer may place the binder course. If base conditions are changed as determined by the Highway Superintendent before the binder is placed, he may order the Developer to seal the stone with a rapid sealing liquid asphalt emulsion as specified in NYSDOT Section 702-10 or 702-11 with 0.5 gallons per square yard as determined by the conditions and not more than 24 hours prior to placement of binder asphalt.

C. Bituminous Pavement

1. Binder shall be placed and compacted to a minimum finished layer thickness of 3 inches with a self-propelled asphalt spreader and rolled according to NYSDOT Specifications 401-3.06 and 401-3.12. Before applying the top course, any irregularities in the binder course shall be eliminated but at no time will "cold patch" or "winter mix" be allowed on the binder for repair work.
2. Before the surface course is placed, the binder will be cleaned by the installer and inspected by the Highway Superintendent to determine the condition of the pavement. It shall be necessary to apply a tack coat at the rate of 0.1-gallon/square yard before placing the surface unless this requirement is waived by the Highway Superintendent.
3. Surface Course shall be placed and compacted to a minimum finished layer thickness of 1 1/2 inches with a self-propelled asphalt spreader and rolled in accordance with NYSDOT Specifications 401-3.06 and 401.3.12.

D. Temporary Road Construction

Where construction sequences preclude the specified road construction items and these requirements for Certificates of Occupancy, a temporary road consisting of the specified road section less top surface course may be constructed.

This temporary road shall be reviewed by the Town Highway Superintendent and approved in writing prior to the issuance of any Certificate of Occupancy. The Town may accept dedication of the road if sufficient monies remain in the financial guarantee to top the road the next year.

E. Continuation of Existing Road

When construction of a road is continued from an existing road or previous developed section, the pavements shall be joined with a triangular cut of at least 15 feet from edge of the pavement to the centerline of the old pavement. The intent of this provision is to eliminate any grade difference and make a smooth riding transition.

All pavement joints shall receive a tack coat before placing the binder or top course.

F. Stabilized Shoulders

Stabilized shoulders shall be constructed to the dimensions shown on the typical sections. Construction methods shall conform to NYSDOT Specification 410-3.01. The base course shall consist of a wedge of crusher run stone with a single surface treatment.

G. Underdrains

Underdrains shall be installed in conformance with NYSDOT Specification 605 and underdrain filter Type 1 per NYSDOT Specification 605-2.02. The underdrain shall be laid on four inches (4") of compacted stone and require six inches (6") of stone above and around the pipe.

4.14 Concrete Gutters and Sidewalks

A. Concrete Gutters (see Appendix H-6.0)

1. Concrete gutters shall be a minimum of 10 inches in depth and constructed true to the shape, line and grade on a thoroughly compacted base. The gutters may be constructed using a slip form method or in-place formwork.
2. Joints between sections shall be placed every 10 feet at right angles to the flow line and must be "wet struck" 1/8 inch wide and 3/4 inch deep. Full

depth bituminous expansion joints shall be placed every 50 feet and at all structures or inlets.

3. Gutters shall be broom finished before the joints are struck and the finish shall be consistent throughout the project.
4. Gutters shall be cured and sealed by spraying with an approved curing and sealing compound at the rate recommended by the manufacturer.
5. One coat of curing and sealing compound shall be applied when the work is complete and another coat after the gutters have set for 48 hours.
6. The use of burlap or coverings for curing or protection is not acceptable until after the concrete has been sprayed and set.
7. Prior to final paving, the gutters shall be flooded and checked for horizontal and vertical line and grade and finish. If any gutters are found to be constructed in an unacceptable manner by the Superintendent of Highways, they shall be removed and replaced. They shall also be backed up with select fill (no cobbles greater than 3 inches) to help prevent any movement during paving.
8. Gutter replacements shall conform to the existing gutter regarding finish and color.

B. Concrete Sidewalks (see Appendix H-7.0)

1. Shall be designed to meet the Americans with Disabilities Act (ADA) requirements.
2. Minimum 5 inches in depth and constructed true to shape, line and grade. Sidewalks installed through driveways shall be 5 inches thick and be reinforced with 6" x 6" wire mesh (10 gauge). Concrete shall be minimum 4000 psi, Class A, air entrained.
3. Minimum width shall be 5 feet or to match existing.
4. The base shall be thoroughly compacted crusher run stone with a thickness of 4 inches. The base material shall extend 6 inches outside each edge of the concrete sidewalk.
5. A cross slope of 1/4 inch per foot shall be maintained for positive drainage toward street level.
6. Construction joints shall be wet struck at 5-foot increments and be 3/4 inch deep. Full depth bituminous expansion joints shall be placed every 50 feet and at all castings.
7. Sidewalks shall be broom finished and have troweled edges with a corner radius of 1/4 inch. The finish shall be consistent throughout the project.

8. Two coats of approved curing and sealing compound shall be applied. One coat immediately following the finish work and the second coat 48 hours later.
9. A 10-foot sidewalk easement may be required.
10. Crosswalks and signage shall be provided as per the ASHTO and NYSDOT standards and in accordance with ADA requirements.

C. Testing

1. The Contractor shall obtain in accordance with ASTM C-31 two samples from every other truck delivering concrete to the site and have the samples compression tested by an independent testing laboratory.
2. Results of these tests shall be submitted to the Town Highway Superintendent.

4.15 Monuments (see Appendix H-10.0)

The monuments shall be installed at those locations shown on the approved final plan and as located in the field by a Licensed Land Surveyor. They shall be installed to a depth of at least 30 inches below finished grade with the top surface to be flush with finished grade. Upon the installation of the monuments the location shall be certified to the Town by a Licensed Land Surveyor as to their accuracy.

4.16 Final Grading

Upon satisfactory completion of the utilities and roads, the entire area within the right-of-way shall be raked, graded and hydroseeded according to the approved plans.

The site Contractor shall be responsible for all work within the right-of-way while also maintaining the erosion control. In those areas where home building has started, clean up and site maintenance will then become the responsibility of the builder. Debris and spoil banks created during the development (not home building) of the site shall be entirely removed and/or disposed of from the site. No burying of debris or material shall be allowed on approved or proposed building lots.

4.17 Landscaping Requirements

Adequate site landscaping may be required of the developer/owner on any lands developed in the Town of Geneva. If required, a landscape plan will need to designate plant species and locations on the plans. See Appendix H-11.0 for Tree/Shrub Planting Details.

A landscaping plan shall include the following:

1. Be designed to conform to the standards and techniques set forth in the Town Code.
2. Visual impacts shall be considered for planting within sight distances.

3. Trees are to be planted a minimum of 5 feet from the edge of any easement.
4. There shall be no underground utilities within 10 feet of any proposed tree.
5. All tree plantings shall be a minimum of 2 ½" caliper or as specified in the Town Code.
6. All tree plantings shall include a 2-year replacement guarantee.

4.18 Final Cleaning

During the time period between initial installation and testing and acceptance for dedication, debris and/or sediment may accumulate in the utility systems. The Developer shall be responsible to flush and remove this debris from the system prior to the final inspection for dedication.

4.19 Signs

Street and traffic signs shall be supplied by the Developer and installed by the Town in accordance with standards outlined in the Manual of Uniform Traffic Control Devices (State of New York, Department of Transportation, Division of Traffic and Safety).

Signs and posts shall be ordered by the Highway Department for consistency throughout the Town. Upon receipt of signs, they shall be placed in the field by the Highway Department with sign post and installation cost the responsibility of the Developer.

4.20 Crosswalk Requirements

Are to comply with the Manual Uniform Traffic Control Devices (MUTCD) requirements.

SECTION 5 - Requirements for Dedication and Project Acceptance

5.01 General

All construction within the right-of-way or on lands to be dedicated to the Town shall be complete with a final site inspection and written approvals of the construction by the following:

1. Town Water & Sewer Superintendent
2. Town Highway Superintendent
3. Town Engineer (if requested by the Town)
4. Subcontracted inspector on behalf of the Town Engineer under prior approval of the Town Board.

5.02 Monuments

Monuments shall have been set in their required locations and certified by the applicants licensed Land Surveyor.

5.03 Grading

Final grading and hydroseeding and mulching to achieve full stabilization shall be completed within the right-of-way and all spoil removed from the site.

5.04 Landscaping

All landscaping is to be completed as per the approved subdivision and site plans and inspected by the Town Engineer and/or the Code Enforcement Officer.

5.05 Lighting

All lighting is to be LED, Dark Sky Compliant, and in accordance with the Town Code.

5.06 Street Signs

All street and traffic signs, including street identification numbers, shall be properly set in their designated locations.

5.07 Road and Easement Dedications

The Dedication process requires many documents, which have to be prepared and checked by many departments within the Town of Geneva, including a review, obtaining the necessary Resolution(s) at Town Board meeting(s), and a Certificate of Occupancy (C of O) for a completed dwelling.

STEPS TO FOLLOW:

1. The developer and/or the developer's engineer(s) contacts the Town of Geneva Building and Zoning Department regarding the necessary Road and/or Easement Dedication requirements.
2. The documents needed for the granting of easements are:
 - a) Easement(s) with Legal Description(s);
 - b) Easement Area Survey Map(s);
 - c) Form TP-584.2 for the Easements (only one is needed for all easements);
 - d) Bill of Sale;
 - e) Survey Map;
 - f) Attorney's Certification of Title (must show the Grantor's ownership interest in the property and show that the subject property is free and clear of all liens and encumbrances that would affect the granting of said easement(s). If there are any liens or encumbrances that would affect the granting of said easement(s), they must all be cleared, discharged or satisfied to the Town's satisfaction prior to the Town accepting the easements);
 - g) If Developer is a corporation or limited liability company:
 - i. a copy of the corporation's Articles of Incorporation or LLC's Articles of Organization,
 - ii. Filing Receipt with the New York State Department of State,
 - iii. Certificate of Good Standing,
 - iv. Franchise Tax Report,
 - v. LLC's Operating Agreement and
 - vi. Resolution of the corporation's Board of Directors/LLC's Members authorizing the transfer of the easements and authorizing the officer who will be signing the documents to sign them;
 - h) Payment by Grantor of all Recording and Filing Fees
3. The needed for conveying title to the roadbed are:
 - a) Warranty Deed with Legal Description (for dedication of road(s));
 - b) TP-584;
 - c) RP-5217;
 - d) Release;
 - e) Bill of Sale;
 - f) Survey Map;

- g) An Abstract of Title to be retained by the Town;
 - h) Preliminary Fee Title Insurance Policy or Attorney's Certification of Title (Policy or Attorney's Certification of Title must show the Grantor's ownership interest in the property and show that the subject property is free and clear of all liens and encumbrances. If there are any liens or encumbrances, they must all be cleared, discharged or satisfied to the Town's satisfaction prior to the Town accepting the deed and/or easements);
 - i) If Developer is a corporation or limited liability company:
 - i. a copy of the corporation's Articles of Incorporation or LLC's Articles of Organization,
 - ii. Filing Receipt with the New York State Department of State,
 - iii. Certificate of Good Standing,
 - iv. Franchise Tax Report,
 - v. LLC's Operating Agreement and
 - vi. Resolution of the corporation's Board of Directors/LLC's Members authorizing the transfer of the easements and authorizing the officer who will be signing the documents to sign them;
 - j) Payment by Grantor of all Recording and Filing Fees
4. After the documents, survey descriptions and maps have been prepared, they are returned to the Town of Geneva Building & Zoning Department for review. If there are no changes, they will be forwarded to the Town's Attorney.
 5. The Town's Attorney reviews the documents for accuracy. If the documents are in order, Counsel will forward them to the Town Board along with Board Resolutions for the Town Board to adopt and an Order for the Highway Superintendent to lay out the highway(s) in question.
 6. Once the Town Board has adopted the Board Resolution(s), the Town Supervisor will sign all approved documents. The developer or the developer's agent will need to arrange with the Town for pick up of the signed documents and arrange to have them recorded in the Ontario County Clerk's Office. Immediately after the documents have been recorded, the developer or the developer's agent must send to the Town Clerk, the Town Building & Zoning Department, the Town Water and Sewer Department, Town Highway Department, Town Engineer, and the Attorney for the Town a copy of the recording receipt from the County Clerk showing the recording date and liber and page of each document that has been recorded. The Town Code Enforcement Officer will not issue a Certificate of Occupancy (C of O) until it has this written proof of recording.
 7. The developer must satisfy all requirements for dedication and project acceptance as outlined in the Town of Geneva's Site and Development Criteria Handbook on pages 69 through 78, paragraphs 5.01 through 5.06, 5.08, and 5.09.

5.08 Dedication Process

Prior to the Town Board taking dedication, the following items are to be completed as required per Section 144-33 of the Town of Geneva Town Code:

1. A final inspection and completion of the Town Inspection Form (Appendix G-4) is to be performed by the Town of Geneva Planning Board representative and/or Town Engineer, Town Water & Sewer Superintendent, and Highway Superintendent to confirm all proposed dedicated items have been completed and constructed per the approved plans and Town requirements.
2. Completion of the General Site Improvements Offered for Dedication Form (Appendix G-3.0) are to be completed, signed (by those who completed the inspection), and forwarded with the dedication package to the Town Board.
3. The submission and acceptance of a two (2) year Maintenance Bond for all improvements to be offered to the Town for dedication. Maintenance sureties shall be written by a surety licensed to do business in New York State and they shall be in the amount of 10 percent of the dedicated items.

The submission of all testing results to the Town and acceptance of project As-Build Drawings meeting the Town of Geneva requirements as listed within Section 5.07.

5.09 As-Build Requirements

1. Four prints of the record drawings and one digital copy of the information in compliance with the list of requirements below, shall be submitted to the Town Code Enforcement Officer for distribution to the Town Engineer, Water & Sewer Department & Highway Department for review.
2. Once approved by the Town Departments, five (5) copies of the record drawings and two (2) CD's containing the digital information is to be provided to the Town of Geneva Building & Zoning Department.
3. The following requirements are to be provided to insure compliance of any future as-built drawings submitted to the Town of Geneva:
 - a) All survey data to be in NAD 83 coordinates. NY Central projection units – US Feet.
 - b) All elevations to be based on NAVD 88 Orthometric Heights.
 - c) A minimum of one site bench mark will be established.
 - d) All infrastructure dedicated to the Town of Geneva is to include but not limited to: monuments and pins delineating dedicated Town of Geneva

properties, fire hydrants, storm & sanitary manholes, catch basins, water valves, curb stops, sewer cleanouts, light poles and stormwater management facilities.

- e) Delivered to the Town of Geneva in a .dwg format that include the following attributes with each structure:
 - Northing
 - Easting
 - Ortho Height
 - Point Code
 - Point I.D.
 - Material
 - Manufacturer
- f) All required points and attributes are to be included in separate files in either .csv or ascii format so that they can be administered and uploaded.
- g) Water lines to be delivered in a .dwg format with attribute data to include length of line, material and size.
- h) Sanitary sewer lines to be delivered in .dwg format with attribute data to include length of line, material, size, inlet line, outlet line, slope line, and flow direction arrows.
- i) Storm sewer lines to be delivered in .dwg format with attribute data to include length of line, material, size, inlet line, outlet line, slope line, and flow direction arrows.
- j) All data is to be delivered to the Town of Geneva on a CD/DVD and a .dwg format digital file.

4. The following Record Drawing information shall be provided as described:

- a) Locations and Elevations of all sanitary/storm manholes, catch basins, culvers, this includes invert and top elevations of sanitary sewers, watermain, storm sewers, slopes, size and lengths.
- b) Locations and Elevations of all water system valves, curb boxes, fire hydrants, sanitary sewer lateral and main connection at wyes, sanitary sewer clean-outs, storm lateral, and water service line and curb box.
- c) Finished Elevations and slopes of road surfaces and gutters, including road name and curve table.
- d) Locations and finished elevations of all dedicated stormwater management facilities and outfall structures.
- e) Locations of all light poles, sidewalks, and street signs.

- f) Liber/page number of any easements or right-of-way and including floodplain numbers.
- g) Any other significant details affecting the operation or maintenance of any system by the town or districts.
- h) All record data and test results shall be supplied to the Town/Districts and are subjected to review and approval at least 15 days prior to any dedication procedure.

If the developer cannot provide the record information as detailed above the Town may elect to complete the record information at the Developer/owners expense.

5.10 Letter of Credit Approval Procedure

The following is the require procedure for review and approval of letters of credit:

1. Developer submits the following to the Town Code Enforcement Officer and Town Engineer:
 - a) Cover letter identifying the project and requested letter of credit amount.
 - b) Completed “Engineers Estimate”.
2. The Town Engineer reviews the Letter of Credit Estimate for accuracy.
3. The Town Engineer forwards the Letter of Credit Estimate to the Town Code Enforcement Officer and Town Board.
4. The Town Board may, by resolution, accept or reject the propose value. Once the Town Board is satisfied with the form and value of the Letter of Credit, the Town Board, by resolution, will accept the Letter of Credit and submit it to the Town Clerk. The Town Clerk shall authorize releases on behalf of, and only after having received instructions from, the Town Board.

5.11 Letter of Credit Release Procedure

The following is the required procedure for review and approval of both partial and final letters of credit releases:

1. Developer submits the following to the Town Code Enforcement Officer and Town Engineer:
 - a) Cover letter identifying the project and requested letter of credit to be released.
 - b) Completed “Town of Geneva Letter of Credit Release Form” (See Appendix G-2.0).
 - c) Completed “Engineer’s Estimate”.

2. Town Engineer reviews the Letter of Credit Release request and reviews quantities of installed materials with Water and Sewer Department and Highway Department.
3. Once quantities are verified, Town Engineer submits a letter of recommendation to the Town Code Enforcement Officer which includes the following:
 - a) Name of Project
 - b) Recommended letter of credit release amount
 - c) Original letter of credit amount
 - d) Letter of credit balance
 - e) Reference to completed and signed "Letter of Credit Release Form" (Appendix G-2.0) submitted by developer
 - f) Copy of Developer's engineers estimate
4. The Town Building & Zoning Department reviews Town Engineer's letter and submits to Town Board with recommendation of action.
5. Copies of the letter of recommendation are sent to the Department Heads, Town Clerk, Town Board and Town Supervisor.
6. Town Board adopts resolution to release requested letter of credit amounts.
7. Town Clerk provides notice to applicant.

8. Partial release from the Letter of Credit may be granted by the Town Board as individual components of the subdivision and/or site development are completed. This shall not be construed as final acceptance of the work by the Town.

5.12 Maintenance Guarantee

The submission and acceptance of a two (2) year Maintenance Bond or the use of 10 percent of the value of the dedicated items in the established Letter of Credit (LOC) for the project, for all improvements to be offered to the Town for dedication. Maintenance sureties shall be written by a surety licensed to do business in New York State and they shall be in the amount of 10 percent of the dedicated items. [The Maintenance surety shall be approved as to form and content by the Municipal Attorney prior to any dedication procedure and final release of funds.]

5.13 Final Release of Funds

Prior to the authorizing of the final release from the Letter of Credit, a final site inspection and approval is to be provided by the Town Department Heads and Town Engineer (upon request by the Town) and completion of the Town Inspection Form (Appendix G-4). The

Town Board, upon recommendation from the Town Engineer, receipt of the General Site Improvements Offered for Dedication Forms (Appendix G-3.0) signed by the appropriate Department Heads and/or Staff, receipt of a two (2) year Maintenance Guarantee, and certified record (As-Built) drawings approved by the Highway Superintendent and Water and Sewer Superintendent, shall then authorize the final release of monies retained in the Letter of Credit.

A minimum of 60 days prior to the Maintenance Guarantee expiring, a final inspection completed by the Town Department Heads and submission of the Final Inspection Form for Expiring Maintenance Bonds (Appendix G-4.0) is to be provided to the Town Code Enforcement Officer.

If the required improvements are not completely installed within the period fixed, or extended by the Town Board, or the submitted Final Inspection Form (Appendix G-4.0) identifies deficiencies, the Town Board may declare the Letter of Credit / Maintenance Guarantee in default and collect the amount payable thereunder. Upon receipt of such amount, the Town shall install such improvements as were covered by the Letter of Credit / Maintenance Guarantee and are commensurate with the extent of building development which has taken place in the subdivision, not exceeding in cost, however, the amount collected upon the Letter of Credit/ Maintenance Guarantee.

LIST OF APPENDICES

GENERAL DETAILS

G – 2.0	Letter of Credit – Release Form
G – 3.0	Dedication Form
G – 4.0	Final Inspection Form
G – 5.0	Town Development Office Action Chart
G – 5.1	Town Development Office Action Chart – Continued
G – 5.2	Town Development Office Action Chart – Continued
G – 5.3	Town Development Office Action Chart – Continued
G – 6.0	SEQR Basic Flow Chart
G – 7.0	Typical Service Detail
G – 8.0	Utility Notifications
G – 9.0	Public Safety Sign Detail

LIST OF APPENDICES

HIGHWAY DETAILS

H – 1.0	Typical Road Cross Sections (Town Collector)
H – 1.1	Typical Road Cross Sections (Local / Subdivision)
H – 1.2	Typical Road Cross Sections (Industrial / Non-Dedicated Private Drive)
H – 2.0	Typical Pavement Cross Sections (Town Collector / Local)
H – 2.1	Typical Pavement Cross Sections (Commercial / Industrial / Non-Dedicated Private Drive)
H – 3.0	Stabilized Shoulder Section (Commercial / Industrial)
H – 4.0	Typical Driveway Apron Detail
H – 5.0	Typical Driveway Culvert Detail
H – 6.0	Concrete Gutter Detail
H – 7.0	Sidewalk Detail
H – 8.0	Cul-De-Sac Plan
H – 8.1	Offset Cul-De-Sac Plan
H – 9.0	Hammer Head Turn Around
H – 10.0	Monument
H – 11.0	Typical Tree/Shrub Planting Detail
H – 12.0	Landscaping Notes
H – 12.1	Landscaping Requirements (Bufferyard A)
H – 12.2	Landscaping Requirements (Bufferyard B)
H – 12.3	Landscaping Requirements (Bufferyard C)
H – 12.4	Landscaping Requirements (Bufferyard D)
H – 12.5	Landscaping Requirements (Fences and Berms)
H – 13.0	Typical Grading Plan
H – 14.0	Stone Dust Trail
H – 15.0	Typical Lighting Detail
H – 16.0	Parking Lot Double Stripe

LIST OF APPENDICES

SANITARY SEWER DETAILS

S – 1.0	Sanitary Sewer Cleanout Detail
S – 2.0	Future Sanitary Connection
S – 3.0	Sanitary Lateral Detail
S – 4.0	Tee Lateral Connection to Sewer Main
S – 5.0	Shallow Sanitary Sewer Manhole (Less than 8' deep)
S – 5.1	Deep Sanitary Sewer Manhole (Greater than 8' deep)
S – 5.2	Sanitary Sewer Manhole Frame and Cover Detail
S – 6.0	Sanitary Sewer Drop Connection
S – 7.0	Shallow Sanitary Sewer Manhole (Less than 4' deep)
S – 8.0	Cleaning and Testing of Sanitary Sewers (General / Cleaning / Testing)
S – 8.1	Cleaning and Testing of Sanitary Sewers (Time Requirements)
S – 8.2	Cleaning and Testing of Sanitary Sewers (Forcemain Testing)
S – 9.0	High Flow Pump Station (>100 GPM)
S – 9.1	High Flow Pump Station (Section)
S – 9.2	High Flow Pump Station (Section)
S – 10.0	Low Flow Pump Station Plan (<100 GPM)
S – 11.0	Pump Station Notes and Requirements

LIST OF APPENDICES

STORM SEWER DETAILS

ST – 1.0	SWPPP Storm Water Permit Process
ST – 2.0	MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form (Page 1 of 2)
ST – 2.1	MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form (Page 2 of 2)
ST – 3.0	Storm Water Pollution Prevention Plan – Notes
ST – 3.1	Storm Water Pollution Prevention Plan – Notes (Continued)
ST – 4.0	Storm Sewer Calculations
ST – 5.0	Catch Basin Detail
ST – 6.0	Storm Sewer and Catch Basin Manhole
ST – 7.0	Gutter and Catch Basin Apron Detail
ST – 8.0	Rainfall Intensity Curves

LIST OF APPENDICES

WATERMAIN DETAILS

W – 1.0	Hydrant Unit
W – 1.1	Parallel Hydrant Unit
W – 1.2	End of Main Hydrant Unit
W – 1.3	Dead End Hydrant Unit
W – 2.0	Watermain Blow Off Detail
W – 3.0	Disinfection / Sampling Tap / Blow Off
W – 4.0	Typical Water Service
W – 5.0	Line Valve Anchor Detail
W – 6.0	Typical Water Meter Vault
W – 7.0	PRV Vault
W – 8.0	Meter Pit Detail
W – 9.0	Temporary Testing Meter Detail
W – 10.0	Watermain Pressure Test
W – 11.1	Mechanical Joint Pipe Restraints
W – 12.0	Watermain / Sewer Crossing Detail
W – 13.0	Trench Detail
W – 14.0	Tapping Saddle

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 2.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

LETTER OF CREDIT RELEASE

PROJECT NAME _____

ESTIMATE NO. _____

PROJECT NO. _____

DATE _____

FIGURE AMOUNTS THIS RELEASE

1) Construction this statement

\$ _____

2) Less Retainage

\$ _____

A. Construction Value To Be Released \$ _____

B. Engineering Costs \$ _____

C. Construction Observation Costs \$ _____

D. Other Costs \$ _____

E. 10% Contingency \$ _____
(Release)

F. Other Costs \$ _____

Total Amount to be Released this Release \$ _____

Project Engineer

Owner

Municipal Engineer

Fiscal Officer

1) Original Amount

\$ _____

2) Authorized For Release
Per Estimate Nos.

_____ \$ _____

_____ \$ _____

_____ \$ _____

_____ \$ _____

_____ \$ _____

_____ \$ _____

_____ \$ _____

_____ \$ _____

_____ \$ _____

_____ \$ _____

Subtotal \$ _____

* Balance Remaining In Letter Of
Credit Through This Statement

\$ _____

* The balance amount shall be sufficient
to insure satisfactory completion of the
remainder of the development.

Date

Date

Date

Date

LETTER OF CREDIT EXPIRES _____

LETTER OF CREDIT - RELEASE FORM

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 3.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

DEDICATION FORM

DATE: _____

RE: _____
(PROJECT NAME)

THE TOWN OFFICIALS LISTED BELOW, AS MAY BE APPROPRIATE, HAVE COMPLETED A FINAL INSPECTION OF THE ABOVE REFERENCED PROJECT AND RECOMMEND THE TOWN BOARD TAKE ACTION TO ACCEPT FOR DEDICATION THE BELOW DESCRIBED COMPONENTS.

- | | |
|--|---|
| <input type="checkbox"/> PUBLIC STREET(S) | <input type="checkbox"/> DRAINAGE FACILITIES/GREEN INFRASTRUCTURE |
| <input type="checkbox"/> PUBLIC WATERMAIN AND/OR FIRE HYDRANTS | <input type="checkbox"/> SIDEWALKS |
| <input type="checkbox"/> STORM SEWERS | <input type="checkbox"/> PARKLAND/OPEN SPACE AREA |
| <input type="checkbox"/> LANDSCAPING | <input type="checkbox"/> OTHER (SPECIFY) _____ |
| <input type="checkbox"/> STREET LIGHTS | |

THIS RECOMMENDATION IS BASED UPON OUR UNDERSTANDING THAT THE FOLLOWING HAVE BEEN PROVIDED:

- ☐ A FINAL INSPECTION WAS COMPLETED AND THE TOWN OF GENEVA FINAL INSPECTION FORM (APPENDIX G-4.0) WAS COMPLETED AND SIGNED.
- ☐ ALL R.O.W. DESCRIPTIONS, EASEMENT(S) AND DEED(S), BILLS OF SALE, AND MAPS HAVE BEEN REVIEWED AND APPROVED BY THE ATTORNEY FOR THE TOWN AND PROVIDED TO THE TOWN BOARD.
- ☐ RECORD MAPS HAVE BEEN REVIEWED AND ACCEPTED BY THE HIGHWAY & WATER SUPERINTENDENT, CODE ENFORCEMENT OFFICER, AND TOWN ENGINEER.
- ☐ THE GIS DATA AS SPECIFIED WITHIN THE TOWN OF GENEVA SITE DESIGN AND DEVELOPMENT CRITERIA MANUAL HAS BEEN PROVIDED TO THE TOWN OF GENEVA AND TOWN ENGINEER.
- ☐ THE MAINTENANCE GUARANTEE HAS BEEN REVIEWED AND APPROVED BY THE ATTORNEY FOR THE TOWN AND BY THE TOWN ENGINEER AND HAS BEEN ACCEPTED BY THE TOWN BOARD.
- ☐ PAYMENT OF ALL FEES HAS BEEN PROVIDED TO THE TOWN BY THE APPLICANT.

☐ _____
HIGHWAY & WATER SUPERINTENDENT

DATE

☐ _____
CODE ENFORCEMENT OFFICER

DATE

☐ _____
TOWN ENGINEER

DATE

TOWN OF
GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 4.0**

DATE: 2019

SCALE: N.T.S.

MRB *group*

INSPECTION FORM

DATE: _____

NAME: _____

- ☐ NO DEFICIENCIES WERE FOUND DURING THIS FINAL INSPECTION AND IT IS RECOMMENDED THAT THE TOWN BOARD TAKE DEDICATION OF THE ITEMS IDENTIFIED WITHIN THE TOWN OF GENEVA DEDICATION FORM AND THE DEDICATION PACKAGE PROVIDED BY THE TOWN ATTORNEY.
- ☐ DEFICIENCIES WERE FOUND DURING THE FINAL INSPECTION AND IT IS RECOMMENDED THAT THE TOWN BOARD NOT TAKE DEDICATION AT THIS TIME UNTIL THE ITEMS IDENTIFIED BELOW HAVE BEEN ADDRESSED TO THE SATISFACTION OF THE TOWN.
- ☐ DEFICIENCIES WERE FOUND DURING THE FINAL INSPECTION AND IT IS RECOMMENDED THAT THE TOWN BOARD DIRECT THESE DEFICIENCIES TO BE CORRECTED WITHIN THE NEXT THIRTY (30) DAYS AND/OR REQUIRE THAT THERE BE A ONE-YEAR EXTENSION TO THE EXPIRING SURETY.

NOTES: _____

[illegible]

- PICTURES

- | | | |
|--------------------------|--------------------------------|-------|
| <input type="checkbox"/> | _____ | _____ |
| | HIGHWAY & WATER SUPERINTENDENT | DATE |
| <input type="checkbox"/> | _____ | _____ |
| | CODE ENFORCEMENT OFFICER | DATE |
| <input type="checkbox"/> | _____ | _____ |
| | TOWN ENGINEER | DATE |

TOWN OF GENEVA

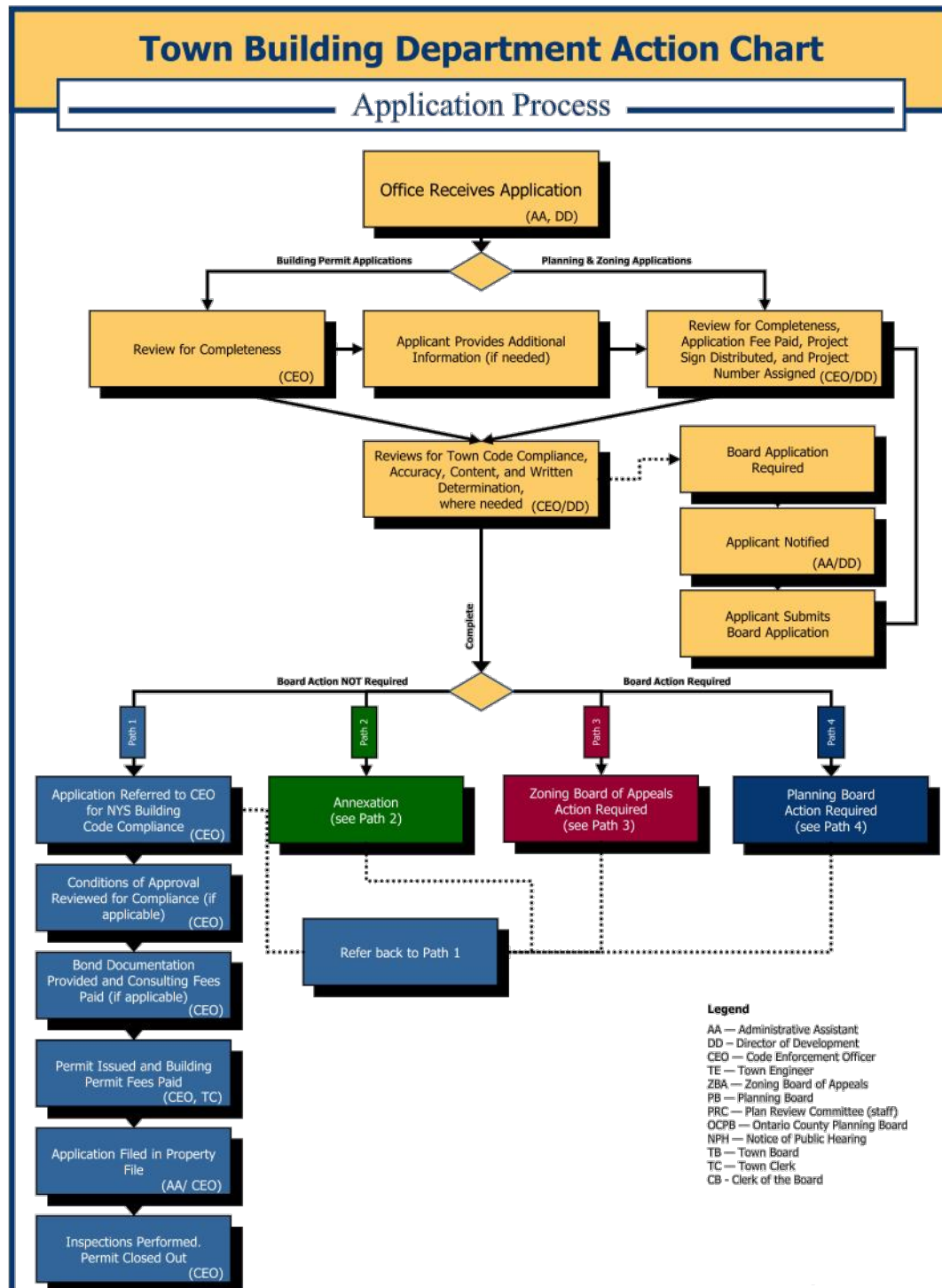
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 5.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



TOWN BUILDING DEPARTMENT ACTION CHART

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 5.1**

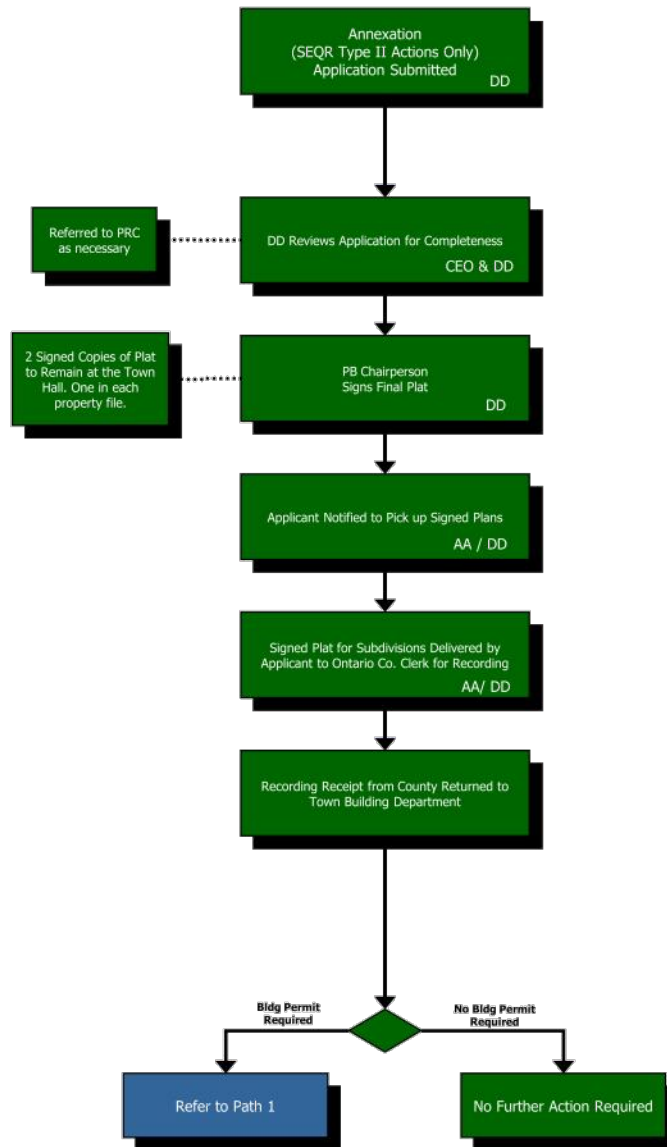
DATE: 2019

SCALE: N.T.S.

MRB | *group*

Town Building Department Action Chart

Annexation (Path 2)



TOWN BUILDING DEPARTMENT ACTION CHART
(CONTINUED)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 5.2**

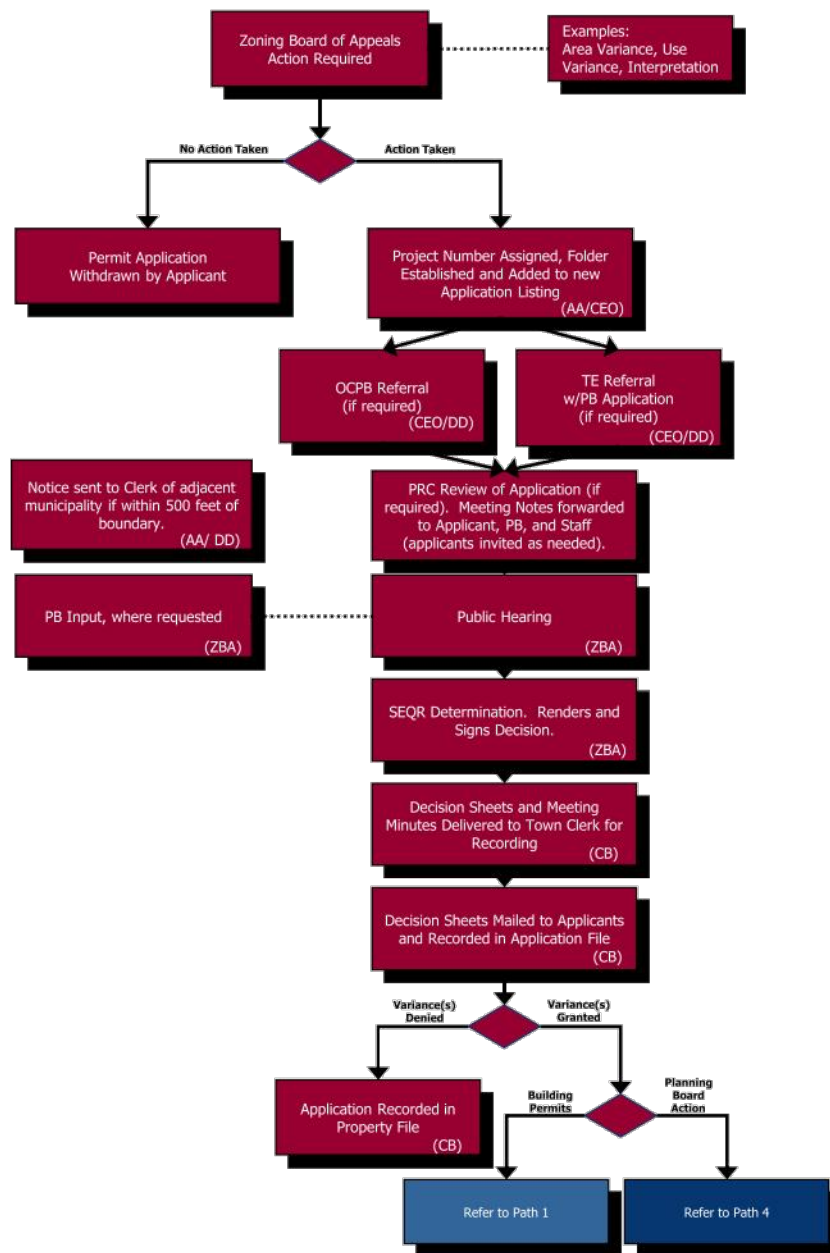
DATE: 2019

SCALE: N.T.S.

MRB | group

Town Building Department Action Chart

Zoning Board of Appeals (Path 3)



TOWN BUILDING DEPARTMENT ACTION CHART
(CONTINUED)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 5.3**

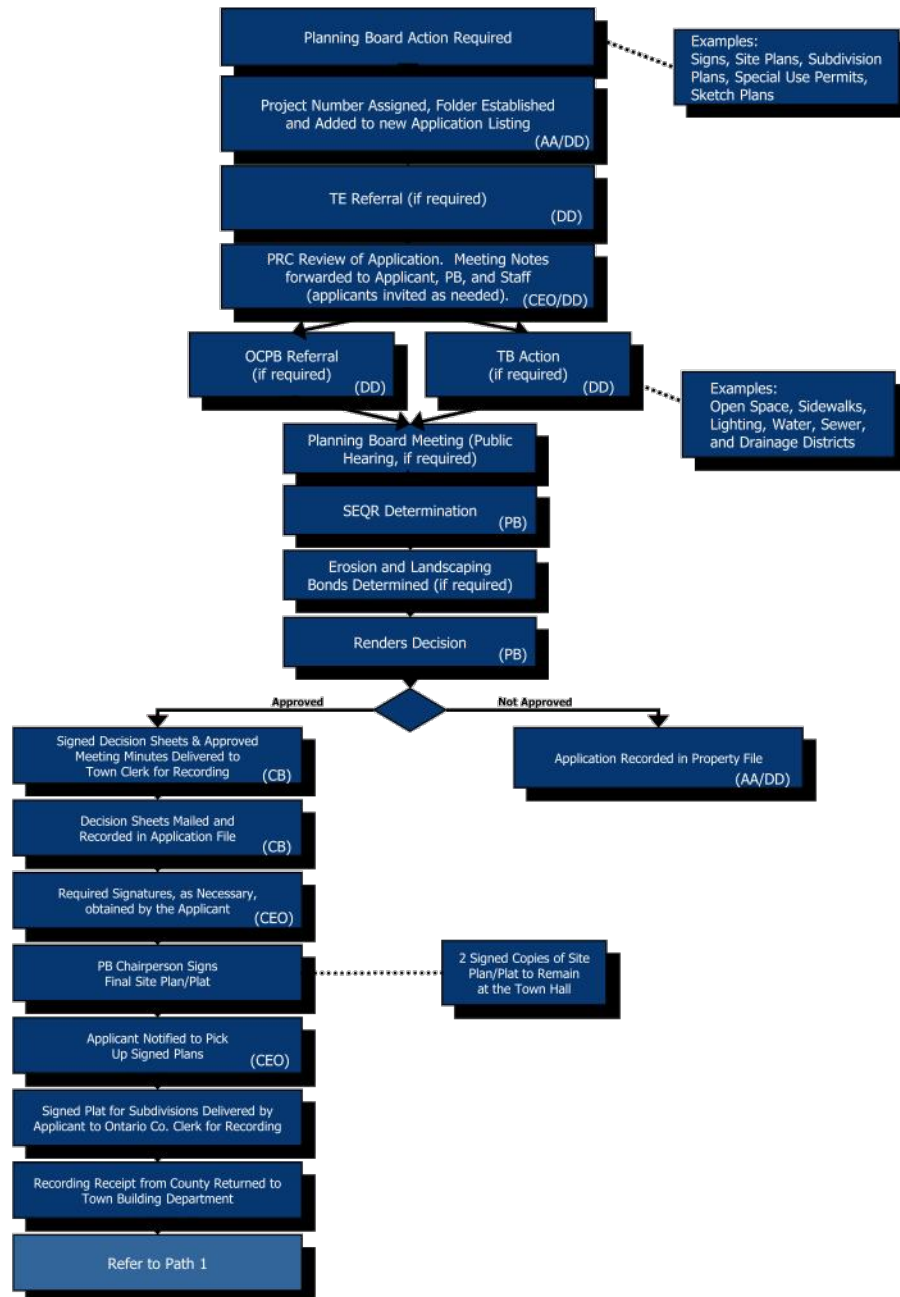
DATE: 2019

SCALE: N.T.S.

MRB | *group*

Town Building Department Action Chart

Planning Board (Path 4)



TOWN OF GENEVA

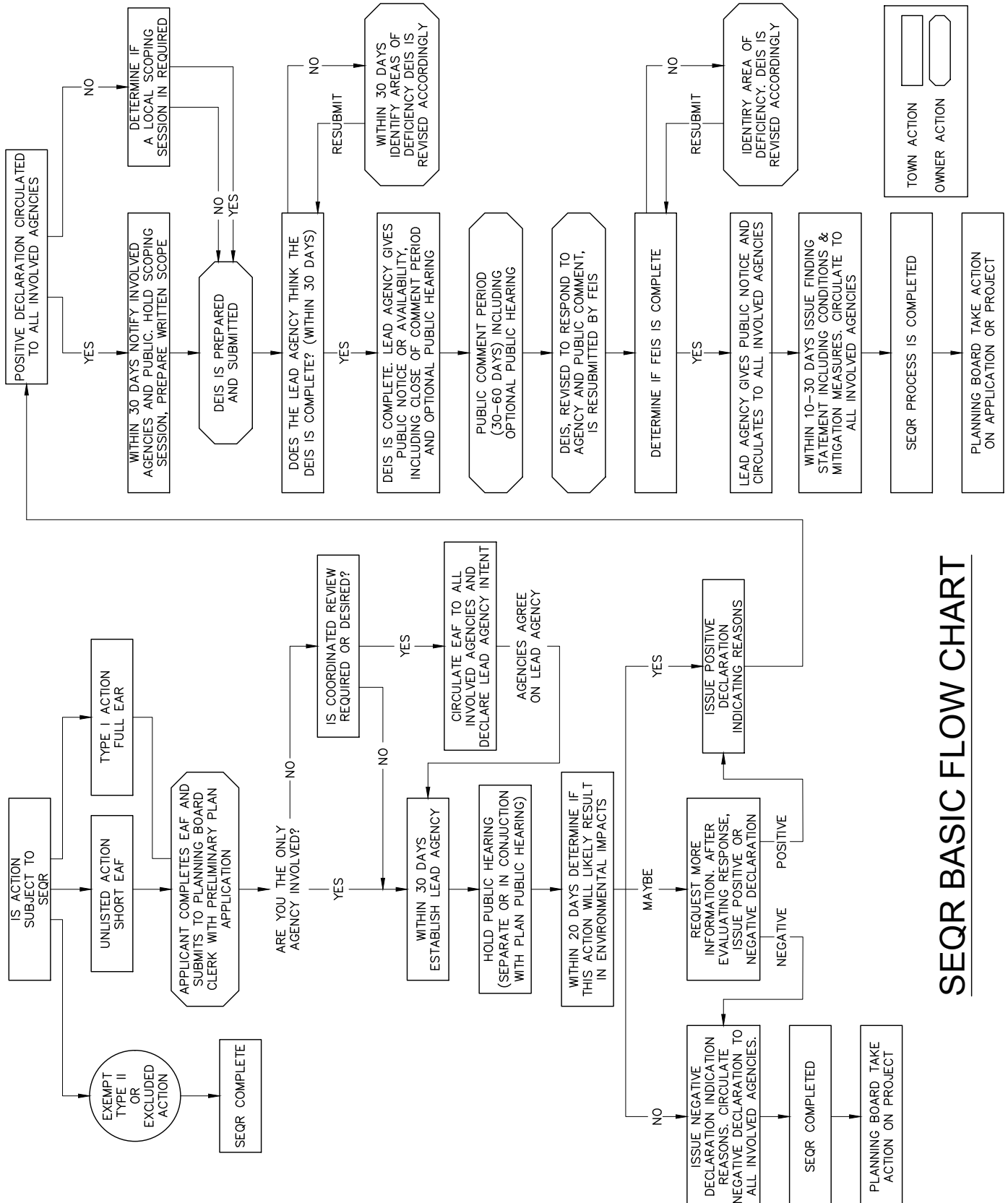
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 6.0**

DATE: 2019

SCALE: N.T.S.

MRB group



TOWN OF GENEVA

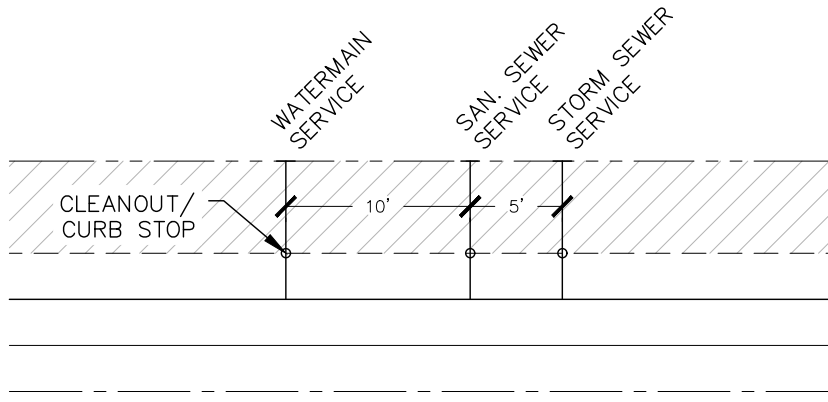
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 7.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



UTILITIES EASEMENT
(GAS, ELEC, ETC.)

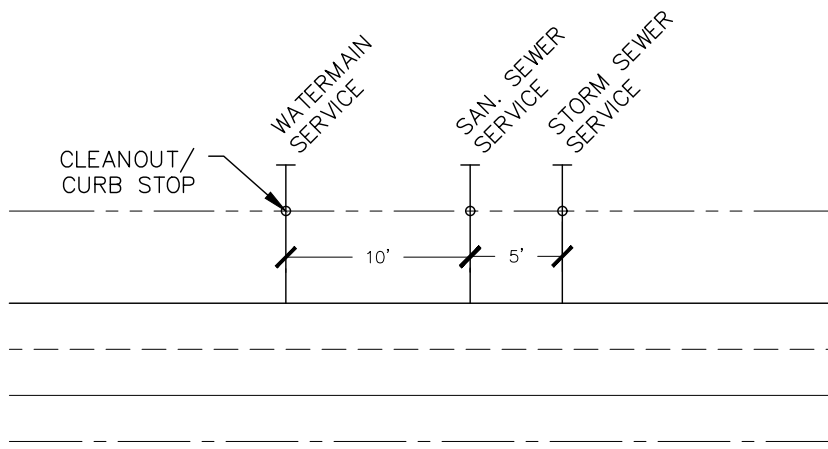
R.O.W.

UTILITY (WATER/SEWER/STORM)

EDGE OF ROAD

⌒ ROAD

INSIDE R.O.W.



WATER/SEWER/STORM EASEMENT

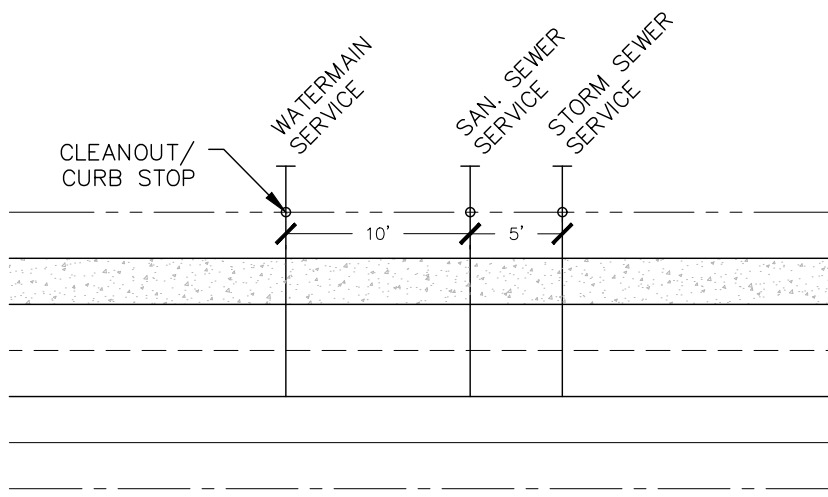
WATER/SEWER/STORM

R.O.W.

EDGE OF ROAD

⌒ ROAD

OUTSIDE R.O.W.



SIDEWALK EASEMENT (VARIES)

SIDEWALK

R.O.W.

WATER/SEWER/STORM

EDGE OF ROAD

⌒ ROAD

SIDEWALK

TYPICAL SERVICE DETAIL

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 8.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

!! CALL !!

**BEFORE YOU
DIG, DRILL OR BLAST**

1-800-962-7962 or 811

IN ACCORDANCE WITH DSNY (DIG SAFE NEW YORK),
CONTRACTORS MUST NOTIFY ALL UTILITIES IN THE AREA
TWO (2) WORKING DAYS BEFORE EXCAVATION.

THIS WILL NOTIFY:

- GLOBAL CROSSING / FRONTIER
- ALLTELL - MANCHESTER-SHORTSVILLE TELEPHONE
- TELERGY FIBEROPTIC
- MCI
- AMERICAN TELEPHONE AND TELEGRAPH
- BUCKEYE PIPELINE COMPANY
- ROCHESTER GAS AND ELECTRIC CORPORATION
- NIAGRA MOHAWK (NIMO) ELECTRIC
- MOBILE OIL
- TENECO
- NEW YORK TELEPHONE
- NEW YORK STATE ELECTRIC AND GAS
- EMPIRE STATE PIPELINE
- TENNESSEE PIPELINE COMPANY
- TOWN OF GENEVA WATER AND SEWER DEPARTMENT

IN ADDITION, THE CONTRACTOR SHALL NOTIFY THE MUNICIPAL
SEWER AND WATER DEPARTMENTS WITHIN THE PROJECT AREA.

UTILITY NOTIFICATIONS

TOWN OF
GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **G - 9.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

NYSDOT Region 9

PIN/SIGN NUMBER	SIGNS4	TEXT NO.	MUTCD NO.
LOCATION NO. (S)			
SIGN SIZE (WxH)	305mm x 913mm		
SIGN AREA 0.28 SQ.MOUNT; GROUND			
BORDER WIDTH 13	BORDER RAD 38		
BACKGROUND	GREEN		
LEGEND & BORDER	WHITE (TYPE 4)		

COORDINATES ARE TO LOWER LEFT CORNERS

SIGN DETAIL

SCALE 1:20

LETTER POSITIONS (X)

Y	FONT	HT	LEN
710	1	102	102
D	140	25	
508	8	102	102
D	118	70	
304	5	102	102
D	118	70	
102	0	102	102
D	116	73	

DIMENSIONS IN mm

LETTER POSITIONS (X)

NOTES:

1. ALL SIGNS TO BE DOUBLE SIDED.

PUBLIC SAFETY SIGN DETAIL

TOWN OF GENEVA

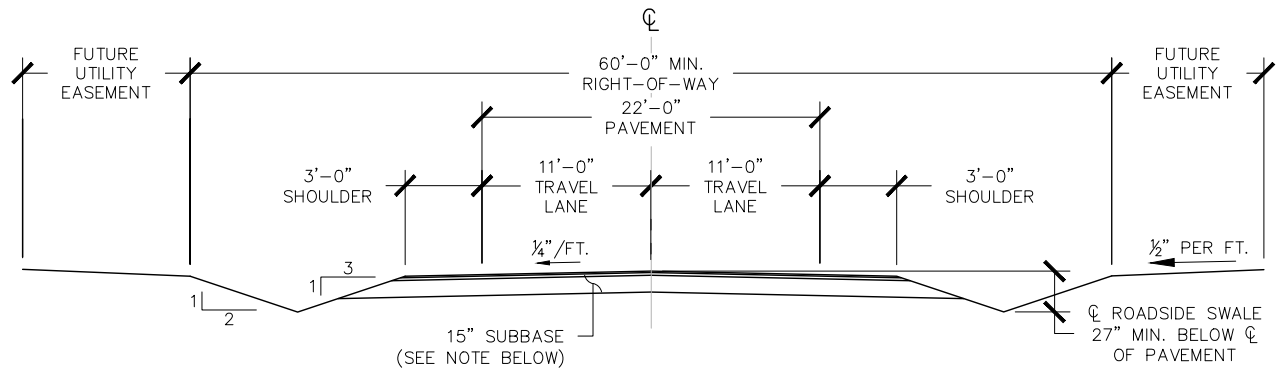
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 1.0**

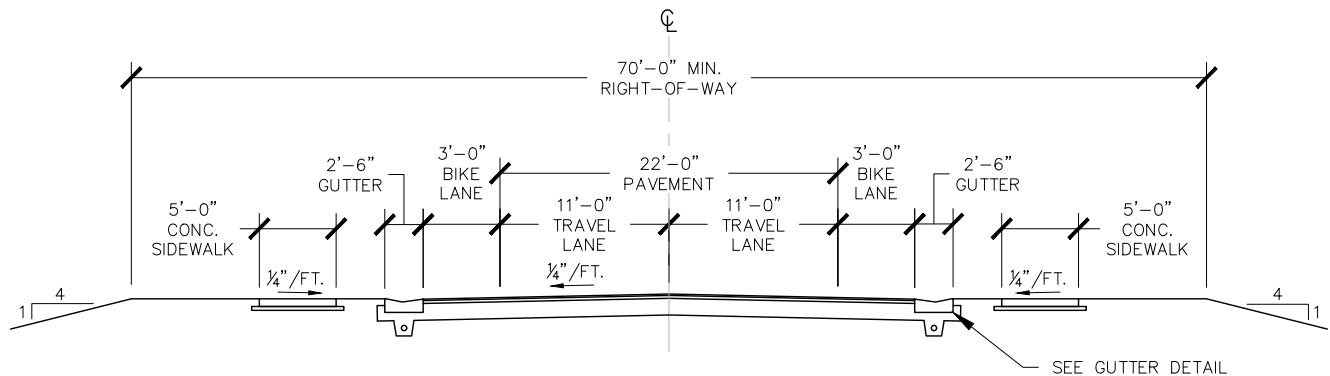
DATE: 2019

SCALE: N.T.S.

MRB | group



TOWN COLLECTOR ROAD



TOWN COLLECTOR ROAD (COMPLETE STREET)

NOTES:

1. SUBBASE EXTENDED OUT TO SWALE BY EITHER STONE WEEPS OR UNDERDRAIN AT DISCRETION OF THE HIGHWAY SUPERINTENDENT.

TYPICAL ROAD CROSS SECTIONS (TOWN COLLECTOR)

TOWN OF GENEVA

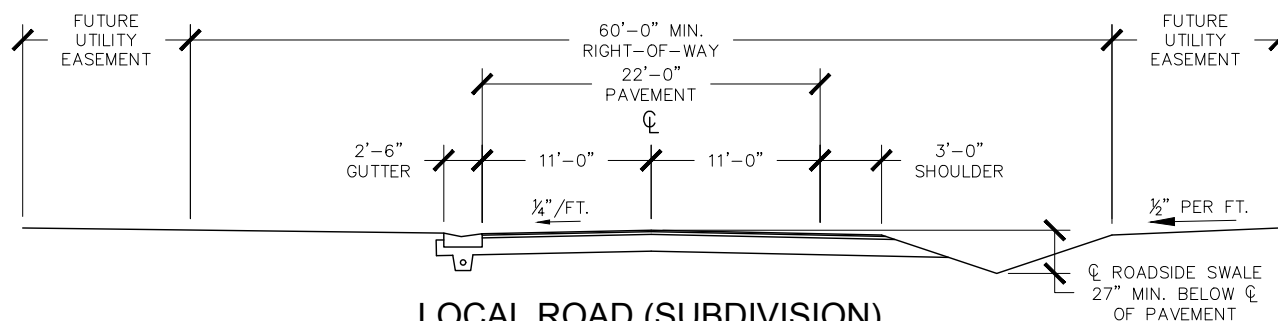
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 1.1**

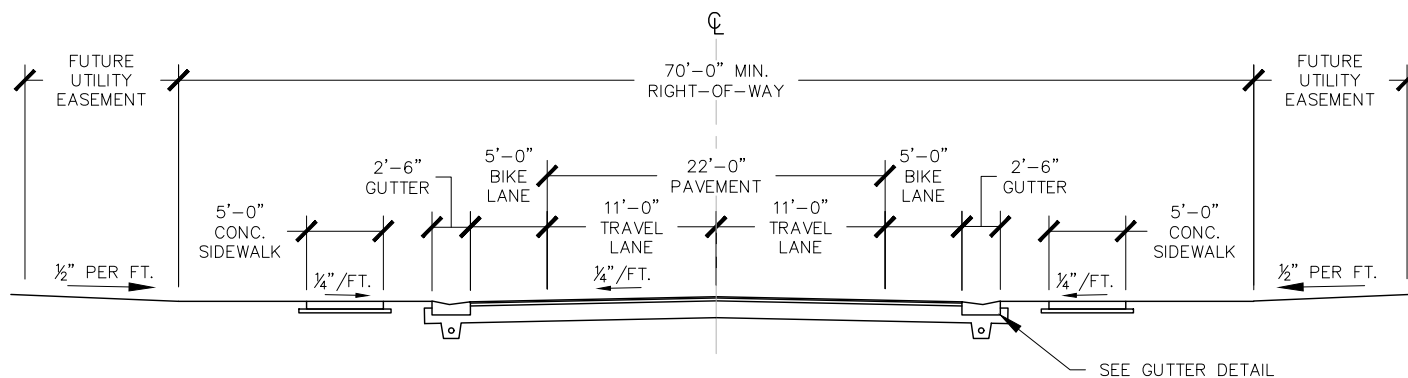
DATE: 2019

SCALE: N.T.S.

MRB | group



LOCAL ROAD (SUBDIVISION)
(WITH CONCRETE GUTTER OR OPTIONAL SWALE)



LOCAL ROAD (SUBDIVISION)
(COMPLETE STREET)

TYPICAL ROAD CROSS SECTIONS (LOCAL)

TOWN OF GENEVA

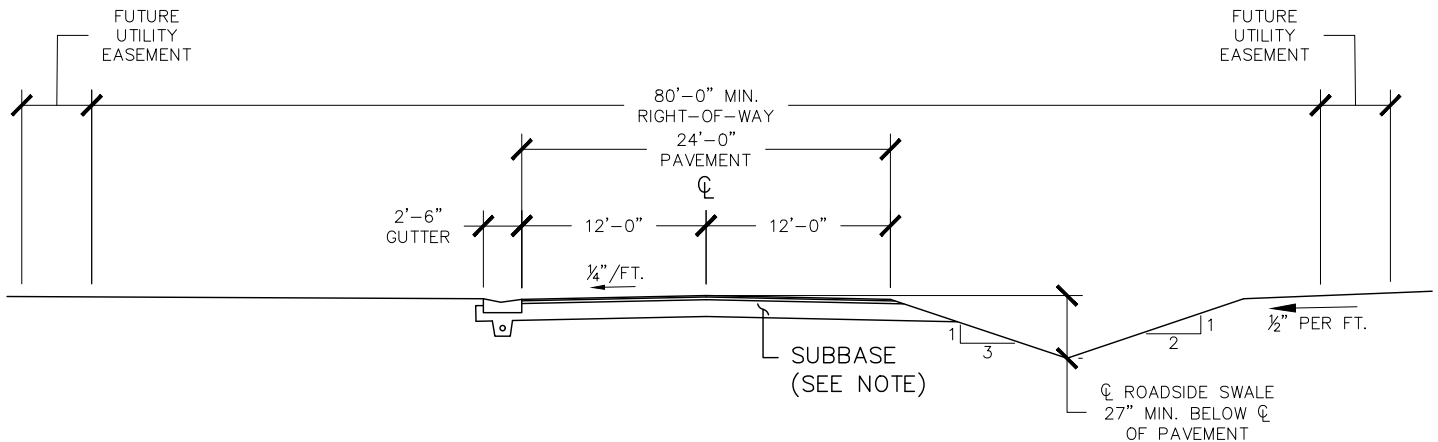
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 1.2**

DATE: 2019

SCALE: N.T.S.

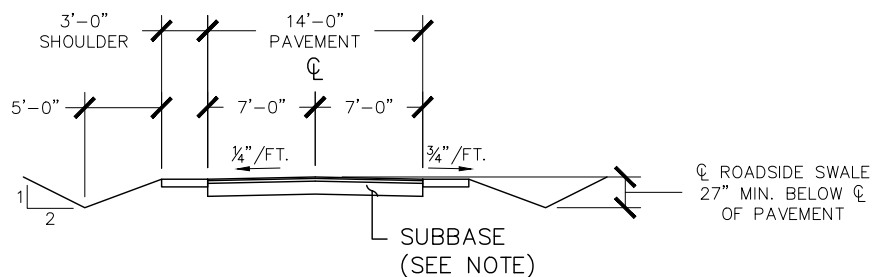
MRB | group



NOTES:

1. SUBBASE EXTENDED OUT TO SWALE BY EITHER STONE WEEPS OR UNDERDRAIN AT DISCRETION OF THE HIGHWAY SUPERINTENDENT.
2. WHERE WATERMAIN HYDRANTS ARE LOCATED ALONG ROAD, DRIVING SURFACE (PAVEMENT AND CONCRETE GUTTERS) WIDTH TO BE 26' MIN. AND EXTEND 20' MIN. IN EACH DIRECTION (40' MIN.)

INDUSTRIAL ROAD



NOTES:

1. WHERE WATERMAIN HYDRANTS ARE LOCATED ALONG ROAD, DRIVING SURFACE PAVEMENT AND CONCRETE GUTTERS) WIDTH TO BE 26' MIN. AND EXTEND 20' MIN. IN EACH DIRECTION (40' MIN.)

NON-DEDICATED PRIVATE DRIVE

TYPICAL ROAD CROSS SECTIONS (INDUSTRIAL / NON-DEDICATED PRIVATE DRIVE)

TOWN OF GENEVA

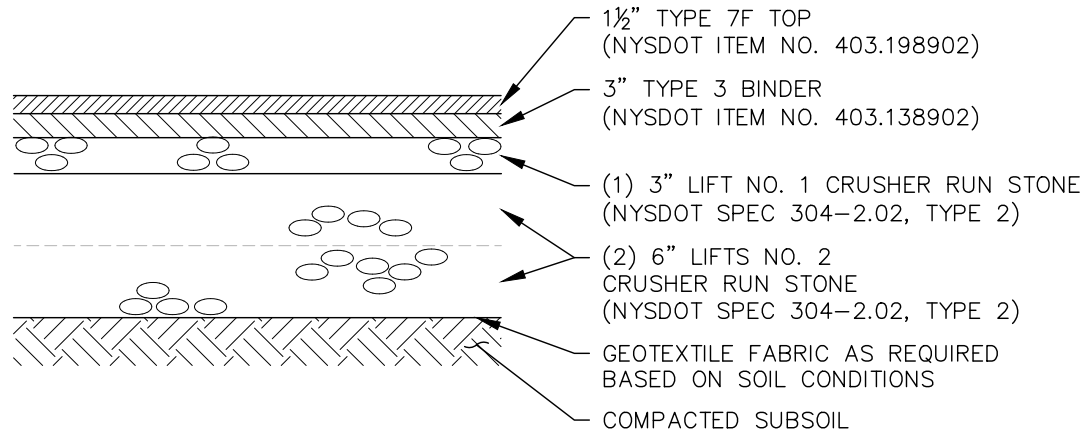
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 2.0**

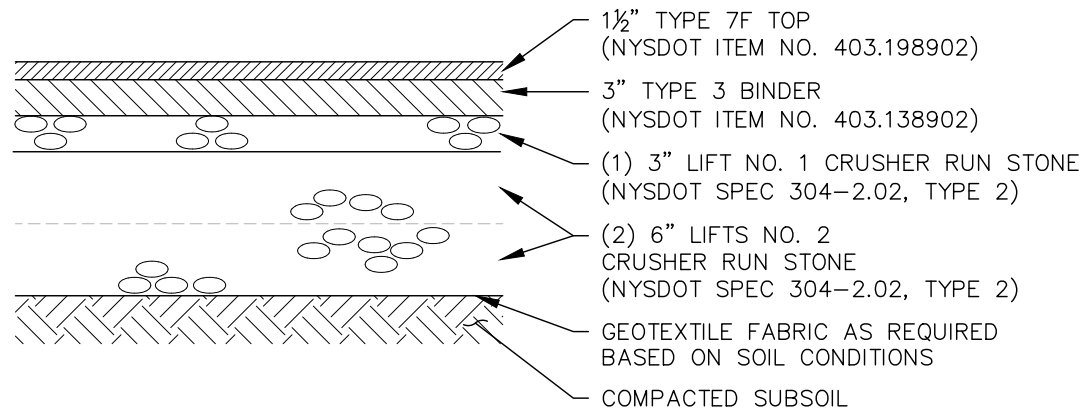
DATE: 2019

SCALE: N.T.S.

MRB | *group*



TOWN COLLECTOR ROAD



LOCAL ROAD (SUBDIVISION)

NOTES:

1. ALL DEPTHS DIMENSIONS ARE COMPACTED THICKNESS.
2. PAVEMENT THICKNESS MAY VARY AS REQUIRED BY TOWN ENGINEER
3. UNDERDRAIN REQUIRED

TYPICAL PAVEMENT CROSS SECTIONS (TOWN COLLECTOR / LOCAL)

TOWN OF GENEVA

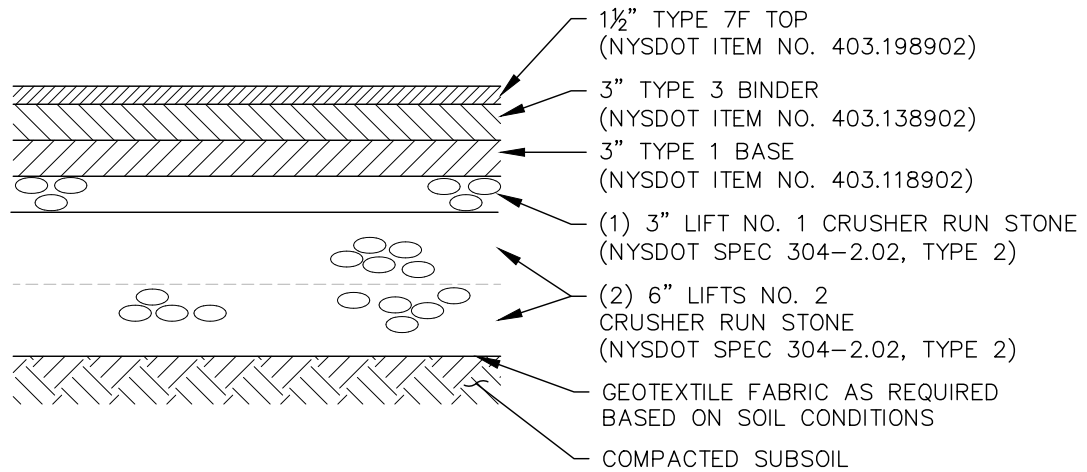
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 2.1**

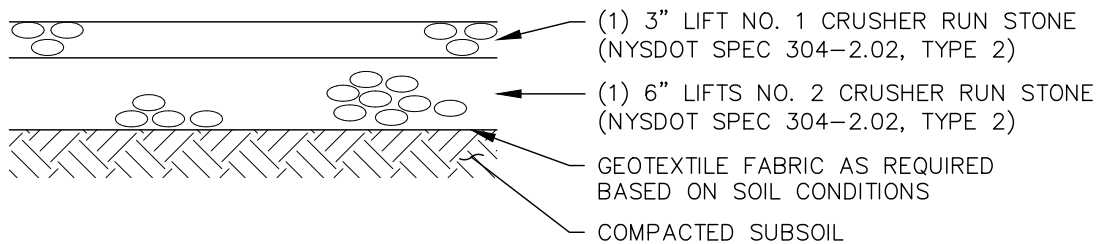
DATE: 2019

SCALE: N.T.S.

MRB | *group*



COMMERCIAL / INDUSTRIAL



NON-DEDICATED PRIVATE DRIVE

NOTES:

1. ALL DEPTHS DIMENSIONS ARE COMPACTED THICKNESS.
2. PAVEMENT THICKNESS MAY VARY AS REQUIRED BY TOWN ENGINEER

TYPICAL PAVEMENT CROSS SECTIONS (COMMERCIAL / INDUSTRIAL / NON-DEDICATED PRIVATE DRIVE)

TOWN OF GENEVA

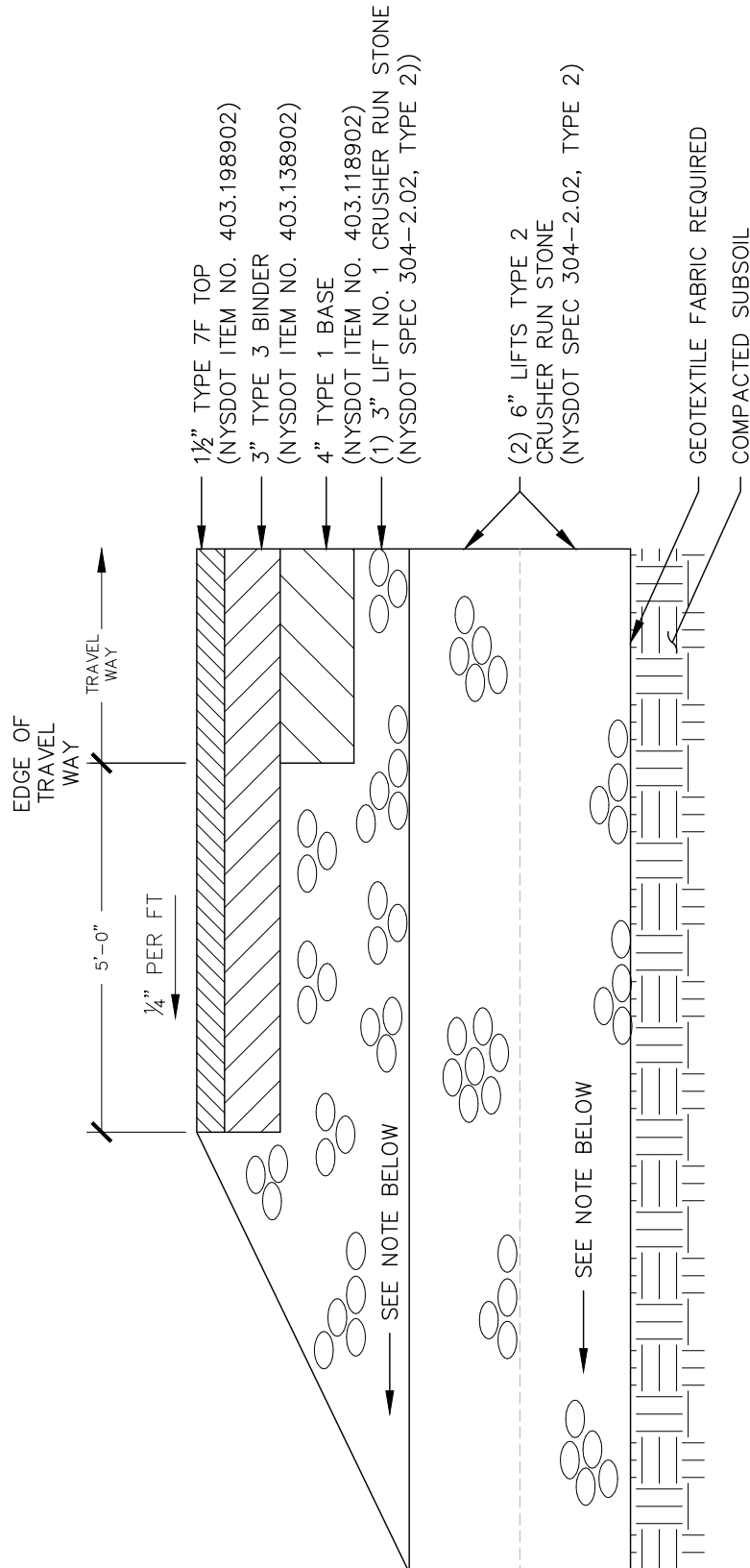
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 3.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. EXTEND SUBBASE TO SWALE PER APPENDICES H-2.0, H-2.1, H-2.2
2. PROVIDE 4" UNDERDRAIN IF SUBBASE CANNOT DAYLIGHT

STABILIZED SHOULDER
(COMMERCIAL / INDUSTRIAL)

TOWN OF GENEVA

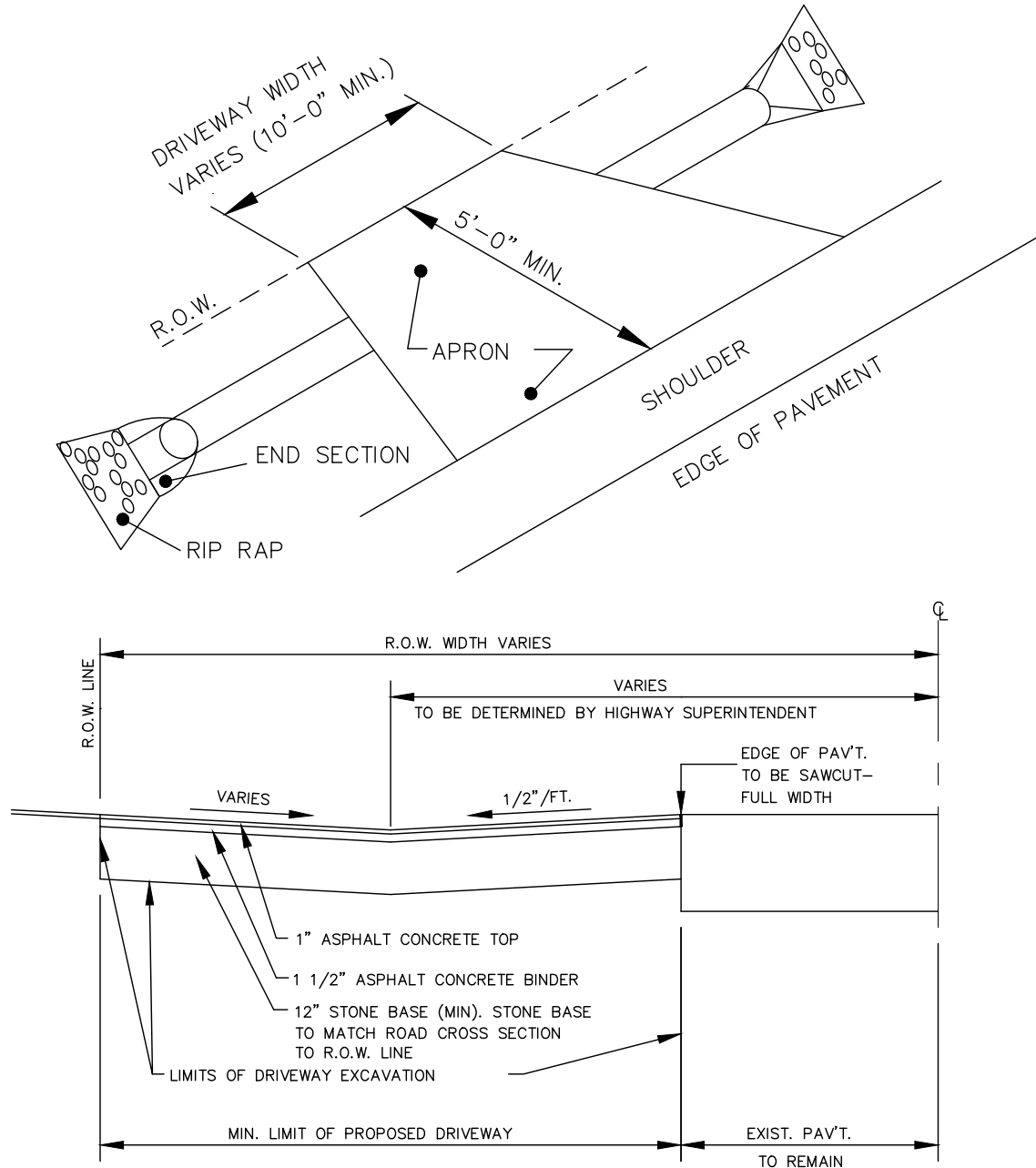
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 4.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. DRIVEWAYS FRONTING ON TOWN ROADS SHALL BE PAVED TO THE RIGHT-OF-WAY LINE UNLESS OTHERWISE INDICATED BY THE TOWN.
2. THE APPLICANT SHALL NOTIFY THE HIGHWAY SUPERINTENDENT AT LEAST 48 HOURS PRIOR TO PERFORMING THE WORK TO SCHEDULE A FIELD INSPECTION.
3. A MAXIMUM 3% LEVELING AREA SHOULD BE PROVIDED FOR THE FIRST 30-FEET FROM THE EDGE OF PAVEMENT.

TYPICAL DRIVEWAY APRON DETAIL

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 5.0**

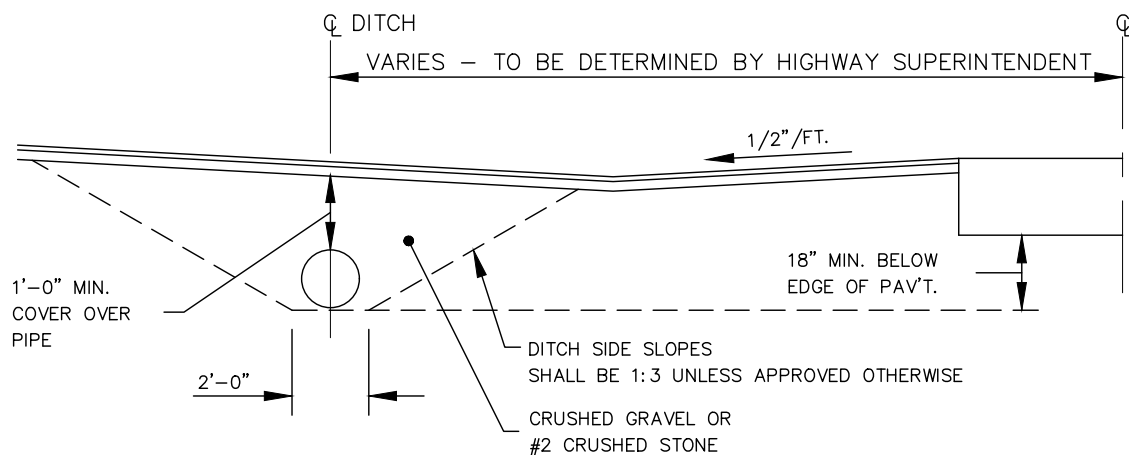
DATE: 2019

SCALE: N.T.S.

MRB | *group*

THE OWNERS SHALL FURNISH AND INSTALL THE PROPER PIPE MATERIAL, MINIMUM LENGTH TO EXTEND AT LEAST THREE (3) FEET BEYOND THE OUTER EDGES OF THE NEW PROPOSED DRIVEWAY AT THE DITCH LINE. SIZE OF THE PIPE WILL BE DETERMINED BY THE TOWN OF FARMINGTON. THE NEW PROPOSED DRIVEWAY CULVERT SHALL BE PLACED AT A LINE, GRADE AND OFFSET DETERMINED BY THE EXISTING DITCH LINE, GRADE AND OFFSET OF THE ADJACENT PROPERTIES ON EITHER SIDE OF THE NEW PROPOSED DRIVEWAY TO FLOW PROPERLY IN A MANNER SATISFACTORILY TO THE SUPERINTENDENT OF HIGHWAYS. ALSO, THE OWNERS OR THEIR AGENTS SHALL INSTALL END SECTIONS TO EACH END OF THE NEW PROPOSED DRIVEWAY CULVERT. ENERGY DISSIPATING MATERIAL OR RIP RAP SHOULD BE USED AT EITHER END SECTION AS DIRECTED BY THE HIGHWAY SUPERINTENDENT.

NOTE: THE APPLICANT SHALL NOTIFY THE HIGHWAY SUPERINTENDENT AT LEAST 48 HOURS PRIOR TO PERFORMING THE WORK TO SCHEDULE FIELD INSPECTION.



SECTIONAL VIEW

TYPICAL DRIVEWAY CULVERT DETAIL

TOWN OF GENEVA

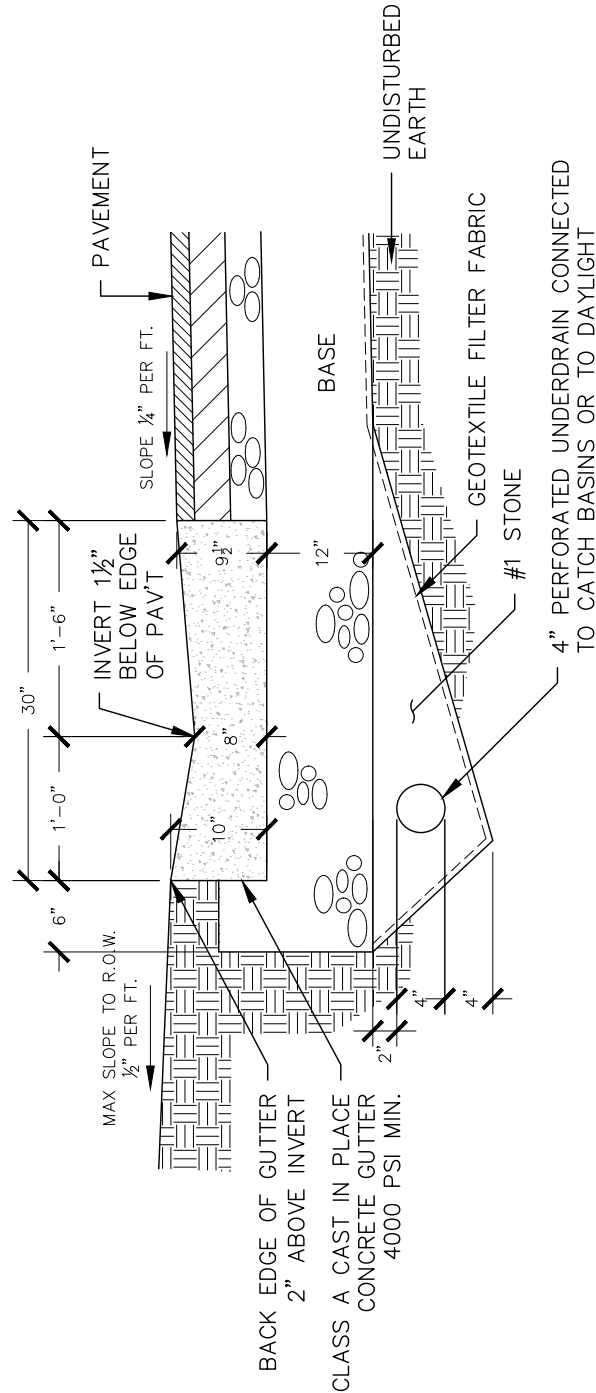
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 6.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



CONCRETE GUTTER DETAIL

TOWN OF GENEVA

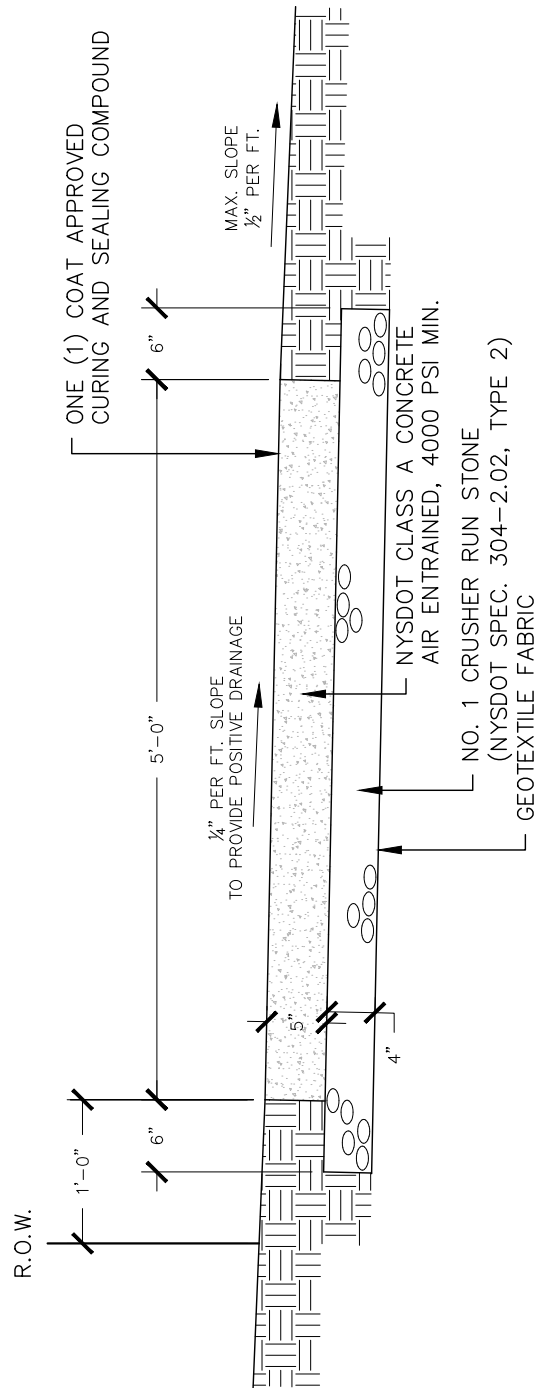
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 7.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTE:

1. CONCRETE SIDEWALKS THROUGH DRIVEWAYS SHALL INCLUDE 6"x6" WIRE MESH (10 GAUGE) FOR REINFORCEMENT.
2. A 10' SIDEWALK EASEMENT MAY BE REQUIRED BY THE TOWN.

SIDEWALK DETAIL

TOWN OF GENEVA

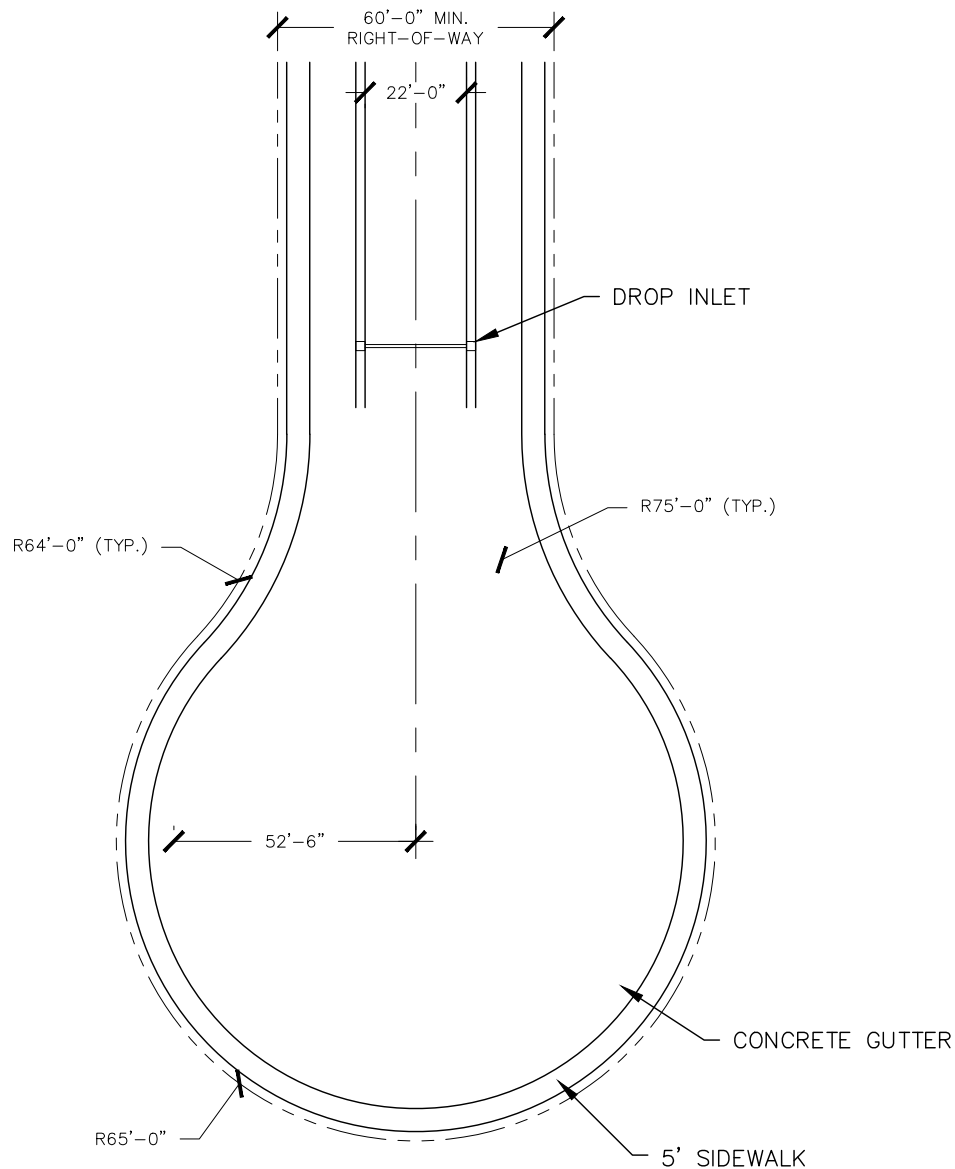
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 8.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. NO DROP INLETS WITHIN PAVEMENT AREA. A THIRD DROP INLET MAY BE INSTALLED AT THE END OF THE CUL-DE-SAC

CUL-DE-SAC PLAN

TOWN OF GENEVA

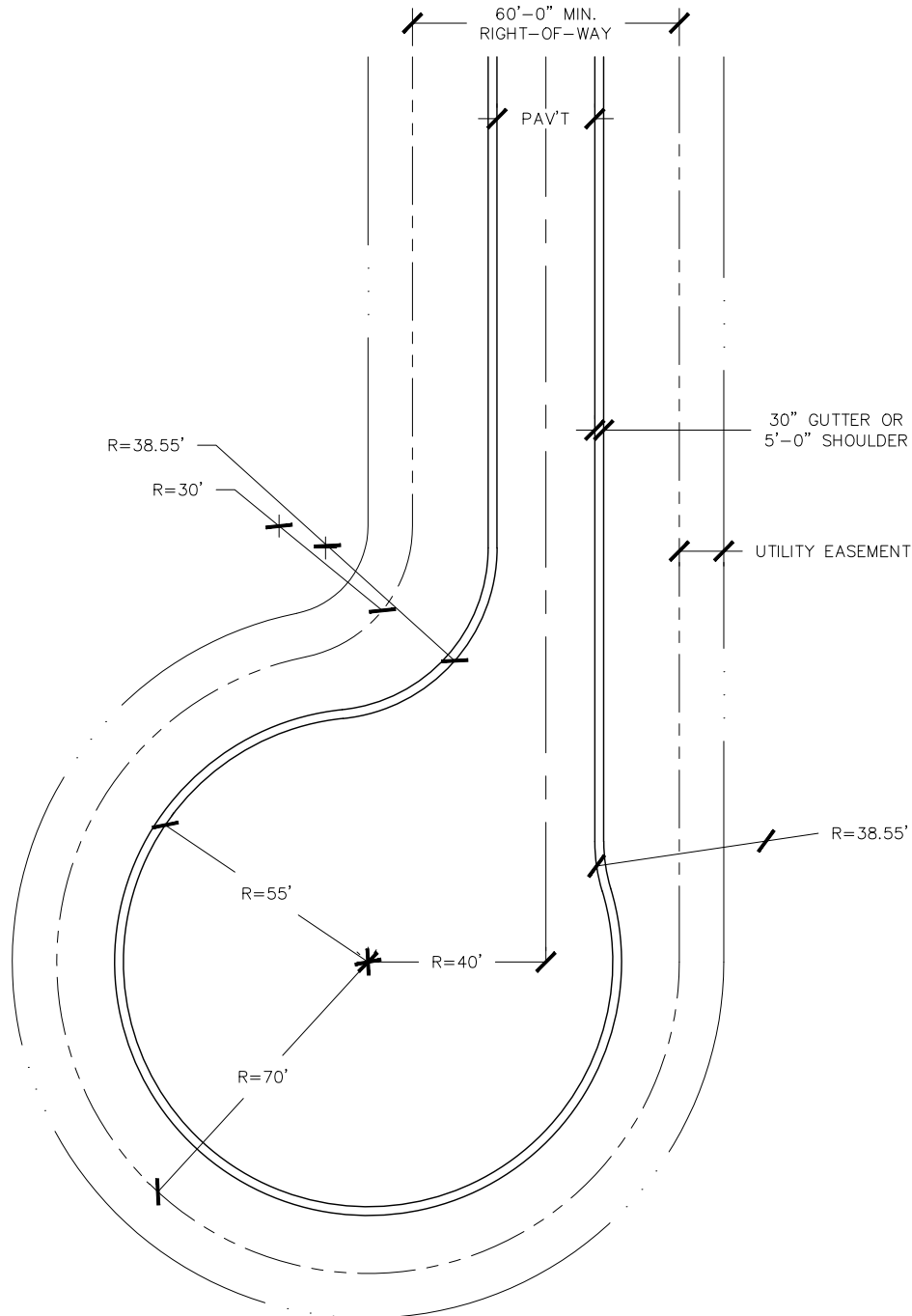
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 8.1**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. DROP INLETS SHALL BE LOCATED AT THE THROAT OF THE CUL-DE-SAC AND AT THE END OF THE CUL-DE-SAC. NO INLETS WILL BE PERMITTED WITHIN THE PAVEMENT AREA.

OFFSET CUL-DE-SAC PLAN

TOWN OF GENEVA

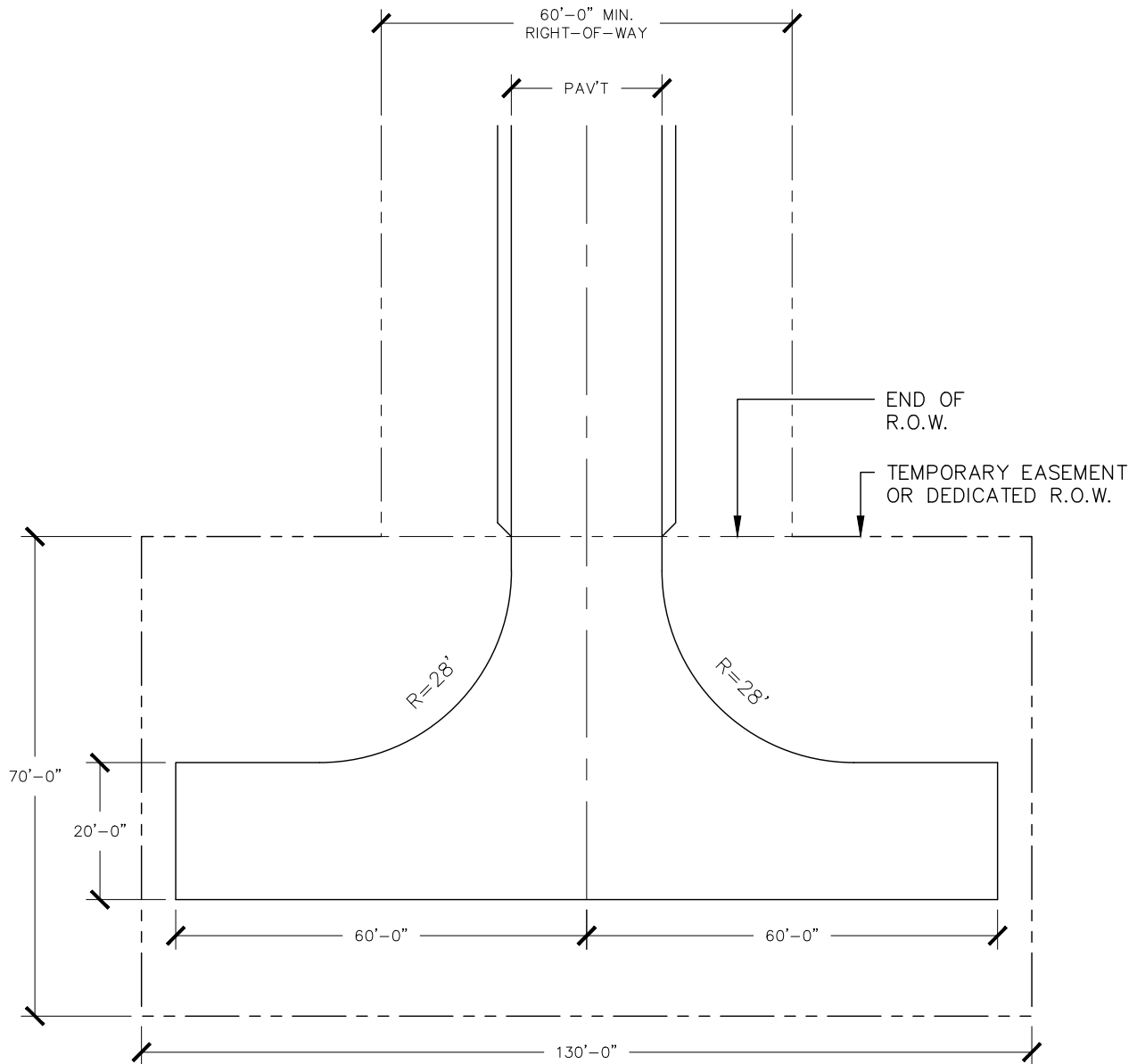
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 9.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. LARGER AREAS MAY BE REQUIRED FOR SNOW STORAGE OR TOPOGRAPHICAL CONSIDERATIONS.
2. FOR USE IN PHASED PROJECTS ONLY.

TEMPORARY HAMMER HEAD TURN AROUND

TOWN OF GENEVA

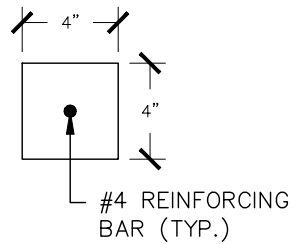
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 10.0**

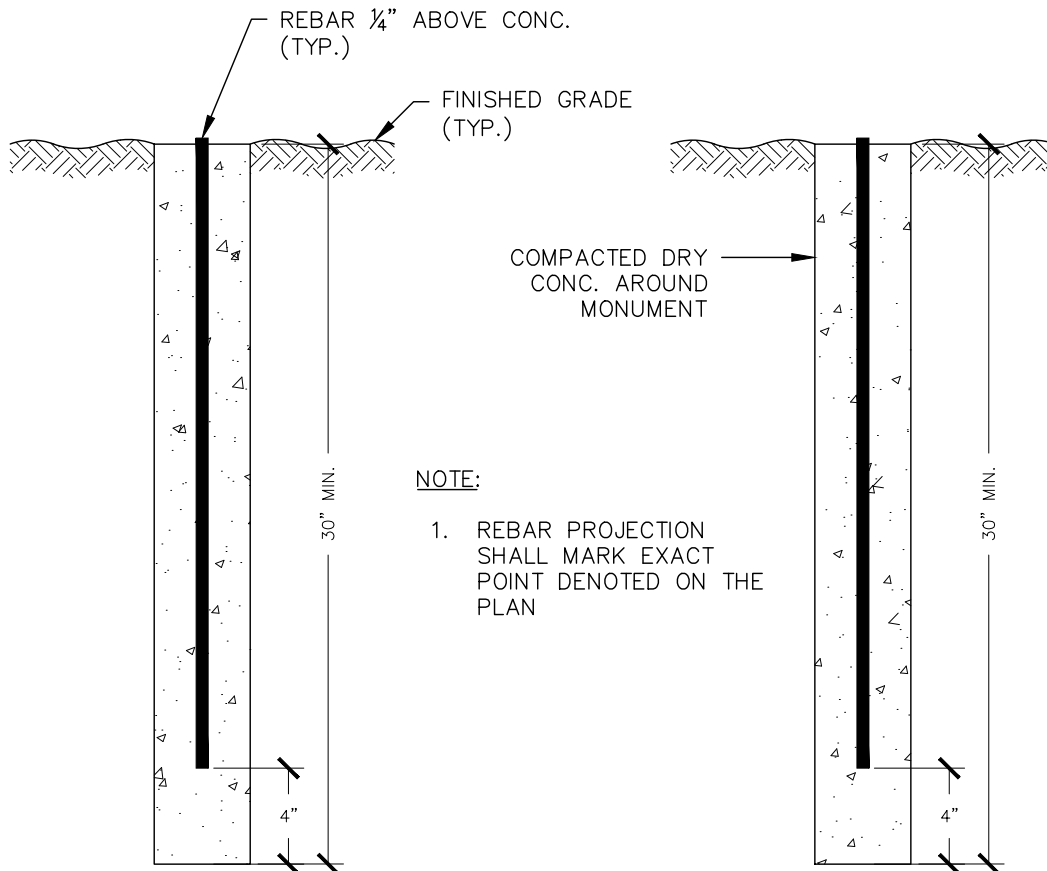
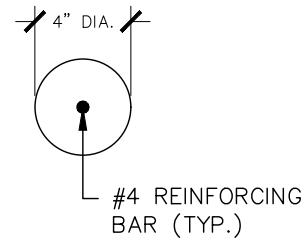
DATE: 2019

SCALE: N.T.S.

MRB | *group*



PLAN



SECTION

MONUMENT

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 11.0**

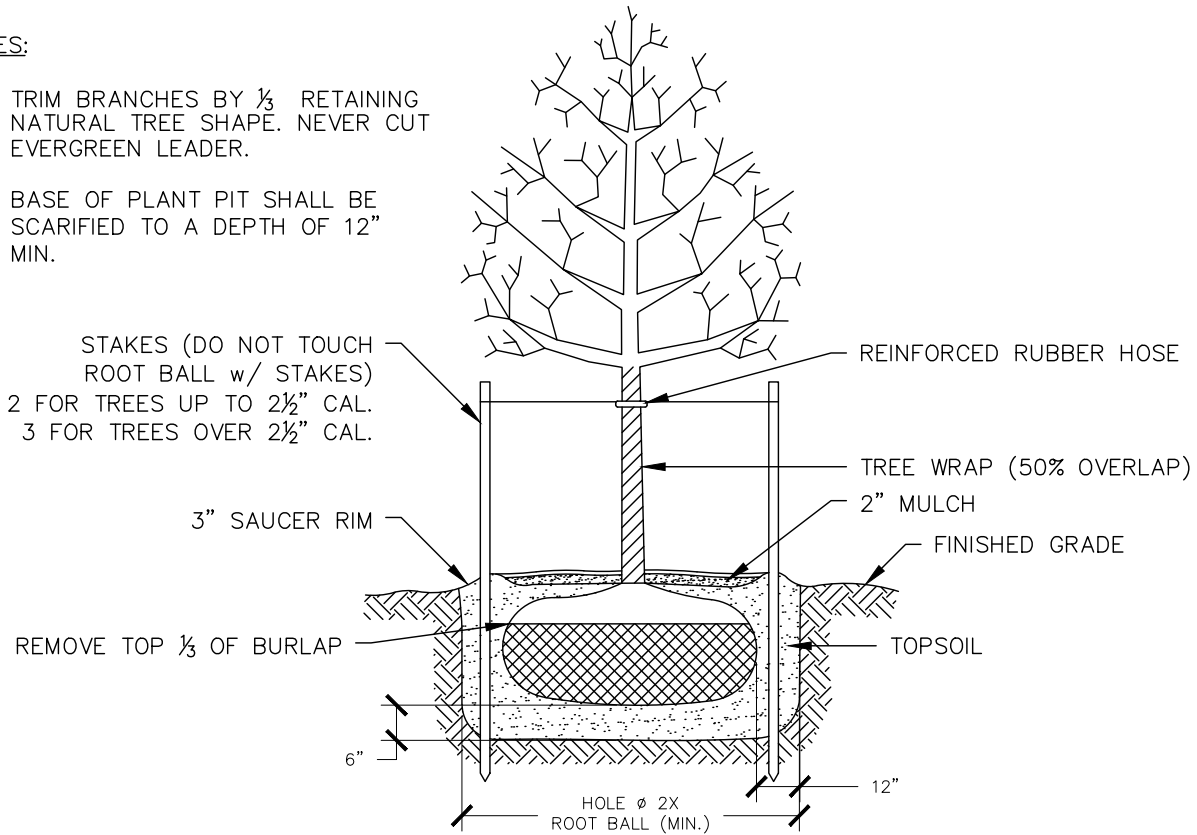
DATE: 2019

SCALE: N.T.S.

MRB | *group*

NOTES:

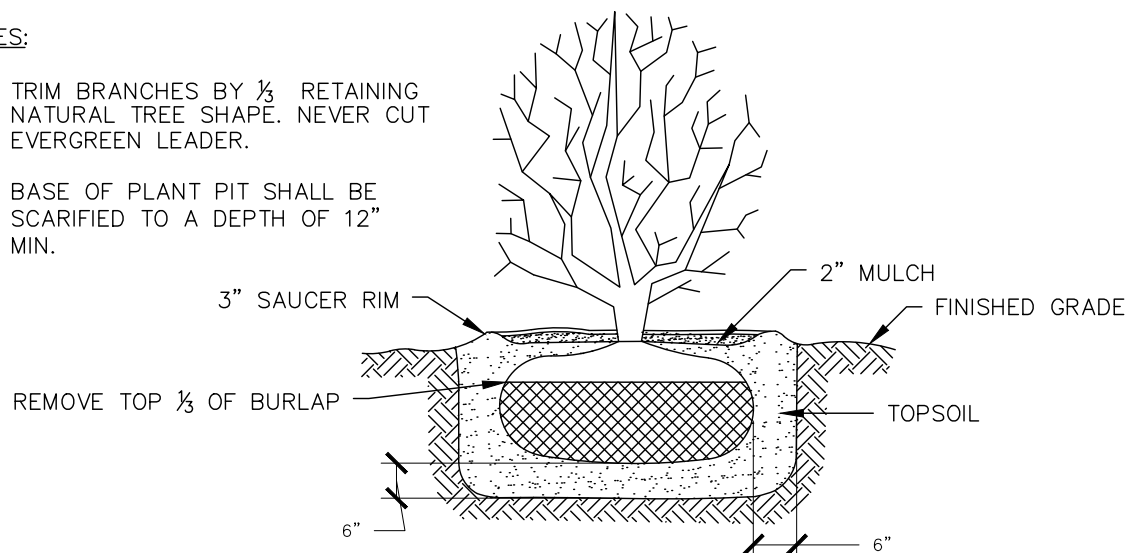
1. TRIM BRANCHES BY $\frac{1}{3}$ RETAINING NATURAL TREE SHAPE. NEVER CUT EVERGREEN LEADER.
2. BASE OF PLANT PIT SHALL BE SCARIFIED TO A DEPTH OF 12" MIN.



TYPICAL TREE PLANTING DETAIL

NOTES:

1. TRIM BRANCHES BY $\frac{1}{3}$ RETAINING NATURAL TREE SHAPE. NEVER CUT EVERGREEN LEADER.
2. BASE OF PLANT PIT SHALL BE SCARIFIED TO A DEPTH OF 12" MIN.



TYPICAL SHRUB PLANTING DETAIL

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 12.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

LANDSCAPING REQUIREMENTS – NOTES

- A. LANDSCAPING CONSISTING OF ATTRACTIVE TREES, SHRUBS, PLANTS, AND GRASS LAWNS SHALL BE REQUIRED AND PLANTED IN ACCORDANCE WITH THE SITE DEVELOPMENT PLAN SUBMITTED AND APPROVED BY THE PLANNING BOARD.
- B. NOT LESS THAN 30% OF THE LOT AREA FOR ANY PERMITTED OR SPECIAL PERMITTED USE LOCATED ON A PARCEL OF LAND WITHIN THE RB, NB, GB, LI, OR GI DISTRICTS SHALL BE DEVOTED TO SEEDING, PLANTINGS, RETENTION OF TREE COVER, SIMILAR VEGETATIVE OR LANDSCAPED COVER. THE PLANNING BOARD MAY INCLUDE SITE DETENTION/RETENTION PONDS WHEN PART OF AN APPROVED SITE PLAN.
- C. PARKING AREA WITHIN THE "MAJOR THOROUGHFARE OVERLAY DISTRICT" SHALL BE LANDSCAPED AND BUFFERED. A REASONABLE REDUCTION IN THE SIZE AND NUMBER OF PARKING SPACES REQUIRED FOR THE PROJECT WITHIN THE OVERLAY DISTRICT SHALL BE PERMITTED BY THE TOWN PLANNING BOARD WHERE IT CAN BE DEMONSTRATED THAT SUCH A REDUCTION WILL NOT CREATE OVERFLOW PARKING PROBLEMS, WILL NOT ADVERSELY IMPACT THE ACCESS ROADS, AND THAT THE ADDITIONAL SPACE WILL BE USED FOR LANDSCAPING OR OPEN SPACE AREAS WITHIN THE SITE.

LAND USE CLASSIFICATION

BUFFERYARD REQUIRED

- | | |
|--|---|
| 1. AGRICULTURAL NEXT TO BUSINESS, INDUSTRIAL, OR PLANNED DEVELOPMENT | B |
| 2. RESIDENTIAL NEXT TO BUSINESS, INDUSTRIAL, OR PLANNED DEVELOPMENT | A |
| 3. PLANNED DEVELOPMENT NEXT TO BUSINESS OR INDUSTRIAL | C |
| 4. BUSINESS OR INDUSTRIAL NEXT TO BUSINESS OR INDUSTRIAL | D |

(SEE APPENDICES H-12.1 THROUGH H-12.5 IN THIS MANUAL)

THE REQUIREMENT OF THE BUFFERYARD MAY BE SATISFIED BY ANY OF THE OPTIONS ILLUSTRATED. THE "PLANT UNIT MULTIPLIER" IS A FACTOR BY WHICH THE BASIC NUMBER OF PLANT MATERIALS REQUIRED FOR A GIVEN BUFFERYARD IS DETERMINED GIVEN A CHANGE IN THE WIDTH OF THAT YARD. THE TYPE AND QUANTITY OF PLANT MATERIALS REQUIRED BY EACH BUFFERYARD, AND EACH BUFFERYARD OPTION, ARE SPECIFIED IN THE APPENDICES H-12.1 THROUGH H-12.5.

LANDSCAPING NOTES

TOWN OF GENEVA

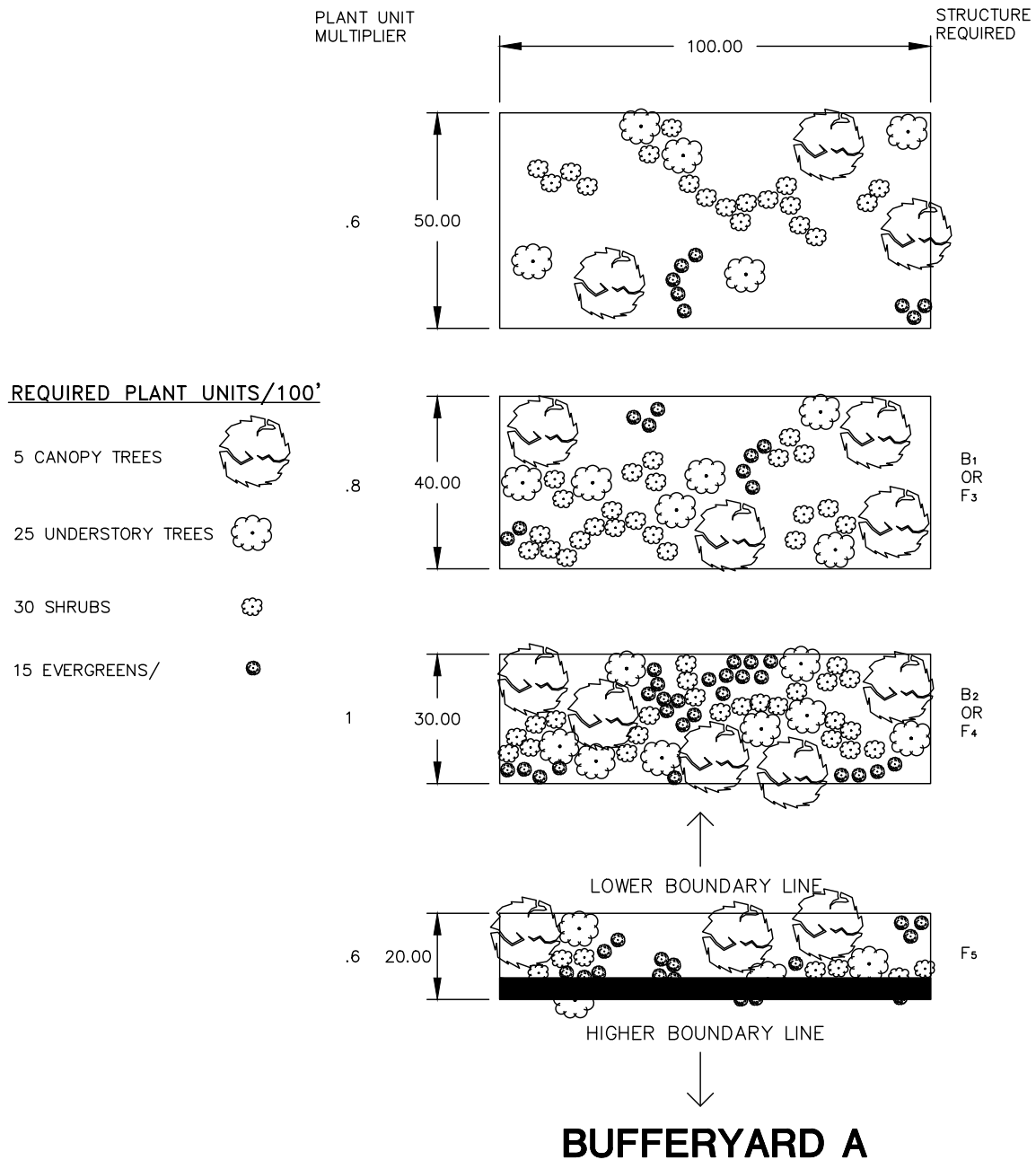
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 12.1**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



LANDSCAPING REQUIREMENTS (BUFFERYARD A)

TOWN OF GENEVA

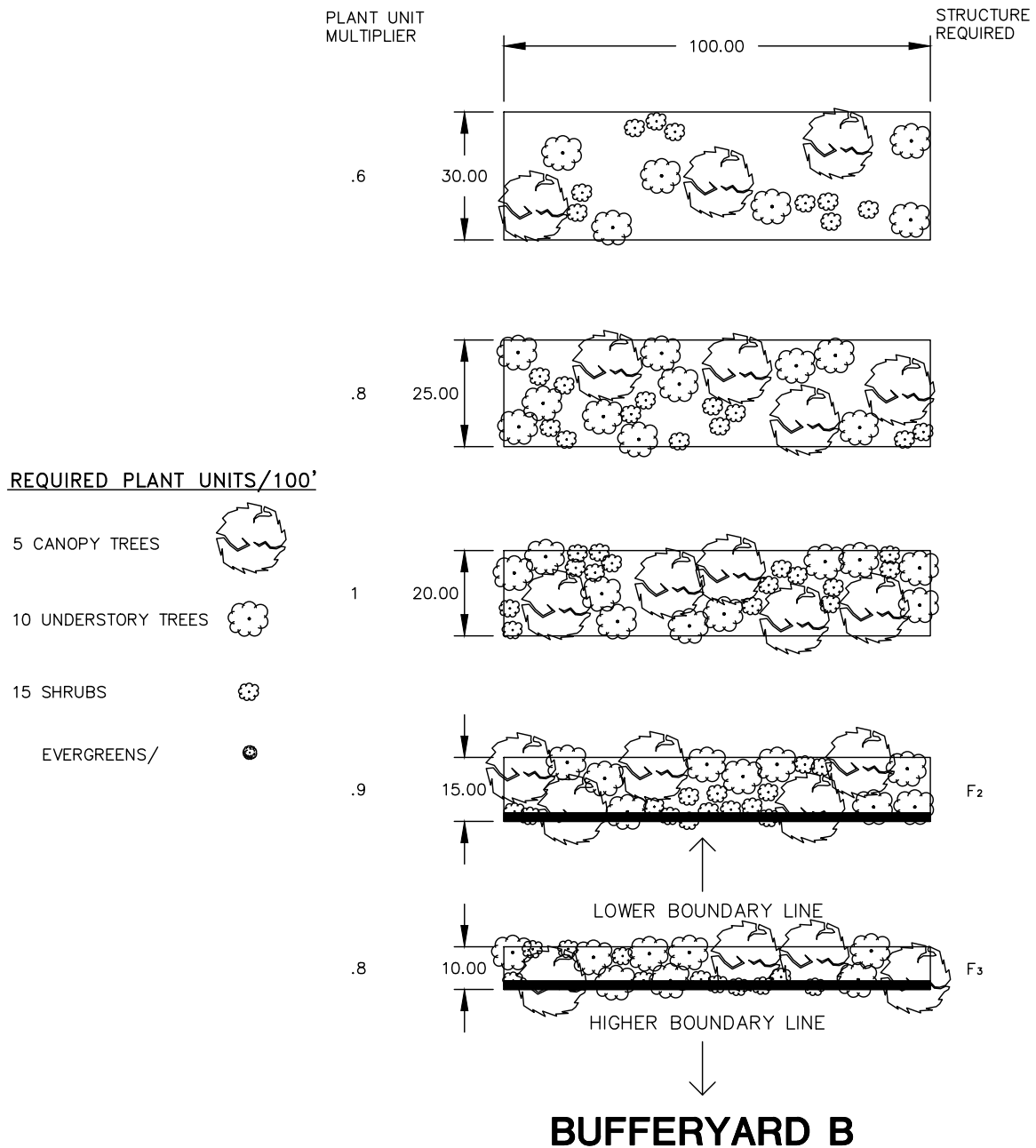
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 12.2**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



LANDSCAPING REQUIREMENTS (BUFFERYARD B)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 12.3**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

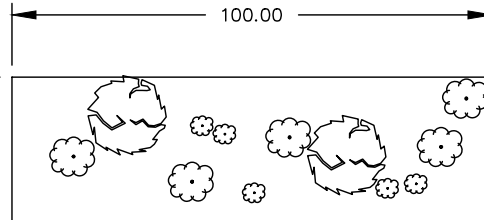
PLANT UNIT
MULTIPLIER

STRUCTURE
REQUIRED

.6

30.00

100.00



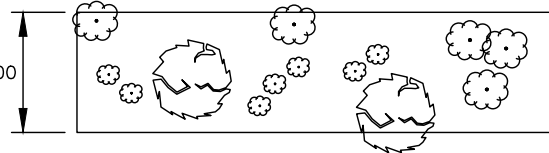
REQUIRED PLANT UNITS/100'

3 CANOPY TREES



.8

25.00



6 UNDERSTORY TREES



9 SHRUBS

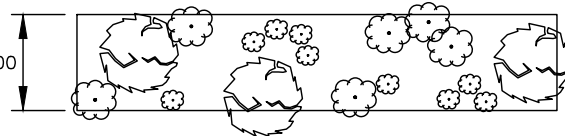


EVERGREENS/



1

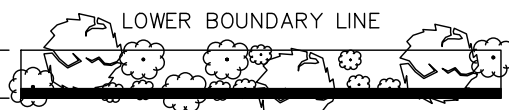
20.00



.9

10.00

LOWER BOUNDARY LINE



HIGHER BOUNDARY LINE

F₁

BUFFERYARD C

LANDSCAPING REQUIREMENTS (BUFFERYARD C)

TOWN OF GENEVA

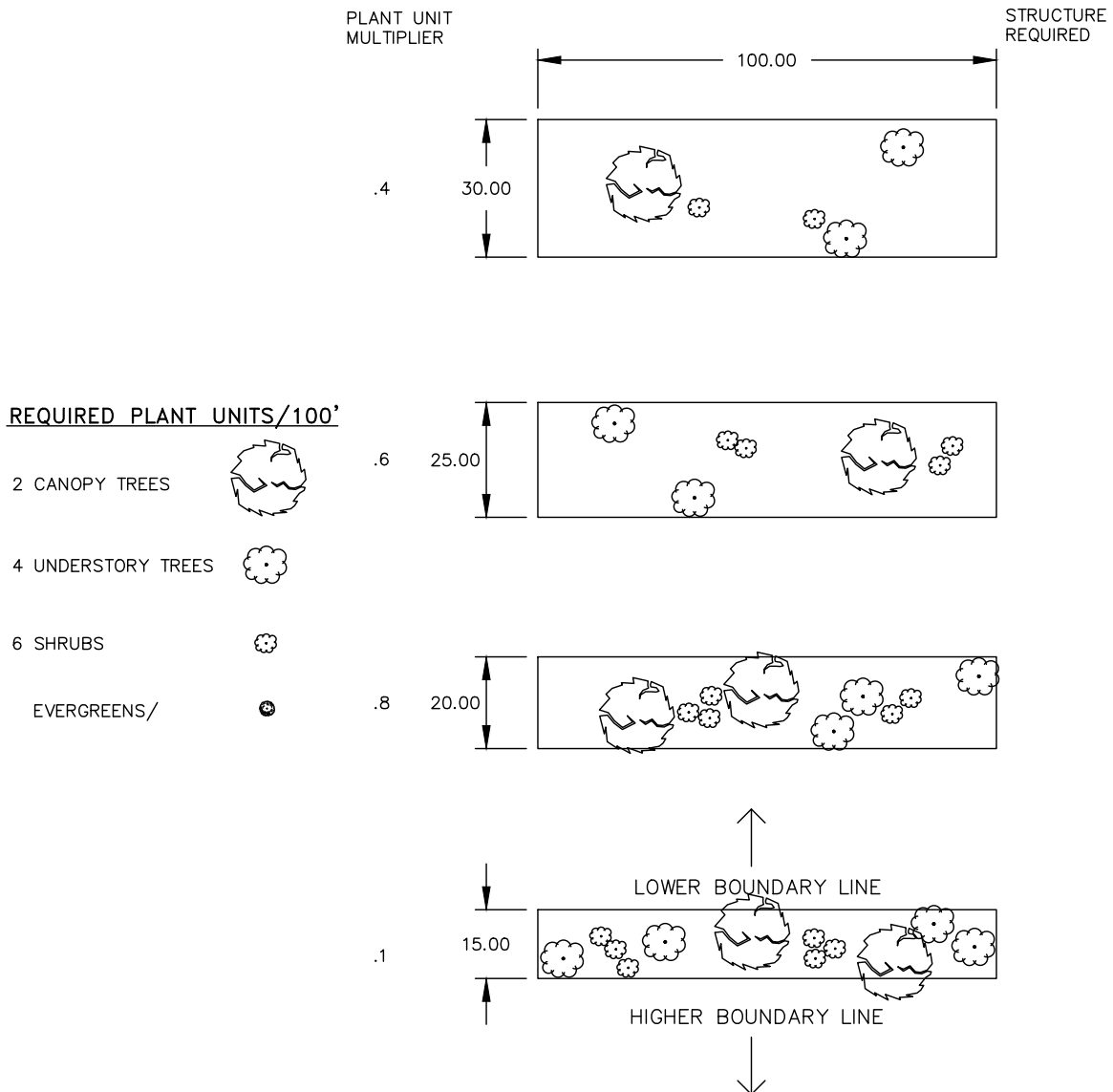
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 12.4**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



BUFFERYARD D

LANDSCAPING REQUIREMENTS (BUFFERYARD D)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 12.5**

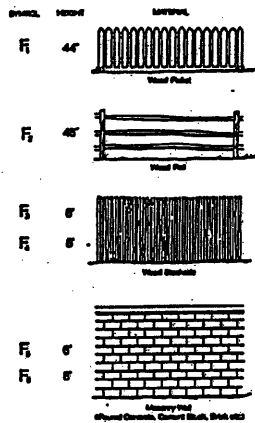
DATE: 2019

SCALE: N.T.S.

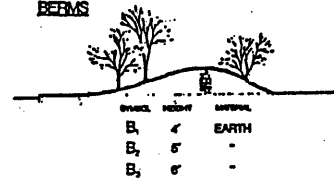
MRB | *group*

LANDSCAPING AND BUFFERING STANDARDS

FENCES



BERMS



INFORMATION SUMMARIZED FROM PERFORMANCE ZONING, by LAHE KENDIG (1980, A.P.A.)

TOWN OF GENEVA

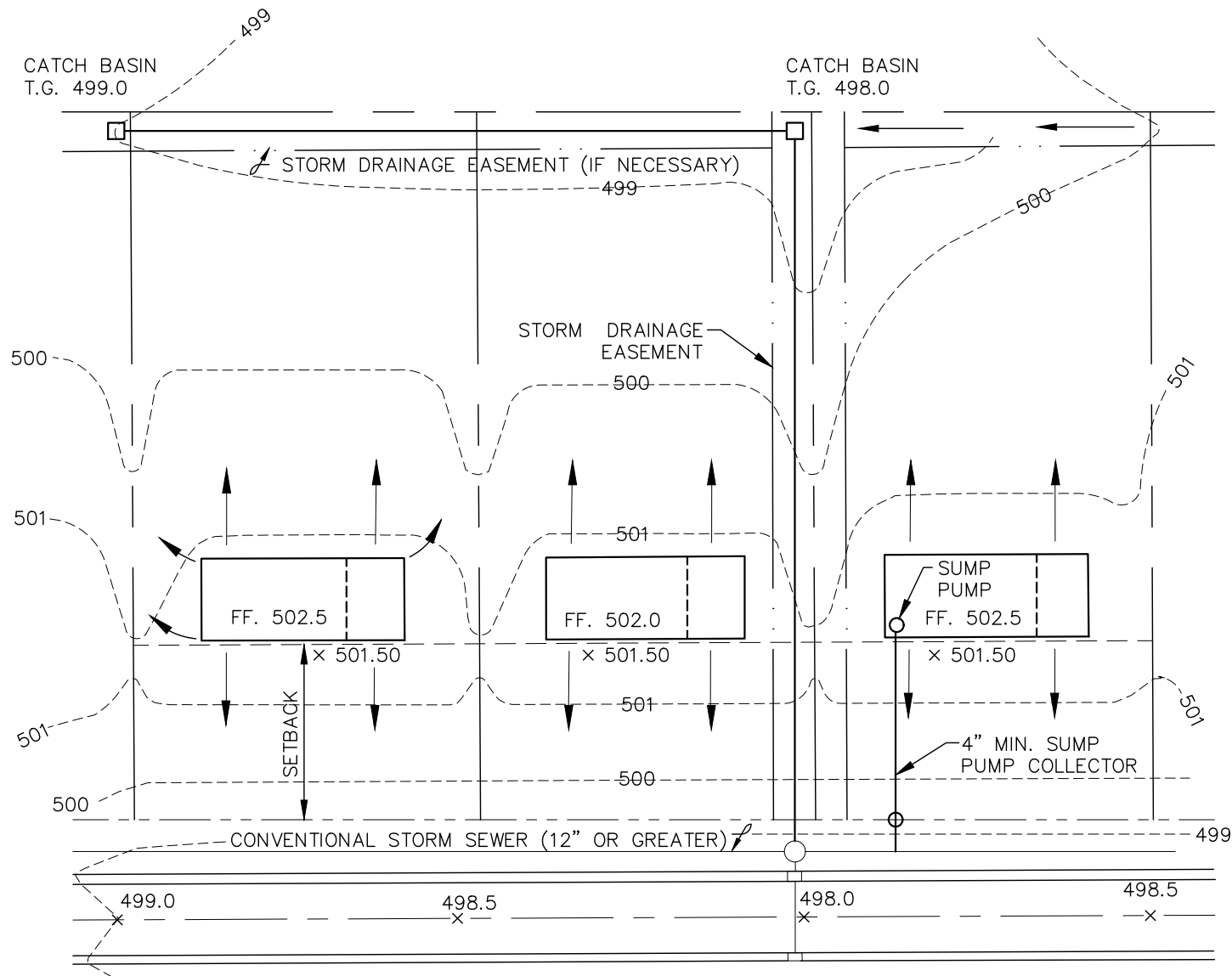
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 13.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



LEGEND

- 502-- ORIGINAL CONTOURS
- 501 -- PROPOSED CONTOURS
- FLOW ARROWS
- × 498.50 SPOT ELEVATIONS
- STORM SEWER & MANHOLE
- CATCH BASIN

TYPICAL GRADING PLAN

TOWN OF GENEVA

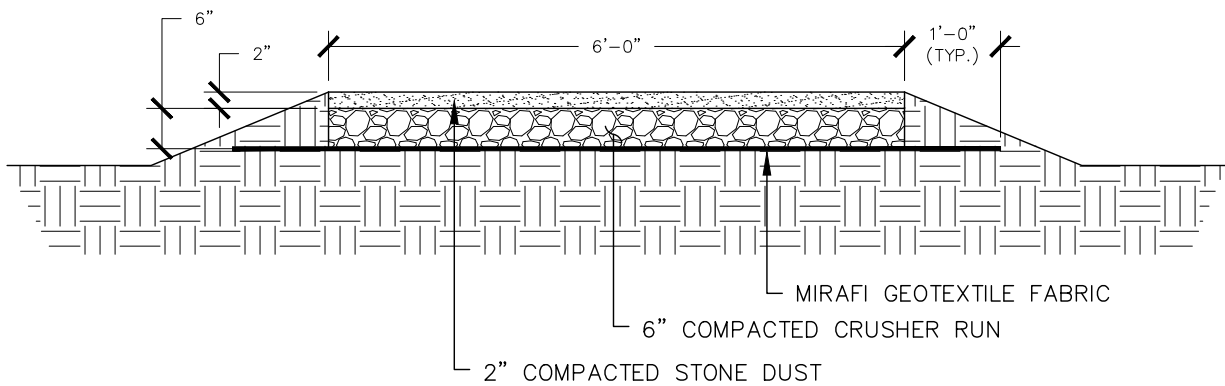
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 14.0**

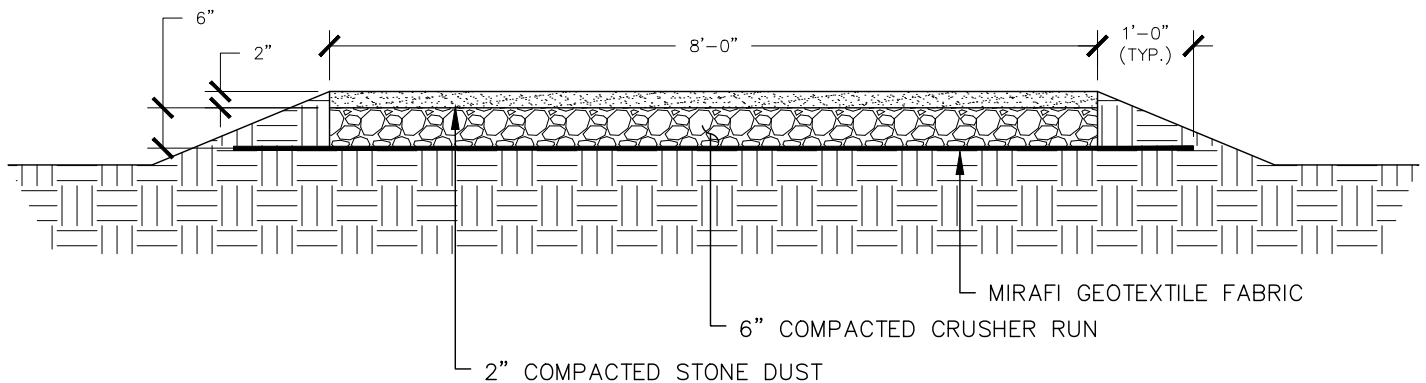
DATE: 2019

SCALE: N.T.S.

MRB | *group*



STONE DUST TRAIL



MULTI-PURPOSE TRAIL

TOWN OF GENEVA

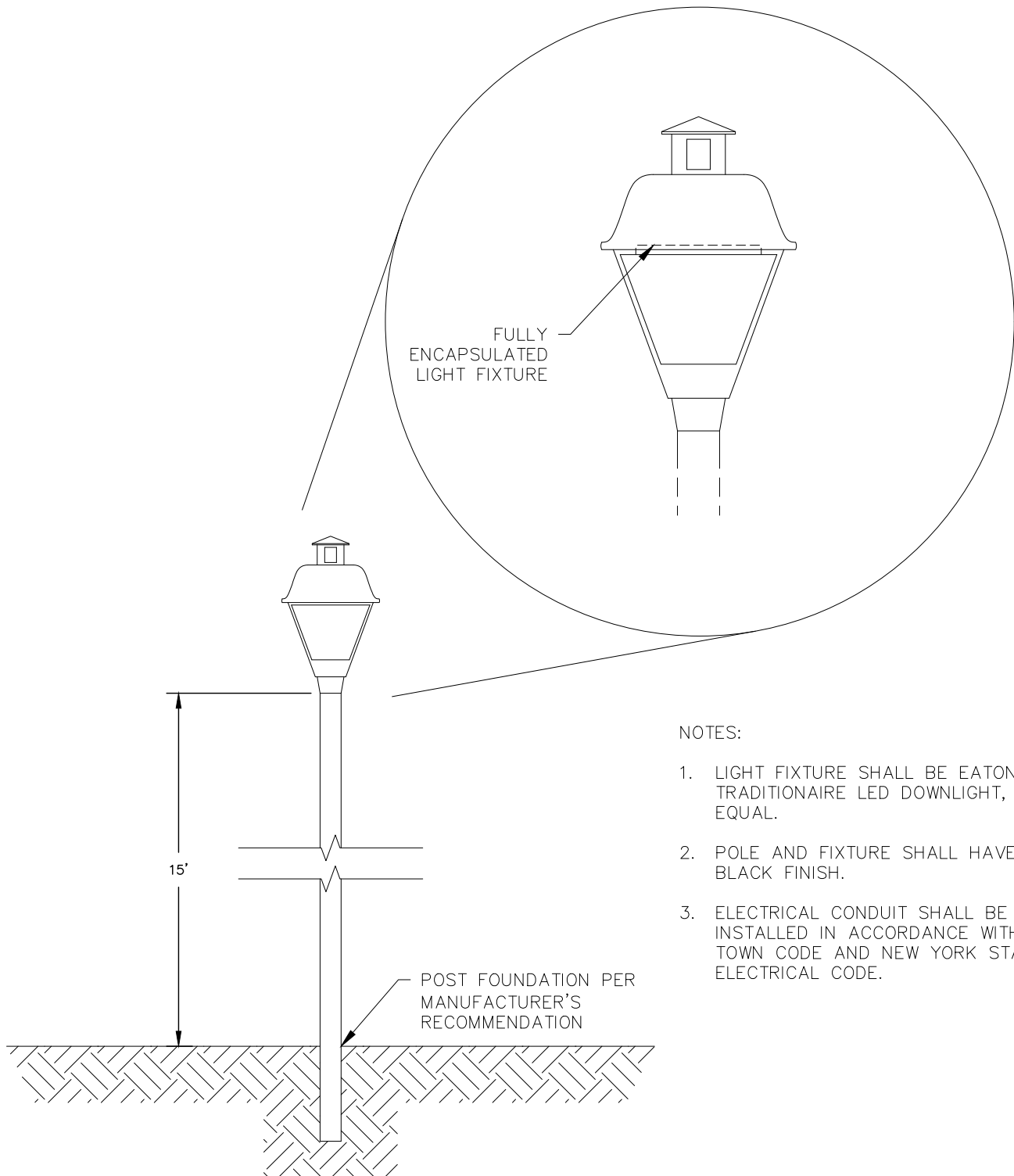
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 15.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. LIGHT FIXTURE SHALL BE EATON UTLD TRADITIONAIRE LED DOWNLIGHT, OR EQUAL.
2. POLE AND FIXTURE SHALL HAVE A BLACK FINISH.
3. ELECTRICAL CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH TOWN CODE AND NEW YORK STATE ELECTRICAL CODE.

STREET LIGHTING DETAIL

TOWN OF GENEVA

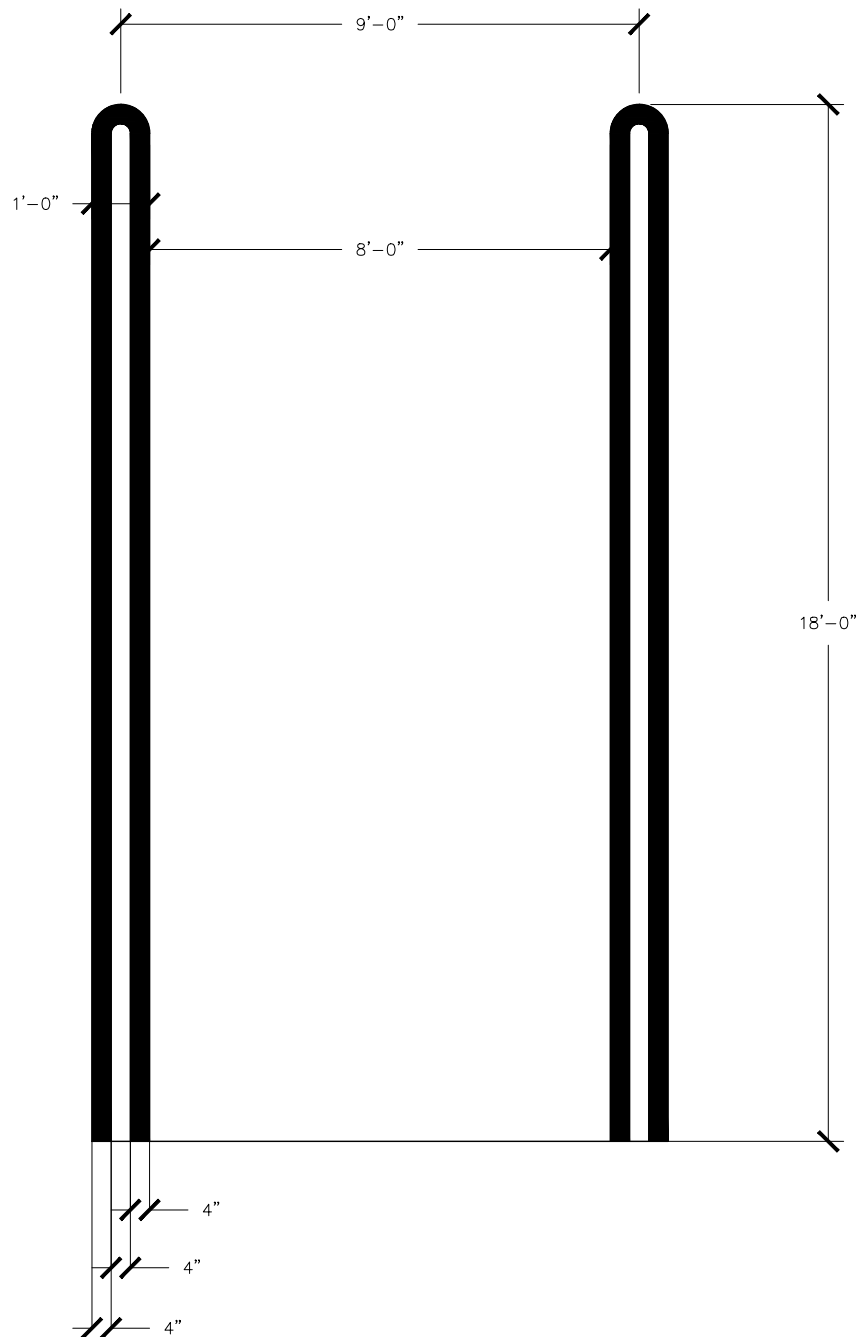
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **H - 16.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



PARKING LOT DOUBLE STRIPE

TOWN OF GENEVA

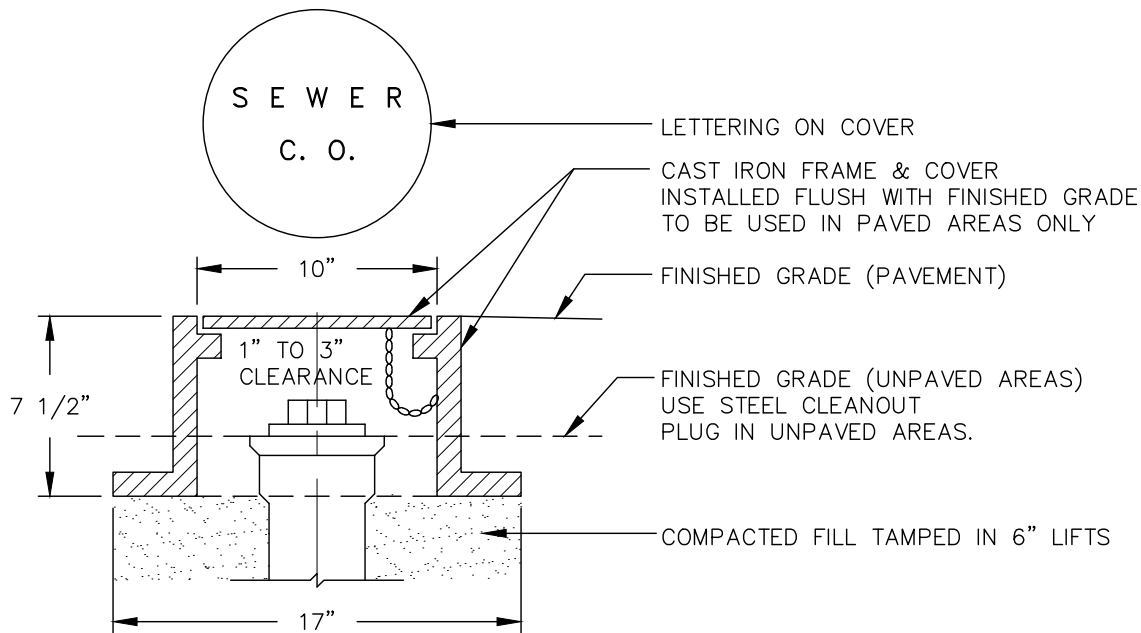
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 1.0**

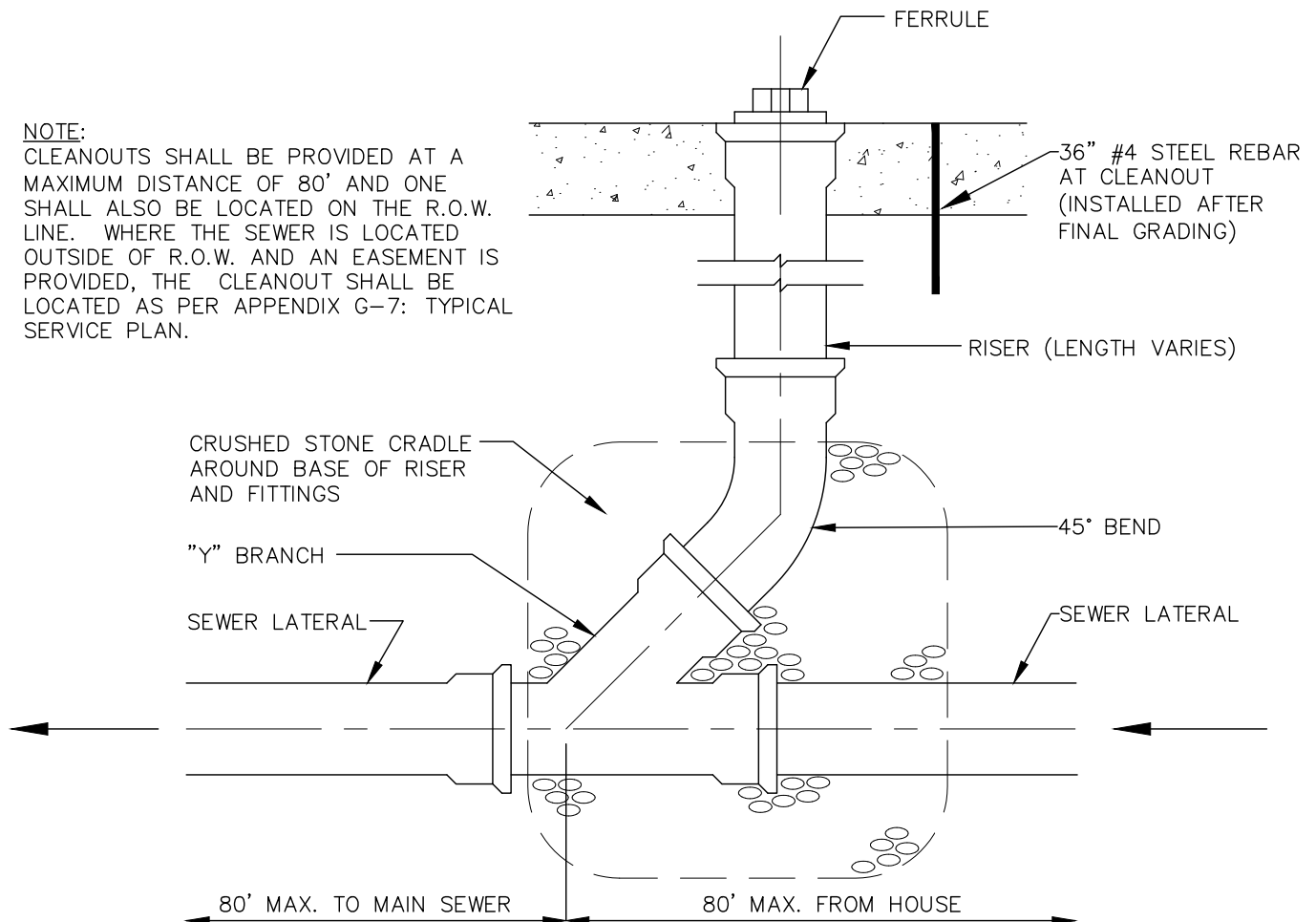
DATE: 2019

SCALE: N.T.S.

MRB | group



NOTE:
CLEANOUTS SHALL BE PROVIDED AT A MAXIMUM DISTANCE OF 80' AND ONE SHALL ALSO BE LOCATED ON THE R.O.W. LINE. WHERE THE SEWER IS LOCATED OUTSIDE OF R.O.W. AND AN EASEMENT IS PROVIDED, THE CLEANOUT SHALL BE LOCATED AS PER APPENDIX G-7: TYPICAL SERVICE PLAN.



SANITARY SEWER CLEANOUT DETAIL

TOWN OF GENEVA

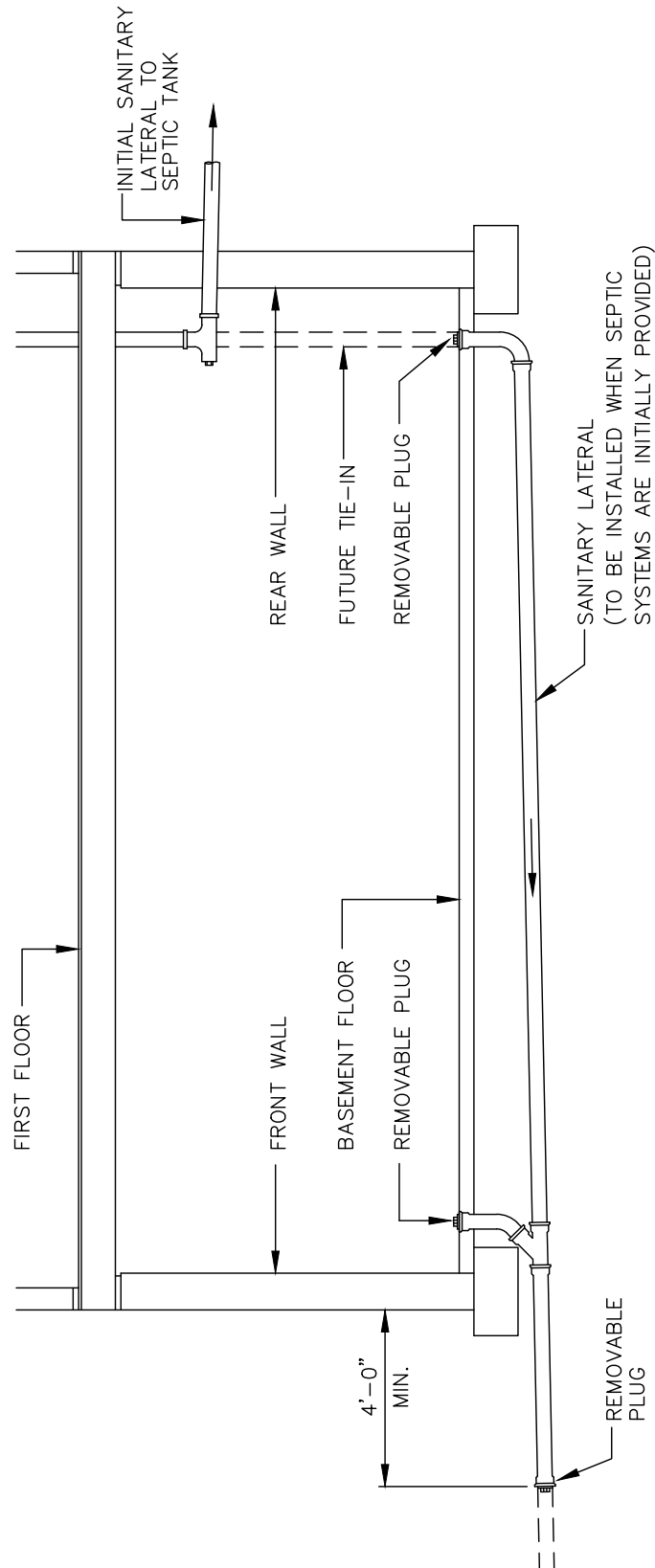
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 2.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



FUTURE SANITARY CONNECTION

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 3.0**

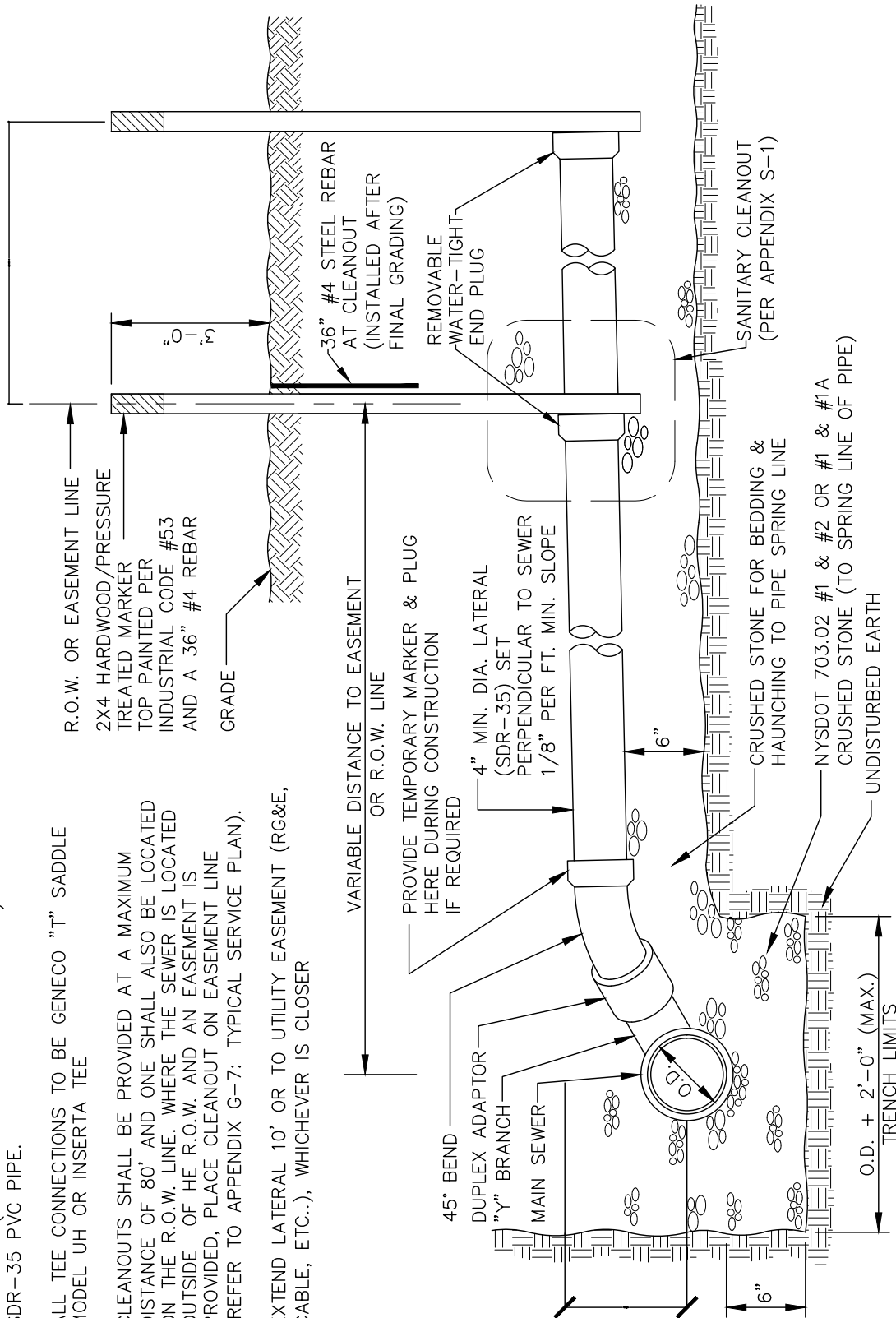
DATE: 2019

SCALE: N.T.S.

MRB | group

NOTES:

- 1.) ALL LATERAL PIPING TO BE TAR-COATED CAST-IRON SOIL PIPE (OR CONFORMING TO ASTM A74) OR SDR-35 PVC PIPE.
- 2.) ALL TEE CONNECTIONS TO BE GENECO "T" SADDLE MODEL UH OR INSERTA TEE
- 3.) CLEANOUTS SHALL BE PROVIDED AT A MAXIMUM DISTANCE OF 80' AND ONE SHALL ALSO BE LOCATED ON THE R.O.W. LINE. WHERE THE SEWER IS LOCATED OUTSIDE OF THE R.O.W. AND AN EASEMENT IS PROVIDED, PLACE CLEANOUT ON EASEMENT LINE (REFER TO APPENDIX G-7: TYPICAL SERVICE PLAN).
- 4.) EXTEND LATERAL 10' OR TO UTILITY EASEMENT (RG&E, CABLE, ETC.), WHICHEVER IS CLOSER



SANITARY LATERAL DETAIL

TOWN OF GENEVA

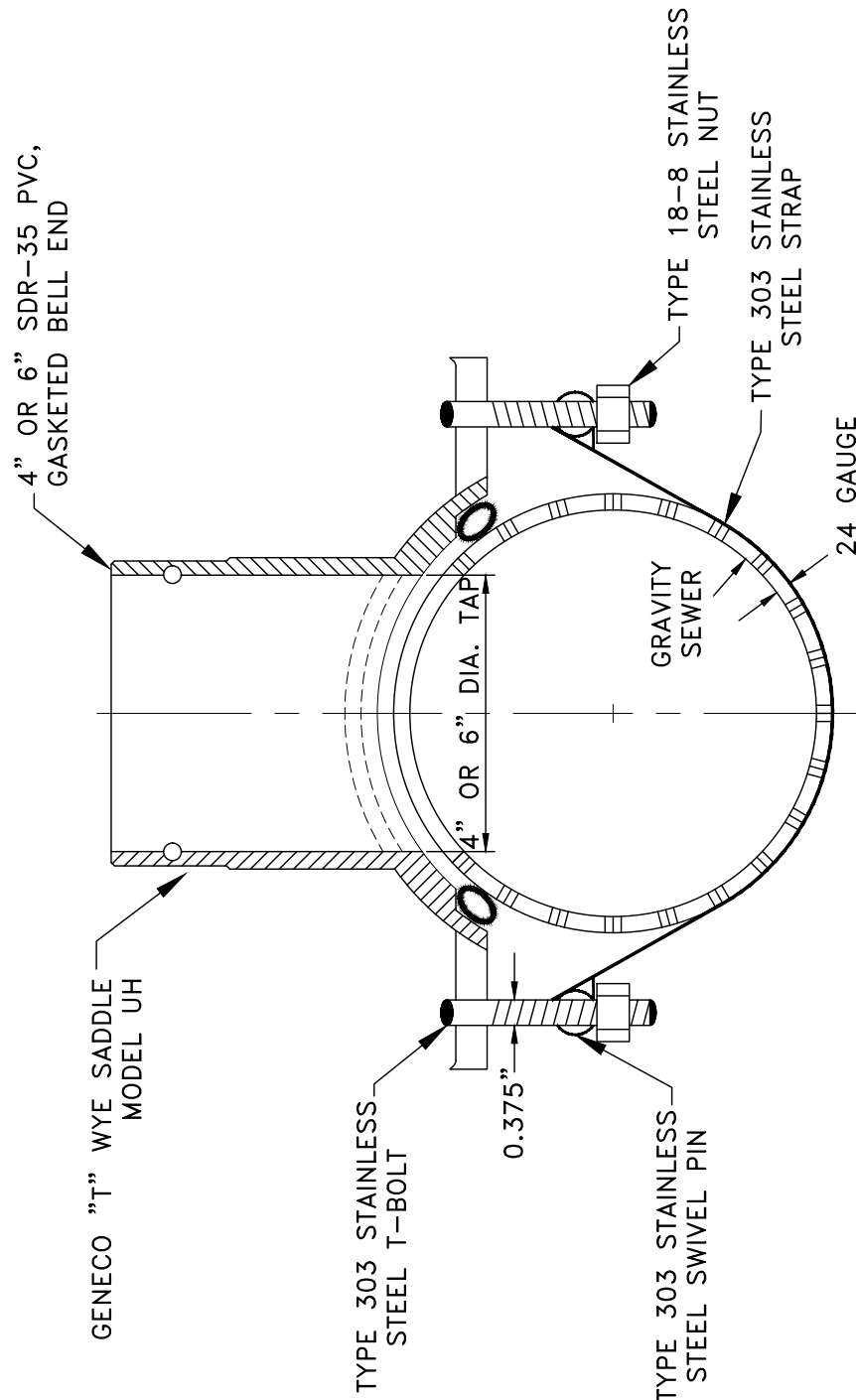
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 4.0**

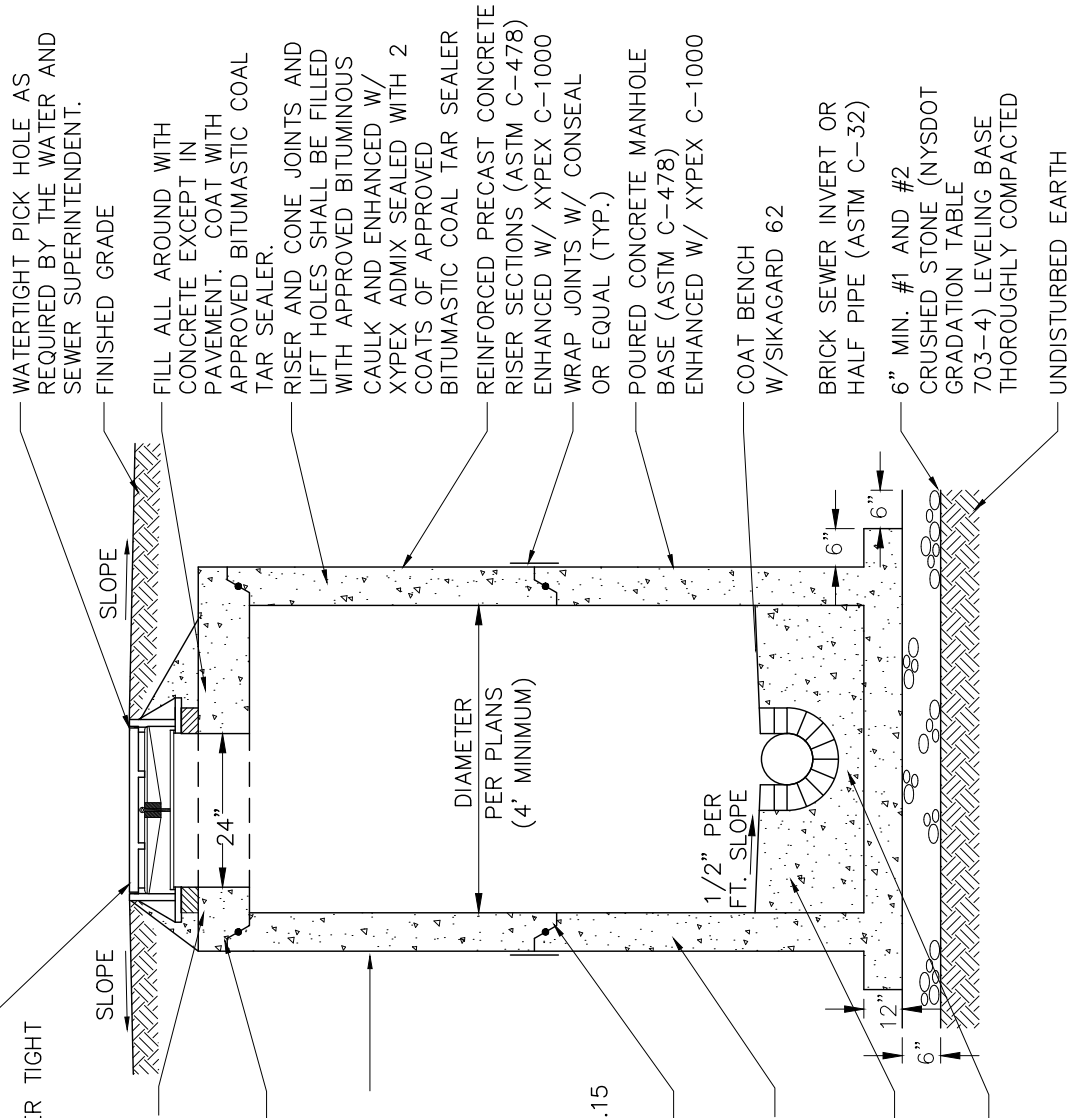
DATE: 2019

SCALE: N.T.S.

MRB | *group*



TEE LATERAL CONNECTION TO SEWER MAIN



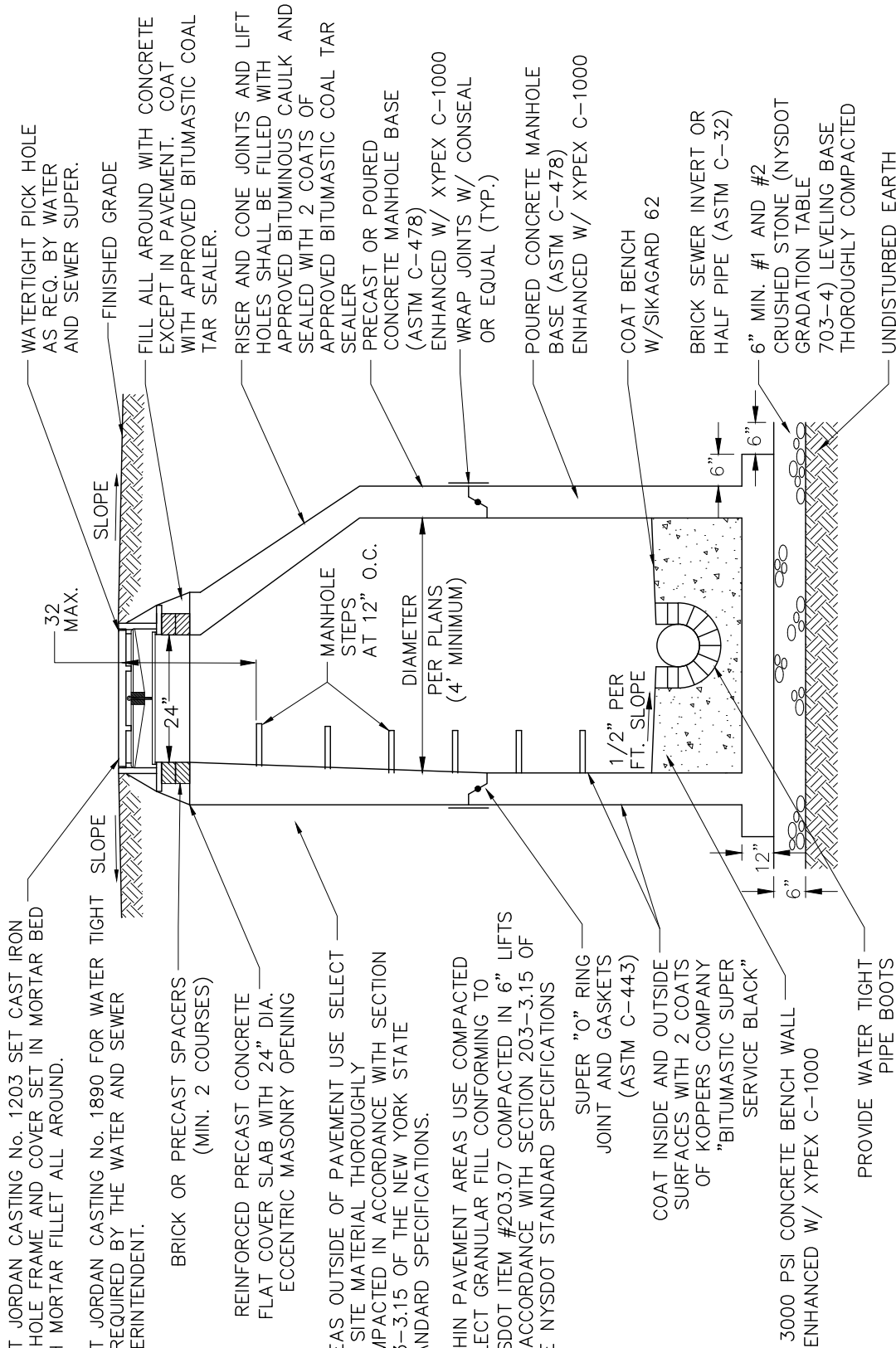
TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 5.1**

DATE: 2019

SCALE: N.T.S.

MRB *group*

NOTES:

- ECCENTRIC CONE RISER SECTIONS CAN BE USED WHEN MANHOLE DEPTH IS GREATER THAN EIGHT (8) FEET
- APPLY EPOXY IN VICINITY OF ANY FOREMAIN CONNECTION
- STEP ALIGNMENT LESS THAN 1" (VERTICAL) ALIGNMENT TOLERANCE
- SAFETY PLATFORM REQUIRED WHEN MANHOLE DEPTH IS OVER 14'

DEEP SANITARY SEWER MANHOLE

(GREATER THAN 8' DEEP)

TOWN OF GENEVA

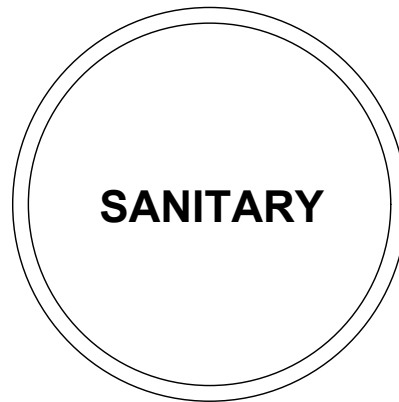
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 5.2**

DATE: 2019

SCALE: N.T.S.

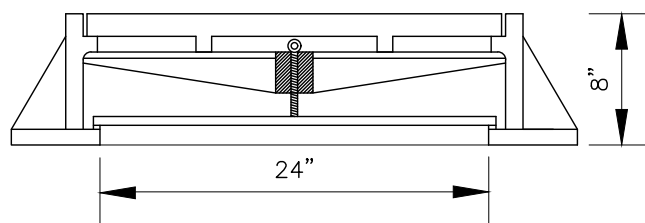
MRB | *group*



THE WORD "SANITARY" IN LETTERS NOT LESS THAN TWO (2) INCHES HIGH SHALL BE STAMPED OR CAST INTO ALL SANITARY MANHOLE COVERS AS TO BE PLAINLY VISIBLE

EAST JORDAN CASTING No. 1203 SET CAST IRON MANHOLE FRAME AND COVER SET IN MORTOR BED WITH MORTOR FILLET ALL AROUND.

EAST JORDAN CASTING No. 1890 OR APPROVED EQUAL FOR WATERTIGHT MANHOLE FRAME AS REQUIRED BY THE WATER AND SEWER SUPERINTENDENT.



SANITARY SEWER MANHOLE
FRAME AND COVER DETAIL

TOWN OF GENEVA

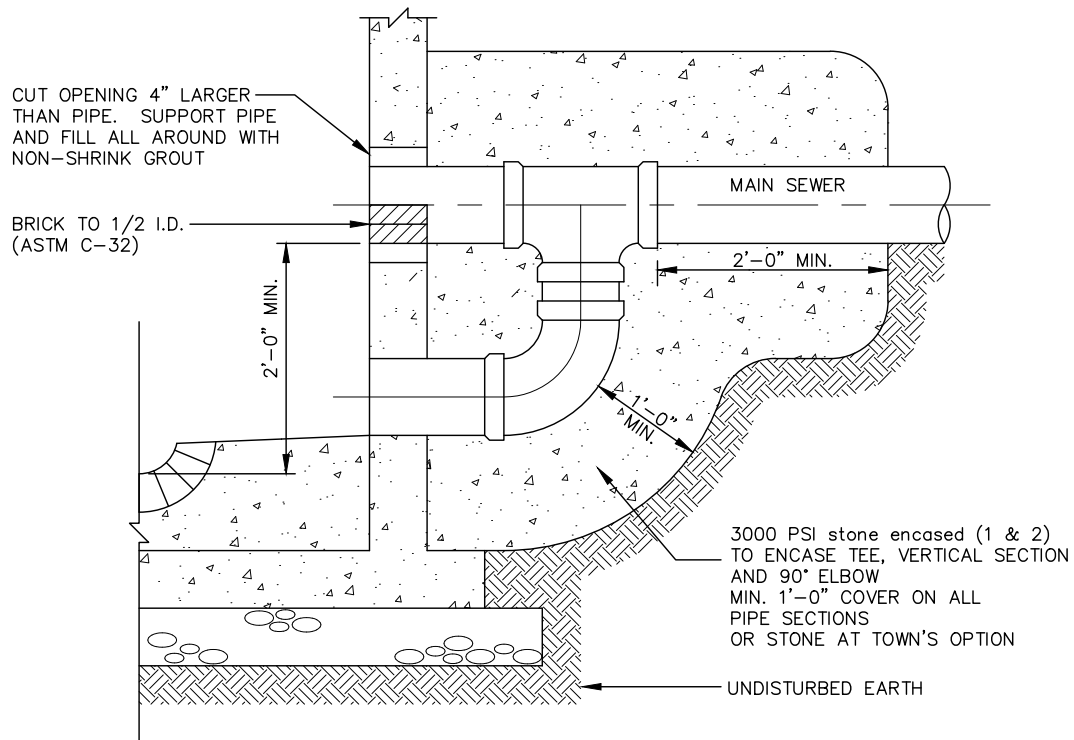
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 6.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTE:

1. SEWER MAIN, TEE AND DROP PIPE SHALL ALL BE THE SAME SIZE.
2. SEE SANITARY SEWER MANHOLE DETAIL FOR ALL OTHER CONSTRUCTION FEATURES NOT SHOWN.

SANITARY SEWER DROP CONNECTION

TOWN OF GENEVA

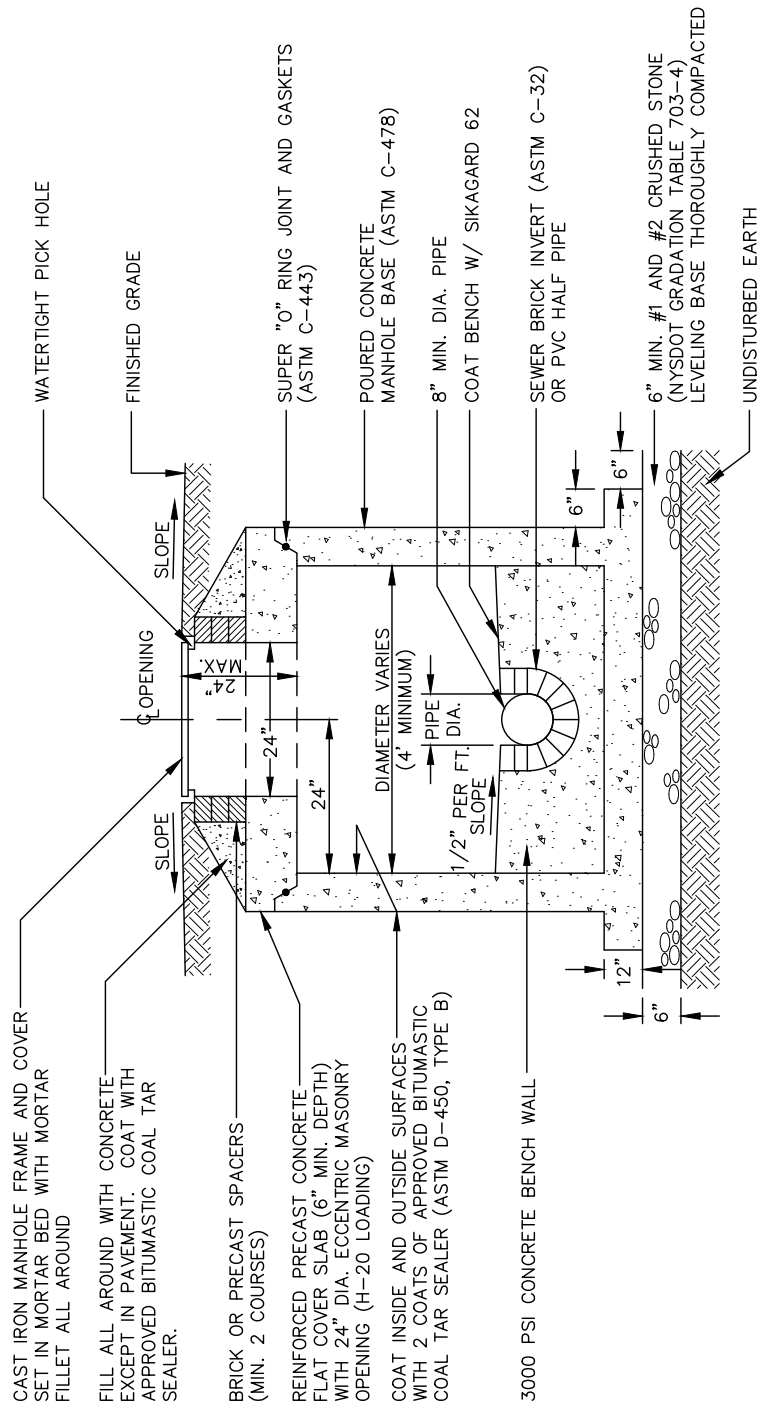
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 7.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



NOTES:

1. RISER AND COVER SLAB JOINTS AND LIFT HOLES SHALL BE FILLED WITH APPROVED BITUMINOUS CAULK AND SEALED WITH 2 COATS OF APPROVED BITUMASTIC COAL TAR SEALER.
2. BACKFILL SHALL BE SELECT MATERIAL (NYS DOT SPEC. 230-2.02) IF OUTSIDE PAVEMENT. IF IN PAVEMENT, BACKFILL SHALL BE CRUSHER RUN STONE (NYS DOT SPEC. 304-2.02, TYPE 2)

SHALLOW SANITARY SEWER MANHOLE
(LESS THAN 4' DEEP)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 8.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

GENERAL

All testing of gravity sewers shall be completed under the observation of the Town, or representative of the Town. The Contractor shall furnish all labor and testing equipment including hoses, pumps, plugs, temporary connections, gauges, etc. necessary to perform the required tests. Water for cleaning and testing shall be furnished by the Contractor through a metered connection as shown in Appendix W.

CLEANING

Each section of gravity sewer shall be flushed to remove all silt, sand, gravel and other debris prior to testing. If any sections of pipe cannot be flushed clean, mechanical methods shall be used to dislodge any deposits in the pipe.

TESTING GRAVITY SEWERS

- I. Air testing may be the method used for the final acceptance of each section of gravity sewer unless otherwise designated by the Town. Gravity sewers shall be tested in sections not exceeding 1,000 feet in length. Any section of gravity sewer which does not give satisfactory test results must be replaced and retested until a satisfactory test is completed. Any section containing sanitary laterals must be televised. Provide all lateral locations and supply televised footage and logs to the town (CD, flash drive, etc.).

a. Air Test

Low pressure air test may be used to test a section of sewer pipe or locate areas requiring replacement. The following procedures shall be used for low pressure air test.

1. The test shall be conducted between two (2) consecutive manholes.
2. The test section of the sewer line shall be plugged at each end. One of the plugs used at the manhole must be tapped and equipped for the air inlet connection for filling the line from the air compressor.
3. All service laterals, stubs and fittings into the sewer test section shall be properly capped or plugged and carefully braced against the internal pressure to prevent air leakage by slippage and blowouts.

CLEANING AND TESTING OF SANITARY SEWERS

(GENERAL / CLEANING / TESTING)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 8.1**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

4. Supply air to the test section slowly, filling the pipe line until a constant pressure of 4.0 PSIG is maintained. The air pressure shall be regulated to prevent the pressure inside the pipe from exceeding 5.0 PSIG.
5. When constant pressure of 4.0 PSIG is reached, throttle the air supply to maintain the internal pressure above 3.5 PSIG for at least five (5) minutes. This time permits the temperature of the entering air to equalize with the temperature of the pipe wall.
6. After the stabilization period, the air pressure shall be adjusted to 4.0 PSIG and the air supply disconnected. At 4.0 PSIG commence timing with a stop watch which is allowed to run until the line pressure drops to 3.5 PSIG at which time the stop watch shall be stopped. The time required for a pressure loss of 0.5 PSIG shall be compared to the following chart.

Any time which is less than shown in the following table shall be cause for rejection:

TIME REQUIREMENTS FOR AIR TESTING

PIPE SIZE (Inches)	TIME	
	(Minutes)	(Seconds)
4	2	32
6	3	50
8	5	6
10	6	22
12	7	39
14	8	56
15	9	35
16	10	12
18	11	34
20	12	45
21	13	30

For larger diameter pipe: Minimum time in seconds =
462 x pipe diameter in feet

CLEANING AND TESTING OF SANITARY SEWERS (TIME REQUIREMENTS)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 8.2**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

7. An air pressure correction shall be required when the prevailing ground water is above the sewer line being tested. Under this condition, the air test pressure shall be increased to 0.433 PSIG for each foot the ground water level is above the invert of the pipe.

b. Water Tests

Leakage or infiltration shall not exceed 100 gallons per inch diameter per mile per day for any section tested. Leakage tests shall be conducted with a positive head of 10 ft. over the pipe invert for a period of 24 hours.

II. Manholes

Each manhole shall be subjected to an infiltration or exfiltration test as determined by the Town.

- a. Water Testing — Each manhole shall be filled with a maximum of 10 feet of water, subjected to a 24 hour test and show a loss of water not to exceed 15 gallons/24 hours for a 4 foot IDMH. Infiltration tests shall adhere to the same limits.
- b. Vacuum Testing — Each manhole shall be subjected to a vacuum of 10 inches of Hg for one minute with an allowable loss of 1 inch of Hg.

FORCEMAIN TESTING

Sanitary Sewer Forcemains shall be tested at 100 psig for a duration of one hour. Allowable leakage shall be as follows:

<u>Pipe Size</u>	<u>Allowable Leakage (gal/hr/100' of pipe)</u>
4"	.030
6"	.045

CLEANING AND TESTING OF SANITARY SEWERS (FORCEMAIN TESTING)

TOWN OF GENEVA

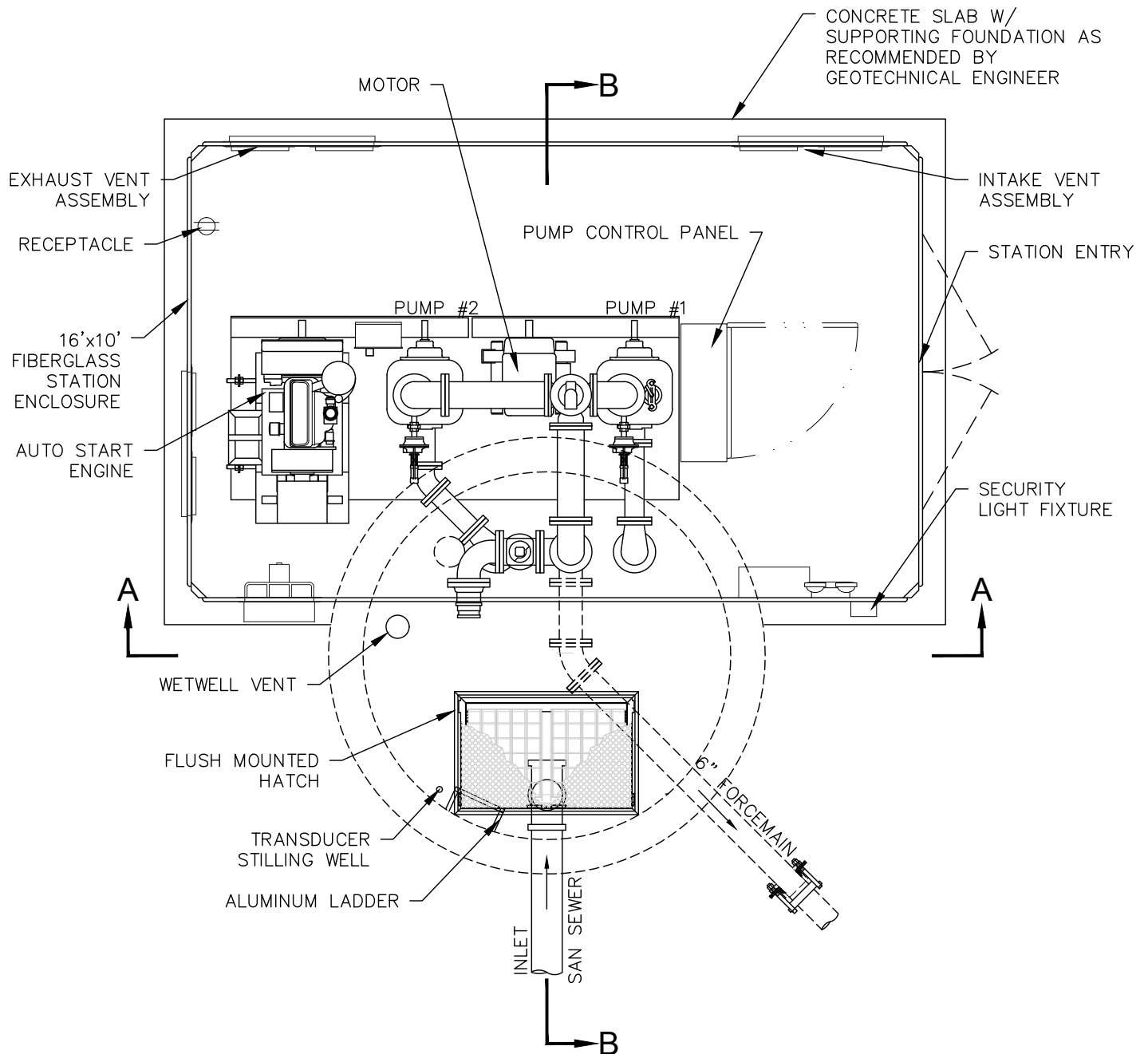
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 9.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



HIGH FLOW PUMP STATION

(>100 GPM)

TOWN OF GENEVA

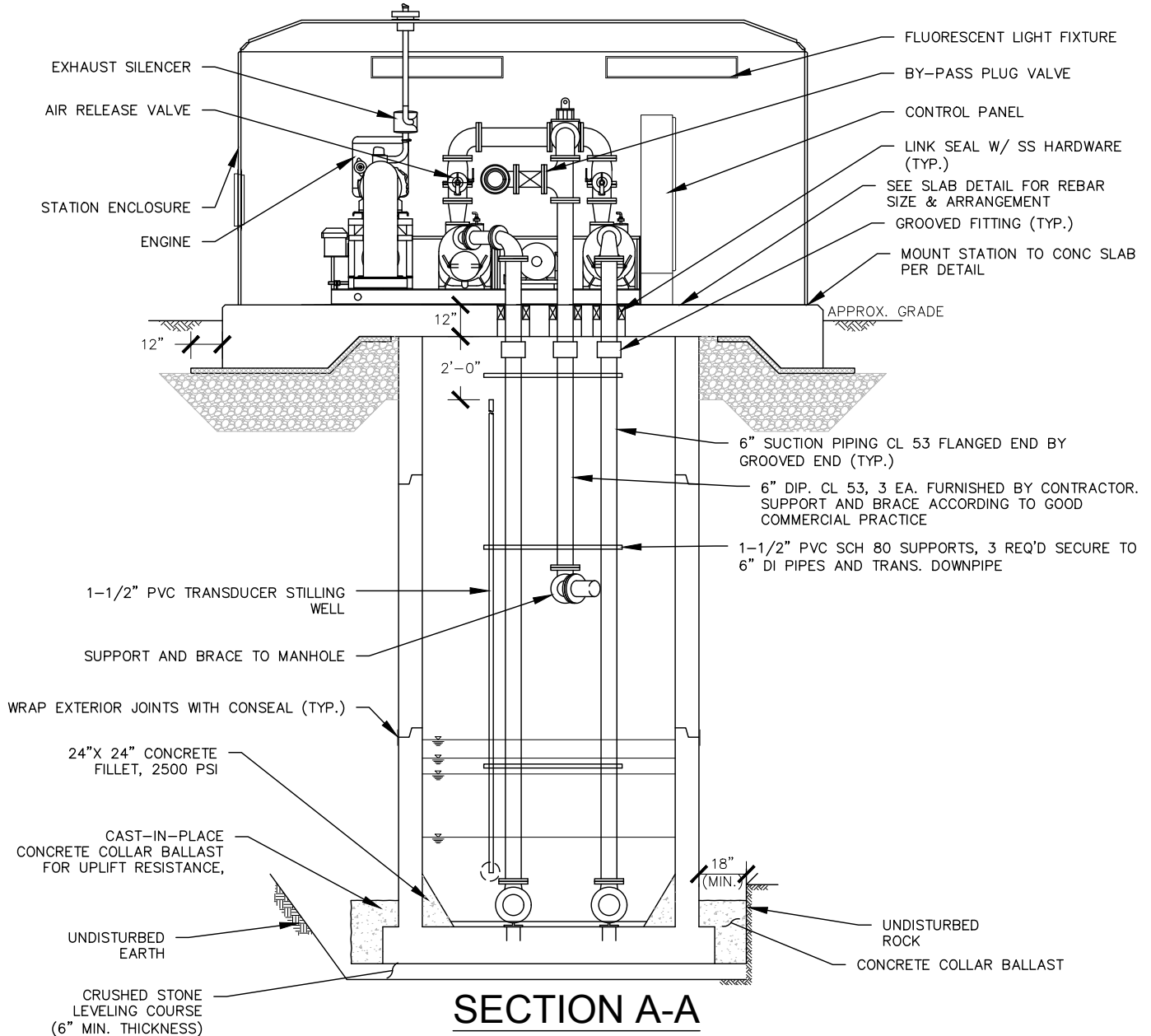
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 9.1**

DATE: 2019

SCALE: N.T.S.

MRB | group



*DIP IN THE WETWELL SHALL BE PAINTED AS FOLLOWS:

- SHOP PRIME W/ TNEC SERIES 1 (2.5 - 3.5 mils)
- FIELD PREP & REPRIME AS NEEDED
- 2 COATS OF TNEC SERIES 446 (7.0 - 10.0 mils DFT EACH)

NOTES:

1. WETWELL TO BE INSTALLED IN CONFORMANCE W/ DETAIL FOR STANDARD SANITARY MANHOLE.
2. ALL HARDWARE, SUPPORTS, & BRACKETS INSTALLED WITHIN THE WETWELL SHALL BE 304 SS. DISSIMILAR METALS SHALL BE ISOLATED USING NYLON WASHERS.
3. PROVIDE REDUNDANT LEVEL FLOATS FOR ALL SPECIFIED OPERATION POINTS.
4. FLOATS TO BE INSTALLED W/ RETRIEVABLE NON-METALLIC CHAIN & WEIGHT SYSTEM.
5. ALL DIP INSTALLED WITHIN THE WETWELL SHALL BE CL 53 DIP.

HIGH FLOW PUMP STATION (SECTION)

TOWN OF GENEVA

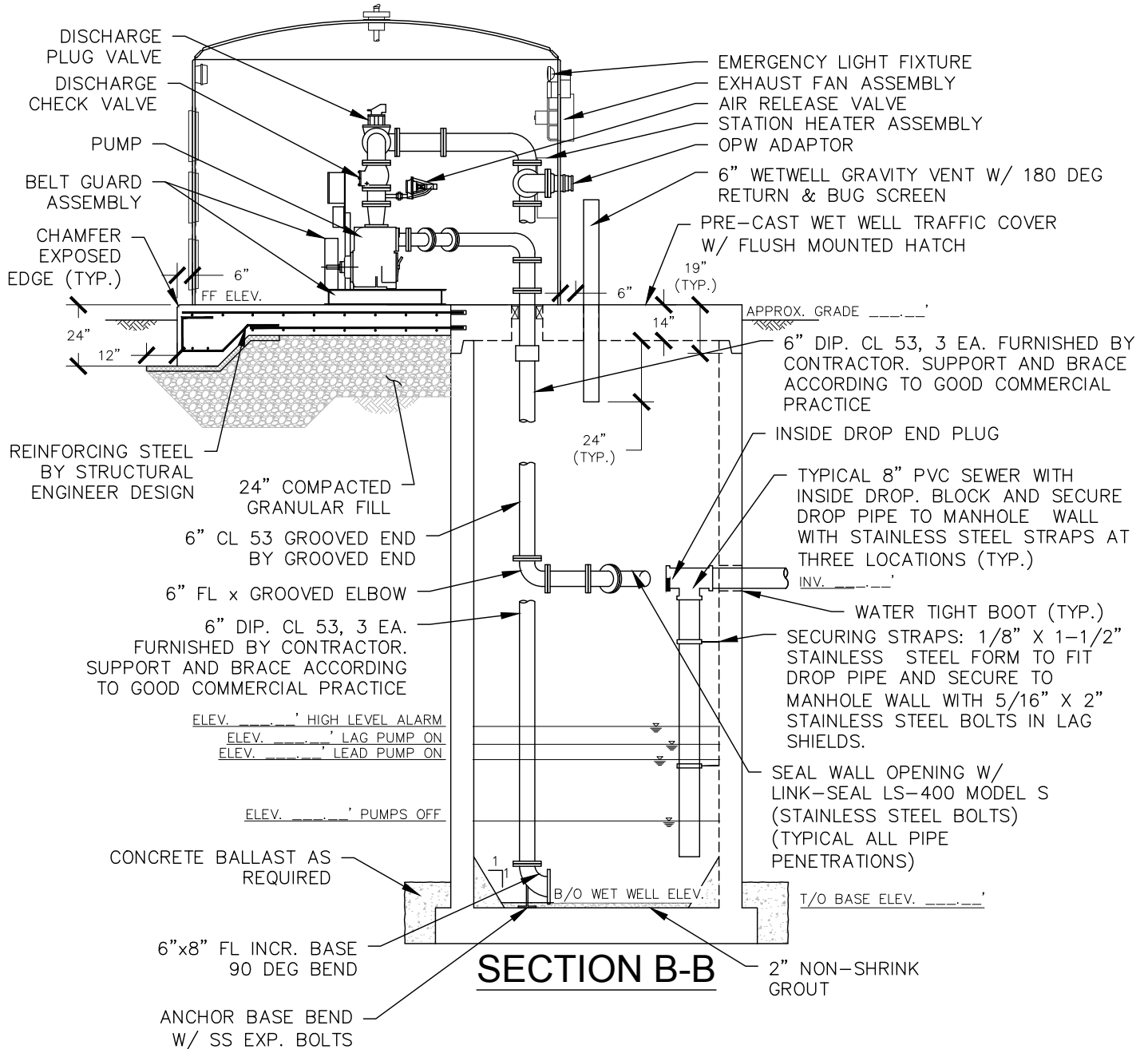
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 9.2**

DATE: 2019

SCALE: N.T.S.

MRB | group



HIGH FLOW PUMP STATION
(SECTION)

TOWN OF GENEVA

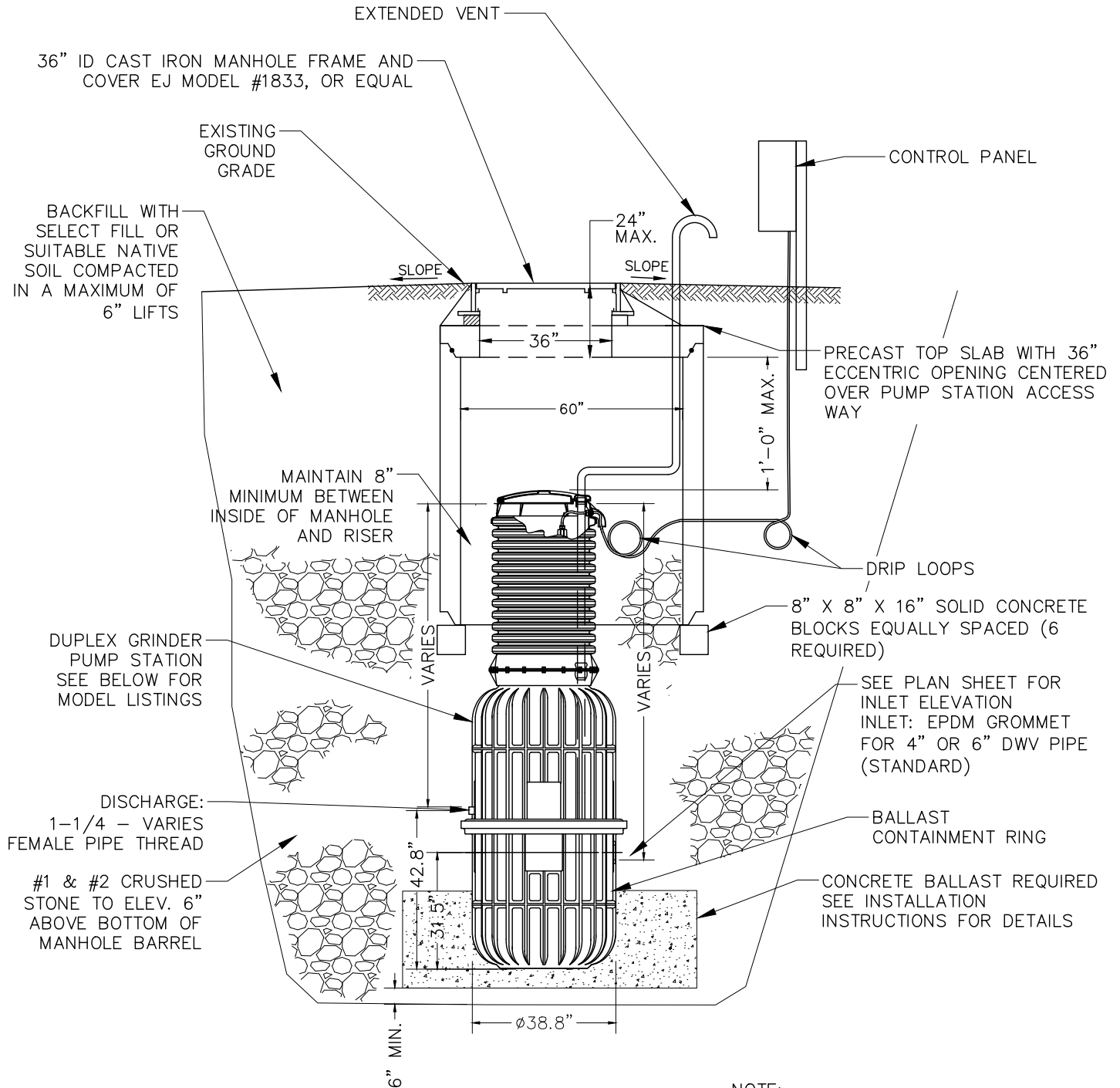
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 10.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



NOTE:
PROVIDE COMBINATION DOUBLE CHECK
VALVE / ISOLATION VALVE ON
DISCHARGE

DUPLEX GRINDER PUMP STATION MODELS:
DH152/DR152 FOR 3000 GPD
DH272/DR272 FOR 5000 GPD
DH502/DR502 FOR 6000 GPD

LOW FLOW PUMP STATION
(<100 GPM)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **S - 11.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

THE FOLLOWING ARE REQUIREMENTS FOR PUMP STATIONS:

THIS PAGE IS TO BE ADDED TO THE MAP INCLUDING THE CONTROL PANEL AND PUMP STATION

1. 12x18 ABOVE GROUND SEWAGE LIFT STATION BY THE GORMAN-RUPP COMPANY (MODEL No. REQUIRED). EXAMPLE: MODEL T4A3S-B 5 HP MOTORS.
2. STAINLESS STEEL CONTROL PANEL IN CONFORMANCE OF APPLICABLE SECTION OF NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA) STANDARDS FOR TYPE 4 ELECTRICAL ENCLOSURES FOR INCOMING POWER, MOTOR, AND LIQUID CONTROLS, AS REQUIRED BY TOWN DEPARTMENT.
3. THE CONTROLLER TO BE ALLEN-BRADLEY MICROLOGIX SYSTEM EQUIPPED WITH A MODEL LRP CPU WITH 14K MEMORY, AND A CONFIGURABLE PORT WHICH IS RESERVED FOR FUTURE CUSTOMER USE INCLUDING THE LIQUID LEVEL CONTROL SENSORS PER TOWN OF GENEVA WATER & SEWER DEPARTMENT SPECIFICATION.
4. THE SYSTEM SHALL HAVE THE FOLLOWING MONITORING CAPABILITIES:
 - a. WELL LEVEL
 - b. WELL LEVEL HIGH AND LOW ALARMS
 - c. AC POWER FAILURE
 - d. WELL DRAW DOWN RATE (USING WEB BASED RATE OF CHANGE SET POINTS)
 - e. PUMP 1 & 2 CURRENT DRAW (WITH SENSE TOROID OPTION)
 - f. PUMP 1 & 2 ON/OFF CYCLES
 - g. PUMP 1 & 2 RUN TIME
 - h. PUMP 1 & 2 FAULTS
 - i. PUMP 1 & 2 ON/OFF AUTOMATIC PUMP CONTROL FROM WELL(S) LEVEL(S)
 - j. RAINFALL (IF CONNECTED TO AN EXTERNAL RAIN GAUGE)
 - k. TIME STAMPS OF WHEN RAIN EVENTS OCCURRED
 - l. ALARM NOTIFICATION VIA E-MAIL, PAGER, TEXT, VOICE ALERTS
 - m. HISTORICAL LOG SHOWING ALL ALARM HISTORY AND CONTINUOUS WATER LEVEL – UP TO TREE YEARS DATA ON-LINE.

PUMP STATION NOTES AND REQUIREMENTS

TOWN OF GENEVA

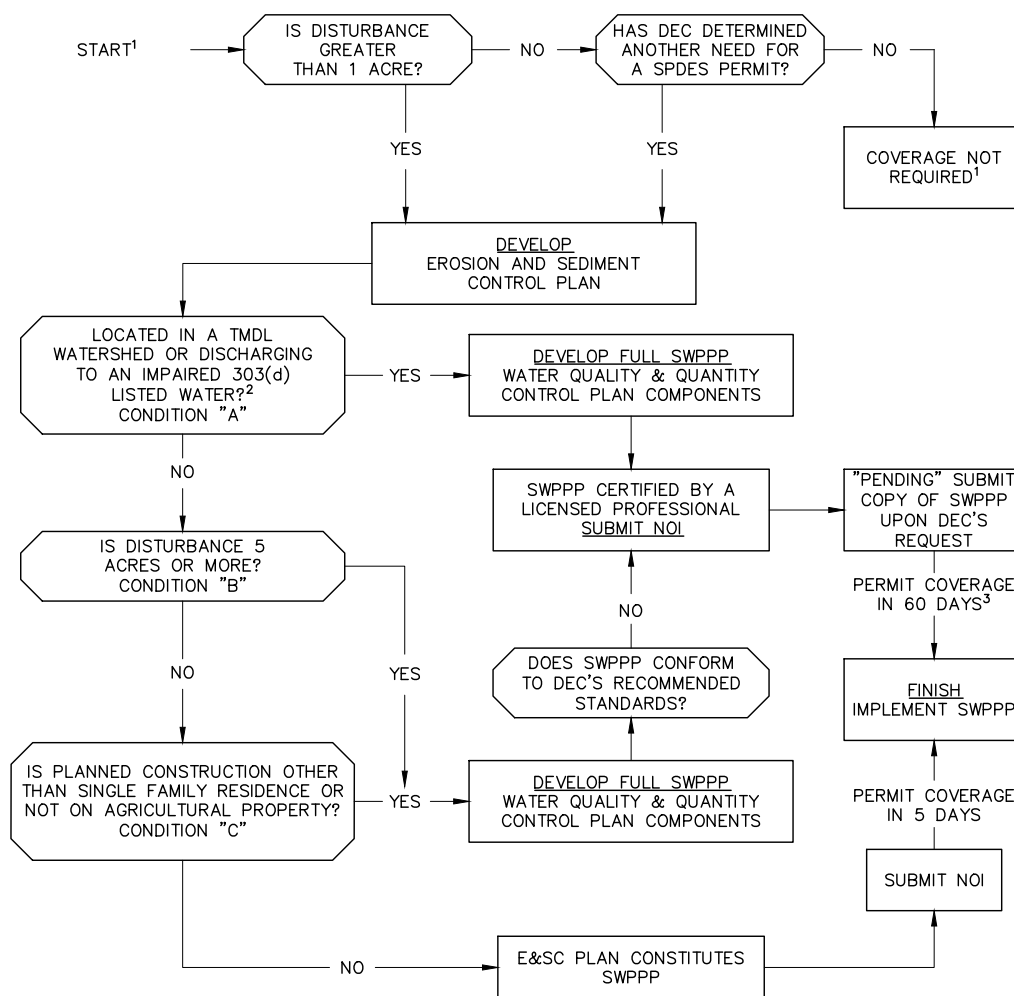
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 1.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. UNDER ANY OF THE ABOVE CONDITIONS OTHER ENVIRONMENTAL PERMITS MAY BE REQUIRED. DEC MAY REQUIRE PERMIT FOR CONSTRUCTION DISTURBANCE < 1 ACRES ON A CASE BY CASE BASIS.
2. AND THE FOLLOWING EXISTS: CONSTRUCTION AND/OR STORMWATER DISCHARGES FROM THE CONSTRUCTION OR POST-CONSTRUCTION SITE CONTAIN THE POLLUTANT OF CONCERN IDENTIFIED IN THE TMDL OR 303(d) LISTING.
3. AFTER RECIEPT BY DEC OF COMPLETED APPLICATION.

SWPPP STORM WATER PERMIT PROCESS

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 2.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



Department of
Environmental
Conservation

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information

1. Owner/Operator Name:

2. Contact Person:

3. Street Address:

4. City/State/Zip:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/State/Zip:

III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information

8. SWPPP Reviewed by:

9. Title/Position:

10. Date Final SWPPP Reviewed and Accepted:

IV. Regulated MS4 Information

11. Name of MS4:

12. MS4 SPDES Permit Identification Number: NYR20A

13. Contact Person:

14. Street Address:

15. City/State/Zip:

16. Telephone Number:

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 2.1**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s).
Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

Page 2 of 2

**MS4 STORMWATER POLLUTION PREVENTION
PLAN (SWPPP) ACCEPTANCE FORM**

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 3.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

Storm Water Pollution Prevention Plan Notes

The Town of Geneva requires the following notes to be added to the Plans:

1. All improvements shall be in accordance with the most recent standards and specifications of the Town of Geneva MS4 requirements and the appropriate water/sewer agencies, unless otherwise noted.
2. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared for this site to conform with New York State Department of Environmental Conservation (NYSDEC) General Permit GP-0-15-002 or latest version thereof and to the requirements of local authorities regarding the maintenance and control of storm water quality and quantity. The Pollution Prevention Plan will consist of the project plans, the Storm Water Management Plan, soil erosion and sedimentation control specification regarding stormwater control.
3. The owner will be responsible for implementing the required SWPPP, including the filing of a "Notice of Intent", receiving a signed MS4 SWPPP Acceptance Form, and if necessary a 5-acre waiver from the Town of Geneva prior to construction starting. The owner, his contractor, sub-contractors and all others associated with the implementation of this plan shall be familiar with and certify the plan and the conditions of the NYSDEC General Permit GP-0-15-002 or latest version thereof for the storm water discharges from construction activities.
4. Any modifications or deviations from the SWPPP, including implementation of erosion control measures and storm water management areas, shall be documented by the owner with the engineer and the Town of Geneva.
5. The owner shall be responsible for providing on-site inspections by a licensed professional of construction erosion control during construction. If the site is over 5 acres of disturbance, inspections are to be conducted twice per week (separated by a minimum of two days). If the site is under 5 acres of disturbance, inspections are to be conducted once per week. An inspection report log is to be kept on-site by the owner with the approved SWPPP. SWPPP inspection reports are to be forwarded to the Town CEO, Construction inspector and Town's engineering firm, MRB Group, D.P.C.
6. Sequence – The contractor shall install erosion & sediment control measures in the following sequence. Construction sequences may be altered through the site plan review process and at the pre-construction meeting:
 - Install perimeter sediment controls, (i.e. erosion fencing).
 - Install stabilized construction entrance.
 - Protect vegetation to remain.
 - Clear grub and construct diversionary swales, sediment basins, traps and other temporary measures.
 - Complete clearing and grubbing operation.
 - Install stormwater management facilities.
 - Strip topsoil and provide erosion control measures around stockpiles locations.
 - Maintain erosion control measures and place additional measures as earthwork and underground utilities are constructed.
 - Restore areas as defined by contract documents.
 - Remove erosion control measures as areas are reestablished with ground cover, once inspected by the Town.
 - If site preparations occur between September 1 and March 31, additional erosion controls must be taken including reducing the size of disturbed areas and placing heavy straw mulch where practical.

STORM WATER POLLUTION PREVENTION PLAN NOTES

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 3.1**

DATE: 2019

SCALE: N.T.S.

MRB | group

Storm Water Pollution Prevention Plan Notes

The Town of Geneva requires the following notes to be added to the Plans:

7. Maps should include re-seeding instructions including materials and a timetable for various seeding:

- Seed all cut and fill, topsoil piles and ponds within fourteen (14) days after completion.
- Grade and seed pipe disturbed areas not in right-of-way within fourteen (14) days after completion.
- Topsoil and seed right-of-way and utility easements within fourteen (14) days of completion by Rochester Gas and Electric.
- **TEMPORARY SEEDING OF DISTURBED AREAS SHALL BE PROVIDED AS FOLLOWS:**

The surface two inches of soil should be loosened by disking, raking, or back-blading with a bulldozer. Immediately fertilize with 300 pounds per acre (or 7 pounds per 1,000 square feet) of 10-10-10 fertilizer. Immediately seed with the following mix:

	<u>PERCENTAGE%</u>	*AT A RATE OF 5LBS PER 1,000 SQ FT
Annual Ryegrass	50%	
Perennial Ryegrass	50%	
Oats	10% (If available)	

Seed should have a germination rate of at least 85 percent and minimal inert material.

- **R.O.W. AREAS SHALL BE TOPSOILED AND STABILIZED USING PERMANENT LAWN SEEDING MIX UPON COMPLETION OF RG&E UTILITIES, SIDEWALKS, AND FINE GRADING:**

	<u>LBS/Acre</u>	<u>% BY PURITY</u>	<u>% GERM</u>
'Pennfine' Perennial Rye Grass	35	85	85
'Pennlawn' Red Fescue	35	97	80
'Baron' and 'Midnight'			
Kentucky Bluegrass	30	85	80
Seeding Rate:	6.0 pounds per 1,000 square feet		
Mulch:	Straw or wood fiber mulch used with hyrdo seeding method at two tons		
	per acre with trackifier: At the Town Inspectors discretion		
Starting Fertilizer:	5:10:10 at 20 pounds per 1,000 square feet.		

- For fall or early winter, seed with certified "aroostock" winter rye (cereal rye) at 100 pounds per acre.
 - Permanent stabilization for steep slopes 3:1 or greater shall include Jute Mesh blanket and Crown Vetch seed with perennial ryegrass.
8. The contractor shall locate, mark, safeguard and preserve all survey control monuments and right-of-way monuments in the areas of construction.
9. Existing underground utilities shown herein were plotted from field locations and/or utility company record plans. Prior to any construction, the contractor shall call the Dig Safety New York (UFPO) hotline at 1-800-962-7962 for stakeout of existing utilities. The contractor shall determine exact location and elevation of underground utilities before comencing construction. Contractor shall make exploration excavations to locate existing underground facilities sufficiently ahead of construction to permit revisions as required to meet the existing conditions.
10. Dust shall be controlled during construction by the contractor to minimize effect on the adjacent properties. The contractor shall implement dust control measures as needed and/or as directed by the Town of Geneva.
11. The owner's contractor shall be responsible for the establishment, maintenance, cleaning, repair and replacement of erosion control measures during site construction.

STORM WATER POLLUTION PREVENTION PLAN NOTES
(CONTINUED)

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 4.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

PROJECT: _____

DATE: _____

ENGINEER: _____

n FACTOR: _____

PIPE SELECTION	DIA. (IN.)	% GRADE	FULL VELOCITY (FPS)	PIPE LENGTH (FT.)	TIME OF FLOW (MIN.)										
						Q TOTAL (CFS)									
						Q ADDED (CFS)									
						i (IN./ HR.)									
						T _c (MIN.)									
						C									
						AREA TOTAL (ACRES)									
						AREA ADDED (ACRES)									
						TO									
						FROM									

STORM SEWER CALCULATIONS

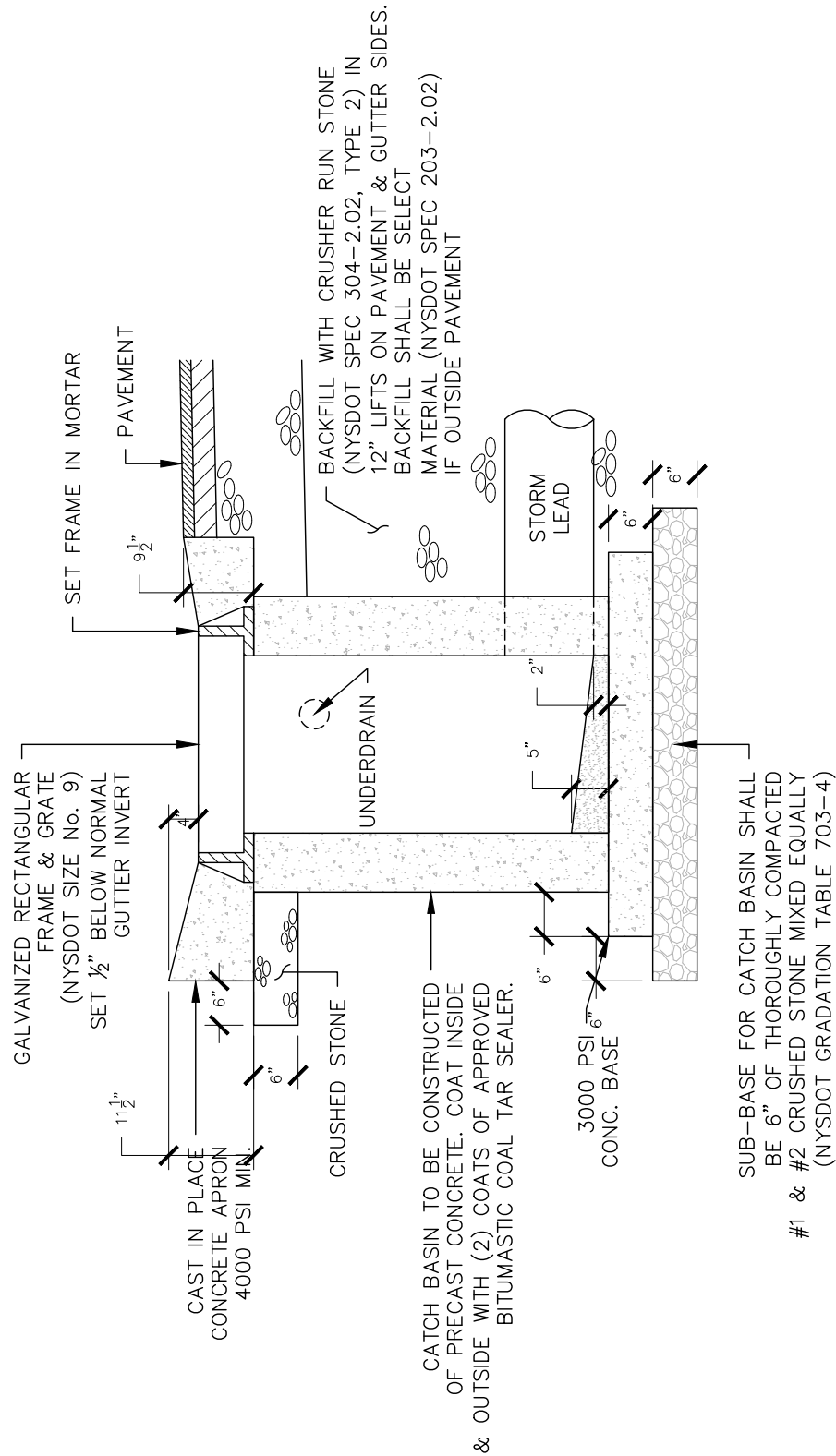
TOWN OF
GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 5.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

CATCH BASIN DETAIL

NOTES:

1. TOWN MAY REQUIRE A 6" SUMP AT THE TOWN'S OPTION.

TOWN OF GENEVA

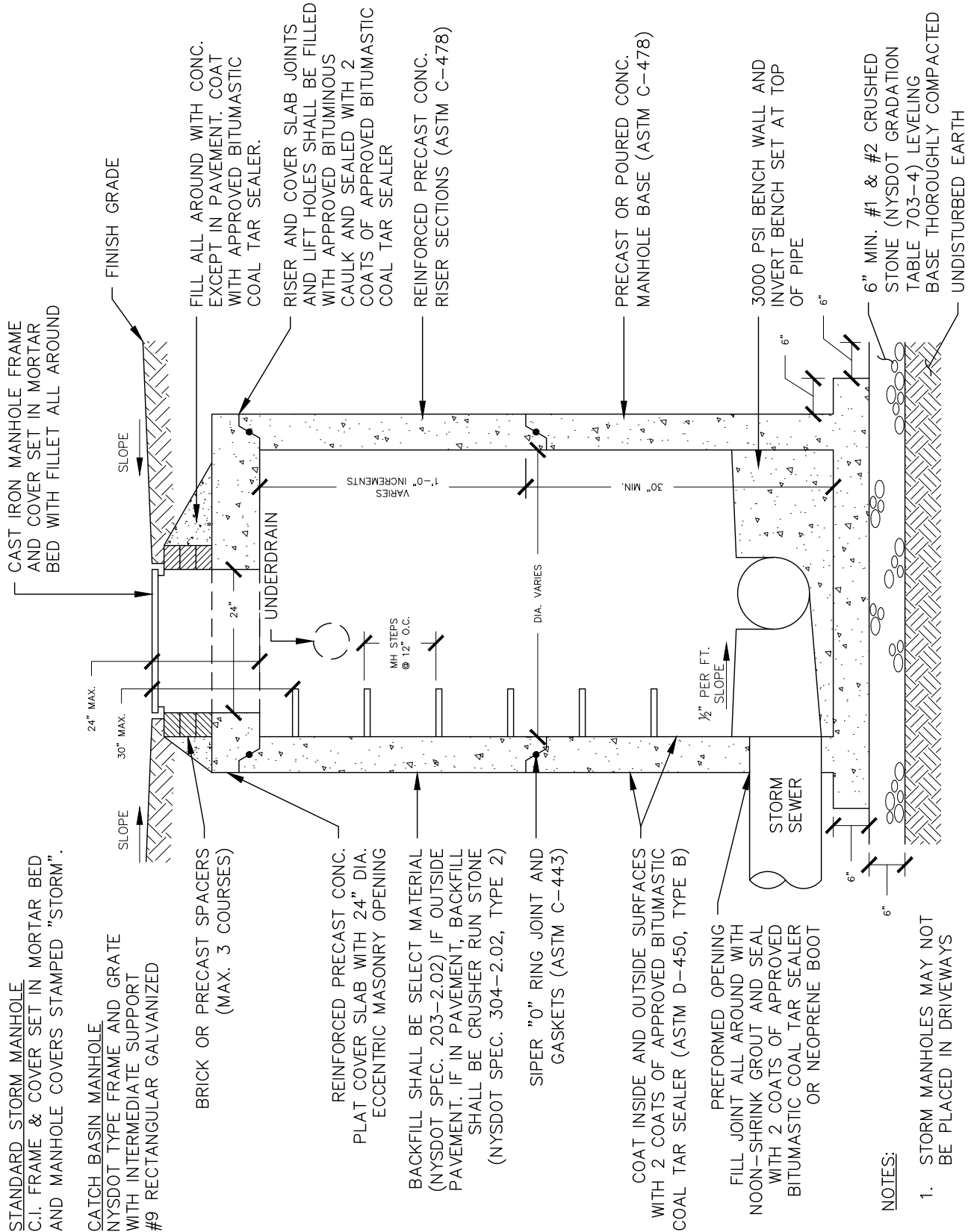
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 6.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



STORM SEWER AND CATCH BASIN MANHOLE

TOWN OF GENEVA

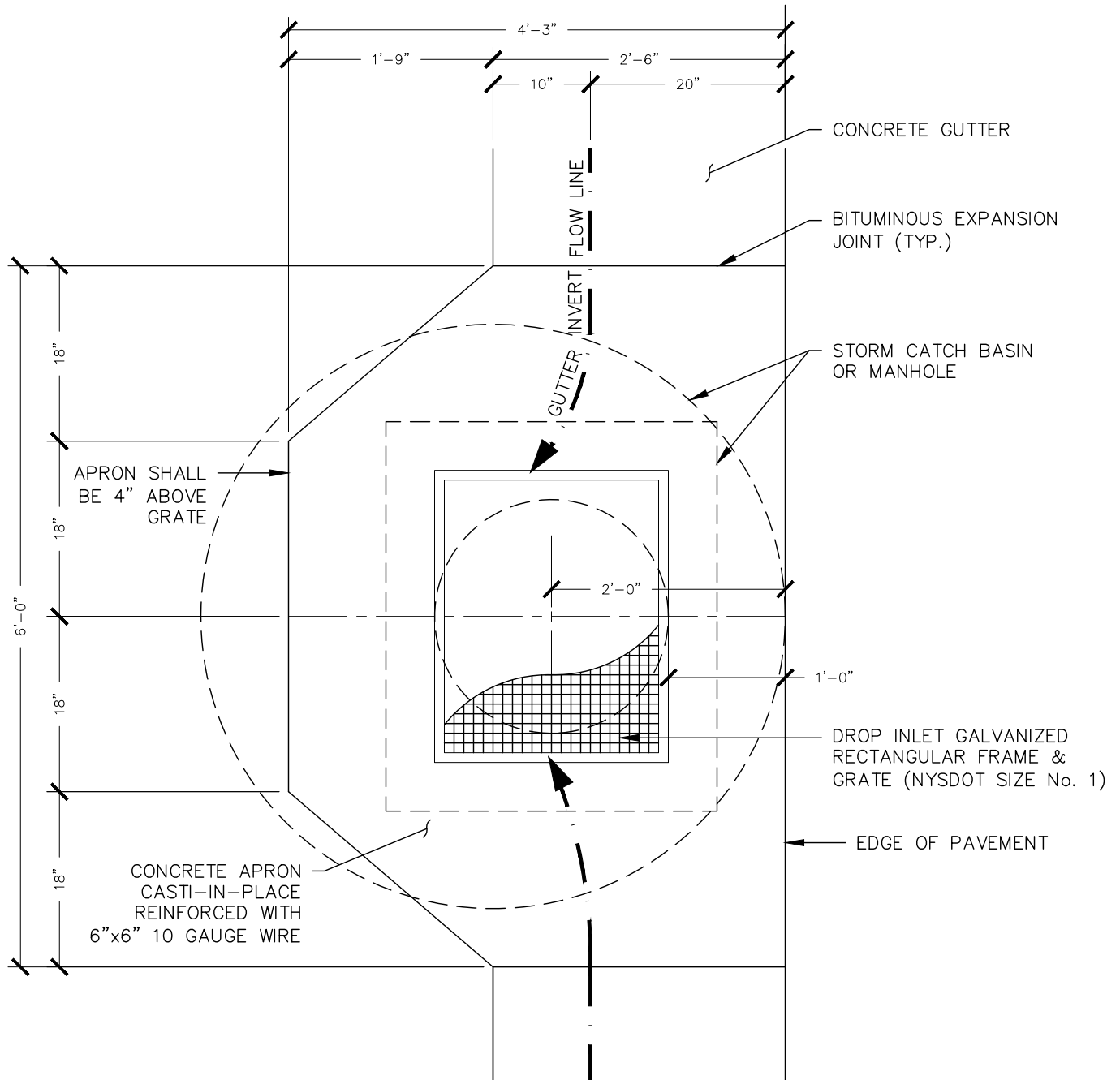
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 7.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



NOTES:

1. CATCH BASINS SHOULD NOT BE PLACED IN DRIVEWAY AREAS OR IN FRONT OF DRIVEWAY AREAS.
2. SPECIAL DESIGN MAY BE REQUIRED FOR STEEP GRADE SECTIONS.

GUTTER AND CATCH BASIN APRON DETAIL

TOWN OF GENEVA

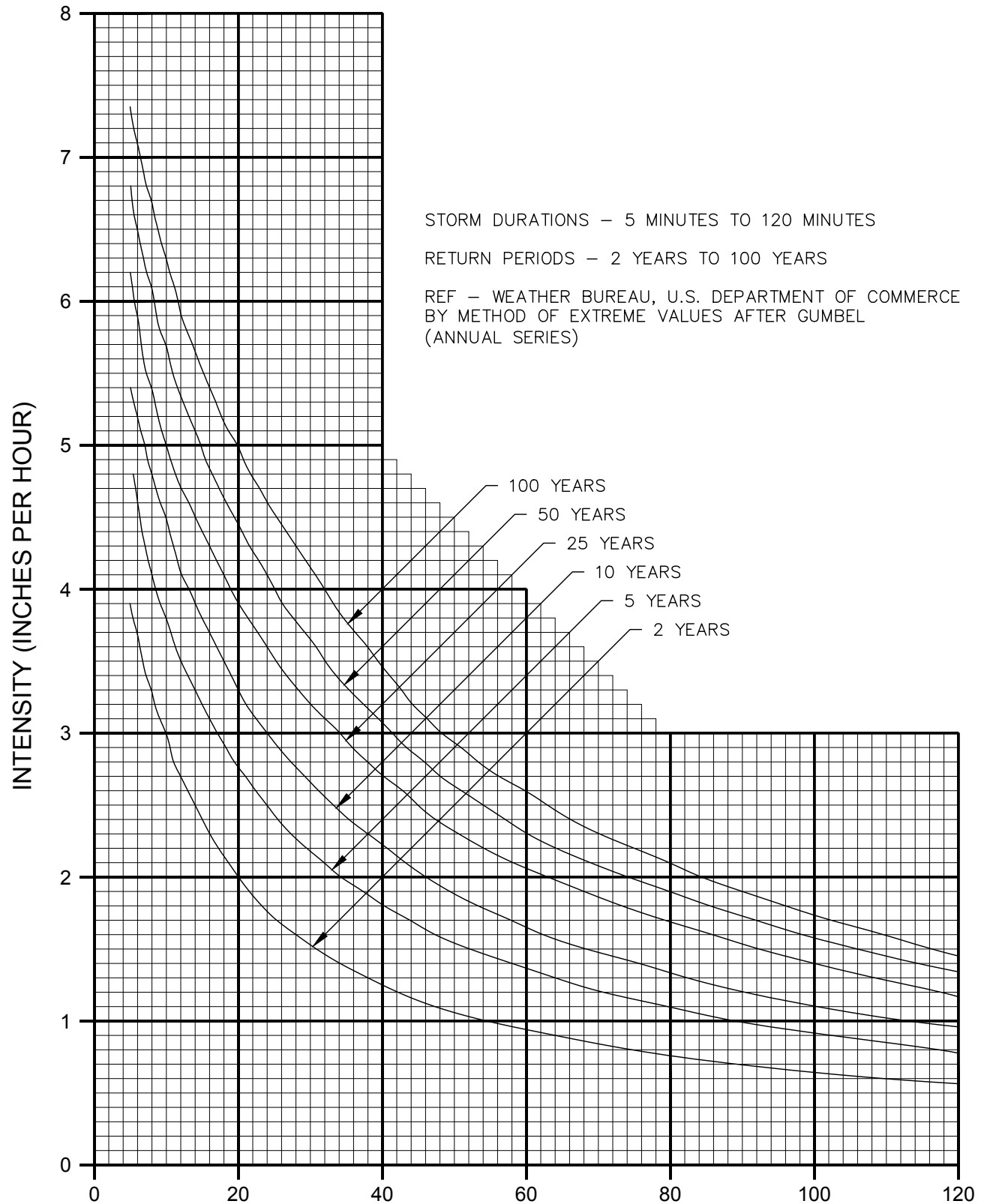
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **ST - 8.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



RAINFALL INTENSITY CURVES

TOWN OF GENEVA

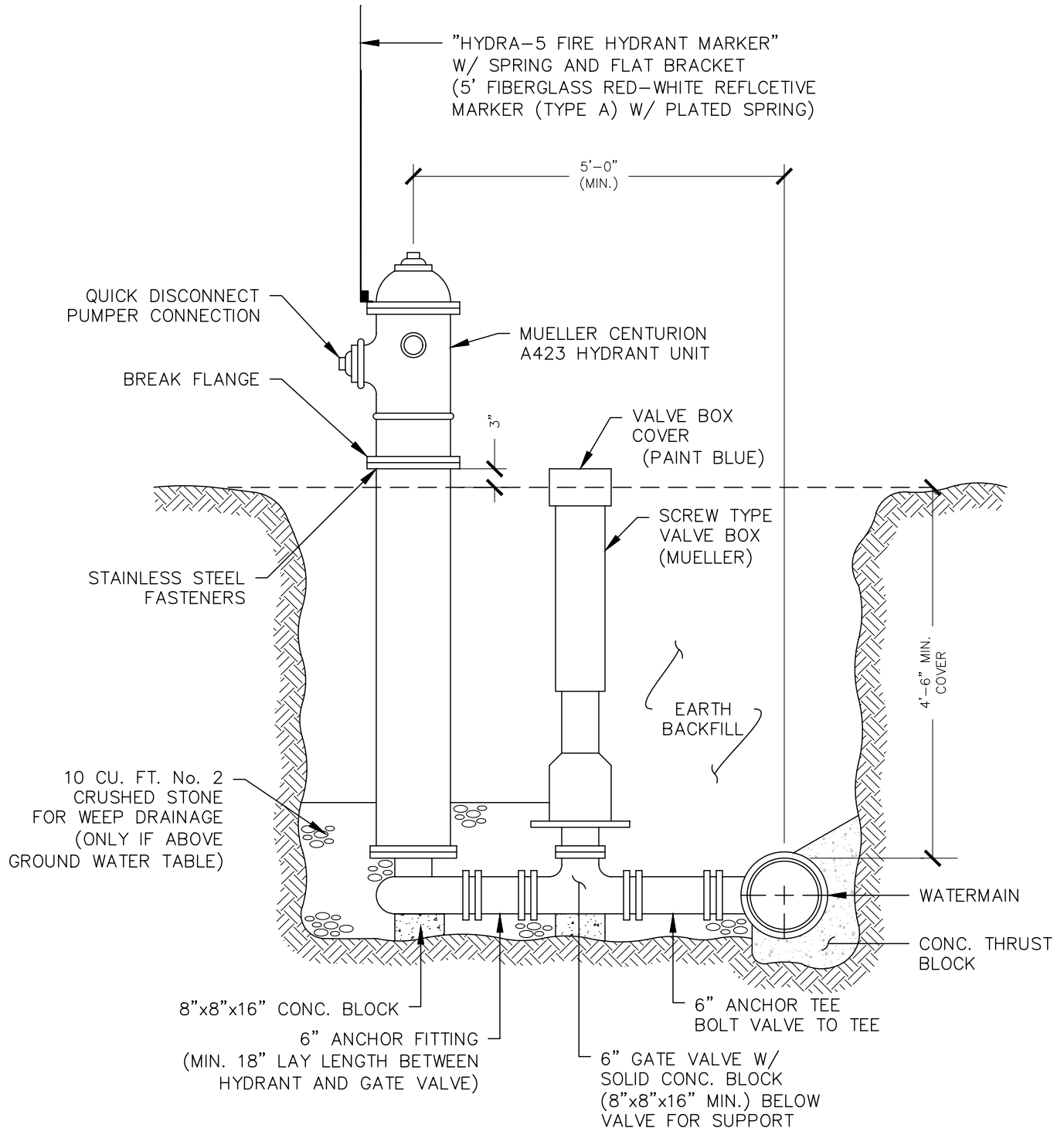
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 1.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



NOTES:

1. IF GROUND WATER IS ENCOUNTERED, THE WEEP HOLES MUST BE PLUGGED AND THE HYDRANT MARKED.
2. HYDRANTS SHALL BE PAINTED RED.

HYDRANT UNIT

TOWN OF GENEVA

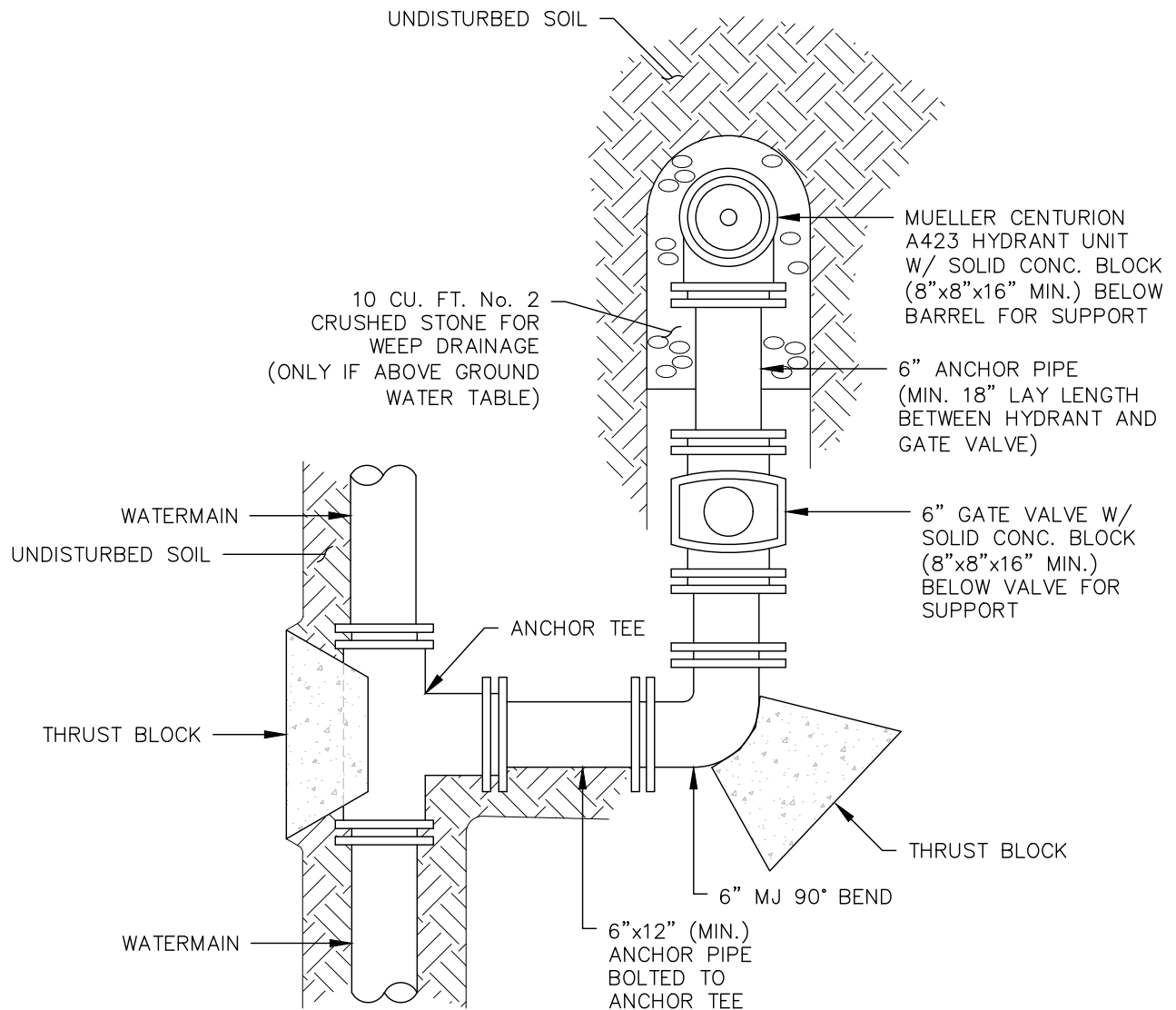
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 1.1**

DATE: 2019

SCALE: N.T.S.

MRB | group



NOTES:

1. IF GROUND WATER IS ENCOUNTERED, THE WEEP HOLES MUST BE PLUGGED AND THE HYDRANT MARKED.
2. HYDRANTS SHALL BE PAINTED RED.

PARALLEL HYDRANT UNIT

TOWN OF GENEVA

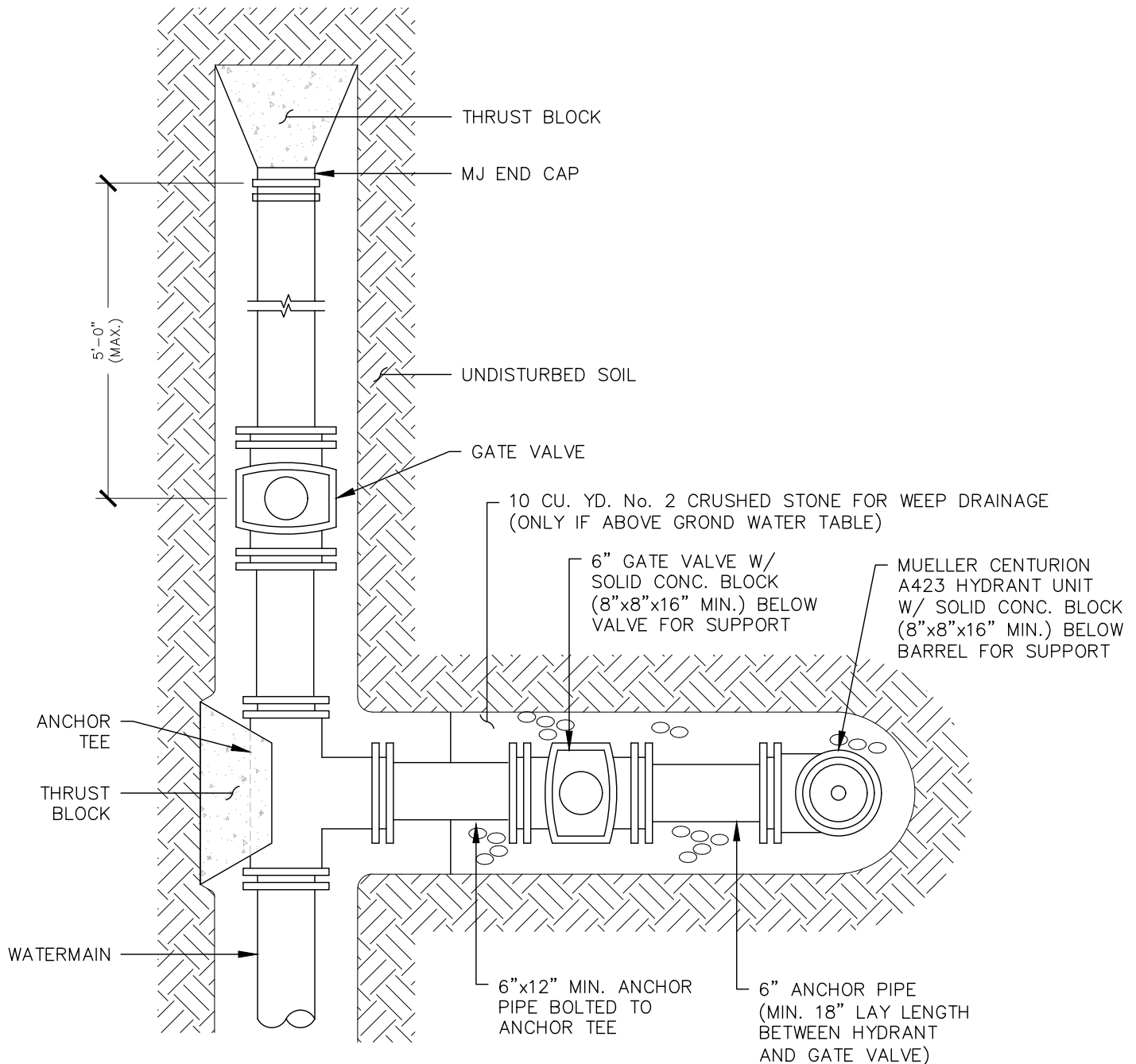
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 1.2**

DATE: 2019

SCALE: N.T.S.

MRB | group



NOTES:

1. IF GROUND WATER IS ENCOUNTERED, THE WEEP HOLES MUST BE PLUGGED AND THE HYDRANT MARKED.
2. HYDRANTS SHALL BE PAINTED RED.

END OF MAIN HYDRANT UNIT

TOWN OF GENEVA

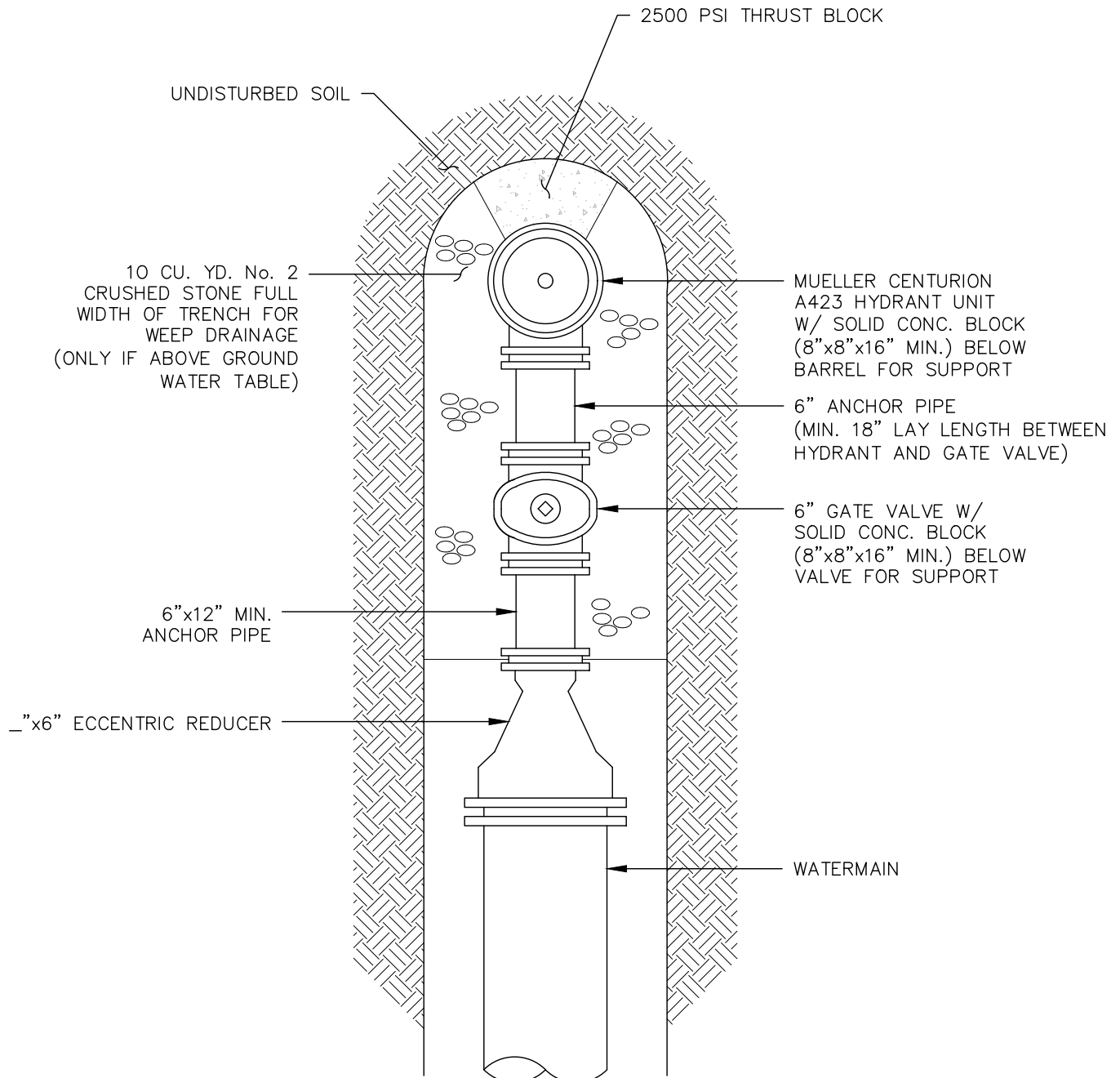
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 1.3**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. IF GROUND WATER IS ENCOUNTERED, THE WEEP HOLES MUST BE PLUGGED AND THE HYDRANT MARKED.
2. HYDRANTS SHALL BE PAINTED RED.

DEAD END HYDRANT UNIT

TOWN OF GENEVA

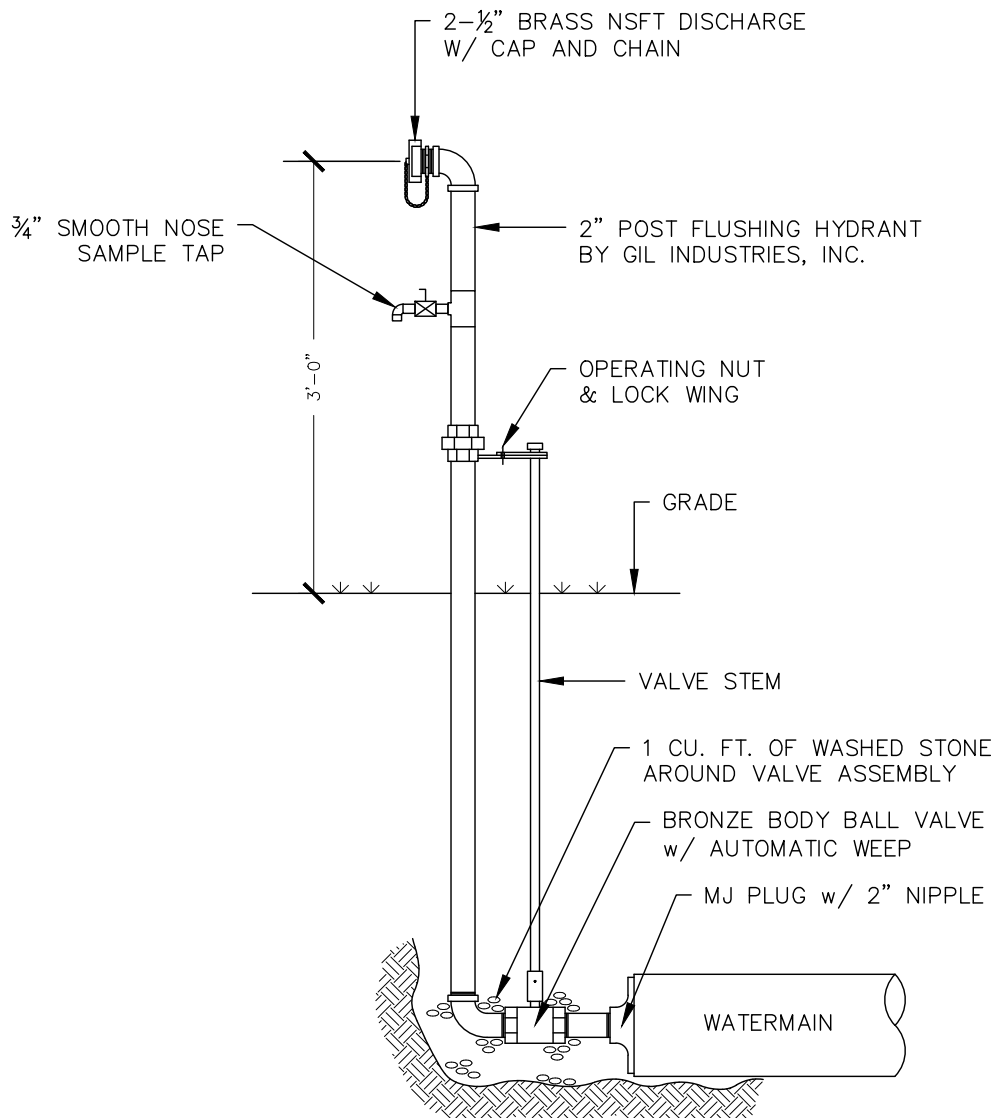
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 2.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



WATERMAIN BLOW-OFF DETAIL

TOWN OF GENEVA

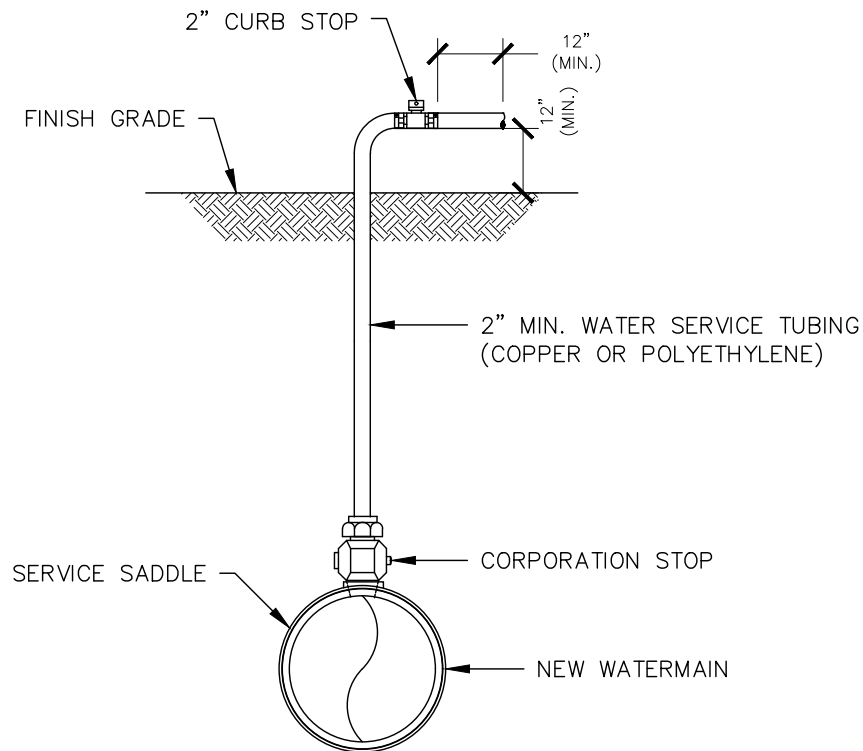
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 3.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



NOTES:

1. UPON NOTIFICATION FROM THE HEALTH DEPARTMENT THAT A SATISFACTORY WATER SAMPLE HAS BEEN OBTAINED, SHUT DOWN CORPORATION STOP AND REMOVE THE SERVICE TUBING.
2. IMMEDIATELY PRIOR TO PLACING THE WATER MAIN IN SERVICE THE CONTRACTOR SHALL REMOVE ALL CORPORATIONS ASSOCIATED WITH TEMPORARY FACILITIES (I.E. SAMPLING TAPS, ETC.) AND REPLACE WITH THREADED BRASS PLUGS.
3. FOR DISINFECTION\SAMPLING TAPS THAT ARE NOT NEEDED TO BLOW-OFF, 1" DISINFECTION\SAMPLING TAPS ARE ACCEPTABLE.
4. 1000 LF MAXIMUM DISTANCE BETWEEN SAMPLE TAPS UNLESS OTHERWISE SPECIFIED BY ENGINEER.

DISINFECTION / SAMPLING TAP / BLOW-OFF

TOWN OF GENEVA

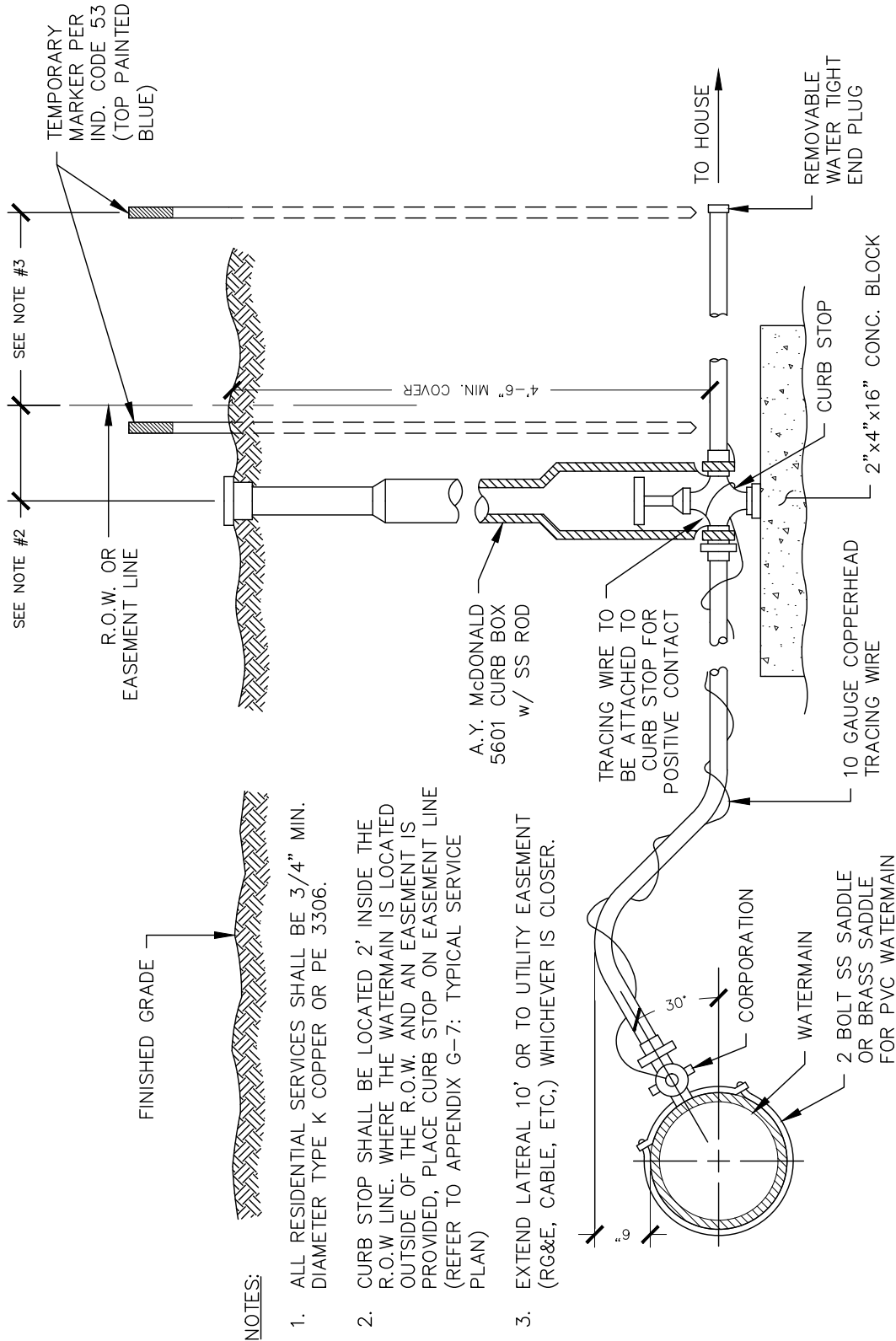
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 4.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



TYPICAL WATER SERVICE

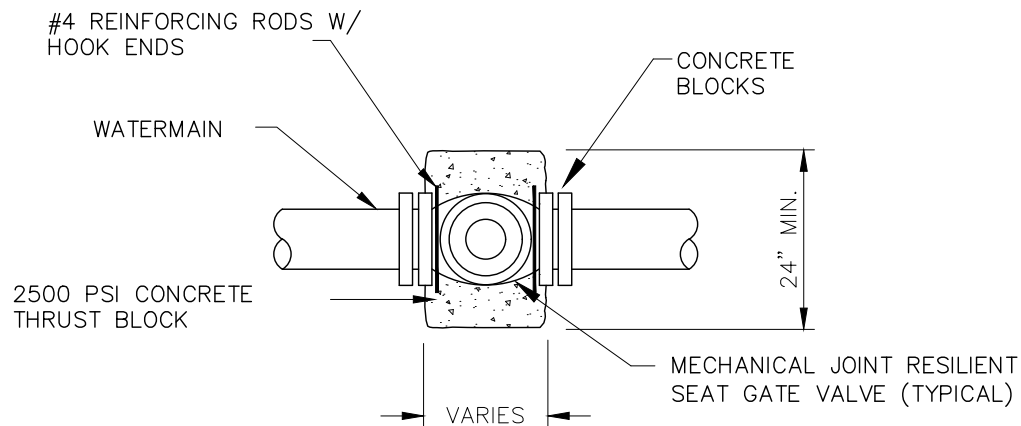
TOWN OF
GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

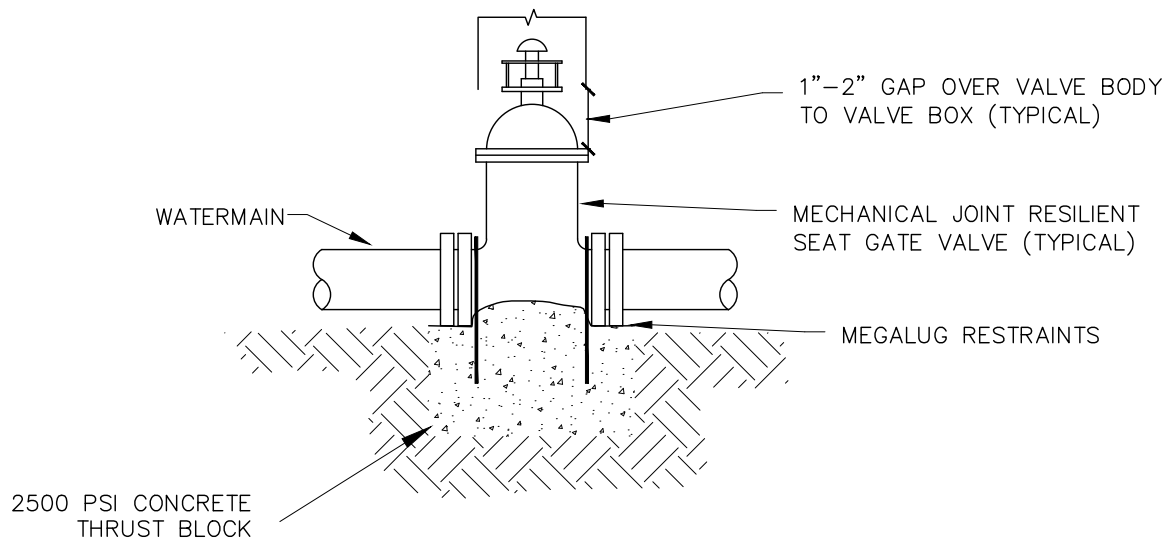
APPENDIX: **W - 5.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

PLAN VIEW



SIDE VIEW

VALVE BOX SHALL BE CENTERED ON VALVE AND SET ON COMPACTED BACKFILL. IN NO CASE SHALL THE VALVE BOX BE SUPPORTED BY THE VALVE.

LINE VALVE ANCHOR DETAIL

TOWN OF GENEVA

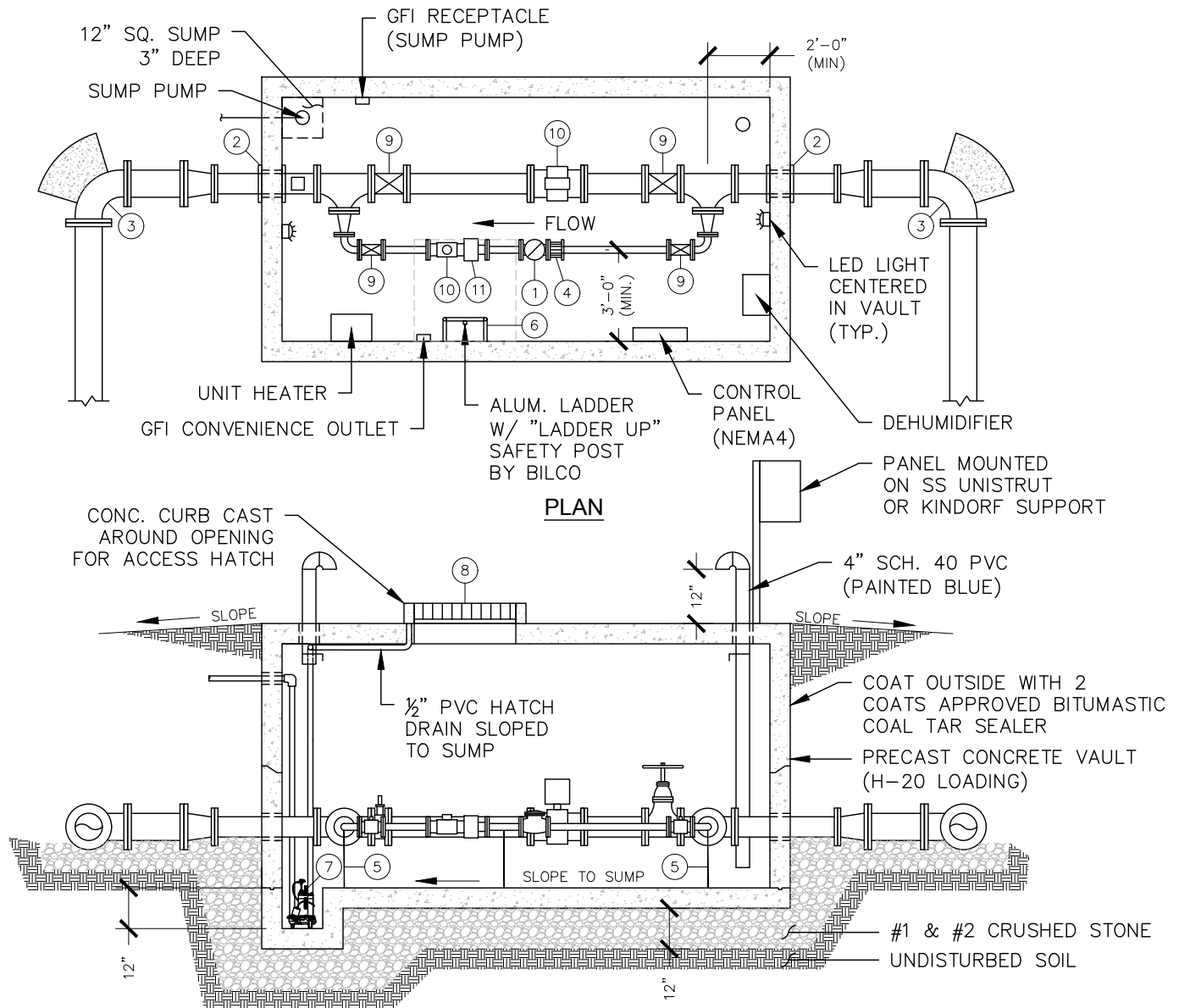
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 6.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



SECTION

- | | |
|--|---|
| ① SURGEBUSTER SWING CHECK VALVE (FL-FL) | ⑧ BILCO ACCESS DOOR TYPE J-2AL (2'-6"X2'-6") H-20 LOADING |
| ② SOCKET CLAMPS | ⑨ RESILIENT SEAT GATE VALVE (FL-FL) (MUELLER) |
| ③ MJ ELBOW | ⑩ BADGER RECORDALL COMPOUND METER OR FIRE SERVICE METER |
| ④ FLANGE ADAPTOR | ⑪ RECORDER PLATE STRAINER |
| ⑤ PIPE SUPPORTS | |
| ⑥ ALUM. LADDER | |
| ⑦ SUMP PUMP OR GRAVITY DISCHARGE TO GROUND SURFACE | |

NOTE: IF A GRAVITY DRAIN IS POSSIBLE, ELIMINATE ALL ELECTRIC.

TYPICAL WATER METER VAULT

TOWN OF GENEVA

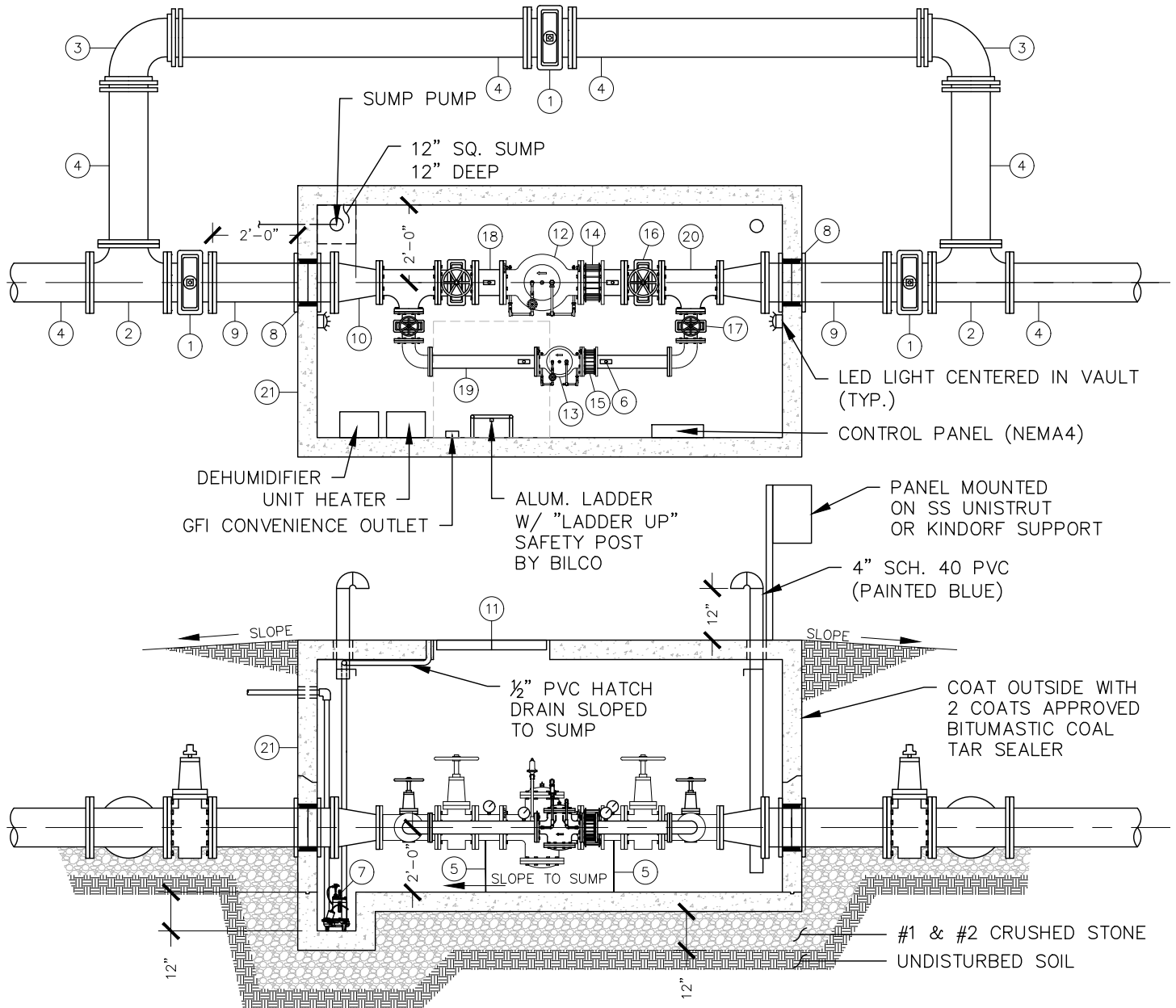
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 7.0**

DATE: 2019

SCALE: N.T.S.

MRB | group



- PROVIDED BY TOWN
- ① 12" GATE VALVE W/ VALVE BOX OPEN LEFT
 - ② 12"x12"x12" D.I.P. TEE
 - ③ 12" D.I.P. 90° MJ BED
 - ④ 12" PVC PIPE
 - ⑤ PIPE SUPPORTS
 - ⑥ PRESSURE GAUGE
 - ⑦ SUMP PUMP OR GRAVITY DISCHARGE TO GROUND SURFACE
 - ⑧ SOCKET CLAMPS W/ WALL SLEEVE
 - ⑨ 12" D.I. PIPE
 - ⑩ 12"x8" D.I. REDUCER
 - ⑪ EJ ALN1 ALUMINUM HATCH (3'-0"x3'-0") PEDESTRIAN LOADING*

- ⑫ 8" ROSS MODEL 40WR-BP PRESSURE REDUCING/BACK PRESSURE SUSTAINING VALVE
- ⑬ 4" ROSS MODEL 40WR-BP PRESSURE REDUCING/BACK PRESSURE SUSTAINING VALVE
- ⑭ 8" D.I. FLANGE ADAPTOR KIT
- ⑮ 4" D.I. FLANGE ADAPTOR KIT
- ⑯ 8" OS&Y VALVE W/ HAND WHEEL OPEN LEFT
- ⑰ 4" OS&Y VALVE W/ HAND WHEEL OPEN LEFT
- ⑱ 8" D.I. PIPE
- ⑲ 4" D.I. PIPE
- ⑳ 8"x8"x4" D.I. REDUCING TEE
- ㉑ PRECAST CONCRETE VAULT (H-20 LOADING)

*NOTE: PROVIDE EQUIVALENT H-20 RATED ACCESS HATCH WHEN VAULT IS TO BE LOCATED WITHIN THE R.O.W.

PRV VAULT

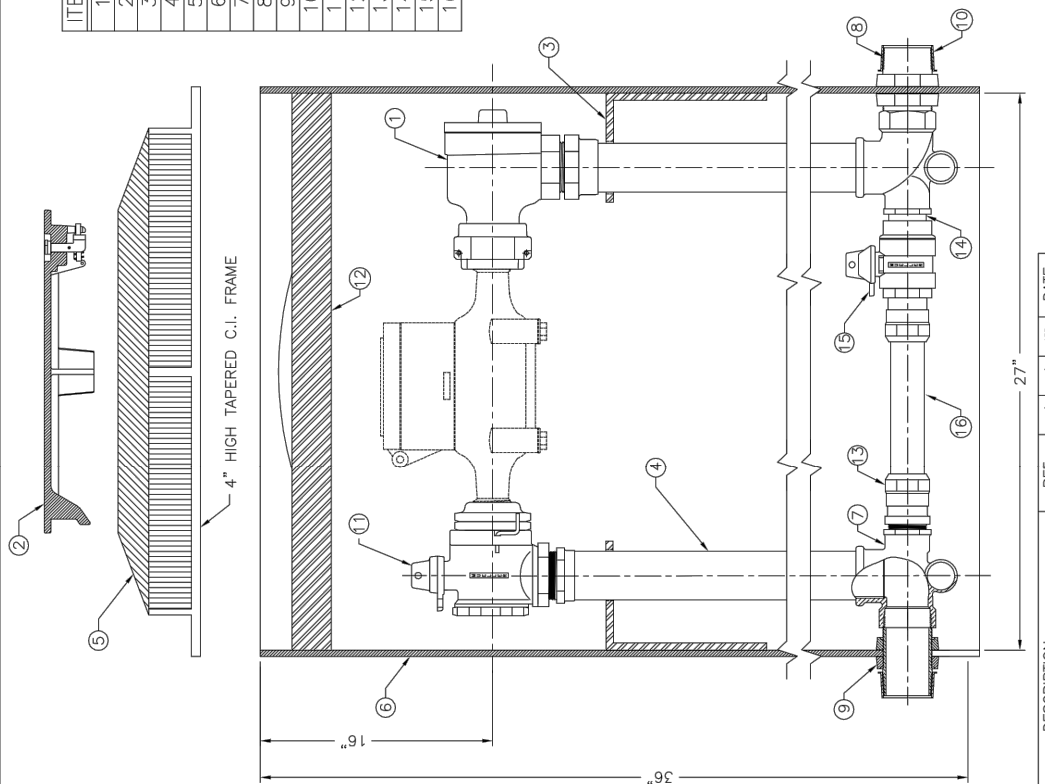
TOWN OF
GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 8.0**

DATE: 2019




SCALE: N.T.S.

MRB | *group*

NOTES:

1. METER NOT INCLUDED
2. FRAME & LID NOT INCLUDED

ITEM	DESCRIPTION	PART No.	REQ'D
1	2" ANGLE CHECK VALVE	550H14244	1
2	18" LOCKING LID—PENTAGON	282925	1
3	PVC STABILIZING BRACKETS	700062	2
4	2" BRASS RISERS	090008	2
5	CAST IRON LID FRAME	700098-1	1
6	PVC SHELL	780007-2736	1
7	TEE	790051	2
8	NIPPLE	700271	2
9	OCT. LOCK NUT	790043	4
10	CAPLUG	304357	2
11	BALL ANGLE METER VALVE	550B2428601	1
12	2"x4 INSULATING PAD	790058	1
13	SERVICE FITTING	500H15428	1
14	NIPPLE	047141	1
15	1-1/2" CURB VALVE	500H1517201	1
16	TUBE	700047	1

		DESCR.		2" SINGLE METER	
DRP/TT	ANC	1-15-07			THIRD ANGLE PROJECTION
CHW/R					SCALE NONE
E.O. NUMBER			STOCK No.	REF. No.	
			REV.	NUMBER	
				5501027.351EB	

550VB2736FBB

METER PIT DETAIL

TOWN OF GENEVA

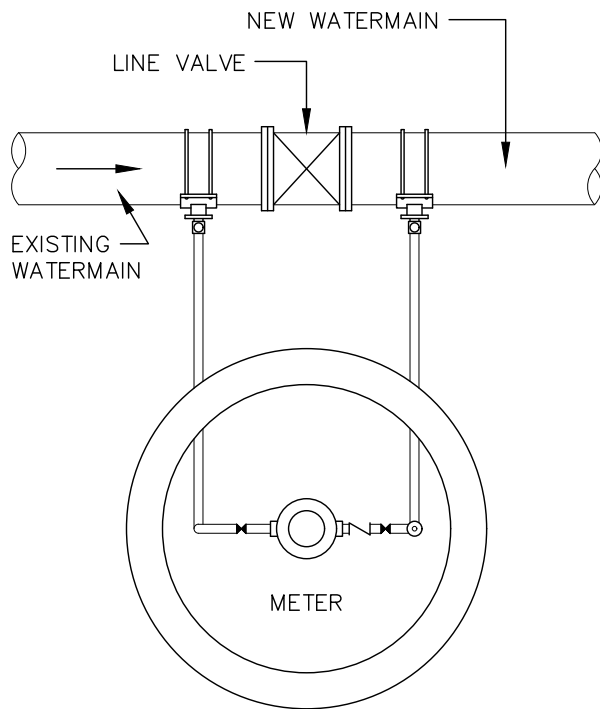
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 9.0**

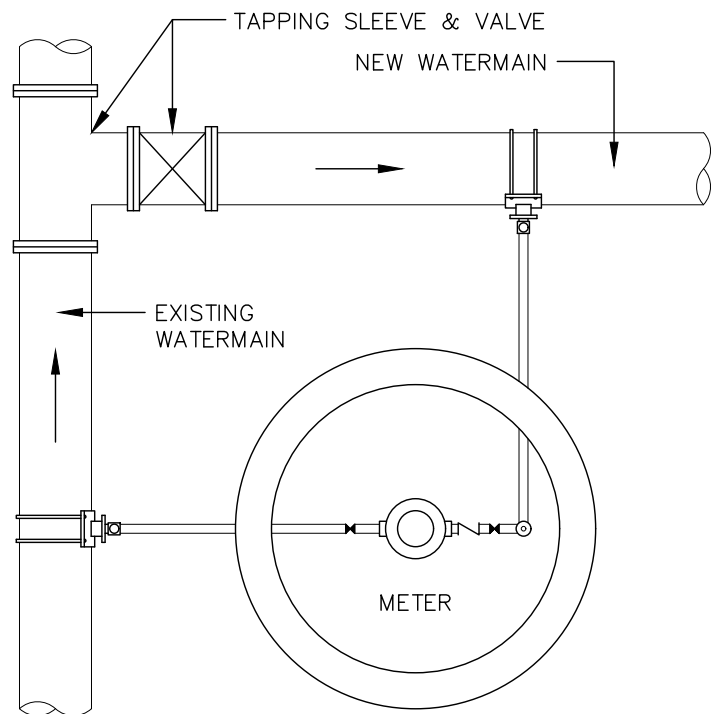
DATE: 2019

SCALE: N.T.S.

MRB | group



EXTENDING EXISTING MAIN

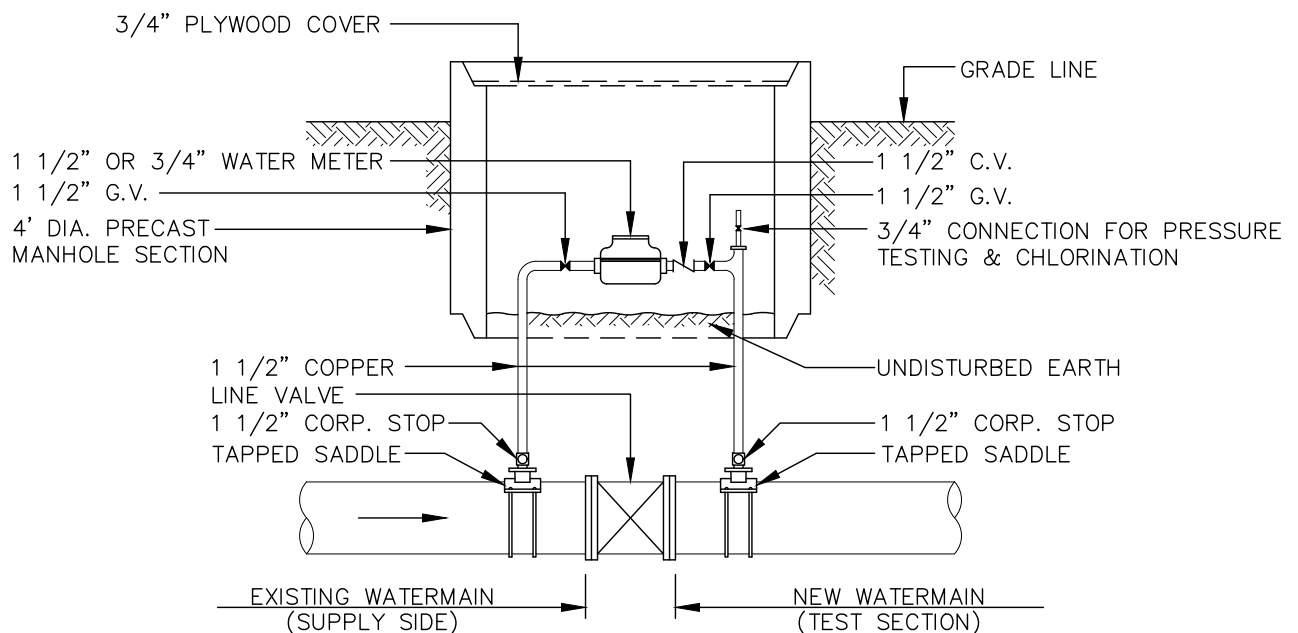


TAPPING EXISTING MAIN

PLAN

NOTES:

1. INSTALL 1 1/2" METER FOR PRESSURE TESTING AND CHLORINATION.
REMOVE AND INSTALL 3/4" METER FOR LEAKAGE TESTING.
2. LINE VALVE TO REMAIN CLOSED UNTIL WATER SYSTEM IS ACCEPTED.



SECTION

TEMPORARY TESTING METER DETAIL

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 10.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

		TEST PRESSURE (P.S.I.)				
		200	225	250	275	300
	PIPE DIA. (INCHES)	ALLOWABLE LEAKAGE (G.P.H.)				
D.I.P. PER 1,000 L.F. OF LINE	6	0.64	0.68	0.71	0.75	0.78
	8	0.85	0.90	0.95	1.00	1.04
	10	1.06	1.13	1.19	1.24	1.30
	12	1.28	1.35	1.42	1.49	1.56
P.V.C. PER 1,000 L.F. OF LINE	6	0.57	0.61	0.64	0.67	0.70
	8	0.76	0.81	0.85	0.90	0.94
	10	0.96	1.02	1.07	1.12	1.17
	12	1.15	1.22	1.28	1.34	1.40

NOTES:

1. TEST PRESSURE TO BE 200 P.S.I. OR 1.5 x WORKING PRESSURE, WHICHEVER IS GREATER.
2. PRESSURE TESTS SHALL BE CONDUCTED SO THE PIPE SECTIONS ARE WITHIN 10 PSI OF THE TEST PRESSURE LOCATION.
3. PRESSURE TESTS SHALL BE CONDUCTED FOR A MINIMUM OF 2 HOURS.
4. LEAKAGE TESTS AT LINE PRESSURE SHALL BE CONDUCTED OVER A 24 HOUR PERIOD.

WATERMAIN PRESSURE TEST

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 11.1**

DATE: 2019

SCALE: N.T.S.

MRB | group

PIPE SIZE (INCHES)	90° BEND	45° BEND	22.5° BEND	11.25° BEND	SIZE ON SIZE TEE	DEAD END
4	13 FT.	—	—	—	—	29 FT.
6	17 FT.	8 FT.	4 FT.	3 FT.	BR.	36 FT.
8	22 FT.	10 FT.	5 FT.	3 FT.	3 FT.	48 FT.
12	33 FT.	14 FT.	7 FT.	4 FT.	23 FT.	76 FT.
14	38 FT.	16 FT.	7 FT.	4 FT.	32 FT.	97 FT.
16	44 FT.	18 FT.	9 FT.	4 FT.	46 FT.	110 FT.

NOTES:

1. RECOMMENDED RESTRAINED LENGTHS FOR STRAIGHT TEES ASSUME A MINIMUM 10' LENGTH OF PIPE ATTACHED TO EACH SIDE OF THE RUN.
2. BR. ONLY INDICATES RESTRAINT AT TEE BRANCH ONLY.
3. ALL BENDS (DEGREE CHANGES) ARE CALCULATED AS HORIZONTAL.
4. DEAD-END SERVICE CONSTITUTES CAPS, PLUGS, VALVES AND HYDRANTS.

HORIZONTAL BEND RESTRAINT

PIPE SIZE (INCHES)	90° BEND	45° BEND	22.5° BEND	11.25° BEND
6	35/10	14/6	7/3	4/2
8	45/13	22/10	11/5	5/2
12	65/19	31/14	16/7	7/3
14		40/16	19/8	10/4
16		45/18	22/9	11/4

NOTES:

1. ALL BENDS (DEGREE CHANGES) ARE CALCULATED AS VERTICAL. THE FIRST RESTRAINED LENGTH (FEET) IS FOR THE HIGH-SIDE BENDS (Lhs) AND THE SECOND RESTRAINED LENGTH (FEET) INDICATES THE LOW-SIDE BENDS (Lls). LENGTHS WERE CALCULATED USING A CONSISTENT 5 FOOT DEPTH OF COVER FOR THE WATERMAIN.

VERTICAL BEND RESTRAINT

PIPE SIZE (INCHES)	TEE (REDUC.)	STRAIGHT REDUCER
8 X 4	BR.	55/29
8 X 6	BR.	22/17
12 X 6	BR.	81/42
12 X 8	BR.	54/36
12 X 10	BR.	20/17
16 X 10	BR.	48/30
16 X 12	BR.	29/32

RESTRAINED LENGTHS FOR REDUCING FITTINGS

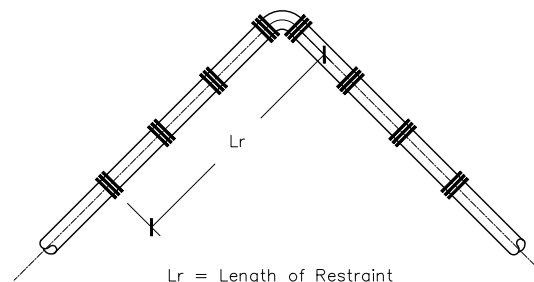
PIPE SIZE (INCHES)	VALVE LR
6	40'
8	40'
12	76'
14	97'
16	110'

RESTRAINED LENGTHS FOR VALVES

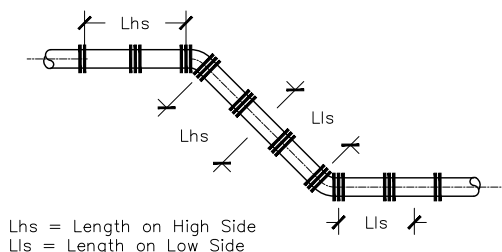
NOTES:

1. RECOMMENDED RESTRAINED LENGTHS FOR STRAIGHT TEES ASSUME A MINIMUM 10' LENGTH OF PIPE ATTACHED TO EACH SIDE OF THE RUN.
2. BR. ONLY INDICATES RESTRAINT AT TEE BRANCH ONLY.
3. STRAIGHT REDUCER UNOBSTRUCTED RESTRAINED LENGTHS OFFER THE OPTION OF RESTRAINING RECOMMENDED DISTANCES ON THE SMALL-END SIDE (FIRST RESTRAINED LENGTH PROVIDED) OR THE LARGE-END SIDE (SECOND RESTRAINED LENGTH PROVIDED).

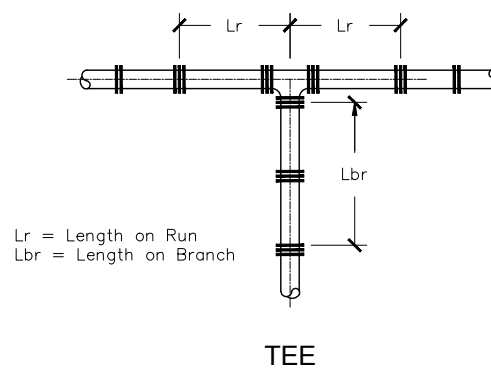
MECHANICAL JOINT PIPE RESTRAINTS



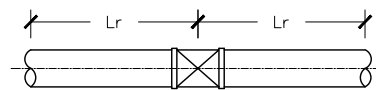
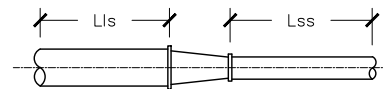
HORIZONTAL BEND



VERTICAL DOWN BEND AND OFFSET



TEE



Lls = Length on Large Side
Lss = Length on Small Side

TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 12.0**

DATE: 2019

SCALE: N.T.S.

MRB | group

CONDITION	SCHEMATIC	REQUIREMENTS
I WATER LINE ABOVE SEWER LINE		<p>A) WATER LINE AND SEWER LINE PIPE LENGTHS TO BE CENTERED AT CROSSING. EACH LENGTH OF PIPE TO BE 10 FT. MINIMUM.</p> <p>B) BACKFILL WITH COMPACTED CRUSHER RUN STONE.</p>
II WATER LINE ABOVE SEWER LINE		<p>A) WATER LINE AND SEWER LINE PIPE LENGTHS TO BE CENTERED AT CROSSING. EACH LENGTH OF PIPE TO BE 10 FT. MINIMUM.</p> <p>B) WHEN BOTH WATER LINE AND SEWER LINE ARE NEW, SLEEVE SEWER LINE WITH STEEL CASING FOR 10 FT. EACH SIDE OF CROSSING.</p> <p>C) WHEN ONE LINE IS EXISTING, SLEEVE PIPE BEING INSTALLED WITH STEEL CASING FOR 10 FT. EACH SIDE OF CROSSING.</p> <p>D) BACKFILL WITH COMPACTED CRUSHER RUN STONE.</p>
III SEWER LINE ABOVE WATER LINE		<p>A) WATER LINE AND SEWER LINE PIPE LENGTHS TO BE CENTERED AT CROSSING. EACH LENGTH OF PIPE TO BE 10 FT. MINIMUM.</p> <p>B) SLEEVE SEWER LINE WITH STEEL CASING FOR 10 FT. EACH SIDE OF CROSSING.</p> <p>C) PROVIDE CRADLE OF CONCRETE OR CRUSHER RUN STONE (SEE TRENCH DETAIL BELOW) FOR WATER LINE AND SEWER LINE FOR 10 FT. EACH SIDE OF CROSSING.</p>
<p align="center"><u>NOTES</u></p> <p>WL (WATER LINE) SL (SEWER LINE) D (OUTSIDE DIAMETER OF PIPE)</p> <p>IN NO CASE SHALL PIPES BE CLOSER THAN 18" APART. DISTANCES ARE MEASURED BETWEEN OUTSIDES OF PIPE.</p>		

WATERMAIN / SEWER CROSSING DETAIL

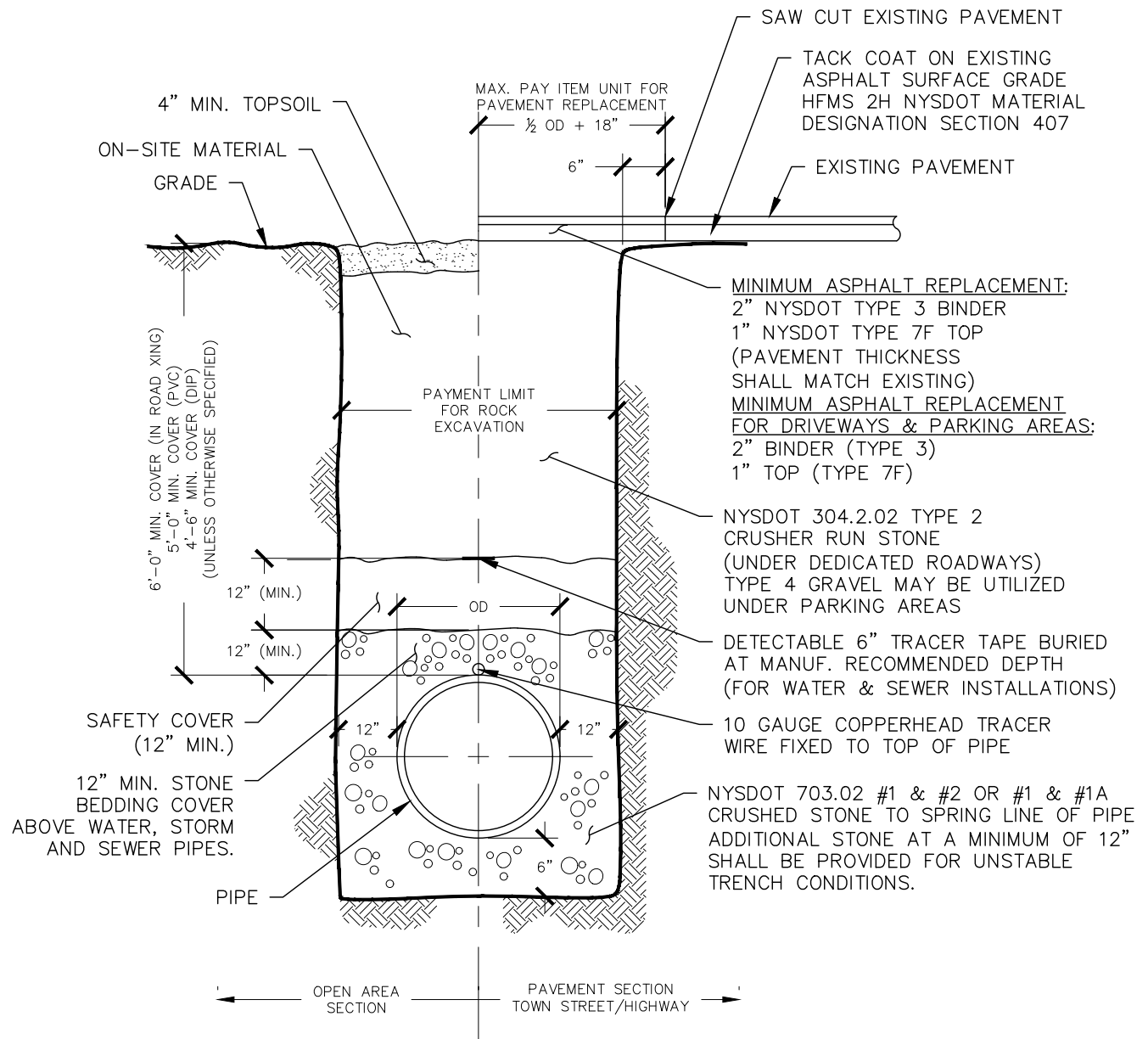
TOWN OF GENEVA

3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 13.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*

TRENCH DETAIL

TOWN OF GENEVA

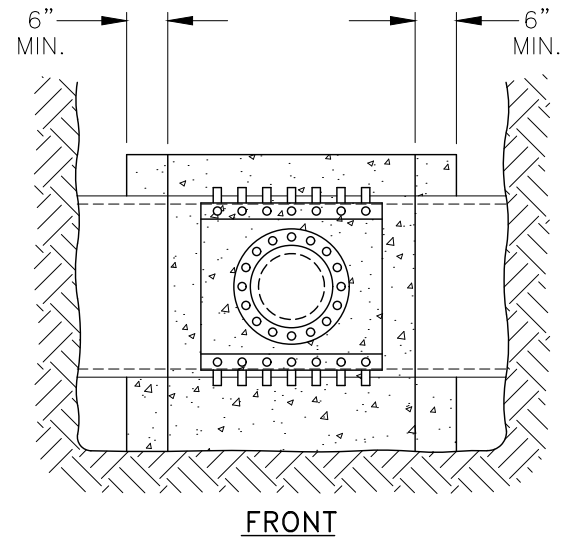
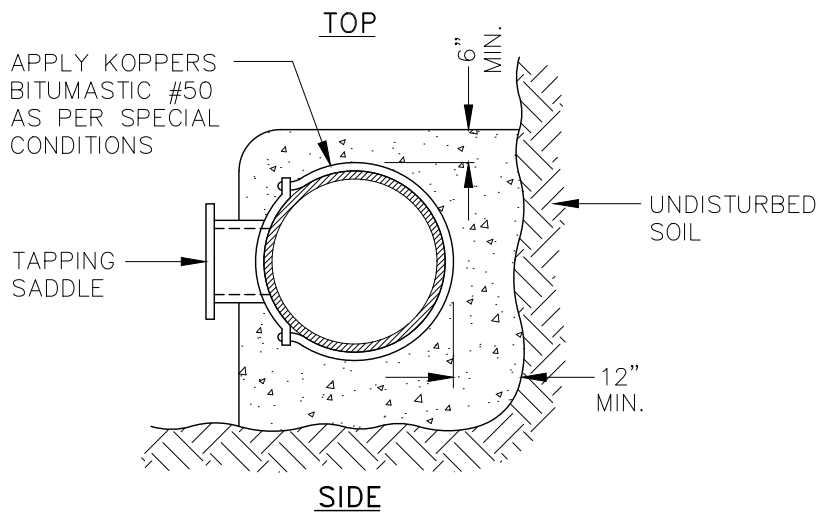
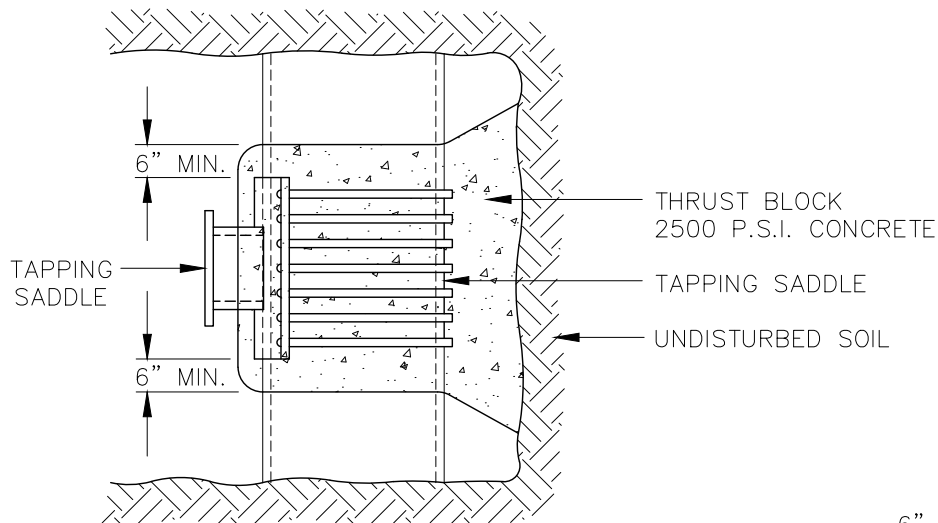
3750 County Road #6
Geneva, NY 14456
(315) 789-3922

APPENDIX: **W - 14.0**

DATE: 2019

SCALE: N.T.S.

MRB | *group*



**TYPICAL TAPPING SADDLE
FOR 16" & LARGER WATER MAINS**