

DESIGN CRITERIA
AND
CONSTRUCTION SPECIFICATIONS
FOR
LAND DEVELOPMENT



TOWN OF CLARKSON
MONROE COUNTY, NEW YORK

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Adopted by the Town Board
Date _____

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NOTE: In the event of conflicting data or information between this document and the Town Code, the Town Code shall take precedence.

DIVISION I
BASIC PROCEDURES/REQUIREMENTS

I.1 INTRODUCTION TO DESIGN CRITERIA AND CONSTRUCTION SPECIFICATIONS

- I.1.1 This booklet has been prepared to serve as a guide for, and a control over, the development of the property within the Town of Clarkson, County of Monroe, NY.
- I.1.2 The intent is to assure proper design and construction of facilities which will be turned over to the Town of Clarkson for perpetual maintenance. Further, it is to assure proper design and construction of facilities which will affect the health and general welfare of the community, and to prevent depreciation of property values. Thirdly, it is to assure that development is compatible with the long-range development plan of the Town of Clarkson.
- I.1.3 It is not the intent of the booklet to conflict with Zoning policies or general over-all supervision of development by the Town Board and Planning Board; rather, it is intended to supplement such policies by providing the technical details necessary to carry out general policy in a successful manner.
- I.1.4 This booklet does not concern itself with control over building design or construction. These matters are covered elsewhere by Town policy and ordinance.
- I.1.5 This booklet is divided into four general Divisions. The first division is entitled "Division I - Basic Procedures/Requirements," which deals with general procedures to be followed. The intent is to provide a guide which will assure expeditious review of development plans as well as the consideration of completed works which are to be turned over to the Town for dedication.
- I.1.6 The second division of the booklet is entitled, "Division II - Design Criteria", and provides a guide of minimum requirements for Applicants' Engineers to conform to in the preparation of plans for subdivisions and other developments.
- I.1.7 The third division of the booklet is entitled, "Division III - Construction Specifications", and provides the construction specifications for materials and execution of the various items of work. Applicants and their Engineers bear the responsibility of requiring their development contractors, and their subcontractors, to familiarize themselves with these specifications and to carry them out in order that maintenance-free utilities are constructed.
- I.1.8 The last Division of this booklet is entitled "Division IV -Construction Details." These design standards are cross-referenced to basic material in the Design and Construction Divisions and consist primarily of graphic illustrations and standard construction details.

I.2 RESPONSIBILITIES OF APPLICANTS

- I.2.1 With development increasing at an accelerated pace it has become necessary to set up certain guidelines to assure that such development proceeds in an orderly but expeditious manner. To implement the procedures required by law and good planning, the Town has developed a Sequence of Procedures for Development in the Town of Clarkson. It is recommended that Applicants and their Engineers follow these guidelines for their own benefit in expediting approvals.
- I.2.2 Applicants are required to retain competent engineering and legal counsel to deal with technical and/or legal matters and provide the necessary detailed information. Normally, the first step will be to come before the Town with a conceptual plan. This is usually the first opportunity the Town has to see how a particular parcel of land is proposed for development. This knowledge permits the Applicant to initiate studies to address issues raised by the Town that must be considered in granting the subsequent formal approval. Questions of traffic circulation, water supply, sanitary sewage collection and disposal, and drainage are some of the major items. Following this conceptual discussion with the Town, the Applicant can make application for an advertised or formal preliminary and final hearing before the Planning Board.

- I.2.3 It should be noted that it is the Applicant's responsibility to provide the Secretary of the Planning Board with sufficient plans and necessary technical supplementary information at least four weeks prior to the presentation of the plans to the Planning Board. This time schedule is necessary in order that an intelligent office and field investigation can be made relative to the proposed submittal, and appropriate comments returned to the Applicant's Engineer for revision where necessary. In the same manner, final plans must be submitted four weeks prior to the formal hearing.
- I.2.4 The final plans shall include any easements mapped and dedicated, along with an engineer's estimate for the financial guarantee, prepared by the Developer and approved by the Town Engineer prior to obtaining the necessary signatures and filing the map.
- I.2.5 In the event the Applicant receives the final approval for the development from the Planning Board, the Applicant shall be responsible for obtaining the signatures of approval of the Town Engineer, Highway Superintendent, and appropriate officials of the Town or representing the Town, and the Agency or Authorities having jurisdiction over water and sanitary sewage facilities. Signatures shall be obtained on a material acceptable for filing with Monroe County and containing any contingency changes requested by the Planning Board. Approval from the New York State Department of Transportation or Monroe County Department of Transportation may be required.
- I.2.6 A minimum per unit charge will be paid up front by the Applicant, along with all other fees, before the map is signed.
- I.2.7 No construction of utilities shall be started without notifying the Town Engineer, Building Department, Highway Department, and the appropriate Authorities having jurisdiction over utilities: water and sanitary sewers.
- I.2.8 Water mains are under the jurisdiction of the Monroe County Water Authority. Applicants are required to familiarize themselves, and comply with all this Agency's requirements for connecting new water lines to their mains. All property to be served by municipal water must be part of a Water District. The District Extension Map and Descriptions are presented to the Town Board for adoption.
- I.2.9 Sanitary sewers are under the jurisdiction of the Town of Clarkson and one of the following two agencies: (1) Pure Water District, or (2) Town of Clarkson. Applicants have the responsibility to familiarize themselves with the requirements of the Agency having jurisdiction over sanitary sewers in the proposed development, comply with these requirements, pay any fees, and secure that Agency's approval and/or permit, for connecting the new development's sanitary sewers into their system.
- I.2.10 No site work will be permitted by the Town until and unless a financial guarantee (self renewing letter of credit or cash) is of an amount, and in a form, which is satisfactory to the Supervisor, the Town Attorney, and Town Engineer; and until all easements have been approved by the Planning Board Attorney and Town Engineer, and filed and recorded; and until permits to connect water and sanitary sewers to existing County systems are secured from above indicated Authorities.

I.3 SEQUENCE OF PROCEDURES FOR DEVELOPMENT

I.3.1 GENERAL

- I.3.1.1 Applicants shall contact the Secretary of the Planning Board, Highway and Building Departments for information and direction relating to project design, sanitary and storm sewer installations, application for hearings, and related fees. Guidance for coordinating and presenting project to Town Officials and procedural matters relating to zoning and Town and Planning Board review can be preliminarily discussed.
- I.3.1.2 The applicant, at initial application, shall sign an agreement indicating that they have read the fee schedule and all charges will be paid.

- I.3.1.3 Where utilities are to be connected into the facilities of other Agencies such as water transmission mains or trunk sewers under the jurisdiction of others, Applicants shall be responsible for contacting such Agencies directly to determine such regulations as may be in effect and to determine the capacity of these facilities to handle the loadings to be imposed upon them by the new development.
- I.3.1.4 Not less than 4 weeks prior to Planning Board meeting sufficient copies of the plan shall be provided to the Secretary of the Planning Board with a request to be placed on the meeting agenda.
- I.3.1.5 Prior to scheduling a Planning Board and/or a public meeting the Secretary of the Planning Board shall review the plans for adequacy of documentation in accordance with this manual.
- I.3.1.6 The Secretary of the Planning Board, upon determination that drawings and specifications meet application requirements, will schedule a Planning Board and/or public meeting, and will distribute copies of application materials to reviewing departments and agencies and to the Town Engineer. (See checklist on page 7)
- I.3.1.7 Town Engineer and Town staff shall furnish the Applicant, Applicant's Engineer, and Planning Board with their review comments prior to the Planning Board meetings.
- I.3.2 CONCEPT PLAN
 - I.3.2.1 Applicant presents 16 copies of the "conceptual" plan (except for one lot subdivision) to Planning Board Secretary with a request to be put on the agenda for an informal discussion with the Planning Board.
 - I.3.2.2 Applicant should be prepared to present a plan and related data to show how the property will be developed and how it will relate to adjoining property. Applicant should be prepared to answer questions relating to roads, traffic, utilities, topography, and drainage.
- I.3.3 PRELIMINARY PLAN
 - I.3.3.1 Applicant makes request for hearing to the Secretary of the Planning Board with sufficient lead-time to publish legal advertising and conduct plan review.
 - I.3.3.2 Applicant presents 16 copies of overall preliminary plan and necessary technical information including applicable SEQR forms to the Town for its review and review by the Town Engineer. The Secretary of the Planning Board shall also submit a copy of the preliminary plan to the County Planning Agency for their review, when required by General Municipal Law, Section 239e.
 - I.3.3.3 Recommendations of Planning Board with respect to preliminary plan including SEQR significance determination, to be submitted to the Applicant and his Engineer by way of a "Notice of Decision" document, mailed after the meeting by the Secretary of the Planning Board.
 - I.3.3.4 Prior to scheduling subsequent meetings on previously tabled applications, the Planning Board Secretary shall determine that the new drawings have been revised and submitted in accordance with the Planning Board Notice of Decision, and that the responses from Monroe County Planning, Town Engineer, and Town Conservation Board have been received. Planning Board Secretary may reschedule subsequent meeting awaiting Engineering response.

I.3.4 FINAL PLAN

- I.3.4.1 Sixteen (16) Copies of the final plan to be delivered to the Secretary of the Planning Board for review and distribution at least 4 weeks prior to meeting date.
- I.3.4.2 Where required, or otherwise appropriate, copies of the final plans shall be distributed to such Agencies as have jurisdiction over the various utilities being utilized in connection with the development.
- I.3.4.3 Applicant petitions Town Board for creation of special improvement districts as appropriate.
- I.3.4.4 Applicant shall furnish Engineer's Estimate of Cost of Improvements, survey maps, legal descriptions, and other data as required.
- I.3.4.5 All required information must be submitted by the Applicant before the final hearing, including easements, and special improvement districts.
- I.3.4.6 Planning Board Secretary to furnish Applicant with Planning Board's decision within 5 business days.

I.3.5 RECORDING

- I.3.5.1 Upon approval, the Applicant shall obtain all necessary signatures and furnish easements, financial guarantee, and estimate of cost of improvements.
- I.3.5.2 Applicant shall file signed subdivisions plans with Monroe County, and signed site plans with Planning Board Secretary.
- I.3.5.3 Five (5) copies of the signed plans shall be delivered to the Planning Board Secretary for distribution to Building Department (1 copy), Highway Department (1 copy), Planning Board, and Town Engineer (2 copies).

I.3.6 CONSTRUCTION

- I.3.6.1 Preconstruction Conference (to be determined at discretion of Town Engineer)

A preconstruction conference will be arranged by the Town, at the Town prior to the start of work. Present at the meeting will be the Developer, the Applicant's Engineer, Town Officials, the Town Engineer, Contractor, sub-contractors, utility and highway representatives, Building Inspector. It shall be the Contractor's responsibility to provide the Town with adequate lead-time so the meeting can be scheduled. The contractor shall be prepared to discuss his work plan, timetable and personnel to be used on the project. Other items such as permits, special conditions, safety regulations, payment vouchers will be discussed.

- I.3.6.2 Performing Construction of Utilities

- I.3.6.2.1 Developer shall not undertake any construction of utilities prior to notifying in writing the Town Highway Superintendent, the Planning Board Secretary, the Town Building Inspector, the Town Engineer, the Monroe County Water Authority, the appropriate Authority having jurisdiction over sanitary sewers, Monroe County Department of Transportation and New York State Department of Transportation (if required)
- I.3.6.2.2 Town personnel shall be notified 48 hours before commencing work in order to plan for inspection. Contact Town Engineer if there is any question.
- I.3.6.3 Construction procedures and materials shall be subject to approval of the Town and other Agencies having jurisdiction over the work. The Developer shall submit periodic estimates of work completed for approval and subsequent release of funds.

I.3.7 PREPARATION OF RECORD PLANS (AS-BUILT)

The Developer shall submit record plans prior to obtaining final approval of completed works. The Town Highway Department shall be provided a mylar reproducible that contains the following:

- 1) Storm main and lateral lengths, locations and inverts (if required)
- 2) Sanitary main and lateral lengths, locations and inverts (if required)

I.3.8 APPROVAL OF COMPLETED WORKS

I.3.8.1 Developer is responsible for obtaining approval of completed works by the Highway Superintendent and the appropriate Agencies having jurisdiction over the utilities. Final approval of underground utilities may precede final approval of pavement and gutters if approved by the Town, and if protected by appropriate maintenance bond and/or the withholding of funds as established by the Town.

I.3.8.2 Developer shall bear all costs of removing any defective work not constructed in conformance with the specifications included in Divisions II and III of this booklet, as will be determined by the Town Engineer, and replace it as specified, to the satisfaction of the Town Engineer and the Town of Clarkson.

I.3.9 WARRANTY OF WORK

Upon receiving final approval for dedicated facilities, the developer shall provide the town with a check, two-year maintenance bond or Letter of Credit in the amount of 10% of the total for the dedicated facilities, to warranty the work.

I.3.10 RELEASE OF WARRANTY

It shall be the Applicant's responsibility to notify the Town forty-five (45) calendar days prior to the expiration of the maintenance period. The Town will make a final inspection and establish a "punch list" of work to be corrected as part of the warranty. Contractor shall make necessary repairs prior to completion of the two-year warranty period or the maintenance period shall be extended.

I.3.11 STREET MONUMENTS

The Developer shall be responsible for having his licensed surveyor set street monuments prior to acceptance of road dedication. He shall advise the Town Engineer when these are set and have his surveyor available to point them out for final approval.

I.4 SUBDIVISION REQUIREMENTS CHECKLIST

I.4.1 CONCEPT LAYOUT

____ Subdivision Name _____

____ Applicant's Name _____

____ Applicant's Address _____

____ Applicant's Phone _____

____ Owners name and address, if different than applicant.

____ Location sketch.

____ North arrows for drawing(s) and location sketch.

____ Scale.

- ___ Legend.
- ___ Existing features to be maintained and removed
- ___ Sketch plan showing location of and distance to existing and proposed methods of servicing the project with respect to water supply, sanitary waste disposal, and drainage.
- ___ Boundaries of the tract to be subdivided, plotted to scale. Approximate lines of proposed streets, sidewalks, proposed lot lines with approximate dimensions and areas, easements, recreational areas, and other permanent open spaces. If the tract is to be developed in phases the entire tract and proposed development plan shall be presented with the concept layout.
- ___ Indication of the zoning of the tract and any other legal restrictions of use.
- ___ Topographic information showing ground contours adjacent and within the tract to be developed at intervals not to exceed 5 feet elevation. Pertinent surface features and regulated areas such as wooded areas, watercourses, one hundred year flood limits, and approximate wetland limits.
- ___ Notes regarding permits and approvals sought or previously obtained
- ___ Site distances and internal flow diagrams
- ___ Name(s) of the professional engineer, architect, and/or surveyor responsible for the preparation of the concept layout.

I.4.2 PRELIMINARY AND FINAL PLANS

All information provided on the concept layout shall be included with the preliminary plan. The following additional information shall be required with the preliminary and final plan submissions.

- ___ All existing structures, abandoned foundations, wooded areas, streams, flood plains, hydrants, telephone poles with identification numbers, and other significant features which are in the proposed development and within 100 feet of the development including septic systems and wells on adjacent properties.
- ___ Length and bearings of lot lines and subdivision boundary lines. Length of curves, tangent stations, and proposed radii. Dimensions shall be indicated in feet and decimals thereof. Angle measurements shall be indicated in degrees-minutes-seconds.
- ___ An actual field survey of the boundary lines of the tract, giving complete descriptive data by bearing and distances, made and certified by a licensed land surveyor. The corners of the tract shall also be indicated on the ground and marked by monuments or pins as approved by the Town Engineer and shall be referenced and shown on the plan.
- ___ Existing and proposed contours at an interval not to exceed 2 feet elevation. Contours shall extend 100 feet minimum beyond the limits of the parcel being developed.
- ___ Benchmark and references.
- ___ Monumentation - information.
- ___ Show proposed and existing buildings and show all set back lines and dimensions, front, side and rear as defined in the code.
- ___ Names of existing and proposed streets
- ___ Lot size - references to conformance with codes
- ___ Tax account numbers, house numbers, and owner's names of parcels adjacent to the proposed subdivision.

- _____ Finished floor elevation, finished grade elevations at the house location(s), and minimum basement elevation. The finished grade elevations shall be shown in boxes at each house corner.
- _____ Street or road stationing
- _____ Street lights, if required
- _____ Sidewalks – closed drainage, curb, and/or gutter
- _____ Indication of existing gas and water mains. Proposed locations of new water mains and services.
- _____ Existing and proposed culverts with size and invert information.
- _____ Proposed well and septic system locations.
- _____ Location of percolation test and deep hole indicated. (Shall be within the area of the proposed septic field).
- _____ In the event mineral deposits are indicated during preparation of septic design a deep hole investigation shall be performed at the house location and results denoted on the plan.
- _____ Percolation test and deep hole data. Deep hole data shall state “none” if water, rock, or minerals are not present. The information shall include the date of the test and the name of the witness from Monroe County Health Department.
- _____ Leachline inverts shown.
- _____ A 1” = 200’ scale map showing the path of drainage to an established bed and bank stream. (As applicable or as requested by the Town Engineer.)
- _____ Restrictions, easements, covenants, wetland boundaries and Federal flood zone information.
- _____ Title/signature/revision blocks. Signature block shall include the following:
 - 1. Town Engineer
 - 2. Town Clerk
 - 3. Planning Board chairman
 - 4. Building Inspector
 - 5. Planning Board Attorney
 - 6. Highway Superintendent
- _____ Seal and signature of a licensed engineer and land surveyor.
- _____ Changes are defined, dated, and indicated in revision block.
- _____ Results of hydrant flow tests are indicated.
- _____ Public water not available (check for the following):
 - a. Note: “The Town of Clarkson is not responsible for the quantity or quality of the well water.”
 - b. Well detail per Monroe County Health Department.
 - c. Well water sample is satisfactory to the Monroe County Health Department.
- _____ Documentation for existing and proposed easements.
- _____ Appropriate Standard Construction Details and profiles.

____ Notes: (See following General Plan Notes)

____ Notes: (See Special System Design Notes in Section I.9.13)

____ Erosion control details and position.

____ Soil stockpile areas designated or referenced.

____ Landscape Plan (If required by Planning Board)

____ In the event special districts (water, sewer, lighting, drainage, sidewalk, and/or playground and park) are to be established by the Town Board, a general note stating the type of district and date of the Town Board approval shall be included on the drawings.

I.4.3 PRELIMINARY AND FINAL PLAN – GENERAL NOTES

1. All improvements shall be in accordance with the most current Town of Clarkson Design Criteria and Construction Specifications for Land Development latest revision.
2. The Applicant's and contractor's attention is directed to Monroe County Local Law #6 of 1971, regarding liability incurred through disturbance or destruction of geodetic survey monuments.
3. The contractor shall determine the exact location and elevation of existing underground utilities prior to beginning construction. The contractor shall make exploratory excavations to locate existing underground utilities sufficiently ahead of construction to allow revisions as required to meet existing conditions.
4. Notify Underground Facilities Protective Organization (U.F.P.O.) two (2) working days prior to digging, drilling or blasting at 1-800-962-7962 for a utility stakeout.
5. Any changes in house and/or septic system location from the approved plan must be resubmitted to the Planning Board for re-approval.
6. The applicant's engineer or surveyor shall set lot monumentation pins at all corners and angles of each lot..
7. Lot line swales are to be constructed and operable prior to the issuance of a Certificate of Occupancy.
8. Driveways are to be paved within the highway or street right-of-way, and a culvert pipe of a size and type approved by the Highway Superintendent or designee is to be placed by the developer. All frontage roadside discharge shall be piped.
9. The contractor shall provide for erosion control barriers during construction and removal of the same upon revegetation of the disturbed areas.
10. The contractor shall be required to clean mud and debris from public roads servicing the construction site, during and after the completion of the project.

11. The contractor shall not operate tracked construction equipment on dedicated roads. The contractor/developer shall be responsible for all site and roadwork damaged during construction operations and said damage shall be repaired, at the Developer's/contractor's expense, prior to acceptance of dedication to the Town.
12. Where the only access to the project is via an existing dedicated road, the contractor/developer shall request permission from the Town Board to use the road as a construction access. A financial guarantee shall be provided to cover damages to the road due to construction equipment.
13. When road cuts are required for installation of utilities under existing dedicated roads, backfill materials shall be compacted and approved by the Town Engineer prior to resurfacing. Backfill materials and compaction methods shall be approved by the Town Engineer.
14. The contractor shall take appropriate precautions to protect property markers and all survey stakes.
15. Sanitary sewer facilities shall be designed and constructed in accordance with the Monroe County Health Department, Monroe County Pure Waters, and Town of Clarkson Sewer standards.
16. Septic field location should not interfere with future additions or improvements.
17. Water services shall be designed and constructed in accordance with the Monroe County Water Authority standards. The Town of Clarkson is not responsible for the quantity or quality of the water.
18. Foundation and cellar drainage shall discharge to street storm drainage systems, or as otherwise approved by the Town Engineer.
19. No homes or attached additions shall be built on slab unless a footer is constructed below the frost line.
20. All utilities are to be installed underground.
21. Lot grading and first floor elevations shall be certified, by the Developer's or Builder's Licensed Surveyor, as to conformance to the approved plans prior to issuance of a Certificate of Occupancy
22. A change in house location not in violation of any existing code, and not affecting drainage or the leach field may be approved by the building inspector in the field. Other changes in the house and/or septic system location must be resubmitted to the Planning Board for Approval.
23. The Town and its Agents will not be responsible for and will not have charge of construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work.

I.5 METHODS OF ESTABLISHING LETTERS OF CREDIT, AND RELEASING OF FUNDS DURING CONSTRUCTION

- I.5.1 Upon receiving final approval of a subdivision or a section thereof or other types of development for which the Planning Board or Town Engineer deems these procedures to be appropriate, the Applicant's Engineer shall submit a preliminary estimate of cost of improvements. This shall be itemized in detail and shall consist of six major sections:

- (A) CLEARING AND GRADING
- (B) WATERMAINS
- (C) SANITARY FACILITIES
- (D) STORM DRAINS & FACILITIES
- (E) GRADING, PAVING AND SIDEWALKS
- (F) MISCELLANEOUS (INCLUDED, BUT NOT LIMITED TO EROSION CONTROL, SURVEY MONUMENTS, STAKEOUT, AS-BUILT MAPS, STREET SIGNS, STREET LIGHTS, LANDSCAPING, BERM CONSTRUCTION, DUST AND MUD CONTROL)

I.5.2 This shall be submitted to the Town Engineer together with a copy of the approved plan. The estimate shall include the following items.

- (A) CONSTRUCTION COSTS
- (B) OTHER ITEMS REQUIRED BY TOWN
- (C) STREET AND TRAFFIC SIGNS
- (D) SURVEY MONUMENTS & NECESSARY STAKE-OUT
- (E) "AS-BUILT" MAP (RECORD PLAN)
- (F) ENGINEERING (3%)
- (G) INSPECTION FOR DEDICATED FACILITIES (5% MIN)
- (H) CONTINGENCIES (10%)

(See Pages I-26 through I-30 for a sample of the Letter of Credit for the Town of Clarkson)

I.5.3 FINANCIAL GUARANTEES

I.5.3.1 The financial guarantee shall be either a self-renewing letter of credit or cash deposit. A cash deposit shall be acceptable in place of all or a portion of the letter of credit provided that its use is subject to the same requirements.

I.5.3.2 The self-renewing letter of credit shall be written so as to comply with the terms and conditions specified by the Town, as set forth in a specimen copy of a letter of credit that has been approved by the Town Attorney, which copy is on file in the Town Clerk's office. Unless otherwise required by the Town, recreation fees and engineering review fees are not to be included in the self-renewing letter of credit. Recreation fees must be paid to the Town prior to the issuance of a building permit. Engineering review fees shall be paid prior to establishing a date for a public hearing. In such instances where the appropriate Town authority requires that the self-renewing letter of credit include provision for engineering review fees and/or the cost of town inspection of improvements, the said letter of credit shall expressly direct the bank holding said letter of credit to pay such engineering fees to the Town.

I.5.3.3 The self-renewing Letter of Credit shall be written to, administratively and legally, allow the Town to draw from the funds to perform any and all work that it deems necessary if the Developer does not diligently, systematically and expeditiously perform the work in accordance with approved plans. The funds that it deems necessary, may be withdrawn by the Town upon certification by a Town Officer, employee, or agent responsible for accepting the construction for dedication, that there is reasonable cause to utilize such funds; and after appropriate action by resolution by the Town Board authorizing the removal and use of such funds for such appropriate purpose.

I.5.3.4 The self-renewing letter of credit amount shall include funds necessary for the costs incurred by the Town for inspection, Town Engineer's advisory services during construction, and surveys and testing necessary to assure completeness and satisfactory quality of the work.

I.5.3.5 All engineering services related to the construction stage that have not been paid from the self-renewing letter of credit, shall be charged directly to the Developer. A Certificate of Occupancy shall not be issued by the Town until such charges have been paid to the Town.

I.5.4 DEVELOPER NON-PERFORMANCE

I.5.4.1 If the Developer fails to perform in accordance with the Town standards and specifications or the site plan, then the Town shall give written notice of such failure, and the Developer shall have a reasonable time not to exceed ten (10) calendar days to properly perform as provided for in such notice. Failure of the Developer to so correct and perform the work within such reasonable time, in no event to exceed fifteen (15) calendar days from receipt of such notices, authorizes the Town to perform and properly complete such items contained in such notice forthwith and to be reimbursed for the cost thereof under the self renewing Letter of Credit. The holder shall advance funds to the Town in place and instead of the Developer, as if the funds under such self renewing Letter of Credit were advanced to the Developer. The Developer will provide for such authority in the self renewing Letter of Credit.

I.5.4.2 The town reserves the right to stop work at the site, and/or suspend inspections.

I.5.4.3 If the Town is required to bring lawsuit against the developer to enforce any provision of this Design Criteria, the Town will have the right to collect all associated costs, including reasonable attorney fees from the self renewing letter of credit. This shall not preclude the Town from seeking other judgments against the developer in excess of the self renewing letter of credit, as allowed by law.

I.5.5 ISSUER OF LETTER OF CREDIT

The self-renewing Letter of Credit shall be issued by a bank, or a bonding or surety company, or by the owner/developer with security acceptable to the Town Board, and shall be approved by the Town Board and the Attorney for the Town as to form, sufficiency and manner of execution.

I.5.6 MATERIAL CERTIFICATION

Before the final release of the Letter of Credit, the Developer must submit to the Town a certification of materials used for the construction of, but not limited to, the following: sanitary sewer, storm sewer, road material, and any additional material which may be required by the Town or Town Engineer.

I.5.7 RELEASE OF FUNDS

I.5.7.1 At such times as the Developer and his contractor wish to have funds released to cover work performed, the Developer's Engineer shall prepare a statement of the work performed as of that date. The statement shall use the same format and item breakdown as requested above for the Estimate of Cost of Improvements.

I.5.7.2 The Developer's Engineer, after preparing such statement, shall submit it for review, approval and signature by the Town Engineer and Town Supervisor. After the supervisor has signed the statement, the Town Clerk will then direct in writing to the lending institution that the approved amount be released from the self renewing Letter of Credit. Each request for release of funds shall use the form provided herein.

I.5.7.3 Terms of Fund Release

A. Storm Sewer

The Town shall release from the self renewing Letter of Credit upon installation of the storm sewers, 60% of the money allocated for these items in the self renewing Letter of Credit. After approved lamping and testing, an additional 30% of the money in the self renewing Letter of Credit shall be released. The 10% retainage shall be released when the Town has received the proper Maintenance Guarantee.

B. Sanitary Sewer

The Town shall release from the self renewing Letter of Credit upon installation of the sanitary sewers 60% of the money allocated for these items in the self renewing Letter of Credit. After testing is complete and approved, an additional 30% of the money in the self renewing Letter of Credit shall be released. Testing of sanitary sewers (lamp and air test) shall take place before the road box is ready for inspection. The 10% retainage shall be released when the Town has received the proper Maintenance Guarantee. A letter signed by the Developer will be provided with the Maintenance Guarantee indicating that the Town will inspect the sanitary sewers, storm sewers and appurtenances just prior to expiration of the Maintenance Guarantee.

C. Road Grading and Pavements

The Town shall release from the self renewing Letter of Credit upon construction of the road box, weep, gutter, and asphalt binder, 90% of the money allocated for these items in the self renewing Letter of Credit. After the road has its top course completely installed, the final 10% of this item will be released from the self renewing Letter of Credit when the Town has received the proper Maintenance Guarantee.

D. Miscellaneous Subject to Retainage

The Town shall release from the self renewing Letter of Credit upon installation of erosion control measures, siltation facilities, and other miscellaneous improvements, 70% of the money allocated for these items in the self renewing Letter of Credit. The remaining 30% shall be retained to insure proper maintenance and final cleanup of these measures.

I.5.8 CONTINGENCIES

I.5.8.1 The contingency item (10%) is intended to cover unforeseen costs from any extras or changes in quantities or types of materials used on the project.

I.5.8.2 The contingency amount can be used at the Town's discretion to reimburse the inspection account or cover the cost of overruns that occur on the project.

I.5.8.3 No more than 75% of the contingency fund shall be released until the top course of asphalt is placed

I.5.9 OWNER'S GUARANTEE

The Owner's guarantee (5%) assures the Town of funds to cover the legal and engineering costs or other costs incurred from the transfer of the contract to another contractor for completion. This combined amount, owner's guarantee and contingency fund being fifteen percent (15%) of the total construction cost, also constitutes a control figure which guarantees that certain items are completed, which include: survey monuments in place, as-built maps delivered, warranty bond established, final inspection completed and final acceptance by the Town of public improvements have been made. No more than 50% of the owners guarantee shall be released until the top course is placed.

I.5.10 LETTER OF CREDIT RENEWAL

The Letter of Credit shall be self-renewing. That is, renewal is automatic, whether or not it is re-certified by the Town. One year from the date the letter is established, and each year thereafter that the project is active, the Town Engineer shall review the prices quoted in the letter. An increase in the Letter of Credit dollar amount may be required before renewal to reflect current construction costs. The Developer must take this into account at each yearly review period and shall submit, 30 days prior to renewal date, an estimate of remaining work to establish a new Letter of Credit amount.

I.5.11 RETAINAGE

On each construction statement, seeking release of funds under the Letter of Credit, an amount equal to 10% of the work in place shall be retained to cover the cost of clean-up, manhole frame adjustments, finish grading, lateral staking, etc. In general, the 10% retainage shall be taken on sections: (A) Sanitary Facilities, (B) Storm Sewers, (C) Road Grading & Pavements, (D) Miscellaneous (such items as Erosion and Dust Control, Landscaping and Siltation Facilities). In general, no retainage is necessary for such miscellaneous items as Engineering, Inspection, Mass Grading, Contingencies, As Built Maps, and Monumentation once these items have been completed.

I.6 MAINTENANCE SECURITY

I.6.1 AMOUNT

I.6.1.1 Upon completion of the required work under the Letter of Credit, a Maintenance Security shall be established.

I.6.1.2 All Maintenance Security amounts shall be for 10% of the original Letter of Credit, but no Maintenance Security shall be for an amount less than \$2,000 (face value).

I.6.2 TERM

I.6.2.1 In as much as weather conditions dictate practicality of performance as well as accessibility for appropriate inspection of the improvements, all Maintenance Securities shall commence no earlier than June 1 or later than October 1 and expire two (2) year thereafter.

I.6.2.2 If the Developer chooses, Maintenance Securities may be established at the completion of the facilities or improvements listed below:

- A. Sanitary and storm sewers including pump stations, manholes and laterals.
- B. Roadway construction, including road foundation items, blacktop, gutters, catch basins, and sidewalks if used.
- C. Drainage facilities such as detention ponds, major creek and ditch work, erosion control, etc.

I.6.2.3 If the entire project is not completed in a timely manner, the Town has the right to ask for subsequent extensions of the initial Maintenance Securities.

I.6.3 PERMITTED NUMBER OF MAINTENANCE SECURITIES

Maintenance Securities need not be written to include all dedicated facilities and improvements in one check. But no more than three (3) Maintenance Securities for one subdivision section will be acceptable.

I.6.4 EXPIRATION OF MAINTENANCE SECURITY

The Developer shall notify the Town forty-five (45) calendar days prior to the expiration date of the maintenance Security. (See Release of Warranty by Municipality under Sequence of Procedures for Development in Town of Clarkson.)

The Town would then provide a punch-list of work to be corrected, if any, so the Developer could make necessary repairs prior to completion of the warranty period or warranty will be extended.

I.7 DEDICATIONS

I.7.1 GENERAL

An offer of dedication of any street, highway or right-of-way (ROW), or any park land, playground area, easement or conservation area, or any utility or improvement thereof, by an owner / developer shall be as prescribed by the statutes of the State of New York, subject to approval by the Town Board, and in a form approved by the Attorney for the Town.

I.7.2 ROAD DEDICATIONS

I.7.2.1 If a road or street intended for dedication is part of a subdivision development, consideration for dedication of said road or street or portion thereof will be made only after the following conditions have been met:

- A. The applicant has petitioned to dedicate the road and the deed of dedication is completed before final approval of the development.

The following shall be required:

1. Deed with legal description of the ROW
2. Completed forms required to complete a real property transfer.
3. Recording fees

- B. To avoid excessive wear by construction vehicles, the development or section as originally approved by the Town is substantially completed, to the satisfaction of the Highway Superintendent and Town Engineer. Generally this could occur when:

At least 70% of the homes are completed and occupied

Conditions C, D, E and F have been met.

- C. The road is inspected and the standards set forth in the Design Criteria for all improvements have been met and approved by the Town Engineer.
- D. The Town will require security for the entire road or portion thereof or other improvements in the form of a self-renewing letter of credit and a Maintenance Security in an amount and for a length of time to be established by the Town Board and Town Engineer.
- E. That when a subdivision has received Town approval to be developed and constructed in phases, a road or street in a single phase of the development that is substantially completed may be considered for dedication at that time.
- F. Road dedication will be contingent on having adequate maintenance securities on deposit.
- G. Street lights must be in place and charged.

I.7.2.2 Interim Maintenance

In order to provide for the health, safety and general welfare of the residents who reside on a road or street intended for eventual dedication, the Town of Clarkson will consider, subject to an agreement executed by both parties, providing such services as snow plowing to permit the safe passage of emergency vehicles and school buses, prior to the final completion and / or approval. The Town may require that a temporary turn-around for these vehicles be provided, that a program of Erosion and Dust Control be followed and that whenever possible a secondary or work road be used for construction related vehicles during the construction of the remaining homes in the subdivision development.

I.7.2.3 Road Dedications shown on Plats

I.7.2.3.1 All streets or accessways shown on a filed or recorded plat or filed final site plan are offered for dedication to the public unless the owner of the affected land, or the owner's agent, makes a notation on the plan to the contrary prior to final approval. Any street or accessway shown on a filed or recorded plat shall be deemed to be private until such time as it has been formally accepted by a resolution of the Town Board.

I.7.2.3.2 In the event that an approved plat is not filed or recorded prior to the expiration date of the plat approval, then such offer of dedication shall be deemed to be invalid, void and of no effect on and after such expiration date, unless title transfer to the Town has been successfully executed.

I.7.3 ELECTRICAL SERVICE

Electrical service is to be installed by the developer, in accord with approved plans and dedicated to the electrical service provider.

I.7.4 WATER SERVICE

Water service is to be installed by the developer in accord with the most recent plans of the Monroe County Water Authority, and dedicated to the Authority and / or local water district in conjunction with road dedication.

I.7.5 SANITARY SEWER SERVICE

Sanitary sewer service is to be installed by the developer in accord with the most recent plans of the Monroe County Pure Waters District, and dedicated to the District and / or local sewer district in conjunction with road dedication.

I.7.6 SIDEWALKS

Sidewalks are to be installed by the developer in accord with standards set forth in this Design Criteria, and dedicated to the Town as if it were part of the street.

I.7.7 STREET LIGHTING

Street lighting is to be installed by the developer in accord with standards set forth in this Design Criteria, and dedicated to the Town as if it were part of the street.

I.7.8 UNDEVELOPED RIGHT-OF-WAY

A. The Town of Clarkson will not accept undeveloped road right-of-way within a subdivision until all requirements related to road dedication are met.

- B. The Town may accept dedication of right-of-way for future road construction or access between developments, for future utility installation, for future public access, or other public purposes
 - 1. If the purpose is shown on the subdivision or site plan
 - 2. If the applicant has petitioned to dedicate the right-of-way, and the dedication has been accepted by the Town Board
 - 3. If the dedication is accompanied by
 - a. A deed with the legal description of the right-of-way
 - b. Completed forms required to complete a real property transfer
 - c. Recording fees
 - 4. If financial guarantees are provided for any improvements required as a condition of development approval.
- C. The Town may accept right-of-way on behalf of the County, State, or federal government for future road widening.

I.7.9 STORM WATER DRAINAGE FACILITIES

- A. Storm water drainage facilities, including pipes, inlets, manholes, culverts, drainage ditches and swales within the right-of-way shall be installed in accord with standards set forth in this Design Criteria and dedicated to the Town as if they were a part of the street.
- B. Storm water detention facilities and other storm water related improvements outside the right-of-way may be constructed on easements or dedicated property. If located on dedicated property, the dedication shall take place at the time of the filing of the initial phase of development from which storm water is directed to the facility.

I.7.10 PARKS AND OPEN SPACE

- A. The Town may require the dedication of land for future parks and open space, in accord with Town Law Sections 274a, 277, and 278.
- B. The purpose of the dedication shall be clearly shown on the plan. The applicant shall also produce a schedule when and how the land is to be dedicated.
- C. Whenever a developer or owner proposes a conveyance or donation of land to the Town with a development application, the Planning Board shall inform the Town Board so that it may consider the specific site for the intended use. The Planning Board may then require the developer to meet with the Town Board for the purpose of reaching a mutually satisfactory agreement so as to facilitate the eventual conversion of the site to the contemplated public use with a minimum of expense on the part of the public and with due regard for the rights of the developer.
- D. All parks and open space shown on a filed subdivision or approved final site plan shall be considered offered, for dedication to the public, unless the owner of the affected land or the owner's agent makes a notation on the final plat or site plan to the contrary. Any park land shown shall be deemed to be private until such time as it has been formally accepted by the Town Board.

I.8 AREAS OF RESPONSIBILITY

I.8.1 TOWN ENGINEER:

Review of all development plans submitted to Planning Board.

Review of plans submitted to other boards, as directed.

Review of layout and storm drainage.

Review of utilities and all matters relative to Design Criteria.

Recommendations as to special conditions.

Review and approval of Applicant's Engineer's estimate of cost of improvements.

Review and approval of Applicant's request for release of funds from amount held under self renewing letter of credit or escrow account.

Inspection of site construction, as directed by the Town.

Inspect pavement and gutters prior to termination of Warranty Period and report findings to Developer, Town Clerk, and Town Attorney.

Make subsequent inspection and approval as necessary.

Review and advise release of "Letter of Credit" funds.

I.8.2 BUILDING INSPECTOR/ZONING OFFICER

Receive plans from Applicants on Town's behalf.

Reviews plans to determine permits required.

Reviews plans for street names (no conflict).

Reviews plans for conflicts in zoning (i.e. setbacks, elevations, uses, etc.) and street names.

Reviews plans for sufficient maneuvering room for fire protection vehicles.

Comments: i.e., proper posting of street numbers for verification of building identification.

Opportunity to dry-run through development prior to occupancy.

Issues Building Permits and collects required fees.

I.8.3 PLANNING BOARD SECRETARY

Receives plans intended for Planning Board Review.

Advises applicants on timely submission and completeness of applications and other necessary forms.

Determines amount of application fees.

Places Developer on agenda for Planning Board and Conservation Board meetings.

Prepares agendas for Board meetings.

Places advertisements for hearing.

Reviews drawings for adequacy of documentation, per submittal requirements.

Directs/mails application materials submitted to Board members, outside concerned agencies, neighbors, etc.

Advises Board members of agency responses.

Attends meetings and notifies applicants of decisions and conditions of approvals (i.e. SEQR, etc.)

I.8.4 SUPERINTENDENT OF HIGHWAYS

Together with the Town Engineer reviews plans for: streets, catch basins and storm drainage, storm water detention basins, sidewalks, gutters, trees and landscaping, driveway cuts, snow-plowing procedure.

Reviews and approves street and drainage layout and construction, especially as related to driveway cut locations, snow-plowing procedures, lighting and pavement drainage.

Inspects pavement and gutters prior to termination of Warranty Period and reports findings to Applicant, Town Clerk, Town Attorney

Make subsequent inspection and approval as necessary.

Review and advise release of self renewing "Letter of Credit" funds.

I.8.5 SEWER DEPARTMENT

No department exists. Plans to be reviewed by the Authority having jurisdiction over sanitary sewers, the Monroe County Health Dept. and/or the Town Engineer.

I.8.6 Planning Board Attorney

Reviews plans for any conflicts/concerns with Town Laws.

Advises on SEQR Procedures.

Reviews and files necessary legal papers for dedication and easements, letter of credit, surety and formation of special districts.

I.8.7 SUPERVISOR

Receives and reviews the Applicant's Final Estimate of Cost of Improvements. The Supervisor is the Fiscal Officer for release of Letters of Credit.

Accepts easements and dedications on behalf of Town

I.8.8 TOWN CLERK

Receives review fees from Applicant on behalf of Town.

I.8.9 CONSERVATION BOARD

Review plans for preservation of natural resources, including water resources.

Review for SEQR significance and makes recommendations to appropriate boards.

I.8.10 ZONING BOARD SECRETARY

Sets agenda for Zoning Board meetings.

I.9 SPECIAL CONDITIONS

I.9.1 NAME OF MUNICIPALITY: TOWN OF CLARKSON

In the interest of consistency and conformity an effort has been made to provide, as much as possible, a standardized set of design and construction specifications for all of the Towns who adopt these Standards. However, there may be procedures, design parameters, or construction materials and methods which each separate Municipality may wish to insist upon for reasons of their own.

Accordingly, these SPECIAL CONDITIONS has been incorporated into this booklet. The purpose is to provide a place in which special variations from the standard documents can be listed for the benefit of the Applicant, Engineer and Contractor. Normally, these Special Conditions will take precedence over the standard data provided elsewhere in the booklet. However, the Town of Clarkson reserves the right to modify these documents in their own best interest, upon suitable notice.

I.9.2 EXCESS SOIL

Town has an excavation ordinance. No excess topsoil or subsoil shall be removed from the site unless approved by the Planning Board. A minimum of 4" of topsoil for all disturbed areas shall remain on site. The location of all topsoil stockpiles shall be shown on the plans and calculations shall be provided to the Town Engineer.

I.9.3 CONSTRUCTION SCHEDULE

As part of the plan submission, the Developer shall indicate his proposed construction timetable in writing to the Planning Board.

I.9.4 BUILDING AND OCCUPANCY PERMITS

No building permit for any permanent building within a subdivision shall be issued by the Building Inspector until

- A. After the record sheet of the subdivision plat has been approved by the Planning Board and has been filed in the office of the Monroe County Clerk.
- B. All critical drainage improvements are completed and approved by the Town Engineer.

Where a permit is desired for the occupancy of a building in the subdivision prior to the completion of all of the improvements shown on the approved construction sheet of the subdivision plat, in addition to the other requirements of the Building Inspector, the road and utilities serving the building shall be completed to a degree satisfactory to the Town Engineer. This shall be a minimum of the binder course of asphalt being placed in front of the dwelling.

I.9.5 HIGHWAY PERMITS

No site work shall commence within the right of way for any road without a permit from the qualifying jurisdiction.

I.9.6 PRIVATE DRIVES

The Town will consider on a case-by-case basis an Applicant's proposal to construct and maintain access to a development as a private drive or roadway. However, where more than four (4) units are served by the private drive, the Developer will be required to construct the roadway to at least the minimum specifications of the Town for a Private Road Section.

I.9.7 SAFETY AND HEALTH CONDITIONS

The Developer and his Contractor shall comply with, and be solely responsible for implementing the NYS Safety Requirements (Code 23 and other applicable codes) and with the Department of Labor Safety and Health Regulations for construction promulgated under the Occupational Safety and Health Act (OSHA) of 1970 (PL 91-596) and under Section 107 of the Contract Work Hours and Safety Standards Act (PL 91-54).

I.9.8 STATE ENVIRONMENTAL QUALITY REVIEW (SEQR)

Most projects designed and constructed according to these procedures are subject to review under the State Environmental Quality Review Act. It shall be the Town's responsibility to insure that the SEQR review has been fully completed prior to the issuance of any approvals. Adherence to these requirements (listed under I.9 Special Conditions) may be considered an appropriate mitigation for some types of on site and off site potential development impacts.

I.9.9 RELATIONSHIP TO OTHER AGENCY PERMIT REQUIREMENTS

It shall be the Applicant's responsibility to obtain, and to notify the Planning Board and Town Engineer of other agency development permits and permit conditions prior to approval of plans by the Planning Board, where possible. Where more detailed plans than those submitted to the Planning Board are necessary for other agency approval, the permits shall be obtained before construction, and the Planning Board and Town Engineer shall be provided a copy of the permit and a list of permit conditions.

I.9.10 HOUSE PLACEMENT ON LOT

The house must be located on the lot so as to allow a two (2) car garage to be constructed without infringing on any lot setback line.

I.9.11 SUBDIVISION REGULATIONS

The Town of Clarkson has adopted Subdivision Regulations. In the event of any conflict or inconsistency between these regulations and the Design Criteria and Construction Specifications for Land Development in the Town of Clarkson, it is the responsibility of the Developer to bring such alleged conflict or inconsistency, in writing, to the attention of the Town Building Inspector/Zoning Officer. The Town will then make a determination as to the appropriate regulation to follow.

I.9.12 SYSTEM DESIGNS

I.9.12.1 SANITARY SEWAGE SYSTEMS

I.9.12.1.1 PUBLIC SERVICE

I.9.12.1.1.1 Show location of sewer outfall and depth below the surface at the house foundation. Show proposed location of sewer line to connection point at the street.

I.9.12.1.2 PRIVATE SERVICE

I.9.12.1.2.1 Provide location and details of sewage disposal system as required by the Monroe County Health Department.

I.9.12.1.2.2 Show location of the leach field and indicate the depth of outfall at the house, and length and quantity of leach lines. Provide detailed drawing of the septic tank and show leach field detail both lateral and longitudinal.

I.9.12.1.2.3 The Planning Board recommends that the leach field be located in front of the house, and that in every case a percolation test be taken in front of the house and results shown. If the leachfield is placed behind the house, the leachfield should be placed in such a location as not to interfere with future additions, decks, swimming pools, etc. The Planning Board recommends the minimum distance from the house be 50 feet, unless the leachfield is placed behind/beside the garage.

I.9.12.1.2.4 The Planning Board has the option to request a deep hole test in the basement area when in their judgment the soil and rock conditions warrant. In every case where mineral deposits are found in the deep hole test in the septic system area, a deep hole shall be dug in the basement area and soil conditions noted. These deep hole tests to be witnessed by the Applicant's engineer and results noted.

I.9.12.1.2.5 Percolation Test Data to include:

- (1) Date of test
- (2) Percolation rate
- (3) Location of test holes
- (4) Name of the person who conducted the test
- (5) Name and title of Monroe County Health Department witness

I.9.12.1.2.6 Deep Hole Test

- (1) Date of test
- (2) Location of test holes
- (3) Type of soil and thickness of each layer
- (4) Level of mineral deposits, if no mineral deposits are encountered, state "none."
- (5) Level of ground water. If no ground water is encountered, state "none."
- (6) Level of solid rock. If no solid rock is encountered, state "none."

I.9.12.1.2.7 Septic System Notes to Include:

- (1) A statement attesting to the bedroom size house the proposed system will support.
- (2) Leach field location to be no closer than 20 feet from any building and no closer than 10 feet to any property line.
- (3) Septic tank location to be a minimum of 10 feet from any building.
- (4) No parking or driving is allowed in the septic disposal area.
- (5) No cut or fill exceeding one foot shall be allowed in the leach field area.
- (6) Laundry tubs to discharge to the septic tank, via a pump if required.

- (7) Septic tank system effluent shall not infiltrate or be discharge to a highway drainage ditch or storm drain.
- (8) Type system to be used: i.e. raised fill, etc.

I.9.12.2 WATER SYSTEM

I.9.12.2.1 PUBLIC SERVICE

- (1) Show location, length and size of waterline from house to point of connection at the street.
- (2) Provide calculation data for water pressure and volume at the house on water lines in excess of 100 feet long.
- (3) Provide hydrant flow test data.
- (4) The developer shall extend the public water line to the end of the proposed development.
- (5) Any extensions of water lines to service a proposed project shall address the quantity and location of fire hydrants along the extended lines, and to provide a hydrant at each five hundred (500) foot intervals in suburban areas and one thousand (1,000) foot intervals on rural roads.
- (6) The developer shall design the tract water system to include an internal and external closed loop to preclude loss of water service in event of a line rupture.
- (7) Planning Board Secretary shall submit drawings to the Fire Marshall to assure compliance with the latest fire code, and as a means of informing him of future water system additions.

I.9.12.2.2 PRIVATE SERVICE

- (1) Where water is to be supplied by well; a general note shall state the Town of Clarkson is not responsible for quality and quantity of water. Location of well to be reviewed and approved by the Monroe County Health Department.

I.9.12.3 PUBLIC ROADS

1. Roads to be dedicated to the Town are to be constructed to meet Town standards.
2. The developer shall be responsible for providing and installing street signs in accordance with Town specifications.
3. Dead end streets are to be designed with a cul-de-sac of a diameter to meet Town specifications.
4. Dead end streets may be limited in length by the Planning Board and Highway Department to ten times the minimum lot width of those lots serviced by the dead end street.
5. Stub street left for future street connections shall be paved and constructed to Town specifications unless otherwise specified by the Planning Board.
6. All roads must be installed to Town specifications up to the first course of black top binder and all utilities installed prior to issuance of any Certificate of Occupancy.
7. The developer of a major subdivision shall provide and install street lights to Town standards.
8. The drawing shall include road construction profile for entire length of road.

I.9.12.4 PRIVATE ROAD/PRIVATE DRIVE

1. The Planning Board may approve private roads in a proposed subdivision where unique conditions may be an advantage to the Town.
2. Private roads are to be constructed to Town standards equal to public road specifications.
3. A Homeowners Association and agreement to provide for continued maintenance and upkeep must be established in accordance with New York State Business Law, and must be provided by the developer prior to the issuance of a building permit.

I.9.12.5 DRIVEWAYS

1. The design shall provide for the curb cut location.
2. The developer shall be responsible for location and installation of the driveway culvert and to clean the roadside ditch to assure free flow.
3. When it is required to join driveways of adjacent properties, the developer will establish an agreement to assure maintenance and upkeep of the common driveway and must be provided by the developer prior to the issuance of a building permit.
4. Each driveway shall be provided with a vehicle turn-around when deemed necessary by the Planning Board.
5. No more than 4 houses or parcels designed as flag lots shall be serviced by adjacent driveways. Private Drives shall have cross access easements.
6. The Applicant's Engineer shall demonstrate to the Town Engineer that there is adequate sight distance.
7. Driveway to have asphalt (installed to Town Highway Specifications) from right-of-way to street (min.).

I.9.12.6 DRAINAGE

1. Proposed design shall indicate location of ditches and/or swales. When determined by the Planning Board or Town Engineer, swale or ditch profiles, and cross sections that clarify the proposed construction shall be provided.
2. Direction of drainage flow shall be indicated by arrows and be away from houses, sewage systems and adjacent properties.
3. The drainage plans shall indicate the location of flood areas, wetlands, and 100 foot buffer zone. Such areas shall be "staked out" by DEC. Elevations for these are to be defined by heavier printed line.
4. The plans must show drainage to a bed and bank stream on a 200 foot scale map.
5. Roadside ditches shall be piped unless agreement can be reached between the Planning Board and Town Engineer that piping is not feasible, or necessary.
6. All major drainage swales shall either be piped, or have installed a four foot wide concrete channel.

7. For development with closed drainage and gutters; provisions shall be made for disposing of roof drainage to dry wells or splash blocks. Basement drainage shall be directed into the street drainage system. Basement floors shall be at an elevation higher than the street drainage system in order to prevent backup or flooding of basements. In lieu of this, the developer may provide that basements shall be drained with sump pumps and appropriate check valves.
8. General Notes shall provide the following:
 - a. Roof leaders shall be piped to the street storm system, unless otherwise approved by the Town Engineer.
 - b. No portion of drainage shall be directed across a leach field.
 - c. Lot line swales to be constructed and operable prior to the issuance of a certificate of occupancy.
 - d. Driveway culvert to be furnished and placed by the contractor of a size and type approved by the Highway Superintendent.
 - e. Contractor shall provide for erosion control barriers during construction and for removal of the same after grading and seeding has been established or as determined by the Town Engineer.
 - f. Detention/retention ponds or areas shall be graded and seeded after the lot(s) have been final graded. Where necessary for pond to function properly, excess silt will be removed by the contractor.

I.9.12.7 BERMS

When berms are required to screen the proposed development from road traffic, such berms to be installed, seeded and planted prior to the issuance of a building permit. Height, configuration, and location of berms to be determined by the Planning Board. The berms shall be shown on the Grading Plan.

I.10 CONTRACTOR RESPONSIBILITIES

I.10.1 RESPONSIBILITIES:

The contractor shall be responsible for the following, in addition to requirements elsewhere in the regulations:

- a. The contractor shall be required to clean mud and debris from public roads servicing the construction site, during and after the completion of the project and to be enforced by the Building Inspector.
- b. On large projects constructed in phases - the contractor shall not operate construction equipment on completed roads. A haul road shall be provided for construction equipment when feasible. The contractor/developer shall be responsible for all site and roadwork damaged by the contractor/developer and to be repaired by the contractor/developer prior to dedication to the Town.
- c. Where the only access to the project is via an existing dedicated road, the contractor/developer shall request permission from the Town Board to use the road for construction access, and provide a letter of credit to cover damage to the road by construction vehicles.
- d. To assure compliance to road specifications the Highway Superintendent and/or Town Engineer may require "core samples" which the contractor may supply from locations as specified by the Highway Superintendent and/or Town Engineer.

- e. The contractor shall notify utility agencies prior to any excavations and request such utility to stake out water, gas, electric and/or buried telephone lines or cables.
- f. When road cuts are required for installation of utilities under existing dedicated streets, backfill shall be compacted to 95% compaction, and be approved by the Town Engineer prior to resurfacing. Alternative methods to compaction must be approved by the Town Engineer.
- g. The contractor shall use due caution in protecting property markers and all survey stakes.
- h. All roads must be installed to Town specifications up to the first course of black top binder and all utilities installed prior to issuance of any Certificate of Occupancy.

END OF DIVISION I

Statement of Construction

Project: No Name Subdivision
Proj. No.: 12-3456-78
Owner: Joc. E. Builder
Location: Town of Clarkson

Sheet No. 1 of 5
Statement No.: 2
Date: 1-Jun-01
Contractor: XYZ Excavating

SECTION A - Storm Sewer (EXAMPLE)

Description	Unit	Unit Price	Contract		Work this Statement		Total work to Date	
			Quan.	Amount	Quan.	Amount	Quan.	Amount
12" CMP Storm Pipe	LF	\$15.00	500	\$7,500.00	300	\$4,500.00	400	\$6,000.00
4' Dia. Manholes	EA	\$1,200.00	5	\$6,000.00	3	\$3,600.00	4	\$4,800.00
12" End Sections	EA	\$175.00	1	\$175.00	0	\$0.00	1	\$175.00
Outlet Structure	LS	\$1,300.00	1	\$1,300.00	0	\$0.00	1	\$1,300.00
Rock Lined Swale	LF	\$10.00	120	\$1,200.00	60	\$600.00	60	\$600.00
Topsoil & Seed Pond	SY	\$2.00	650	\$1,300.00	500	\$1,000.00	500	\$1,000.00
18" x 24" Drop Inlets	EA	\$550.00	5	\$2,750.00	0	\$0.00	2	\$1,100.00
Total Section A:				\$20,225.00		\$9,700.00		\$14,975.00

Statement of Construction

Project: No Name Subdivision
Proj. No.: 12-3456-78
Owner: Joe E. Builder
Location: Town of Clarkson

Sheet No. 2 of 5
Statement No.: 2
Date: 1-Jun-01
Contractor: XYZ Excavating

SECTION B - Water main (EXAMPLE)

Description	Unit	Unit Price	Contract		Work this Statement		Total work to Date	
			Quan.	Amount	Quan.	Amount	Quan.	Amount
8" DI Water main Class 52	LF	\$15.00	820	\$12,300.00	320	\$4,800.00	820	\$12,300.00
12" x 8" T.S. & V.	EA	\$1,500.00	1	\$1,500.00	0	\$0.00	1	\$1,500.00
1" Water service (K-copper)	EA	\$400.00	13	\$5,200.00	3	\$1,200.00	10	\$4,000.00
1" Water service tap	EA	\$200.00	13	\$2,600.00	3	\$600.00	10	\$2,000.00
Fire Hydrant assembly	EA	\$2,000.00	2	\$4,000.00	1	\$2,000.00	2	\$4,000.00
2" Blow-off assembly	EA	\$400.00	2	\$800.00	1	\$400.00	2	\$800.00
Total Section B:				\$26,400.00		\$9,000.00		\$24,600.00

Statement of Construction

Project: No Name Subdivision
Proj. No.: 12-3456-78
Owner: Joe E. Builder
Location: Town of Clarkson

Sheet No. 3 of 5
Statement No.: 2
Date: 1-Jun-01
Contractor: XYZ Excavating

SECTION C - Roadway/Site (EXAMPLE)

Description	Unit	Unit Price	Contract		Work this Statement		Total work to Date	
			Quan.	Amount	Quan.	Amount	Quan.	Amount
Excavate and Shape Road	LF	\$2.00	990	\$1,980.00	340	\$680.00	990	\$1,980.00
12" Crusher Run Base	LF	\$22.00	990	\$21,780.00	340	\$7,480.00	990	\$21,780.00
3" Binder Course asphalt	LF	\$15.00	990	\$14,850.00	0	\$0.00	650	\$9,750.00
1-1/2" Top Course Asphalt	LF	\$13.00	990	\$12,870.00	0	\$0.00	0	\$0.00
Grade R.O.W., Incl. Berms	LS	\$1,000.00	1	\$1,000.00	0	\$0.00	1	\$1,000.00
Street - Trees	EA	\$100.00	16	\$1,600.00	0	\$0.00	10	\$1,000.00
Berm - Trees	EA	\$80.00	16	\$1,280.00	0	\$0.00	6	\$480.00
Erosion Control	LS	\$500.00	1	\$500.00	0	\$0.00	1	\$500.00
			Total Section C:		\$55,860.00		\$8,160.00	
							\$36,490.00	

Statement of Construction

Project: No Name Subdivision
Proj. No.: 12-3456-78
Owner: Joe E. Builder
Location: Town of Clarkson

Sheet No. 4 of 5
Statement No.: 2
Date: 1-Jun-01
Contractor: XYZ Excavating

SECTION D - Misc. (Not Subject to Retainage) (EXAMPLE)

Description	Unit	Unit Price	Contract		Work this Statement		Total work to Date	
			Quan.	Amount	Quan.	Amount	Quan.	Amount
Street Signs	EA	\$500.00	1	\$500.00	0	\$0.00	0	\$0.00
Monumentation	EA	\$250.00	4	\$1,000.00	0	\$0.00	0	\$0.00
As-Builts	LS	\$750.00	1	\$750.00	0	\$0.00	0	\$0.00
			Total Section D:			\$2,250.00		\$0.00

Statement of Construction

Project: No Name Subdivision
Proj. No.: 12-3456-78
Owner: Joe E. Builder
Location: Town of Clarkson

Sheet No. 5 of 5
Statement No.: 2
Date: 1-Jun-01
Contractor: XYZ Excavating

Total Construction Cost	\$ 102,485.00
10% Contingencies	\$ 10,248.50
5% Owner's Guarantee	\$ 5,124.25
5% Inspection Services	\$ 5,124.25
Section D Miscellaneous	\$ 2,250.00
TOTAL LETTER OF CREDIT:	\$ 125,232.00

TOTAL WORK TO DATE:	
SECTION A	\$ 14,975.00
SECTION B	\$ 24,600.00
SECTION C	\$ 36,490.00
Subtotal	\$ 76,065.00
Less Retainage 10%	\$ 7,606.50
Subtotal	\$ 68,458.50

Total this Release	
SECTION A	\$ 9,700.00
SECTION B	\$ 9,000.00
SECTION C	\$ 8,160.00
Subtotal this Release	\$ 26,860.00
Less Retainage 10%	\$ 2,686.00
Subtotal	\$ 24,174.00

Total Release - Section D Miscellaneous	\$ -
Total Release - Contingency	\$ 1,979.00
Total Release - Owner's Guarantee	\$ -
Total Release - Town Inspection	\$ 2,975.00
Total Release to Date	\$ 73,412.50

AMOUNT REMAINING IN LETTER OF CREDIT \$ 51,819.50

Release due - Section D Miscellaneous	\$ -
Release due - Contingency	\$ 1,979.00
Release due - Owner's Guarantee	\$ -
Release due - Town Inspection	\$ 1,250.00
Total this Release	\$ 27,403.00

DIVISION II
DESIGN CRITERIA

II.1 GENERAL

The development of property shall conform to zoning, subdivision, and other development related restrictions established by the Town of Clarkson. It shall also conform with all regulations established herein as well as to appropriate laws, rules, and regulations established by all governing bodies having or claiming jurisdiction over various phases of the development.

Where a conflict arises between these regulations and those of other Agencies, the Developer shall make known to the conflicting Agencies the area of disagreement and endeavor to have such Agencies resolve their differences before proceeding with development.

Although these Standards have principally been developed to apply to subdivisions, they shall apply to other developments as well to the extent that the Standards are applicable.

II.2 BASIS OF DESIGN

II.2.1 The term "infrastructure" as used herein shall be defined as roads, drains, sewers, water mains and appurtenances thereto, both private and intended to be turned over to the Town of Clarkson for maintenance and operation.

II.2.2 Infrastructure shall be designed to conform with the topography of the property and with existing utilities on adjacent streets or property. Applicants shall satisfy themselves by preliminary investigation, and consultation with appropriate Town Officials, and Authorities having jurisdiction over existing infrastructure, as to the adequacy of adjoining facilities upon which their property must rely for service, most particularly water mains, sewers, drains and culverts, and drainage channels. All utilities shall be constructed outside of the pavement area.

II.2.3 Standards for required improvements shall be appropriate for the public use and demand anticipated upon full development, and shall be of sufficient size to accommodate development of proximate areas if these are considered by the Board to be logically served through the subject property.

II.2.4 Applicants bear the responsibility of providing sound engineering design of all infrastructure, subject to the approval of the Town of Clarkson and the respective Authorities having jurisdiction over existing infrastructure. The design shall be prepared by a professional engineer licensed to practice in the State of New York, who shall have had experience in the infrastructure design. The design shall conform to the requirements set forth herein.

II.3 SUBMISSION OF PLANS AND PERTINENT DATA

Applicants proposing projects for which engineering review of plans is required, shall submit plans in accordance with these specifications, in addition to those required by the applicable Municipal Code regulations. The Applicant shall submit conceptual, preliminary and final plans as outlined in the sequence of procedures in Division I of this document, application materials specified in the site plan review, or specifications of other local laws, as applicable to the project. The Secretary of the Planning Board can advise which law(s) applies to the development, and what information is required. Reference should also be made to the Review Sheets included in this booklet under the section entitled "Introduction".

II.4 STREET, ROAD, AND PAVEMENT DESIGN

II.4.1 STREET ARRANGEMENT

- II.4.1.1 Street systems shall be designed with due regard to the needs for: convenient traffic access and circulation; traffic control and safety; access for fire fighting, snow removal, and street maintenance equipment; and storm water drainage and sewage disposal. Streets shall be designed to accommodate the prospective traffic, and so arranged as to separate through traffic from neighborhood traffic insofar as it is practicable.
- II.4.1.2 The streets in contiguous developments shall be coordinated so as to compose a convenient system. Where a development adjoins undeveloped land its streets shall be laid out so as to provide suitable future street connections with the adjoining land when the latter shall be developed. A street thus temporarily dead ended shall be constructed to the property line and shall be provided with a temporary turn-around of the same dimensions as for permanent dead end streets if in excess of 200 feet, with a notation on the plan providing for temporary easements for the paved turn-around until such time as the street is extended. These same requirements shall apply at the discretion of the Planning Board in those cases where the adjoining land is another section of the same project, and which is not scheduled for development at the same time.
- II.4.1.3 Streets shall be designed in a manner that will accommodate the existing topography, and all streets shall be laid out so as to obtain as many as possible of the building sites at or above the grades of the streets. Grades of streets shall conform as closely as possible to the original topography. A combination of steep grades and sharp curves shall be avoided. Vertical curves where sight distances from planned driveways will be compromised must be addressed early in the design phase and brought to the attention of the Town.
- II.4.1.4 Where a development abuts or contains an existing or proposed arterial street, or other existing Town, Village, County or State highway the Planning Board may require marginal access streets reverse frontage with screen planting contained in a non-access reservation along the rear property line, deep lots with or without rear service alleys, or such other treatment as may be necessary for adequate protection of residential properties and to afford separation of through and local traffic.
- II.4.1.5 Where a development borders or contains an existing or proposed railroad right-of-way, or controlled access highway right-of-way, the Planning Board may require a street approximately parallel to and on each side of such right-of-way, at a distance suitable for the appropriate use of the intervening land, as for park purposes in residential districts, or for business, commercial or industrial purpose in appropriate districts. Such distances shall also be determined with due regard for the requirements of approach grades and future grade separation.
- II.4.1.6 Designers of streets must consider cut-through traffic and speed. Street layout shall make it difficult and inconvenient for commuter traffic from outside the subdivision to use residential streets for cut-through to arterial streets. Innovative layouts using turning circles, divided sections, changing pavement widths, etc. are encouraged.
- II.4.1.7 Vertical curves resulting in blind driveways shall be avoided. Developers and / or engineers are to show portions of driveways near vertical curves and prove site distances are adequate at design speeds.

II.4.2 DEAD-END STREETS

Where a street does not extend to the boundary of the subdivision and its continuation is not needed for access to adjoining property, it shall be separated from such boundary by a distance sufficient to accommodate a lot meeting the requirements of the Zoning Ordinance. Reserve strips of land shall not be left between the end of a proposed street and an adjacent piece of property. However, the Planning Board may require the reservation of an easement 30 feet wide for pedestrian traffic or utilities. A cul-de-sac of a minimum right-of-way radius of 70.00 feet shall be provided at the end of any permanent dead-end street. For greater convenience to traffic and more effective police and fire protection, the length of permanent dead-end streets may be limited to 10 times the minimum lot width for the zoning district, such length to be measured to the center point of the cul-de-sac. For temporary dead ends, there shall be provided a suitable turnaround, construction to Town specifications.

II.4.3 STANDARDS FOR STREET DESIGN

All streets shall be designed and constructed to conform to the requirements set forth in the following table entitled "Standards for Street Design".

Construction Detail Drawings shall be submitted to demonstrate conformance with this Section.

II.4.4 STREET INTERSECTIONS

II.4.4.1 Intersections of arterial streets shall be held to a minimum and spaced at least 1000 feet apart, and intersections of collector streets by other streets shall be at least 800 feet apart. Cross (four-cornered) street intersections shall be avoided insofar as possible, except at intersections where both streets are at least of collector designation. Between offset intersections there shall be a distance of at least 150 feet. Within 50 feet of an intersection, streets shall be approximately at right angles. In no case shall the angle of intersection be less than 85 degrees without additional channelization. Minimum curb radii shall depend on the intersecting street types; and shall be as follows:

Collector with collector:	40'
Minor with collector:	35'
Minor with minor:	35'
Industrial with collector	60 ' with 4.0' offset and 60 ft. taper (per AASHTO)

II.4.4.2 Access streets into the subdivision from an arterial street shall have minimum curb radii of 40'. All property corners at street intersections shall be rounded with a radius of 20', or have comparable cut-offs or chords, as the Planning Board sees fit. Within triangular areas formed by the intersecting street lines, for a distance of 75 feet from their intersection, and the diagonals connecting the end points of these lines, visibility for traffic safety shall be provided, by exclusions of plantings or structures and regrading as necessary.

II.4.4.3 Grades at intersections should not exceed 2% for a distance of 50' from the intersection. From 50 to 100', the grades should not exceed 3%.

II.4.4.4 Triangles, circles or other traffic channeling islands may be required at intersections where present or anticipated traffic conditions indicate their advisability for traffic control or safety.

II.4.5 STREET GRADING AND SHOULDERS

Areas within street rights-of-way shall be graded as necessary to eliminate any slopes steeper than one foot vertical in three feet of horizontal distance. Street shoulders shall not exceed a slope of 10% at right angle to the street centerline. Shoulders at least eight feet wide shall be provided on both sides of collector streets. Minor streets shall have a shoulder at least eight feet wide on one side of the street and at least four feet wide on the other. Shoulders shall be treated with oil and stone-all other unpaved areas within the street right-of-way shall be treated with topsoil and seeded to grass except where noted differently on the Typical Road Section.

II.4.6 SIDEWALKS

Concrete sidewalks shall be provided in locations where they are deemed by the Town Board to be appropriate and in the interest of public safety or convenience and in accordance with the Typical Road Section. Asphalt sidewalks maybe substituted for concrete on Rural Roads where recommended by the Planning Board and approved by the Highway Superintendent and Town Engineer.

II.4.7 TREES

The developer shall take adequate measures to preserve desirable existing trees in suitable locations within the development.

In general, the street right-of-way shall be cleared of existing trees, but occasional existing trees of unusual value may be preserved within the street right-of-way if approved by the Planning Board. New tree plantings are not allowed within R.O.W., unless approved by Planning Board and Highway Department. Tree planting shall be governed by Section III.8 of these requirements.

Planting of new trees may be required by the Planning Board.

II.4.8 LIGHTING

Lighting facilities shall be required along all new streets where designated by the Planning Board. Light spacing, fixtures and underground conduit shall meet with the requirements set forth by the Planning Board and Electric Corporation having jurisdiction in the service area. Street light poles are leased from the power company. All costs are paid by the Lighting District formed for the proposed subdivision.

II.4.9 STREET NAMES

All streets shall be named, and such names shall be subject to the approval of the Planning Board, Highway Superintendent, and by the office administering 911. Names shall be sufficiently different in sound and spelling from other street names in the Town of Clarkson and post offices contiguous to the Town of Clarkson so as not to cause confusion. A street which is a continuation of an existing street shall bear the same name. Relating street names to features of local historical, topographical, or other natural interest is encouraged.

II.4.10 STREET SIGNS

Traffic control and street identification signs shall be provided as part of the development. Design and installation of all signs shall be in conformance with the NYS DOT M.U.T.C.D., latest edition. Unless otherwise approved by the Planning Board, street name signs shall conform to Figure 13-1 of the M.U.T.C.D. Street signs shall be required at the time the road is paved with binder course of asphalt and prior to issuance of the first "Certificate of Occupancy". The Developer shall pay the Town Highway Department for the installation of the street signs, or post an adequate security.

II.4.11 MONUMENTS

- II.4.11.1 Permanent survey monuments shall be set in the boundary of rights-of-way at intersecting streets, PC and PT of curves, though the PI of short curves may be used instead, where such is practical, at the discretion of the Highway Superintendent and/or the Town Engineer. Monuments shall be placed along the R.O.W. line on one side of the street only and at only one corner of intersecting streets. Adjacent monumented points shall be intervisible. Monuments shall not be placed in the roadway.
- II.4.11.2 Monuments shall be tied into the New York State Coordinate System or other datum acceptable to the Highway Superintendent and/or Town Engineer. Monument locations shall be shown on the subdivision record map, along with the coordinates. Field notes of ties to monuments or a tie sheet shall be recorded on the Monumentation As-Built.
- II.4.11.3 Monuments shall be placed so that the scored or marked point shall coincide with the intersection of the lines to be marked, and shall be set so that the top of the monument is level with the surface of the surrounding ground. Monuments shall be readily visible.
- II.4.11.4 The proposed replacement of any existing monuments shall be clearly indicated on the final plan.
- II.4.11.5 Iron pin markers shall be set at the beginning and ending of all curves along street property lines; at all points where lot lines intersect curves, either front or rear; at all angles in property lines of lots; and at all corner lots. Markers shall consist of steel pipe at least eighteen (18) inches long and not less than three-fourths (3/4) inch in diameter. Iron pin markers shall not be used for road monuments.
- II.4.11.6 Monuments shall be of stone or concrete and not less than 4" in diameter or square, and not less than 42" long or to the top of underlying rock. Concrete monuments shall be reinforced with steel rods, and a plug, brass plate, or pin shall serve as the point of reference. If stone, a drilled hole shall serve as the point of reference and a magnetic rod or other suitable metal shall be placed adjacent to the monument to allow for recovery.

II.4.12 STREET IMPROVEMENTS - GENERAL

In addition to the required improvements specifically referred to elsewhere in these regulations, subdivision plats and other developments shall provide for all other customary elements of street construction and utility service which may be appropriate in each locality as determined by the Planning Board upon consultation with the Town Engineer and Highway Superintendent. Such elements may include, but shall not be limited to, street pavement, gutters, storm water, inlets, manholes, curbs, sidewalks, street lighting, water mains, fire hydrants, fire alarm signal devices, and sanitary sewers. Underground utilities within the street right-of-way shall be located as required by the Highway Superintendent and/or the Town Engineer, and underground service connections to the street R.O.W. of each lot shall be installed before the street is paved. All street improvements and other construction features of the development shall conform to the Town specifications which may be established from time to time and shall be subject to approval as to design, specifications, and construction by the Highway Superintendent and/or the Town Engineer.

II.4.13 HIGHWAY FRONTAGE

- II.4.13.1 To promote and protect the public health, safety, and welfare it shall be the policy of the Town Board to control the number of entrances and exits onto and off from State, County, and Town highways.
- II.4.13.2 This policy is adopted toward the end that safer highways shall result, more cohesive neighborhoods be developed and abutting property owners shall not be unduly and unnecessarily inconvenienced in the future when it becomes necessary to widen highways to accommodate greater traffic flows.
- II.4.13.3 The Town Planning Board shall from time to time, as part of the process of approving sketches, maps, plots, plats, or plans require that the applicant grant to the Town of Clarkson such easements as are required to provide access to contiguous properties onto a public highway via frontage or service roads, common

driveway, or such other roadways as are required so that the number of entrances and exits onto and off from State, County, and Town highways are not increased.

II.4.14 Widening of Existing Street Right-of-Way

Where a subdivision or other development adjoins an existing street which does not conform to the right-of-way standards given in the table entitled "Standards for Street Design" in these regulations, the Developer shall dedicate whatever additional right-of-way width is necessary to provide, on the development side of the normal street centerline, a width which is equal to at least one-half of the minimum standard width for the respective type of street.

II.4.15 ROAD SECTIONS

The road sections provided in this manual shall be used for the various road sections allowed in the Town.

II.4.16 NON-RESIDENTIAL SUBDIVISIONS

Standards for streets in non-residential subdivisions and other developments with an internal circulation network shall be appropriate for the use intended, and shall be established by the Planning Board upon advice by the Town Engineer.

II.4.17 PRIVATE DRIVES

II.4.17.1 The Planning Board will review all private drives in relation to access, ability to support traffic loads, traffic circulation, drainage and maintenance. All private drives shall be named and marked with an approved sign for adequate identification for emergency and fire situations. The conditions and standards for Private Drives are as follows:

II.4.17.2 A private drive may serve a maximum of four housing units. The length of the drive may vary, but shall be designed for convenience to traffic, effective police and fire protection, safety and ease of maintenance.

II.4.17.3 RIGHT-OF-WAY

- a. If a right-of-way for a single lot is 200' or greater in length, the right-of-way width shall be at least 20' along the frontage and shall be owned in fee by the lot owner.
- b. A right of way serving two, three or four lots shall be at least 60' in width, and each owner shall own a fee interest in a part of said right of way that is at least 15' in width. Ownership of said 60' wide parcel may be in common with others with the approval of the Planning Board.

II.4.17.4 A turn-around, either a cul-de-sac or a "tee-type" shall be provided at the end of each private drive exceeding 500' in length, and be a minimum of 40 ft. radius or as otherwise required to accommodate emergency vehicles.

II.4.17.5 At the discretion of the Planning Board, private drive design to serve a development shall be submitted to the Town Engineer for review. Said review shall be at applicant's expense.

II.4.17.6 Prior to Town approval the applicant shall obtain a State Attorney General's approval or no action letter for the private drive.

II.4.17.7 The owner shall cause to be recorded in the Monroe County Clerk's office a declaration of covenants, restrictions and easements in a form acceptable to the Planning Board Attorney, which shall, at a minimum, provide:

- a. For reciprocal easements for use of said road of each owner of a lot in said subdivision.

- b. For a declaration that the town has no responsibility for the maintenance of said private road.
- c. That maintenance of the road is to be paid for by the owners of the lots. "Maintenance" shall include normal upkeep, reconstruction, drainage, snow plowing and any and all other costs which may be associated with such road.
- d. That no certificate of occupancy can be issued until the road is installed in accordance with the above specifications and to the satisfaction of the Town Engineers.
- e. That should a majority of the lot owners or prospective Applicants of any of the lots desire to upgrade the road to town specifications, and seek dedication, no lot owner sharing in the access agreement shall protest or impede the dedication by virtue of their access or ownership rights to the right-of-way.

II.4.17.8 See Private Drive detail drawing in Division IV.

II.4.18 WATERCOURSES

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

II.4.19 TOPPING

All roads, whether dedicated or private, shall set over the winter months prior to the final application of topping material. Prior to the placement of the top course of asphalt, the entire road shall be treated with "tack coat". The top material may be installed in the spring of the following year or as approved by the Town Engineer. Binder shall be a tighter mix approved by the Town Engineer.

II.4.20 Withholding Certificate of Occupancy

A certificate of occupancy shall not be issued until the binder course is installed on all roads/drives, whether they are to be dedicated or private.

II.5 STORM WATER MANAGEMENT

II.5.1 GENERAL POLICY:

II.5.1.1 It is the Town's policy to control both the quantity and quality of storm water runoff. Facilities shall be designed to take the run-off from streets, lawns, paved areas and run-off areas. Full engineering attention shall be given to the interception and conveyance of storm water by the street drainage system, a system of backlot-lie drainage swales and main drainage channels through the development.

II.5.1.2 Storm water quantity and quality management shall be provided for all new land development (including redevelopment) where, in the judgment of the Town Engineer, it is considered necessary in order to provide drainage control and to protect water quality.

- II.5.1.3 An adequate and comprehensive drainage system shall be provided to convey the storm water runoff originating within and outside the development in accordance with the natural direction of runoff for the total upland watershed area affecting the development. Such drainage systems shall have sufficient capacity to accommodate the potential future runoff based upon the probable land use and ultimate development of the total watershed area upland of the development.
- II.5.1.4 Particular attention should be given to storm drainage facilities. These facilities shall be designed to take the runoff from streets, lawns, paved areas, and roof areas. Full engineering attention shall be given to the interception and conveyance of storm water by the street drainage system, a system of back-lot-line drainage swales, and main drainage channels and pipes through the development.
- II.5.1.5 The preservation and improvement of natural watercourses is important to the overall drainage plan in the Town of Clarkson. When developing a site that has a natural watercourse (numbered tributary), this watercourse should be designed to conform to the standards set forth in the Town of Clarkson Drainage Study of 1966 or as directed by the Highway Superintendent or Town Engineer. Improvements shall be performed and paid for by the Applicant as part of the development costs.
- II.5.1.6 Attention is called to the possibilities of using easements along natural watercourses to satisfy the open space requirements of average density developments under the Zoning Law, and to absorb pollutants associated with runoff.
- II.5.1.7 No developed or re-built area shall discharge storm water into adjacent culverts and channels at a rate greater than what occurs under a natural undeveloped condition.
- II.5.1.8 The flow capacity of channels and culverts immediately downstream from a development does not necessarily govern the adequacy of the total drainage system downstream.
- a. Proceeding downstream in any given drainage basin, (and therefore from any given development) the area contributing to any drainage channel is increasing.
 - b. Culverts and channels downstream from a 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.
- II.5.1.9 The fact that downstream facilities are inadequate prior to development, and therefore, flood at certain times, does not imply that increasing the frequency at which they will flood by allowing additional runoff from a development will be acceptable.
- II.5.1.10 Storm water leaving the site shall be discharged to a recognized drainage course, via easements dedicated to the Town.
- II.5.1.11 If the Town deems it desirable and appropriate to remedy a downstream flooding situation, they may, at their discretion, require an impoundment area of a size and type which can assist in rectifying the downstream flooding situation. This downstream flooding situation might be a case where backyards flood rather frequently, or where downstream piping systems are overtaxed, possibly causing backup into cellars, yards, etc. The cost of any excess facilities is subject to negotiations with the developer.
- II.5.1.12 The developer is expected to be familiar with the requirements of the Phase II State Pollution Discharge Elimination System (SPDES), General Permits for Stormwater Runoff from Construction Activity as well as the New York State Stormwater Management Design Manual (October 2001 or as amended) and to comply with their regulations and procedures.

- II.5.1.13 The developer must provide storm water facilities that will meet the following goals of the State of New York and Town of Clarkson:
- (1) Meet pollutant removal goals for water quality (WQ), which is determined to be at least the first 0.8” of run-off from all land areas for which the perviousness has been changed over the pre-development conditions (80% rule).
 - (2) Reduce channel erosion or provide channel protection (cpr), which is determined to be the 24-hour extended detention of a post-developed 1-year, 24-hour storm event.
 - (3) Prevent over bank flooding or protect from the over bank flood (QP), which is the control of the peak discharge from the 10-year storm to the 10-year predevelopment rates.
 - (4) Aid in the control of extreme floods or the extreme storm (Qc), which is the control of the peak discharge from the 100-year storm to the 100-year predevelopment rates.
- II.5.1.14 When considering the wide variety of Best Management Practice’s (BMPs) that are available or being proposed to mitigate the impacts of stormwater runoff, it is evident that there are a number of factors that influence what might be chosen as the preferred or required method. In addition to the obvious consideration of pollutant removal capacity, a developer must consider additional factors including:
- Longevity
 - Construction cost
 - Environmental Issues
 - Reliability
 - Safety
 - Aesthetics
 - Maintenance cost
- Refer to *Design of Stormwater Wetland Systems* by Thomas R. Schyeler, which provides a comparison of the most common BMP options.
- II.5.1.15 Stormwater wetland and multiple pond system with predominant wetland characteristics are the most logical and practical extension of current stormwater management practices. Properly designed and constructed stormwater wetlands should be the preferred and most frequently required BMP to meet regulatory requirements to mitigate the impacts of nonpoint source pollution. Recommended design and constructed practices for these systems are included in Appendix.
- II.5.1.16 Stormwater management facilities associated with developments subject to Phase II SPDES General Permit for Stormwater Runoff from Construction Activity shall be designed to comply with the New York State Stormwater Management Design Manual. Where the standards in this Design Criteria and Construction Specifications are not consistent with the SPDES General Permit Requirements, the more restrictive shall apply. The Town reserves the right to require more stringent standards in circumstances where the Town Engineer determines more stringent standards are warranted.
- II.5.2 DRAINAGE EASEMENTS
- II.5.2.1 Drainage Easements - shall be reserved where road runoff must cross private property. Easement width is to be established by the Town Engineer and approved by the Town Board.
- II.5.2.2 Easements shall be provided along all natural watercourses and dedicated facilities. Additional easements may be required to maintain drainageways where deemed necessary by the Town of Clarkson. Easement width is to be determined by the Town Engineer and approved by the Town Board.

II.5.2.3 The Applicant must demonstrate that effort was made in good faith in trying to obtain drainage easements. Certified letters are acceptable proof.

II.5.3 DRAINAGE COMPUTATIONS

II.5.3.1 Stormwater drainage computations necessary to determine runoff rates for existing and developed conditions shall be performed using SCS (Soil Conservation Service) accepted methods. Design of major stormwater conveyance systems and detention shall be sized as determined by the contributing watershed area. The “developed condition storm” for the return period and contributing watershed area noted below shall be the basis for design:

Less than 1 sq mi	-	10 yr storm
Between 1 sq mi - 4 sq mi	-	25 yr storm
Between 4 sq mi - 20 sq mi	-	50 yr storm
Above 20 square miles	-	100 yr storm

II.5.3.2 Design of storm sewers for the development may be performed by the Rational Formula, using the “10 year developed condition storm” as a basis for design. The minimum coefficient of runoff “C” to be used shall be 0.40 for developed conditions. Time of concentration to the first inlet shall be determined using the included SCS nomograph and shall be taken as not more than fifteen (15) minutes. Rainfall-intensity curves have been included in this document for use in computing anticipated stormwater runoff rates. (SCS Nomograph and Rainfall Intensity Curves are appended to this Division of the Design Criteria)

II.5.4 ENGINEERING REPORT AND PLANS

II.5.4.1 See Section II.16.2.3 for submission requirements

II.5.4.2 The minimum size pipe used for dedicated storm drains shall be 12" diameter.

II.5.4.3 Drop Inlets shall be spaced at intervals of not over 300 feet or between each driveway if there are no gutters, at low points, and at intersections. They shall conform to the detailed drawings included in Division IV: Construction Details. Drop Inlets shall be connected to the storm system with a manhole.

II.5.4.4 Manholes shall be provided along the drain piping network. Manholes shall be designed as follows:

- a. Manholes shall be placed at intervals of 300 feet maximum.
- b. The piping of drainage through a manhole shall be such that the crown of the pipe leaving the manhole will be 0.10 feet lower than the crown of the pipe entering the manhole.
- c. No drop manholes will be permitted.
- d. Manhole tops shall be accurately designed to conform to finished grade.
- e. All three-way manholes shall be a minimum of 5 foot diameter. All special manholes shall be reviewed by the Town Engineer. The invert of a three way manhole will have a minimum radius of one-half (1/2) the diameter of the manhole. No “T” intersections will be accepted.

II.5.4.5 Storm drains shall be constructed as outlined under Division III: Construction Specifications, of this manual.

II.5.4.6 Drains shall be designed with straight-line grade and alignment between manholes. Sufficient grade shall be provided to prevent settling of sediment (minimum velocity of three (3) feet per second).

- II.5.4.7 Open channels serving as main drainageways normally will not be accepted by the Municipality where, by engineering design, it has been established that the future flow (under conditions of full development) could be conveyed in a pipe system having an "N" value of 0.013, up to and including a size of 48" diameter or equivalent. Applicants and their engineers bear the responsibility of providing technical design data in this regard which shall be submitted to the Municipality and its engineer, whose approval or disapproval of this data shall be final and binding. Easements along natural or open watercourses shall be provided as specified in Section II.13.5.
- II.5.4.8 Developer and his Engineer shall be responsible for furnishing, as part of their plans to be presented before the Planning Board, full and sufficient details of all hydraulic structures. This includes, but is not limited to, cross sections of drainage channels, details of head wall construction, erosion control structures, special manholes, detention facilities and all such other items as may be necessary to establish fully, the methods and materials to be followed in construction.
- II.5.4.9 Developer and his Engineer shall so design the vertical control of their subdivision that surcharge of storm drainage systems will not cause a backup or flooding of cellars. 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 drain system can run fully surcharged;(b) the cellar drainage discharges through a sump pump and check valve; (c) the cellar drainage discharges through a gravity drain with a check valve and pea trap.
- II.5.4.10 In the design of storm drainage piping system an "N" of 0.013 shall be used for smooth pipe and "N" of 0.024 shall be used for corrugated metal pipe, unless the corrugated metal pipe is of the "smooth-flo" type, in which case an "N" of 0.013 may be used. All CMP shall conform to NYS DOT Standards for Recommended Minimum 70 year Design Life.
- II.5.4.11 Storm drain piping conveying drainage along side lot lines shall extend to the rear lot line or to the main channel to which the drain is discharging.
- II.5.4.12 All culverts placed in existing streams shall be designed to insure that the upstream water surface elevation will not be increased by placing this structure in the path of flow.
- II.5.4.13 In order to maintain structural strength, drop inlet structures shall not contain more than two (2) main storm water conduits. (4" weep drains are not considered main conduits.)
- II.5.4.14 On certain projects there may be key elevations which must be adhered to, as determined by the Town Engineer. These key elevations may be finished floor, lowest architectural opening or basement floor elevations. Applicant's engineer shall certify these key elevations in writing, prior to the issuance of a Certificate of Occupancy.
- II.5.4.15 Drop Inlet within gutters shall be placed with the intent that they do not lay within the vehicular traffic area of drives and/or roadways.
- II.5.4.16 Catch basins will be placed along rear lot lines at every three lots, to collect a total of six lots. These catch basins shall be piped to the street storm system, unless directed by the Town Engineer.
- II.5.5 STORM WATER DETENTION BASINS

II.5.5.1 GENERAL

II.5.5.1.1 The Town has determined that storm water detention basins will be required because continual upstream development tends to overtax both downstream natural watercourses and man-made drainage facilities. In addition, increased rates of storm water runoff cause environmental problems downstream such as highly erosive velocities, flooding and overtopping of the banks. Consequently, it has been determined to insist upon detention basins and to have these detention basins designed in a manner compatible with the particular problem. Due to the topography of the Town of Clarkson, detention facilities will be off stream ponds.

II.5.5.1.2 While the Town reserves the right to establish particular parameters in each individual instance, the general philosophy is to permit runoff from any particular development at a rate no greater than 65% of any storm occurrence which would normally occur under a natural, undeveloped condition for all storms. That is, the Town generally agrees that property owners along the downstream channel should be prepared to accept a rate of discharge from the upstream areas equivalent to the discharge from the upstream area under a natural condition.

II.5.5.1.3 It should be pointed out, however, that the Town definitely reserves the right to establish other more restrictive parameters. For example, if the downstream area has been subjected 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, it may, at its discretion, require an impoundment area of a size and type, as well as storm sewers and culverts, which can assist in rectifying the downstream flooding situation.

II.5.5.1.4 Detention/Retention pond facilities are to be designed and built to standards discussed with, and approved by, the Town and its Engineer. Attention shall be given to providing facilities which are aesthetically pleasing, of a permanent nature, safe, and requiring minimum maintenance.

II.5.5.1.5 The Developer is responsible for providing and transferring to the Town permanent easements of a location and type adequate to encompass and to service and maintain the facilities. Such easements are to be approved by the Town Board prior to final subdivision approval.

II.5.5.2 ACCESS FOR MAINTENANCE

If not adjacent to a public right-of-way, an easement shall be provided for access for purposes of maintaining the detention/retention basin. The easement size and location shall be approved by the Town Highway Superintendent.

II.5.5.3 DESIGN

The detention facility is made of three structures:

- A. Detention pond
- B. Outlet control structure
- C. Emergency spillway

The three structures work together as one system.

II.5.5.3.1 DETENTION POND

a. The size of the facility shall be according to the contributing watershed area:

Less than 1 sq mi	-	10 yr storm
Between 1 sq mi - 4 sq mi	-	25 yr storm
Between 4 sq mi - 20 sq mi	-	50 yr storm
Above 20 square miles	-	100 yr storm

(All storms down to and including the 2 yr storm event, shall be detained within the pond)

- b. Sizing the detention pond shall be done using the Soil Conservation Service (SCS) technical release No. 55 (TR-55). Computations shall be based on 24-hr duration rainfall as supplied by the U. S. Weather Bureau. Routing computations shall be performed demonstrating the adequacy of the detention facility and outfall structure.
- c. Individual commercial sites less than 3 acres in size that require a detention pond due to the amount of impervious area, may size the pond using the Rational Method.

II.5.5.3.2 OUTLET CONTROL STRUCTURE

- a. The control structure shall be designed as a multi-frequency structure since more drainage is generated in all storms from a developed site. The control structure should be designed to attenuate the lesser storms as well as the design storm.
- b. The outfall pipe (through the berm) shall be designed to pass the design storm (as outlined in "Detention Pond") with a headwater 0.5 ft. above the top of the control structure. The minimum pipe size shall be 8" diameter. The pipe through the berm shall be provided with an anti-seep collar.
- c. The control structure shall have a trash rack and anti-vortex device.
- d. The outlet structure should be placed on a suitable base to insure the structure does not become buoyant under high water conditions prior to the structure overtopping.
- e. The minimum size of a control structure shall be a diameter of 36 inches.
- f. The riser tube shall be constructed of reinforced concrete with precast flow orifices.
- g. If site constraints do not permit the use of a riser tube arrangement, the Applicant's engineer may discuss alternate design with the Town Engineer.

II.5.5.3.3 EMERGENCY SPILLWAY

An emergency spillway shall be provided on all detention ponds to avoid embankment overtopping and subsequent embankment failure.

- a. Emergency spillways should be designed using the developed flow for the next larger design storm than the detention pond. (Ex. detention pond - 25 yr -- emergency spillway 50 yr), and using the following equation $Q=3.0 Lh^{3/2}$.
- c. All emergency spillways should be placed in an area of cut so to minimize the possibility of dam failure. In no case shall emergency spillway sections be designed for, or constructed in the embankment section.
- d. The invert of the spillway shall be set to provide a minimum of 1.0 ft. of freeboard above the peak elevation of the design storm.
- e. The top of the dam elevation shall be set a minimum of 1.0 ft. above the free water surface passing over the emergency spillway.
- f. Tops of embankments shall be designed and constructed level to avoid low points in the embankment section.

II.5.6 STORM WATER GROUND RECHARGE

- II.5.6.1 In certain areas where development does not offer positive surface storm water discharge, the Town may allow storm water ground recharge.
- II.5.6.2 The New York State Department of Environmental Conservation may place certain constraints on systems using ground recharge of storm water. Some of the possible constraints (but not limited to these) are:
1) discharge shall not take place into or within four feet above bedrock or the groundwater table,
2) Storm water may be required to be treated prior to discharge. 3) The system may need periodic service to maintain the designed permeability and prevent failure.
- II.5.6.3 If preliminary approval is given to the concept for a particular location, the developer shall follow the procedure described below. Final approval of the system shall be at the discretion of NYS Department of Environmental Conservation, the Town Engineer and the Municipality.
- II.5.6.4 The Developer shall retain a competent Soils Engineer to provide a detailed report and plan showing the quantitative and qualitative ability of the aquifer to receive ground recharge. More specifically the report shall include soil permeability data, geologic features, gradation and soil sampling data, and soil exploration and testing. Adequate logs of test pits and bore holes shall be provided to define the limits of the aquifer where recharge would be made. Pond shall be constructed in such a manner to insure no leakage or outbreaks can occur onto adjacent properties.
- II.5.6.5 The ground recharge facility shall include a retention facility where adequate settling of soils can occur, and storage can be provided. Discharge to the recharge area via a trickle tube or other piping should be shown. Other design data including fencing, useful life of system, infiltration piping and operation and maintenance costs are required and shall be included and made part of the report.

II.6 SEDIMENT AND EROSION CONTROL

- II.6.1 Sediment control facilities are to be designed and constructed to conform with “Guidelines for Urban Erosion and Sedimentation Control”, published by the NYS Chapter of the Soil and Water Conservation Society. The sediment control design shall incorporate the type, number and frequency of maintenance actions required for erosion control during construction. Further, inspection of erosion control measures must be performed every 7 calendar days and immediately following rainfall events of greater than 0.5 inches. The inspection process must verify that all erosion control measures are adequately operational, maintained properly and sediment is removed from the control structures. The Town will reserve the right to modify or order any additional maintenance of said erosion control measures.
- II.6.2 The Town Conservation Board and Town Engineer will act as advisors to the Town Planning Board in the review and approval of planning for sediment control. It is the intent that the developer and his / her engineer (in the case of land development) to work with these advisors, beginning at the concept stage, in developing the sediment control plan. It shall be the responsibility of the developer to request this involvement at the time of his / her first contact with the Planning Board. The request shall be made to the Planning Board Chairperson.
- II.6.3 In order to ensure that the surrounding land and watercourses will not be subjected to siltation or erosion, the Planning Board shall require the Developer to follow certain erosion control practices. The Developer shall consult with the Town Engineer to determine whether or not the required procedures are to be put into practice. Such procedures should include:
- a. Minimize the area of stripped ground cover at any one time. Retain and protect natural vegetation whenever possible.
 - b. Fitting of the development plan to the topography and soils so as to minimize the erosion potential.
 - c. Retention and protection of natural vegetation wherever possible.

- d. Installation of permanent final vegetation and structures as soon as practical.
- e. Provision of adequate protective measures when slopes in excess of ten percent (10%) are graded, and minimizing of such steep grading.
- f. Prohibition of stripping of existing ground cover until interceptor swales and sediment sinks have been installed by the Developer and approved by the Town.
- g. Provision for temporary vegetation and/or mulching to protect critical areas.
- h. Provision for adequate drainage facilities to accommodate effectively the increased runoff caused by changed soil and surface conditions during and after development. The Applicant's Engineer shall show, as part of the 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.
- i. Installing and maintaining temporary sedimentation basins at the point or points of storm water discharge from the property.
- j. Require the Developer to routinely "muck-out" sediment sinks and interceptor swales, to maintain full capacity.
- k. Interceptor swales and sedimentation basins constructed on all developments prior to the actual mass grading taking place. The purpose of these swales and basins is to prevent off-site siltation.
- l. Provide hydraulically placed mulch of the "mat" type on raw areas that must be exposed for extended periods.
- m. Place firmly anchored and embedded straw bales or filter fabric barriers in areas of concentrated runoff, such as at culvert and catch basin inlets, and in swales, in an effort to reduce soil transport reaching the settling pond.
- n. Wherever possible, leave temporary buffer strips of original ground cover vegetation to act as a soil migration retardant.
- o. Use "Soil Saver" jute mesh along swales or other areas where runoff rates are of sufficient quantity or velocity so as to cause additional erosion.
- p. Restore ground surface protection as soon as possible by utilizing hydraulically-place mulch of the "mat" type.
- q. The right-of-way shall be seeded with the appropriate mix after construction, as soon as practical, or as directed by the Town Engineer. If initial growth is unsatisfactory, the contractor will be required to re-seed the right-of-way.
- r. No grades shall exceed 1:5.

II.6.4

Innovative design for sediment control by the developer shall be encouraged. As a guideline, sediment sinks / settling ponds and interceptor swales shall normally be used to intercept, and detain for settling all sheet flow and channel flow from disturbed areas of the development project, upstream from the location where such discharge enters either the natural stream system, another watercourse, or a storm drain system; or where it would enter upon undisturbed areas or the land of others.

- II.6.5 There should be sufficient topographic data, sufficient design grades on swales and basins and a sequence of operations to enable the contractor to provide for the facility without causing off-site siltation.
- II.6.6 At the time the facilities are constructed and prior to the mass grading operations, Developers shall contact the Town Engineer so that an inspection can be made in the field to assure that all siltation facilities are constructed prior to the actual mass grading.
- II.6.7 Direct discharge from de-watering pumps and surface runoff from the construction sites to storm sewers, culverts, streams, or ditches shall not be permitted. Intercept and conduct surface runoff and discharge from de-watering pumps to siltation ponds before discharge to natural drainage channels.
- II.6.8 Sediment sinks / settling ponds shall normally be proposed and constructed as temporary facilities separate and apart from the proposed permanent stormwater detention pond facility. If the developer and his / her engineer make a tentative judgment, after appropriate preliminary study, that a combined permanent stormwater detention pond and a temporary sediment sink are more cost-effective, both from the point of view of construction costs and minimized environmental damage, they may submit such a proposal for consideration. The decision of which method shall be used will, however, rest with the Town Engineer.
- II.6.9 In the event that there are areas within a development which are to be preserved or left in their natural state or forever wild and siltation facilities must be constructed, and the intent therefore shall be to protect these areas they shall be surrounded by orange safety fencing.
- II.6.10 No topsoil or subsoil shall be removed from the site unless approved by the Town Board.

II.7 FLOOD HAZARD PREVENTION

- II.7.1 Flood hazard prevention shall include the control of soil erosion of land surface and drainage channels and the prevention of inundation and excessive groundwater seepage by comprehensive site grading and the establishment of adequate elevations of buildings, building openings and roadway above the observed, anticipated, or computed water levels of storm sewers, streams, channels, flood plains, detention basins and swales.
- II.7.2 Particular attention shall be paid to development in the vicinity of creeks and their flood plains. No alteration of the existing characteristics of the areas shall take place without the specific approval of the Town as to the adequacy of the protective measures taken, if any, and the effects of such development on upstream and downstream reaches of the watercourse and adjacent properties.
- II.7.3 All development proposed within the special Flood Hazard Area as defined by the Federal Insurance Administration shall comply with the various regulations set forth by the Federal Insurance Administrator, when applicable.

II.8 DUST AND MUD CONTROL

The Developer shall take all necessary measures to control dust resulting from his construction operations and to prevent spillage of excavated material on public roads. See Section III.2.7 for specific requirements.

II.9 SANITARY SEWAGE FACILITIES

II.9.1 PUBLIC SEWER FACILITIES

- II.9.1.1 Sanitary sewers shall be provided wherever the proximity of existing sewers makes it possible. They shall be designed in accordance with the standards set forth by the New York State Department of Environmental Conservation, Town Engineer, and such other Agency as has jurisdiction over design, construction and/or final operation or maintenance. The Developer shall be responsible to secure the approval of the appropriate Agency to connect the new sanitary sewers to the Agency's existing sewers, prior to start of construction. Extend sanitary sewers to the limits of the project.

- II.9.1.2 Materials shall be as specified in Division III of this booklet.
- II.9.1.3 In designing sewer profiles, consideration shall be given to the relationship of house elevation to sewer elevation to assure the installation of laterals on at least a one percent (1.0%) grade (1/8 inch per foot) for 6" laterals and (2.0%) grade (1/4 inch per foot) for 4" laterals.
- II.9.1.4 Sanitary manhole spacing to be no greater than 300' maximum.
- II.9.1.5 The sanitary sewer profile shall be designed so that there is at least 0.1 of a foot drop within the manhole but not greater than 2 feet. If drop through manhole is 2' (feet) or greater there shall be an outside drop provided. See details for drop manhole design.
- II.9.1.6 All three-way manholes are to be 5' in diameter or greater depending on the size of the pipe.
- II.9.1.7 The invert of a three way manhole shall have a minimum radius equal to one-half (1/2) the diameter of the manhole. No "T" intersections will be permitted.
- II.9.1.8 All sanitary sewage facilities shall be subject to the approval of the Municipality during all stages of design and construction.
- II.9.2 **SANITARY SEPTIC SYSTEMS**
- II.9.2.1 Where sanitary sewers are not available or where the proposed development is too distant from existing facilities for public sewers to be provided economically, development along existing highways may be permitted on the basis of providing septic tanks and leach beds. Such facilities shall be designed in accordance with current policies and directives of the NYS DEC and NYS Health Dept.
- II.9.2.2 See submission requirements and special notes in section I.9.12.1.2.
- II.10 **SANITARY SEWER PUMP STATIONS**
Note: Insert after review and approval.
- II.11 **WATER SUPPLY**
- II.11.1 The Monroe County Water Authority has jurisdiction over all water mains, permits and appurtenances. Concurrent with the submission of the Preliminary Plan, the Developer shall submit a data sheet providing sufficient calculations relating to static and residual pressure, date of flow tests, recorded flow, description of existing water mains and a discussion on anticipated fire protection and domestic pressures and volumes within the development. Extend to limits of project. All property to be served by municipal water must be in a Water District. The District Extension Map and Description are presented to the Town Board for adoption.
- II.11.2 Water lines shall be used wherever the proximity of water lines makes it possible. The water lines and appurtenances shall be designed in accordance with the Standards set forth by the Monroe County Water Authority.
- II.11.3 These facilities shall be subject to the approval of the Town and MCWA during all stages of design and construction.
- II.11.4 The criterion of design will normally be that pipes shall be sized to obtain the required fire flow at the critical point in the development while satisfying the average daytime domestic draft, and in no case shall be less than ISO standards.
- II.11.5 Where public waterlines are installed, all such waterlines shall be located between the curb line and the property line within any street right-of-way.

- II.11.6 Where public water is not available, the Developer may be required to install fire suppression ponds or similar on-site storage to aid fire protection.
- II.11.7 When private wells are to be used, as well as individual sewage leach fields, the Applicant must submit to the Town soil data and detailed plans indicating how he intends to prevent pollution of the wells.
- II.12 ACCOMMODATIONS FOR HOUSE AND LOT STORM DRAINAGE
- II.12.1 Provisions shall be made for draining the surface of each lot by proper grading and the construction of swales, ditches or drains. These items shall receive the same careful design attention as the street drainage system.
- II.12.2 Where front lot setbacks exceed 150' and/or where natural drainage characteristics would be better utilized by draining away from the street, this requirement may be waived.
- II.12.3 Provisions shall be made for piping of roof and cellar drainage into the street drainage system. The developer and his engineer, however, must design and provide that cellar floors will be at an elevation higher than the pavement to permit the street drainage system to run fully surcharged without causing backup or flooding in the cellars. In lieu of this, the developer may request from the town, permission to drain the cellars with sump pumps and appropriate double check valves.
- II.12.4 Finished grade adjacent to building walls shall be a minimum of 15" higher than the centerline of pavement for standard development. In minor developments, where front setbacks exceed 150 feet and/or where natural drainage characteristics would be better utilized by draining away from the street, this requirement may be waived. Furnished information to be reviewed and approved by Town Engineer. In any case, provisions shall be made for positive drainage of each lot by designing a minimum grade of 2.0% away from the building to side-lot and back-lot swales, natural drainage channels, or drains.
- II.12.5 Show finished grade elevation on drawing, blocked out at the front. The intent of this is to maintain positive drainage away from the structure. Exceptions to this shall be reviewed and approved by the Town Engineer.
- II.12.6 In special conditions, where topography permits or dictates, cellar drainage may be conveyed to main drainage swales where it can be deposited if no nuisance will be caused or created to abutting or downstream property owners. In such instances the cellar floor shall be so designed as to be above the level of the project design flood to assure no backup or flooding of the cellar.
- II.12.7 No laundry, sanitary, or kitchen wastes shall be discharged to a storm drainage system. Further, no drain connections from garages or driveways shall be permitted to enter drainage swales where soap suds and detergents from car washing operations could cause a nuisance to abutting or downstream property owners.
- II.12.8 Storm drain laterals shall have outside clean-out. (See detail at end of Specifications).
- II.12.9 No cellar drainage, roof drainage, drain connections from garages, and/or any other stormwater shall be conveyed to sanitary sewer system.
- II.12.10 Dry wells for disposing roof drainage shall be used where storm sewers are not available and soil conditions are acceptable. The Developer shall size the facility using a minimum of a 10-year storm.
- II.12.11 Storm drains conveying drainage along side lot lines shall extend to the rear lot line or the main channel to which the drain discharging.
- II.12.12 No portion of drainage shall be directed across a leach field.

- II.12.13 Driveway culvert to be furnished and placed by the contractor of a size and type approved by the Highway Superintendent.
- II.12.14 Contractor shall provide for erosion control barriers during construction and for removal of the same after grading and seeding has been established or as determined by the Town Engineer.
- II.12.15 All lots shall be so graded and positive drainage provided, such that oncoming drainage from upland lots shall be conducted across the lower lots in a manner which will not cause a nuisance to the downstream property owner, nor in such a manner as to cause a safety hazard to structures or property. To insure proper lot drainage, the following shall be adhered to:
1. That lot grading be approved by the Town Engineer upon completion. It is the Developer's responsibility to contact the Town for inspection.
 2. That if the Developer wishes to modify the approved grading plan, the Town Engineer must approve all of the changes before actual changes in ground elevation are made.
 3. All municipal storm sewer manholes including catch basins and yard inlets will be raised to the approved grade to ensure proper drainage.
 4. Surface drainage from no more than three (3) consecutive lots in any direction may be collected in a yard drain and piped to the storm system.

II.13 CONDUIT DESIGN

- II.13.1 All design for pipelines for sanitary sewers and storm drains shall be based on the earth loading occurring at the transition width. Designers shall assume a class C bedding (load factor 1.5) and safety factor of 1.5 in their design calculations. (except for R.C.P. S.F. = 1.0). Specifications for construction shall stipulate a granular bedding (Class C) as indicated on page 212 of the WPCF Manual of Practice No. 1, "Design and Construction of Sanitary and Storm Sewers, 1969 Edition." The granular bedding shall be #1 and #2 (approximately a 50-50 mixture) crushed stone as specified in the NYS DOT specifications, Section 703-0201 "Crushed Stone." Also, unless substantiated by test results, the designer shall assume the following:

$$W = 120 \text{ lb. per cu. ft.}$$

$$KU = Ku' = 0.13 \text{ (curve D, pg 189 WPCF Manual)}$$

$$rsdP = 0.5 @ Ku = Ku' = 0.165 \text{ (pg 191, WPCF Manual)}$$

- II.13.2 Shaped trench bottoms will not be permitted.

II.14 EASEMENTS

- II.14.1 It shall be the responsibility of the Developer to furnish easements to the Town of Clarkson, as required, for the installation and permanent operation of storm sewers, sanitary sewers, water mains or access roads where required.
- II.14.2 Easements to be granted to the Town of Clarkson for any proposed development must be prepared and presented to the Planning Board Attorney prior to final approval of the project.
- II.14.3 These easements shall be prepared prior to the approval of the detailed plan and be so written as to be contingent upon the Town's approval of said Plan. Applicants bear the responsibility for preparation of the easement maps and assuring their transfer to the Town of Clarkson and recording in the County Clerk's Office.
- II.14.4 All access and utility easements granted to the Town must have an access to a dedicated street.

- II.14.5 The Town of Clarkson reserves the right to require easements for anticipated future utilities where in the opinion of the Town Board and/or the Town Engineer such easements are justified by the estimated rate of growth of the area in question.
- II.14.6 Easements across lots or centered on rear or side lot lines shall be provided for utilities where necessary and shall be at least 20 feet in width. Where multiple utilities are present, the easement may be changed to 30 feet. Easements along common property lines may be split evenly between lots. In all cases easement width shall 1) Be adequate to accommodate maintenance equipment in performing tasks and 2) Have access from a dedicated highway sufficient to permit passage of maintenance equipment.
- II.14.7 Where a development is traversed by a watercourse, drainageway, channel, or stream or contains a pond which crosses a property line, there shall be provided a storm water easement or drainage right-of-way conforming substantially with the line of such watercourse and of such width as will be adequate to preserve natural drainage and to accommodate the twenty-five year flood area of such watercourse. Access on easement from a dedicated highway sufficient to permit passage of maintenance equipment should be provided. Piping of the watercourse may be provided. In no case shall the easement be less than 20 feet in width.
- II.14.8 Stream easement width to accommodate drainage shall be determined by the Town Engineer, and may include provisions for pedestrian access, if required by the Planning Board.
- II.14.9 If a drainage easement along a stream is part of a conservation easement, both shall show on the plan.

II.15 UTILITIES

- II.15.1 All utilities shall be underground, including electric, telephone and cable TV. This regulation shall be enacted in accordance with the NYS Public Service Commission ruling (tariffs) for all public utilities. Utility companies shall obtain the necessary approvals and permits prior to starting construction
- II.15.2 The Planning Board reserves the option to modify or waive these requirements if appropriate, along with the easement dimensions.
- II.15.3 When road cuts are required for installation of utilities under existing dedicated streets, backfill shall be compacted to 95% compaction, and be approved by the Town Engineer prior to resurfacing. Alternative methods to compaction must be approved by the Town Engineer.

II.16 REQUIRED DRAWINGS

II.16.1 CONCEPT PLAN DATA

A rough scaled concept layout shall be drawn on paper at a standard scale of not more than two hundred (200) feet to the inch. It shall be clearly marked CONCEPT PLAN and shall show the following information:

- A. Name of the proposed development, the name and address of the applicant(s), and owners name if different than applicant.
- B. A clear written statement of the Applicant's intent.
- C. North arrow, scale and a general location map showing the relation of the proposed development to major roads and intersections in the area.
- D. All existing structures, natural and regulated areas such as wooded areas, flood plains and wetlands, streams and other significant features which are in the development and/or within two hundred (200) feet of the property.

- E. Contours shall also be indicated at intervals of not more than five (5) feet, along with spot elevations as shown on the Monroe County topographic base maps.
- F. The proposed pattern of lots, street layout, recreation areas, drainage systems, sewage disposal and water supply within the area to be developed.
- G. State the distance to the nearest public water service and sewage service if lots are designed with septic systems and well water.
- A. Show path of development storm water drainage to a bed and bank stream.
- I. Site distances and internal circulation flow diagrams.
- J. Indication of the zoning of the property and other legal restrictions of use.
- K. Names of professional engineer, architect, or surveyor responsible for the preparation of the Concept Layout.

II.16.2 PRELIMINARY AND FINAL SUBDIVISION PLANS

In preparing the detailed subdivision plans the Developer shall subdivide the project into four (4) major "sets" of plans as follows:

- Subdivision Plat Record Plan
- Subdivision Grading, Erosion Control & Drainage Plan
- Subdivision Utility & Street Plan
- Subdivision Landscaping Plan

Submission requirements for other types of developments shall be in accordance with applicable ordinances.

Specifically, the drawings shall include, but not be limited to, the following:

II.16.2.1 DRAWING SIZES AND DIMENSIONS

- A. Standard engineering drawings sizes shall be used to adequately present the plan dimensions of no smaller than 40 feet to the inch for one to five lot subdivisions, and building additions.
- B. Dimensions for large projects of over five lots, commercial, and industrial projects shall be no smaller than 50 feet to the inch.
- C. Large area maps, depicting drainage and flood plain areas may be shown at 200 feet to the inch.

II.16.2.2 PRELIMINARY AND FINAL SUBDIVISION PLAT / RECORD PLAN

Unless the County Clerk specifies otherwise, the Plat shall be 22" x 34" in size and shall be drawn at a minimum scale of 50' to 1" unless otherwise approved. Where more than one sheet is required to show the entire development, a key map showing all sections shall be provided. The following information shall be clearly shown:

- a. Title of the sheet, including name and address of the applicant, Owner and/or Developer and all required signatures. (Where Developer or owner is a corporation, a statement of corporate ownership and officers shall be submitted to the Planning Board, at the preliminary stage).
- b. Title/signature/revision blocks. Signature block shall include the following:

1. Town Engineer
 2. Town Clerk
 3. Planning Board Chairman
 4. Building Inspector
 5. Planning Board Attorney
 6. Highway Superintendent
- c. North point, graphic scale, and date.
 - d. The boundaries of the subdivision and information to show the location of the project in relation to surrounding property and streets, including names of owners and tax account numbers of adjacent land or names of adjacent development.
 - e. An actual field survey of the boundary lines of the tract, giving complete descriptive data by bearing and distances, made and certified by a licensed land surveyor. The corners of the tract shall also be indicated on the ground and marked by monuments as approved by the Town Engineer and shall be referenced and shown on the plan.
 - f. In whatever manner that is practical, the subdivision boundary shall be referenced from two directions to establish USC&GS monuments or NYS Plane Coordinate monuments. In the event that such monuments have been obliterated, the subdivision boundary shall be referenced to the nearest highway intersections or at least two previously established monuments of subdivisions of public lands. Any combination of types of reference ties may be accepted which would fulfill the requirement of exact measurements from the subdivision boundary to reference points previously established.
 - g. The lines and dimensions of existing and proposed streets and aisles within the development and the lines of existing or approved streets on adjoining properties.
 - h. The proposed and existing buildings, setback lines and dimensions, front, side and rear as defined by the Code.
 - i. The names of existing and proposed streets.
 - j. The lines and dimensions of proposed lots, with dimensions and bearings or angles, which shall be numbered and shall have their area in square feet indicated.
 - k. The lines and dimensions of driveways, streets, recreation and green areas.
 - l. The lines and purposes of existing and proposed easements immediately adjoining and within the subdivision.
 - m. The lines and dimensions of all property which is offered, or to be offered, for dedication for public use, with the purpose indicated thereon, and of all property that is proposed to be reserved by deed covenant for the common use of the property owners.
 - n. The location of monuments to be placed within the subdivision.
 - o. The locations of any municipal and zoning boundary lines within the property.
 - p. Statement as to the zoning of the property and legal restrictions on use.
 - q. Compliance of the proposed lots and structures with zoning requirements. If any do not comply but are covered by zoning variances, the statement should include reference to such variance(s).

- r. Certification by a licensed professional engineer and a licensed land surveyor as evidence of professional responsibility for the preparation of the Plat and a place for the liber and page where filed.

II.16.2.3 SUBDIVISION GRADING AND DRAINAGE PLAN

This plan shall be on a separate sheet of the same size and scale as the Plat and provide the following information.

- a. Contours of existing grade at intervals of not more than 1', except in instances of a steep grade of greater than 6%, where 2' contours are acceptable. Intervals less than 1' may be required depending on the character of the topography. Contour to extend a minimum of 200' beyond property limits.
- b. Location of all existing and proposed buildings, roads, driveways, additions, leach fields, and wells.
- c. House elevation shall show pad elevation (finished grade), minimum first floor elevation and minimum basement elevation. Enclose the pad elevation within a block located at each house corner.
- d. Number of each lot.
- e. Final grades and/or contours at intervals of not more than 2'. Smaller intervals may be required depending on topography.
- f. Location of all swales, creeks, ponds, drainage outfall, etc.
- g. All grades shall be established from USC & GS datum.
- h. Location and means of controlling erosion and sediment buildup within the project limits, with standard details.
- i. Slope stabilization details.
- j. Flood hazard prevention details.
- k. Storm water detention basins, retention basins, and ground recharge facilities.
- l. Certification by a licensed professional land surveyor of the finished grades after completion of grading.
- m. A Drainage Report shall be included detailing profiles, typical and special cross sections of the proposed stormwater drainage facilities and copies of computations. It shall include the following information:
 - i. Report
 - Final Design Data and copies of computations used as a basis for the design capacities and performance of drainage facilities.
 - Detention pond sizing calculations.
 - Outlet control design calculations.
 - Stage-storage-discharge information for the pond and outlet structure.
 - Pond routing calculations for the design storm and lesser storms.
 - Emergency spillway sizing calculations.

- Undeveloped and developed drainage area maps with the path used for time of concentration clearly delineated.
- Additional information as required by the Town Engineer, or as specified for a pollution prevention plan prepared according to SPDES General Permit.

ii. Plans

- Plan, profiles, and typical and special cross sections of proposed stormwater drainage facilities.
- Proposed grading of pond.
- Path of drainage from site to a bed and bank stream.
- Details of pond, outlet structure, and spillway with all critical elevations labeled.
- A section through the pond with berm side slopes, pipes.

II.16.2.4 SUBDIVISION UTILITY AND STREET PLAN

This plan shall be on a separate sheet of the same size and scale as the Plat and provide the following details.

- a. Complete plans and profiles of all proposed roads, sanitary and storm sewers, including:
- Inverts, grades, stationing and offset, original and finished ground profiles above these sewers, elevations of cellars of proposed buildings, top of manhole grades, and spacing between manholes.
 - Elevations, stationing and offset of storm water inlets
 - Road profile with stationing, existing and proposed elevations, and vertical curve data.
 - Type, material and class of pipe.
 - Type, material and class of fill/bedding materials.
- b. Location and details of all other facilities, including water mains, gas mains, telephone & electric.
- c. Location of all existing utilities in and adjacent to the site to be developed.
- d. A statement as to:
- The pressure & flow available in existing water mains.
 - The proposed number of units and anticipated sanitary sewage flow.
 - The available storm water facilities downstream of this project.
- e. If the proposed subdivision is not to be served by a public sewer system, the following information shall be provided at the discretion of the Planning Board.
- Percolation test data to include:
 - Date of test.
 - Percolation rate.
 - Location of test hole(s).
 - Name of person who conducted the test.
 - Name of Monroe County Health Department witness.

- (2) Deep hole test data to include:
 - a. Date of test.
 - b. Location of test hole(s).
 - c. Type of soil and thickness of each layer
 - d. Level of mineral deposits. If no mineral deposits are encountered, state "none."
 - e. Level of groundwater. If no groundwater is encountered, state "none."
 - f. Level of solid rock. If solid rock is not encountered, state "none."
 - g. Name of Monroe County Health Department witness.
- f. Details of erosion and slope stabilization measures where applicable.
- g. Any other details pertinent to site construction.

II.16.2.5 Other data required by the Municipal Code shall be included as part of the Subdivision Final Plans. The initial plans shall be modified to reflect As-Built conditions.

END OF DIVISION II

STANDARDS FOR ROAD/STREET DESIGN

	Typical Public/Private Roads	Rural Road	Collector/Industrial Road ⁴	Private Drive ⁵
Min. width of R.O.W.	60'	60-80'	70'	60'
Min. width of pavement	20' (10' travel lanes)	20-32' (10'-12" travel lanes 0-4' shoulders)	24' (collector) 26' (industrial)	14' (asphalt optional-except within the ROW)
Min. radius of horizontal curves	150'	150-300'	300	----
Min. length of vertical curves	100', but in no case less than 20' for each 1% difference in grade	200', but in no case less than 30' for each 1% difference in grade	200', but in no case less than 30' for each 1% difference in grade	----
Min. length of tangents between curves	100'	200'	200'	----
Max. Grade / (Min. Grade)	7% (0.5%)	6% (0.5%)	6% (0.5%)	8% (0.5%)
Minimum sight distance	200'	300'	300'	600'

1. Where strict imposition of these standards could result in excessive demands upon the subdivider, they must be modified by the Planning Board, recommendation of the Town Engineer, and necessary changes to insure safe vehicular operation. Standards of the American Association of State Highway Officials shall govern determination of safe operating speeds and signing requirements.
2. Radii of horizontal curves shall be measured to the centerline of the road/street.
3. Sight distance shall be measured between points along the centerline of the road/street on a straight line, entirely within the right-of-way, and clear of obstructions (i.e. trees, shrubs, signs, etc.). One point shall be 6 inches (0.5 feet) above the surface of the road/street and the other point is 3.75 feet above the road/street surface.
4. Collector roads/street which do not service an area containing a minimum of 150 dwelling units, under ultimate development, may be considered as a typical road/street for purpose of design. The service area of the collector road/street includes those dwelling units on typical roads/streets which feed into the collector.
5. A private drive is defined as a road which services 1-4 dwelling units. This road section shall be constructed to the standards of the Typical Road Section. Any modifications shall be approved by the Planning Board and the Town Engineer.

FIGURE — 1

RAINFALL INTENSITY CURVES for MONROE COUNTY, NEW YORK

STORM DURATIONS — 5 MINUTES TO 120 MINUTES

RETURN PERIODS — 2 YEARS TO 100 YEARS

MONROE COUNTY PLANNING COUNCIL

REF: WEATHER BUREAU, U.S. DEPT. OF COMMERCE
BY METHOD OF EXTREME VALUES AFTER
GUMBEL (ANNUAL SERIES)

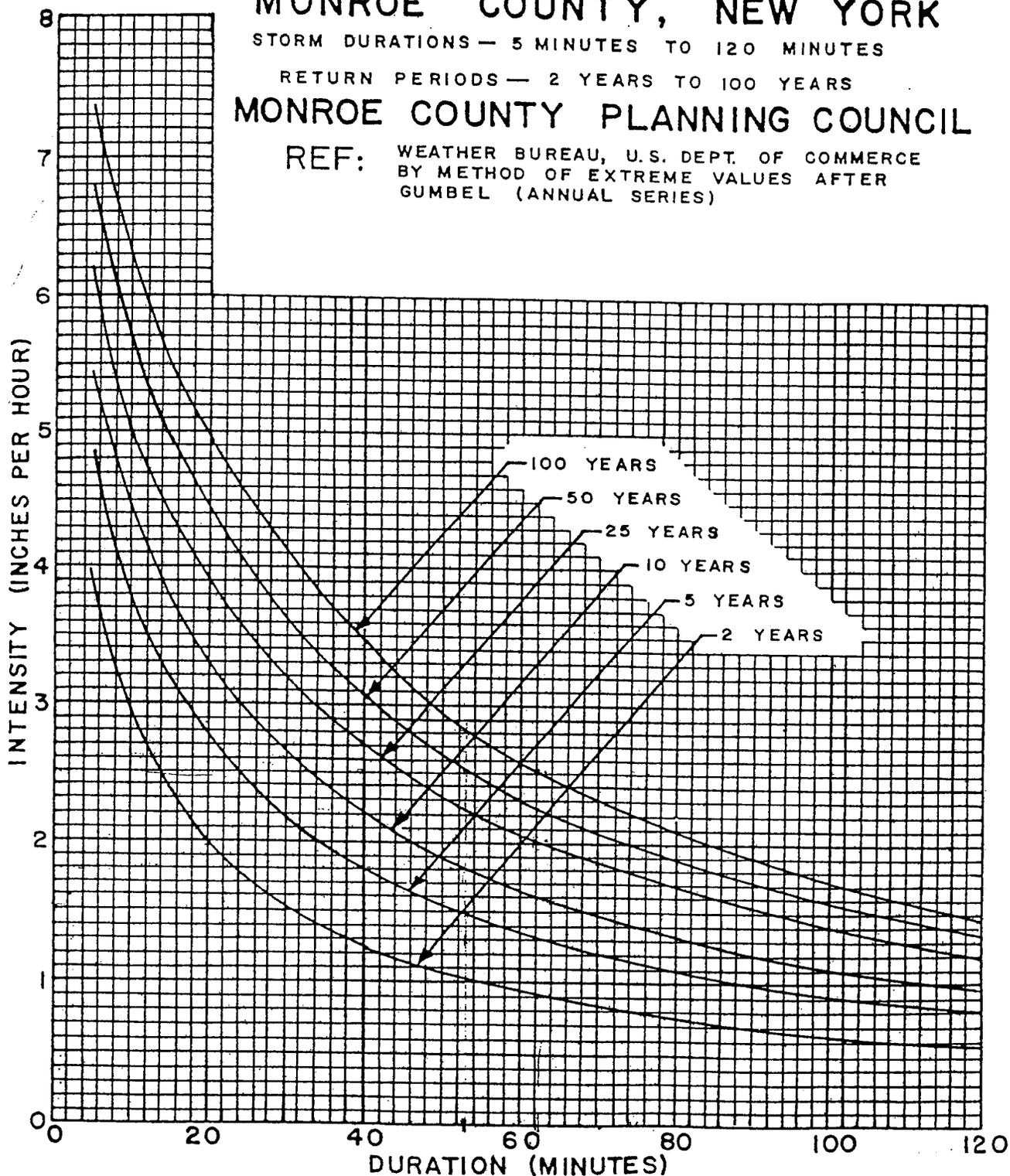


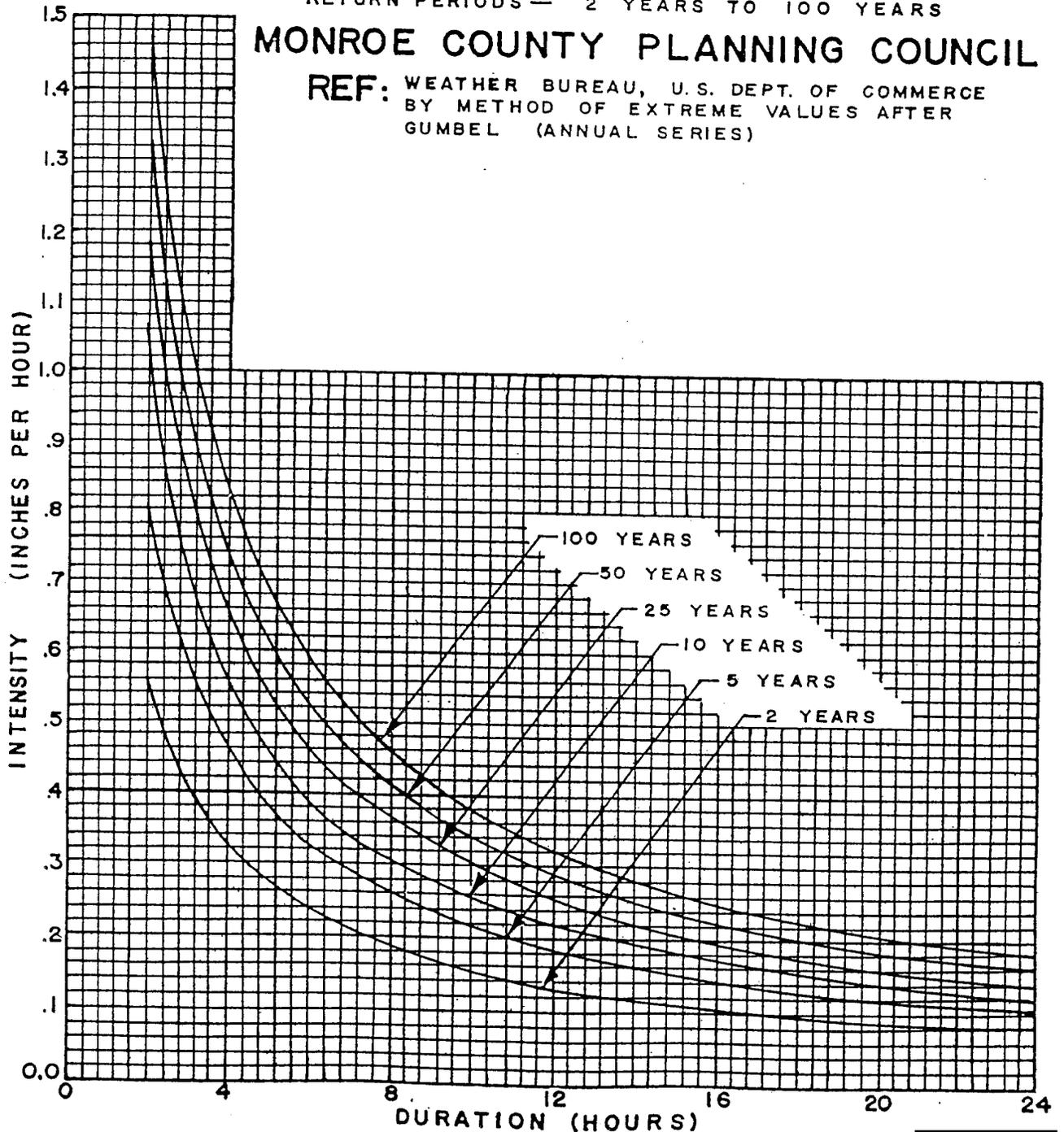
FIGURE — 2

RAINFALL INTENSITY CURVES
for
MONROE COUNTY, NEW YORK

STORM DURATIONS — 2 HOURS TO 24 HOURS
RETURN PERIODS — 2 YEARS TO 100 YEARS

MONROE COUNTY PLANNING COUNCIL

REF: WEATHER BUREAU, U.S. DEPT. OF COMMERCE
BY METHOD OF EXTREME VALUES AFTER
GUMBEL (ANNUAL SERIES)



DIVISION III
CONSTRUCTION SPECIFICATIONS

III.1 GENERAL

The purpose of these specifications is to assure that utilities and streets, which are to be turned over to the Town of Clarkson for maintenance, shall be so constructed as to cause a minimum of maintenance and a maximum of benefit to the Town. They shall, therefore, be strictly adhered to. Failure of the Developer, his agents, employees, or subcontractors to comply shall be considered sufficient cause by the Town to not accept the utilities and streets or any portion thereof for dedication until all work is satisfactory.

III.1.2 INSPECTION

III.1.2.1 All construction shall at all times be subject to inspection by the Town Board, their agents, representatives, and authorized employees. Such inspectors may stop the work when the Developer or his contractor has no competent foreman in charge of the work, or when the work or materials does not meet these specifications, or when circumstances are such that continuance of that particular phase of the work would not be in the best interests of the Town.

III.1.2.2 Costs incurred for inspection services for trading, drainage and dedicated and Town related facilities shall be borne by the Developer, and sufficient funds shall be part of the letter of credit.

III.1.2.3 Failure of the Town, the Town Engineer, their agents, employees or representatives, to reject improper work or inferior material during construction shall not be construed as, nor imply, final acceptance. If subsequent inspection, operation, or circumstances cause defects to become evident, the Developer shall make, or cause to be made, such cuts or other exposures of the work as may be required to determine cause of such defects. Such defects shall then be corrected to the satisfaction of the Town at the expense of the Developer.

III.1.3 RESPONSIBILITY FOR WORK

III.1.3.1 The Developer is solely responsible to the Town for proper construction of utilities. It will normally be of benefit to both the Developer and the Town to have Town representatives deal directly with the Developer's contractors where such are employed, both as a matter of expediency and to avoid needless liaison. However, such action shall not be construed as relieving the Developer of his prime responsibility to the Town.

III.1.4 Safeguarding Existing Utilities, Other Property and Persons.

III.1.4.1 The Developer, or his Contractor where work and responsibility has been so delegated, shall comply with N.Y.S. Industrial Code, Rule #53, cited as 12 NYCRR 53, relating to "Construction, Excavation, and Demolition Operations at or Near Underground Facilities." It shall be the responsibility of the Developer, or his contractor, to notify the proper utility owner and request stake-out of existing underground utilities well in advance of start of excavation, or performing any work in the vicinity of existing utilities.

III.1.4.2 Care shall be taken to protect persons and property, as well as avoid potentially hazardous conditions or nuisances. The Developer and his contractor shall comply with all stipulations of the Occupational Safety and Health Act of 1970 and all revisions and amendments thereto.

III.1.5 WARRANTY OF WORK AND MATERIALS

III.1.5.1 The Developer shall warrant all work performed and materials furnished against defect, failure, inadequacy, or breakage for a period of one year from the date of final acceptance of the work by the Town Board. Money for warranty shall be deposited with the Town prior to the acceptance of the work. In the event of such defect, failure, inadequacy, or breakage during said warranty period, the Developer shall make the necessary repairs or replacements within ten calendar days of the mailing of written notice by the Town Board or their Engineer. Amount of Warranty Bond required by the Town shall be 10% of the original letter of credit but amount shall be for an amount less than \$5,000.

III.1.5.2 Should the Developer fail, neglect, or refuse to so comply within the specified time, the Town shall make the necessary repairs or replacements, for the account of the Developer, and deduct all costs therefore from the moneys or securities being held by the Town to ensure compliance during the warranty period.

III.1.6 STAKE-OUT

III.1.6.1 All construction work shall be properly staked-out by competent engineering personnel in accordance with the approved plan. Such stake-out shall be in sufficient detail to ensure correct elevations of tops of structures, proper crowns, slopes, and alignments. Minimum road stake-out shall include elevations at 50 ft. stations, all high and low points, and all critical points for laying out horizontal curves. Stakeout will be provided on both sides of the roadway.

III.1.6.2 Where pavement base courses or sub-grades are left unfinished during the winter, they shall be re-staked in the spring and regraded accordingly.

III.1.7 Protection of Incomplete Works

Where work is left incomplete, because of weather or other reasons, it shall be protected. Roadbeds shall be left well-drained, sanitary sewers (and storm drains where applicable) shall be temporarily plugged and so protected that surface water, mud, silt, and debris cannot enter. Sewer laterals, water services, and valves shall be suitably marked with stakes, and shall be protected.

III.1.8 RECORD MAPS (AS-BUILT)

III.1.8.1 Prior to acceptance of the utilities by the Town of Clarkson, the Developer shall submit an "As-Built" plan. This plan shall be drawn to scale and shall indicate the following:

- A. Manhole top of covers and inverts, length of pipes between manholes, grades and description of pipes and appurtenances.
- B. Location of wyes, with distance on profile to closest manhole cover.
- C. Easements with filing Liber and Page
- D. Survey monuments and coordinates.
- E. Three ties to all sanitary and storm cleanouts, water corporations and curb boxes and water valves.
- F. Water main, material type and size.
- G. Hydrant locations and top of operating hut elevation.
- H. Finish grading of the site.
- I. Centerline of road profile.

III.1.8.2 As-built plans shall be prepared and certified by a Licensed Land Surveyor.

III.1.8.3 As-Built plans shall be submitted to the Town. The subdivider shall furnish one reproducible mylar, and two prints of each sheet to the Highway Department, one print to the Town Engineer and one set to the Building Inspector.

III.1.9 FULL COMPLETION OF WORK AND CLEANUP

III.1.9.1 Prior to acceptance of the utilities by the Town, the Developer shall fully complete the work and leave the site in a neat and orderly condition. Slopes, drainage ways and other graded areas shall be fully stabilized by planting grass or other vegetation or by such means acceptable to the Town.

III.1.9.2 Grading between adjacent lots as well as between lots and the street area shall have a continuity without abrupt changes in elevation or unfinished ground surface.

III.1.9.3 The road base should not be used by the contractor for material deliveries or as a construction haul road. In the event the developer has to use the subdivision road for material delivery, the developer will be responsible for any road damage and/or stone base contamination. Any contaminated stone will, at the Developer's expense, be removed from the road and replaced with clean stone. Many times this damage is not discovered, but the road starts to fail years before it should.

III.1.9.4 All areas shall be so graded that run-off from higher elevation lots does not create a nuisance on lower elevation lots. To this extent lots shall normally be graded to drain front-and-back, with street gutters taking the front drainage, and shallow swales taking the back-lot-line drainage.

III.1.9.5 Valve boxes, manhole covers and curb shut-off boxes shall be left flush with the surface.

III.1.10 PERMITS

The Developer shall obtain from the proper Authorities all necessary permits, and pay for all fees, for building or blasting; or construction work within public streets.

III.2 SEDIMENT AND DUST CONTROL

III.2.1 GENERAL

Sediment Control Facilities are to be constructed as required by the Town and NYSDEC. These facilities shall conform with "Guidelines for Urban Erosion and Sedimentation Control", published by the NYS Chapter of the Soil and Water Conservation Society. The Town reserves the right to modify or order periodic maintenance of soil erosion control measures.

III.2.2 SEQUENCE OF WORK

The construction of sediment interceptor, entrapment, and settling facilities shall be undertaken, completed, and approved prior to any other work of a construction nature taking place on the project. No other stripping of vegetation or other ground cover, earth movement, trenching or excavation, shall be commenced until, in the judgment of the Town the sediment control facilities are complete, adequate and operable.

III.2.3 SCOPE OF FACILITIES

The facilities shall consist of sediment interceptor swales, sediment sinks/settling ponds and ancillary features required by the design and subdivision plans approval process, together with such directives as the Town may, from time to time, issue in order to improve performance or to adjust for changes in the Developer's construction sequence or procedures, or to correct for partial or total failure or loss of efficiency of the facilities.

III.2.4 PERFORMANCE

III.2.4.1 It is the intention to retain on-site all products of erosion caused by disturbance and/or removal of vegetation or other ground cover. The basic concept is to utilize interceptor swales at the base, or downhill limit, of disturbed areas, draining to temporary sediment sinks/settling basins, to which location the storm drain systems shall also temporarily drain until such time as the land development project has been sufficiently restored with ground cover as to prevent soil erosion.

III.2.4.2 Further, the intent is to retain gross soil particles on-site, and to minimize, to the standard permitted by the state-of-the-art, the passage of colloidal particles into the natural waters of the Town. Because of the wide range of partially or totally uncontrollable variables during the land development (the worst return-frequency storm, the area of stripped ground cover, the presence or absence of completed storm drain systems, the amount of sediment stored in the sink at any given time, the variation in soil texture, or the presence of saturated or frozen ground, for example) each sediment sink/entrapment facility shall include a filter fabric/ crushed stone barrier to protect the discharge.

III.2.4.3 Performance shall be measured by the ability of the facility to pass all runoff through the filter fabric at all times during construction.

III.2.4.4 It is the responsibility of the Developer to adequately maintain the filtering integrity of the facility and to repair or replace it when required.

III.2.4.5 Degenerating efficiency as evidenced by holes, rips, or tears in the fabric, or failure of the settling pond to drain after a storm because of filter fabric blinding, or the presence of highly turbid water downstream of the fabric, shall be considered cause for repair and or replacement. The sediment sink shall be routinely mucked-out by the contractor to assure detention, settling and storage capability throughout the project is maintained.

III.2.5 ANCILLARY SEDIMENT CONTROL FEATURES

III.2.5.1 In order to extend the longevity of the sediment sink facility, thereby minimizing the maintenance costs of filter fabric replacement and interim excavation of the sediment sink, the Town encourages the use of ancillary sediment control features throughout the land development project. The following methods are recommended for sediment and erosion control during construction:

- a. The area of stripped ground cover should be kept to a bear minimum at any one time.
- b. Provide hydraulically placed mulch of the "mat" type on raw areas that must be exposed for extended periods.
- c. Place firmly anchored and embedded straw bales or filter fabric barriers in areas of concentrated run-off, such as at culvert and catch basin inlets, and in swales, in an effort to reduce soil transport reaching the settling pond.
- d. Wherever possible, leave temporary buffer strips of original ground cover vegetation in an effort to retard soil migration.
- e. Use jute mesh along swales or other areas where runoff rates are of sufficient quantity or velocity as to cause additional erosion.
- f. Restore ground surface protection as soon as possible by utilizing hydraulically-placed mulch of the "mat" type.

III.2.6 TERMINATION OF FACILITIES

III.2.6.1 The judgment as to the appropriate time of termination of sediment and erosion facilities rests with the Town and NYSDEC and their decision shall be final and binding.

III.2.6.2 The primary performance criteria used in making the determination will be the quality of the runoff from the development entering the sediment settling facility. When, in the judgment of the Town and NYSDEC, the ground cover in the land development project has been sufficiently restored such that runoff through the swales and storm drain system is relatively soil-free, they may grant permission to divert flow through the permanent storm water detention pond or such other drainage systems as are described on the approved plans.

III.2.6.3 The Developer and his Engineer are reminded that dependence on siltation facilities from one construction season to the next greatly increases the statistical possibility of storms of greater intensity, resulting in greater runoff and erosion with subsequent possible overtaxing or failure of the facility. Therefore, expeditious restoration of ground cover, or temporary protection of soil surface is strongly encouraged. Also, sediment ponds should be mucked out to maintain the required storage volume.

III.2.7 Dust and Mud Control

III.2.7.1 Recognizing that removal of vegetation, dry conditions, and periodic high winds cause nuisance dust movement the Developer shall take such steps as are necessary to avoid nuisance and damage to abutting properties and occupants. Such steps may include, but not be limited to: application of water, calcium chloride and/or magnesium chloride, mulching, and re-vegetating disturbed areas.

III.2.7.2 Further, the Developer is responsible for minimizing "tracking" of mud onto existing roads. A stabilized construction entrance shall be constructed. Roads shall be scraped and broomed clear of mud at the end of each working day as required.

III.2.7.3 The Town reserves the right to include in the Letter of Credit an allowance to cover the estimated cost of such dust and mud control.

III.3 CONSTRUCTION OF ROADS AND STREETS

III.3.1 MATERIALS - GENERAL REQUIREMENTS

All materials used in the work shall meet the requirements as specified, unless the same are altered by specific requirements under any itemized specification or by modifying notes shown upon the plans. In the absence of any specific reference to specifications, the material to be incorporated into any project, and the work to be performed are intended to conform to the NYS DOT Standard Specifications, latest revision, as determined by the Municipal Engineer.

III.3.2 BASIS OF CONSTRUCTION

III.3.2.1 In order to assure the structural integrity of the sub-grade and "crusher run" stone foundation course the following general rules shall apply:

- a. Underground utilities shall be constructed outside the pavement area.
- b. Where crossover trenches are required for utility services (including gas mains, electric, etc.), the trenches shall be backfilled with the excavated material, if acceptable and approved by the Town, or #2 crusher run. Material shall be compacted in 6" layers with vibrating tamping equipment to 95% modified proctor.

(Developers note that this includes all cross-overs including gas mains and other utilities and services).

- c. After properly shaping and obtaining approval of the subgrade, the crusher run foundation course may be placed. The entire foundation course - out to out - must be vibra-tamped with a 10 ton roller, in 6" lifts to 95% modified proctor.
- d. Foundation courses for permanent roads must not be used for access roads in wet weather, or at such times when the sub-grade could become "pumped" into the foundation course, since this, of course, is one of the main contributing factors to the "alligatoring" type of failure which is seen so frequently in subdivision streets.
- e. Where pavements must be placed in an embankment condition the entire height of embankment must be constructed with the use of standard and appropriate compaction equipment. This equipment shall consist of sheepsfoot rollers, vibratory roller or similar equipment. Entire embankment area shall be compacted in " lifts to 95% modified proctor density. If required by the Town Building Inspector the Developer shall provide results of certified compaction tests undertaken by a competent soils testing laboratory.
- f. All roads, whether dedicated or private, shall set over the winter months prior to the final application of top asphalt material. The top material may be installed in the spring of the following year or at the approval of Town.

III.3.3 ROADWAY EXCAVATION

Material from stripping of sod and topsoil shall be stored for later use, or placed in the embankment beyond the pavement limits as directed by the Town Engineer. All material from clearing and grubbing, together with stumps, brush, trees, and other rubbish shall be disposed of in a manner satisfactory to the Town of Clarkson.

III.3.4 PREPARING ROAD SUBGRADE

III.3.4.1 WORK

The Developer and/or his contractor shall excavate for the base, pavement and gutters to the designed subgrade elevation and 6" wider on each side than the designed pavement and gutter width as shown on the "Typical Road Section" and as indicated in the following specifications.

III.3.4.2 METHOD

The subgrade shall be excavated or "boxed" following the depth and alignment of the stakes established by the Developer's Licensed Land Surveyor or Engineer for this purpose. These stakes shall be at intervals of not more than 50' and at 25' in areas on grades of less than 0.5%.

After being excavated to the proper depth the subgrade shall be graded and crowned, allowing for extra 3' x 8" wedge excavation (filled with #1 & #2 stone) as shown on "Typical Road Section", and rolled thoroughly with a 10-ton roller or vibratory roller capable of producing a minimum dynamic vibration force of 27,000 lbs. Any unsuitable material found below subgrade shall be removed and replaced by approved #2 crusher run stone and compacted in 6" lifts. If the fine grade becomes rutted, it shall be regraded and rolled before the base is placed.

No base shall be placed over unstable trenches or soft spots. If this condition should arise, the soil should be removed and filled with crusher run. The Developer and/or his contractor shall be responsible for any settling in finished pavement.

III.3.5 ROAD BASE

III.3.5.1 WORK

A base of #1 and #2 Crusher Run Stone Dolomite Limestone shall be furnished, placed and rolled. The remaining courses shall be placed in 6" compacted lifts as shown on the "Typical Standard Road Section" and as further described in the following specifications.

III.3.5.2 MATERIAL

The materials shall conform to a "No. 1 and No.2 Crushed Stone and No.2 Crusher Run" dolomite limestone. (#3 Stone & Smaller)

III.3.5.3 METHOD

The base shall be placed on a graded, crowned and compacted subgrade, free of ruts and disturbed earth as follows:

- a. After proper rolling and grading of the subgrade the 3' x 8" wedge is to be lined with geotextile fabric and filled with No. 1 and No. 2 evenly blended crushed stone.
- b. The first lift of six inches (6") shall be placed and graded, maintaining the specified crown and rolled thoroughly with a vibratory compactor capable of producing a minimum dynamic vibration force of 27,000 lbs, using #2 crusher run stone.
- c. The last lift of six inches (6") shall be placed and graded to conform to the lines and grades as shown on the "Typical Road Section". All depressions and/or "boney" areas shall be brought to grade and/or choked with #00's and #1's crushed dolomite limestone. The material shall then be rolled thoroughly from the gutter to the centerline.
- d. Special care should be given during this operation not to harm the concrete gutters; i.e., scraping with grader blade or hitting with roller wheels. Special attention should also be given to obtaining good compaction next to the gutter.

III.3.6 CONSTRUCTION OF CONCRETE GUTTERS

III.3.6.1 WORK

The Developer and/or his contractor shall furnish and place Portland cement concrete gutters as shown on the plans and in accordance with the thickness and cross section as shown on the "Typical Road Section" and as stated in the following specifications.

III.3.6.2 MATERIAL

The material shall conform to the chart provided below. The concrete shall have a minimum compression strength of 4000 psi after 28 days, using a six (6) bag mix with 6% ± air entrained cement.

<u>MIX ID:</u>	<u>400FL</u>	<u>410FL</u>
Strength @ 28 days	4000 psi	4000 psi
Cement (lbs/cy)	480 lbs	480 lbs
Flyash (lbs/cy)	100 lbs	100 lbs
Fine Aggregate (lbs/cy)	1375 lbs	1375 lbs
Coarse Agg, #1 Stone (lbs/cy)	1640 lbs	820 lbs
Coarse Agg, #2 Stone (lbs/cy)	0 lbs	820 lbs
Air Entraining (oz/cy)	5.8 ozs	5.8 ozs
Water Reducer (oz/cy)	20.3 ozs	20.3 ozs
Water (gal/cy)	32.0 gal	32.0 gal
Water/Cement Ratio	0.46	0.46
Designed Slump	3" +/- 1"	3" +/- 1"
Designed Air Content	5% - 7%	5% - 7%

III.3.6.3 METHOD

The concrete gutters shall be constructed of the shape shown on the "Typical Road Section" and shall conform to the lines and grades shown on the plans and as approved by the Town.

Standard 6" steel forms shall be used and set to the grade and alignment by stakes established by the Developer's Engineer for this purpose. These stakes shall be set at intervals of not more than 50' and 25' in flat areas on grades of less than 0.8%. The base that these forms are set upon shall be graded to obtain a full 6" of concrete particularly under the invert. This base material between forms shall be compacted by mechanical means preferably a vibra-tamper. These forms shall be oiled before the pouring of concrete.

Expansion joints shall be installed every 50' with fracture (or dummy) joints every 10'. An expansion joint shall be installed at the end of a day's work or wherever the pouring of concrete is stopped for any reason. (The intent of this last clause is to prevent the disturbance of concrete which has reached its initial set). Expansion joints shall be constructed of 1/2" pre-molded joint material.

To ensure positive flow the gutter shall be screeded longitudinally with a suitable straight edge. The screed shall be worked laterally; i.e., parallel with the centerline of the gutter from the invert of the gutter to the outer edges. This process shall be done at the appropriate time during the setting of the concrete. When

gutters are installed by this "hand method," special attention should be given to the "spalling" of the concrete along the sides of the forms.

The gutter may also be installed by use of an approved gutter machine (such as a Dotmar Gutter Machine) using the proper screed to form the invert shown on "Typical Road Section", and equipped with a Vibrator attachment.

At the appropriate time, the concrete shall be broomed lightly with a fine-bristled broom and edged with a proper metal edging tool. This brooming is to fill small voids thus making it unnecessary to do an excessive amount of floating and troweling which brings too much water to the surface causing spalling of the finished concrete in the future.

The forms shall not be removed until the concrete is sufficiently "set" to prevent chipping of the edges. The gutter shall be backfilled as soon as possible to prevent undermining of the gutter in case of precipitation. The gutters shall be protected from traffic for a sufficient length of time to avoid damage to them.

III.3.6.4 COLD WEATHER CONCRETING

Concrete gutters shall not be installed while there is frost in the ground. Gutters installed in the cold weather shall be suitably covered by straw, hay or other means to prevent freezing.

III.3.6.5 WET WEATHER CONCRETING

Concrete gutters shall not be installed where there is water lying between the forms or where the crushed stone base is soft from rain. Gutters installed (unavoidably) during a rainstorm shall be covered by a waterproof material immediately.

III.3.6.6 CURING

The concrete gutter shall be cured by spraying with "Accure" manufactured by the Allerton Chemical Company, "Polyclear" manufactured by the UPCO Company, or an approved equal. The spray shall be applied to the gutter at the coverage rate as specified by the manufacturer.

III.3.7 BITUMINOUS CONCRETE PAVEMENT

III.3.7.1 WORK

A two-course bituminous concrete pavement shall be laid to conform to the required thickness and cross section as shown on the plan and on the "Typical Road Section" and as further described in the following specifications.

III.3.7.2 MATERIAL

The material shall conform to the NYS DOT, Standard Specifications for Construction and Materials. The Municipal Engineer shall be provided in writing, the source of the material and provide a written description of the material to be used including size and percentage of the aggregate and asphalt. The Engineer reserves the right to modify the percentages of the aggregates to be used.

III.3.7.3 METHOD

Before starting the laying of the asphalt pavement the base shall be graded and compacted between the concrete gutters according to the plan. No manhole in pavement.

The asphalt shall be applied in two (2) courses consisting of a binder course and top course, compacted to the required thickness. The pavement shall be laid by an approved self-propelled, asphalt spreader manned by competent operators. The top course shall be laid in the year following the installation of the binder

surfacing. (Binder shall be through a freeze-thaw cycle prior to topping, and shall be thoroughly broomed and cleaned prior to placing of the top course). Prior to placement of the top course of asphalt the entire road shall be treated with an asphaltic tack coat.

Each course will be compacted by rolling with a 10-12 ton vibratory tandem roller at the appropriate time by a competent operator.

All raking shall be done by skilled help to maintain a smooth and uniform finish at intersections, curves and around manholes, and valve boxes.

Before applying the top course any irregularities found in the binder course shall be eliminated. At no time will "cold patch" or winter mix be used for any purpose.

Protection of new pavement shall be provided until properly set. This protection is necessary on subdivisions where the traffic is mostly by cars starting and stopping or by heavy trucks.

The finished pavement shall be level or slightly above (maximum 1/4") the concrete gutters, however, at no time shall it be below.

III.3.8 MAINTENANCE OF ROADWAY

The Developer shall be responsible for maintaining & protecting the roadway and temporary cul-de-sac and/or turn around during the warranty period. If subsequent subdivision sections are built utilizing the roadway for access and/or haul road during construction, the Developer shall be responsible for special maintenance provisions. These provisions could be placing or replacing topping, periodic cleaning and flushing of the road surface and repair of any structural damage. The Developer shall submit a schedule of his proposed "road maintenance program" to the Town indicating how the roadway will be maintained, a timetable for the proposed maintenance and an estimate of cost. This schedule shall be reviewed and approved by the Town and shall become part of the project work. The approved estimated amount for maintenance shall be included in the letter of credit.

III.3.9 TEMPORARY CUL-DE-SAC OR TURN-AROUNDS

In areas where a temporary cul-de-sac or turnaround is proposed, the Developer shall provide sufficient details on the plan showing the road section, dimensions of the roadway and the materials proposed. The cul-de-sac or turn-around shall comply with materials shown on the Typical Road Section, except topping could be omitted. The Developer shall provide cost in the letter of credit to cover the cost of the proposed temporary construction.

III.3.10 PRIVATE ROADS & DRIVES

III.3.10.1 CONSTRUCTION SPECIFICATIONS

The minimum width of the traveled way for two to four lots is to be 16'.

- a. Road subgrade (native earth beneath road base) to be shaped to a crown and compacted, to prevent ground water from becoming trapped in the road base.

Road base to consist of a minimum of 9" of crusher run meeting NYS DOT Item 304, thoroughly compacted in two lifts.

A 3" of bituminous asphalt surface shall be placed on the crusher run base.

- b. Roadside swales are to be provided. Swale inverts to be 10" lower than road subgrade. Swales are to be graded to a minimum slope of 1% to provide positive drainage to the nearest watercourse. Swale side slopes to be graded to at least a 1 vertical to 3 horizontal slope and seeded to provide a healthy growth of grass.
- c. Drainage Easements - shall be reserved where road runoff must cross private property. Easement width is to be established by the Municipal Engineer.
- d. Turning Radius - shall be a minimum of 40 feet to the inside radius or as required to safely turn the local emergency vehicles.
- e. A turn-around, either a cul-de-sac or a "tee-type" shall be provided at the end of each private drive, and shall be designed to accommodate emergency vehicles.

- f. At the discretion of the Planning Board, a private road design to serve a development may be submitted to the Municipal Engineer for review. Said review shall be at owner's expense.
- g. If required by the Town, upon completion of private road construction, the Developer's Engineer shall submit written certification that the road was constructed in accordance with the approved plans and to the specifications of the Town of Clarkson.

(See Private Road detail drawing in Division IV at rear of book.)

III.4 CONSTRUCTION OF WATERMAINS AND APPURTENANCES

III.4.1 GENERAL

All water main construction and related work shall be done in accordance with the Monroe County Water Authority's "Rules and Regulations for Developers and Developer's Engineer."

Special requirements of the Town of Clarkson are:

- a. Hydrants to be located as closely as possible to the intersection of road right of way and individual lot property lines.
- b. Hydrants to be located within one foot of the highway boundary line, with no part of the hydrant extending beyond this line, onto private property.
- c. Hydrant spacing shall be in accordance with applicable Building and Fire Codes, and shall be subject to review and approval by the Town Fire Marshal.
- d. Main line valves be set on all branches of any tees and crosses installed.
- e. Service line from curb shutoff to meter to be of the same size and material as specified by the MCWA from the main to the curb shutoff.
- f. Service lines beyond the meter and into the house shall be type K copper, except that 1" service lines may be plastic water service tubing made from ultra-high molecular weight polyethylene resin meeting AWWA C901-78 and ASTM C-1248 specifications, latest revision, rated at 200 psi working pressure.
- g. Ends of water mains (stubs for future corrections) shall have a valve and at least one (1) length of pipe beyond the valve.

III.4.2 MATERIAL AND INSTALLATION

Water main materials and installation shall comply with MCWA's "Standard Specifications for Materials to be Furnished by Developers" and "Detailed Specifications for the Installation of Mains and Services," which are hereby made part of those Construction Specifications.

III.5 CONSTRUCTION OF DROP INLETS

III.5.1 DROP INLETS

The construction of drop inlets shall be as shown on the "Drop Inlet Detail" and according to the following specifications.

III.5.1.1 MATERIAL

Use frame and grate as manufactured by the Borden Metal Products (rectangular type B J/12" grates and frames, per DPW drawing 65-45C, galvanized) or approved equal. Use Borden frame and grate as follows:

#1 - 23-15/16" x 27-1/2" frame - 22-11/16" x 26-1/2" grate: To be used under normal conditions unless otherwise specified. To be used on a drop inlet built with inside dimensions of 18" x 24".

#6 - 26-7/16" x 27-1/2" frame - 25-3/16" x 26-1/2" grate: To be used where specified under special conditions and in lawn area where required. To be used on drop inlets built with inside dimensions of 24" x 24".

The drop inlet shall be 4000 psi air entrained concrete, 5" reinforced walls, 6" reinforced base as manufactured by Kistner Concrete Products Inc. or approved equal. Drop inlets shall be precast with 4" drain pipe on three sides as shown on the Standard Detail. The bottom of precast concrete drop inlet shall be painted with two coats, and the inside walls shall be painted with one coat of Koppers bitumastic 300 M or approved equal. Provide #1 and #2 stone backfill around the exterior of the precast concrete. Precast concrete drop inlet may be used at contractor's material option.

III.5.2 METHOD

The Drop inlet shall be placed on a foundation of crushed stone.

Three (3) -4" diameter perforated pipe shall be placed to provide "weep drainage". (See gutter inlet detail.)

The concrete shall be built to a height to allow for 8" of concrete cap between the basin drop inlet and the bottom of frame and grate as part of the concrete apron.

Before pouring the concrete apron, the frame shall be adjusted on drop inlet wall to allow a 1-1/2" drop from invert of gutter to top of grate (except under special conditions). This drop shall be formed gradually in the invert.

The basin shall be provided with 1's and 2's crushed stone around the exterior, extending from the bottom of the drop inlet to the top of the structure on a 2-on-1 slope. This stone shall be compacted before pouring of the concrete apron.

The lateral pipe leading from the drop inlet to the storm manhole shall be encased in 1's and 2's crushed stone and extending to the top of the trench. This pipe shall be perforated corrugated metal pipe, bituminous coated, 14 gauge.

III.6 CONSTRUCTION OF SANITARY SEWERS AND STORM DRAINS

Developer is responsible for checking which of the various construction materials are approved for use in the Town of Clarkson. Sanitary sewer pipe shall be in accordance with Pure Waters standards.

III.6.1 SANITARY SEWER PIPE (MAIN SEWER)

Sanitary sewers shall be built either of (1) reinforced concrete sewer pipe with steel and rubber joint meeting ASTM C76 and C443 specifications and interior coating of Koppers Coal Tar Epoxy Bitumastic 300-M, 16 mil thickness if 24" or larger; or (2) Poly-vinyl chloride (P.V.C.) sewer main with integral wall, bell and spigot rubber ring joints as manufactured by Johns-Manville Company or approved equal, with a minimum wall thickness of SDR 35. PVC sewer main shall meet ASTM Standard Specifications D-3034, joints ASTM D-3212, and fitting materials ASTM D-1784 and any later revisions thereto.

III.6.1.1 STRENGTH CLASSIFICATION

The pipe shall be designed as to proper strength classification by the Developer's Licensed Professional Engineer and shall be stated on the plans. Height of cover, nature of foundation soil, type of bedding, and trench width shall be considered in specifying the pipe. Developer shall be responsible for providing extra strength bedding, cradle or encasement if the design conditions cannot be met in the field.

III.6.2 STORM WATER SEWER PIPE

III.6.2.1 Storm water sewer pipe shall be built of concrete sewer pipe, 14 gauge corrugated metal pipe bituminous coated, or High Density Polyethylene-N-12.

III.6.2.2 The pipe shall be designed as to proper strength classification by the Developer's Licensed Professional Engineer and shall be stated on the plans. Height of cover, nature of foundation soil, type of bedding and trench width shall be considered in specifying the pipe.

III.6.2.3 Developer shall be responsible for providing extra strength bedding, cradle or encasement if the design conditions cannot be met in the field. Whenever the storm sewer is under the road, the Town requires that the Developer's Engineer specify the correct class for H-20 loading at the sewer depth.

III.6.3 SPECIAL CONSTRUCTION

Other types of sewer pipe may be used to meet unusual construction conditions when approved by the Municipal Engineer. Concrete encasement or cradle for the sewer may be required where excessive loads are expected, particularly in shallow trenches or where subsoil conditions are unsatisfactory.

III.6.4 MANHOLES AND DROP INLETS

The materials used in the construction of manholes and drop inlets shall conform to the details as shown on the Standard Sheets included hereinafter. Connecting pipe between drop inlets and from drop inlet to sewer manhole shall be a minimum 12" diameter.

All contractors must obtain a written permit from the Town to work on any storm sewer. Permits shall be obtained from the Highway Superintendent prior to starting construction.

III.6.5 SPECIAL STRUCTURES

Detailed plans for the construction of sewer lifts, box culverts, headwalls, bridges, erosion control structures, any necessary special manholes or drop inlets shall be designed by the Developer's Engineer and shall be submitted to the Municipal Engineer for his approval prior to construction.

III.6.6 HANDLING PIPE

All pipes and fittings shall be handled carefully. Pipes and fittings shall not be dumped or dropped while unloading or during placement in the trench.

III.6.7 STOCKPILING PIPE

All necessary precaution to insure the stability of any stockpile, or individual length, of pipe that is stored should be taken. Pipe stored along a road or sidewalk shall be placed so that it does not create a safety hazard or impair the free flow of traffic.

III.6.8 FITTING AND CUTTING PIPE

The joint surfaces of all pipes and fittings shall be clean, and shall fit together to form a tight joint. When cutting pipe is deemed necessary, the workmanship and tools used shall be such that the quality and strength of the pipe is not impaired. Pipe which is, in the judgment of the Municipal Engineer, unsatisfactory shall be rejected and moved from the site.

III.6.9 JOINTS

Sanitary sewer joints shall comply with the provisions noted under Paragraph III.6.1: Sanitary Sewer Pipe. Storm water sewer joints shall be as per the material manufacturer's written instructions. Corrugated metal pipe shall be provided rubber gasket unless specified by the Town Engineer.

III.6.10 SEWER LINE AND GRADE

All pipe shall be laid true to line and grade with bells upstream and shall have a full, firm and even bearing. Boulders or other natural obstructions shall be promptly removed and shall not be considered cause for varying from true line and grade.

III.6.11 TRENCHES

Any suitable excavation methods may be used but sewer trenches shall be confined to the smallest area practical for proper construction subject to compliance with all State and Federal safety regulations applying to trenching and excavation. Hand methods shall be employed where it is deemed necessary by the Municipal Engineer to preserve trees or protect existing utilities and/or structures. All necessary precautions shall be taken when blasting to confine flying stone or debris and to protect and prevent damage to adjacent utilities and/or structures. Where necessary, sheeting and/or bracing shall be used to provide support and stability to the trench walls. Unless otherwise directed, sheeting and bracing shall be carefully removed as the trenches are backfilled. For trench compaction specifications, see Paragraph III.3.2 (B).

III.6.12 BARRICADES

All open excavations shall be completely surrounded with barricades and illuminated if left open during the night, at weekends and/or holidays.

III.6.13 SOIL

Excavated material unsuitable for backfill shall be removed from the site of the work as it is excavated. Excavated material that is to be used for backfill shall be placed in soil banks located on only one side of the trenches or pits and at least two (2) feet away from the excavation wall. These spoil banks shall be located where they will not interfere with the work, or contribute an overload to the wall of the excavation. Where necessary, the excess material shall be removed to some other place and brought back when required.

III.6.14 DRAINAGE

Necessary precautions shall be taken at all times to prevent the flooding of adjacent property. Drainage ditches, necessary relocation of stream channels, or other positive means of diverting and/or controlling the water shall be employed. No water shall be drained into a pipe or trench under construction. Water shall not be allowed to accumulate in the trenches and interfere in any way with the proper installation of the sewer, but shall be drained or pumped away from the work to established drainage channels.

III.6.15 PIPE INSTALLATION

III.6.15.1 An industrial laser specifically made for pipe laying operations shall be used to establish line and grade. All manufacturer's recommendations with regard to maintaining accuracy shall be strictly followed. Normally, pipes may be installed at a distance of no greater than 300' from the laser. In any case, line and grade shall be checked every 100' using a transit or pre-established grade.

III.6.16 EARTH FOUNDATION

Where pipe is installed on native earth the trench bottom shall be bedded as specified under Paragraph

III.6.16.1 Low areas shall be filled with suitable crushed stone. Where rock in either ledge or boulder formation is encountered, it shall be removed below grade and replaced with suitable sand or crushed stone as shown on the construction details in Division IV of this book. Where a firm foundation is not encountered at the established grade due to soft, spongy or other unstable soil, (unless other special construction methods are called for on the plans) all such unstable soil, under the pipe and for a width of at least one diameter on each side of the pipe, shall be removed and replaced with suitable crushed stone or other approved suitable material properly compacted to provide adequate support for the pipe line.

III.6.17 BEDDING - HAND BACKFILLING

III.6.17.1 Storm and sanitary sewers shall be constructed using #1 and #2 size crushed - stone, evenly blended, meeting NYS DOT Standard Specification, Section 703-02, Material Designation 703-02.01. Stone bedding for sanitary and storm sewers shall be placed and compacted as shown in the detail labeled Figure IV-14: "Standard Trench Details"

III.6.17.2 Suitable native excavated material shall then be placed and tamped lightly along side the pipe until the top grade of the pipe is reached. Use the pipe tamp and the flat-bottom tamp for performing this operation.

III.6.17.3 When the top of the pipe is reached, an additional 9"-12" of earth shall be placed and spread evenly over the pipe by hand. The material shall be free of stones or rocks. The hand backfill shall follow closely behind pipe laying to support the trench, slopes, and prevent damage to or movement of the pipe by cave-in of the trench walls.

III.6.18 BACKFILL

Following the hand operation, backfill may be machine placed providing extreme care is used. A responsible person shall be retained to supervise backfilling operations. He shall be so positioned so he can observe and direct the backfill material as it is pushed into the trench. Backfill shall be made to existing grade and left in a neat and uniform condition. Excess earth shall be windowed over the trench area. Where the trench passed under a ditch, stream, swale, or drainage way, the backfill shall be left in such a manner as to allow proper drainage as well as duplicate conditions as they existed prior to construction. The surface must be entirely free of lumps of earth, stones and debris. Adjacent roadways shall be swept clean of all rubbish and flushed with water if necessary. Shoulders of highways which have been cut shall be carefully shaped and consolidated by tamping or rolling.

III.6.19 CRADLE

Where called for on the plans, or as ordered by the Town Engineer to meet field conditions, pipe shall be installed on cradles. The Town Engineer will determine at the time of construction whether a dry or plastic concrete mix will be used at any particular location depending upon trench conditions. Cradle material shall be placed to the width shown on the plans, or as ordered by the Town Engineer, and to an elevation 0.D./4 up the side of the pipe. The pipe shall be laid in a channel formed in the cradle material by means of a round-pointed shovel. High points and low spots shall be corrected and the pipe firmly bedded to line and grade and jointed. Suitable native excavated material shall then be added and tamped along the haunches of the pipe and subsequently shaped to the top of the pipe. A "safety cover" of 9"-12" of earth shall then be placed, and backfill placed as specified under Paragraph III.6.18.

III.6.20 PROTECTION OF EXISTING SEWERS

Care shall be taken at all times to avoid entrance of mud and water to existing sewers. When connecting to an existing manhole, the connection shall be tightly plugged until completion of the work. At that time, the plug shall be removed and the accumulated water and mud pumped out of the manhole under the supervision of the Municipal Engineer. The cost of any necessary cleaning or flushing of existing facilities caused by failure to comply with this specification or for other reasons will be borne by the Developer.

III.6.21 Protection of New Work at the end of each working day (or any other time of work stoppage), the upstream end of the pipe shall be tightly plugged to prevent entrance of mud, silt, or muddy water.

III.6.22 CONSTRUCTION UNDER ADVERSE CONDITIONS

No pipe shall be laid during adverse weather conditions. In no case shall pipe be laid in water. In cases where sewers are being installed in wet conditions or below the groundwater table so that installed pipes become submerged overnight, sufficient backfill shall be placed to prevent the pipe against buoyancy.

III.6.23 CONFLICTING PIPE LINES & OTHER UTILITIES

No existing pipe line, conduit, cable, pole, guy wire or other utilities or portion thereof shall be moved without the consent of the Agency operating such utility. Any necessary changes in line and grade of the new pipeline shall be made only with the consent of the Highway Superintendent and the Town Engineer.

III.6.24 HOUSE LATERALS - SEWER

III.6.24.1 Lateral connections extending to the street R.O.W. shall be put in for each lot. These laterals shall be constructed with the same care as main sewers. The sanitary laterals shall be 4" diameter and the storm water laterals (where required -- see Paragraph II-5) shall be 6" diameter and shall be installed on a minimum slope of 1/4" per foot. The pipe used for laterals shall have a joint specifically made to fit the bell on the Y branch of the street sewer. Laterals shall be firmly bedded in the same crushed stone bedding required for sanitary sewers. They shall be laid true to line and grade, and the bedding material shall be tamped under the pipe and alongside the haunches to provide full bedding and lateral support for the entire length of the pipe. The interior of each pipe shall be cleaned before adding the next length of pipe. Laterals shall be installed at depths not greater than 10'. Stone encased riser pipes from the deep sanitary sewer to the 10' level shall be used to accomplish this method of construction.

III.6.24.2 The connection to the main sewer shall be made using a Y branch and elbow, encased in stone and appropriate saddle slant.

III.6.24.3 Sanitary laterals shall be installed to the street R.O.W., or the property line, and tested along with the main sewer.

III.6.24.4 The ends of all laterals shall be plugged or capped to hold pressure while testing, and marked with a 2" x 4" witness stake extending from the pipe to a point 4' above the ground. Paint top of witness stake using following color code:

Red	Sanitary sewer
Green	Storm sewer
Blue	Water

III.6.24.5 A record shall be kept of the location of all laterals and this information shall be shown on the "As-built" plans (see Paragraph III.1.8).

III.6.24.6 Material of Sanitary Sewer Lateral Pipe shall be:

Poly-vinyl chloride (P.V.C.) sewer laterals with integral wall bell and spigot rubber ring joints as manufactured by Johns-Manville Company or approved equal, with a minimum wall thickness of SDR-35. Lateral pipe shall meet ASTM Standard Specifications D-3034, joints ASTM D-3212, and fitting materials ASTM D-1784 and any later revisions thereto. Laterals shall be bedded throughout with pea gravel or #1 crushed stone. Provide metal-capped cleanouts of design per Town Engineer specification at the R.O.W.

III.6.24.7 Material of storm sewer lateral pipe shall be:

PVC sewer pipe SDR-35 for extra heavy duty and municipal service with "O" ring seals.

III.6.24.8 Storm sewer laterals shall be at least 4" in diameter if only the sump drains to the lateral, and 6" for all other cases.

III.6.25 Testing and Infiltration/Exfiltration Rate - Sanitary Sewers

III.6.25.1 A visual inspection of each section of completed sanitary sewer shall be made for smoothness of invert, freedom from obstructions, and straightness of line. The sewer shall be substantially watertight and free from infiltration.

III.6.25.2 All sanitary sewers must be tested before being approved.

III.6.25.3 At intervals ordered or approved, not to exceed 1,000' in length, the pipe shall be tested for leakage, by measuring infiltration or exfiltration.

III.6.25.4 Infiltration testing shall be permitted only when the groundwater levels are at least 5' above the top of the pipe for the entire length being tested. Infiltration shall be measured by use of a watertight weir, or a device for volumetric measurement approved by the Municipal Engineer.

III.6.25.5 Exfiltration tests shall be conducted by filling the pipe with water to provide a head of at least 5' over the highest point of the line, or 5' above the groundwater, whichever is higher, and measuring the leakage.

III.6.25.6 Infiltration/exfiltration tests shall be carried out over a period of at least three hours and the total leakage of any section tested shall not exceed the rate of 100 gallons per mile of pipe per 24 hours per inch of nominal diameter. If leakage exceeds the specified amount, the Developer or his contractor shall make the necessary repairs to reduce the leakage within the specified limits and the tests shall be repeated until the leakage requirement is met. A Town inspector shall witness all tests. Where there is a difference of 7' in elevation of inverts between manholes, this section of sewer shall be tested by air and manholes checked by water. The air test will be conducted as follows:

III.6.26 AIR TEST FOR SEWER LINES

After completing backfill of a section of wastewater line, the Developer or his contractor shall at his expense, conduct a Line Acceptance Test using low pressure air. The test shall be performed using the

below stated equipment, according to stated procedures and under the supervision of the Municipal Engineer.

III.6.27 EQUIPMENT

Cherne Air-Loc Equipment, as manufactured by Cherne Industrial, Inc. of Edina, Minnesota or approved equal. Equipment used shall meet the following minimum requirements.

- a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
- b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
- c. All air used shall pass through a single control panel.
- d. Three individual hoses shall be used for the following connections: (1) From control panel to pneumatic plugs for inflation; (2) From control panel to sealed line for introducing the low pressure air; (3) From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.

III.6.27 PROCEDURES

III.6.27.1 All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psig. The sealed pipe shall be pressurized to 5 psig. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipe.

- III.6.27.2 After a manhole-to-manhole reach of pipe has been backfilled and cleaned, and the pneumatic plugs are checked by the above procedures, the plugs shall be placed in the line at each manhole and inflated to 25 psig. Low pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psig greater than the average back pressure of any groundwater that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize.
- III.6.27.3 After the stabilization period (3.5 psig minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "Acceptable" if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

Pipe Dia. in Inches	Minutes
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

- III.6.27.4 In areas where groundwater is known to exist, the Developer or his contractor shall install a one-half inch diameter capped pipe nipple, approximately 10' long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the Line Acceptance Test, the groundwater shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The hose shall be held vertically and a measurement of the height in feet of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11-1/2 feet, then the added pressure will be 5 psig. This increases the 3.5 psig to 8.5 psig, and the 2.5 psig to 7.5 psig. The allowable drop of one pound and the timing remain the same.)
- III.6.27.5 If the installation fails to meet this requirement, the Developer or his contractor shall, at his own expense, determine the source of leakage. He shall then repair or replace all defective materials and/or workmanship as specified elsewhere. The air test shall be repeated until the reach of sewer meets with the test requirements.

III.6.28 WATER TESTING MANHOLES

- III.6.28.1 When the sewer is tested, and approved by the Town inspector, the manholes shall be tested by water. The tests shall be run using the following procedure:
- III.6.28.2 The inlet and outlet pipe for the manhole shall be plugged with a plumber's plug that allows no leakage. The manholes shall be filled with water to a height just below the steel frame. The water shall remain for one hour to allow for stabilization and soaking of the water into the concrete.
- III.6.28.3 The test shall be run for a minimum of three (3) hours. Measurements from the top of water to the top of frame at the start and finish of the test shall be taken.
- III.6.28.4 The manhole shall be watertight and no drop in water elevation shall be allowed.
- III.6.29 Inspection of Laterals from Sewer to House

- III.6.29.1 Laterals from the street R.O.W., or the property line, to house shall be constructed in accordance with the Town of Clarkson's specifications for building laterals, sanitary sewer laterals and any other type plumbing.
- III.6.29.2 It is incumbent upon the Builder, the house Owner, or the Plumber responsible for the work, to make proper and timely requests for inspection. Inspection will be made essentially for the following purposes:
- a. To inspect connection to street sewer.
 - b. To inspect materials, joints, alignments, and bedding of piping.
 - c. To inspect for proper connections.
 - d. To "tie-in" the location of lateral pipes for a permanent record.
 - e. To inspect cleanouts where required by long laterals.
- III.6.30 PENALTIES FOR NON-COMPLIANCE
- III.6.30.1 Penalty for non-compliance with these regulations is provided for in the Town "Sewer Use Ordinance".
- III.6.30.2 Any return trips by the Town Inspector caused by failure of the Builder to be ready for inspection will result in an extra charge billed to the person making the application for permit. The charge shall be established by the Town Board and noted in the fee schedule.
- III.7 FINAL GRADING, AND RESTORATION OF GRASSED SURFACES
- III.7.1 GENERAL
- III.7.1.1 The Developer shall generally maintain his tract in a neat and nuisance free condition. Cellar excavations and trenches shall not be left open for prolonged periods or be allowed to fill with water and thereby create a hazard.
- III.7.1.2 Where open storm drainage ditches or swales are constructed, the side slopes and bottom shall be neatly graded and left in a clean condition. Side slopes shall be topsoiled, and seeded with perennial rye grass.
- III.7.1.3 Vacant, unsold lots shall not be used as a depository for scrap lumber, excess earth, or trash. These materials have to be hauled away promptly to a dump site approved by the Town of Clarkson and NYS DEC, Region 8, Avon, NY.
- III.7.2 WOODED AND OPEN AREAS
- III.7.2.1 Fertilizer should be applied at a rate to deliver 1/2 lbs. of nitrogen, 1 lbs. of potassium, and 1 lbs. phosphorous per 1000 square feet. Seed shall be applied at the rate of 2 to 3 pounds of live seed per thousand square feet.

III.7.2.2 MULCHING

Within forty-eight (48) hours after seeding, a mulch of clean new crop wheat straw shall be placed uniformly in a continuous blanket to provide a cover of 3" loose depth. A mechanical blower may be used to apply mulch provided the machine has been specifically designed and approved for the purpose. Machines which cut mulch into short pieces shall not be permitted.

III.7.3 GRASS AND PLANTED AREAS

Grass and Planted areas shall be designated as all other areas not specified as Wooded or Open Areas and including Lawn Areas. All work in connection with the restoration of grass and planted areas shall be performed by an experienced landscape contractor.

III.7.4 TOPSOIL

Topsoil shall be suitable for use in seeding and shall contain no material toxic to plant growth. It shall be placed to a compacted depth of four (4) inches over subsoil and twelve (12) inches (8 inches subsoil and 4 inches topsoil) over fill material containing stone or concrete.

III.7.4.1 Topsoil shall be used for the top 4 inches of backfill for trenches and excavations in grass and planted areas unless otherwise required by particular easement agreements. Topsoil shall be approved topsoil obtained from excavation operations or, if sufficient suitable material is not available, it shall be imported by the Developer or his contractor.

III.7.4.2 Imported topsoil shall contain no admixture of refuse or any material toxic to plant growth and shall be reasonably free from subsoil, stumps, roots, brush, stones, clay lumps or similar objects larger than 2" in greatest diameter.

III.7.4.3 After topsoil is spread, all large, stiff clods and stones 2 inches or more in greatest dimension, roots and other debris shall be cleared and disposed of off-site so that the finished surfaces shall be acceptable for seeding operations. In areas to be sodded, topsoil shall be graded to such elevations that when sod is placed, it shall be at the same elevation as the adjacent grassed areas.

III.7.5 Liming, Fertilizing and Seeding

III.7.5.1 All areas to be seeded, shall be disked or otherwise loosened to a depth of 2", and shall be raked to true lines, free of all unsightly variations, bumps, ridges or depressions. All sticks, stones, roots or other objectionable materials which might interfere with the formation of a finely pulverized seedbed shall be removed from the soil.

III.7.5.2 Topsoil areas shall be lightly compacted and allow all low spots to be leveled. Limestone, if needed, shall be worked lightly into the top two (2) inches of the soil.

III.7.5.3 Commercial fertilizer, 1-2-2 ratio, shall be applied by approved equipment at a rate to deliver 1/2 lbs. of nitrogen, 1 lbs. of potassium, and 1 lbs. phosphorous to deliver per 1,000 sq. ft., and worked lightly into the top 2" of the soil. An additional application shall be made 3 to 4 weeks following germination.

III.7.5.4 Seed of the mix specified below shall be sowed with approved equipment at the recommended rates.

III.7.5.5 SEED MIXES

Sunny Dry/Wet	15% Kentucky Bluegrass 50% Perennial Ryegrass 25% Red Fescue 10% Crep. Fescue rate: 3 - 4 lbs./ M
Low Maintenance Dry/Wet	65% Fine Fescue 10-20% Perennial Ryegrass remainder Kentuckt Bluegrass rate: 3 - 4 lbs./ M
Shady Dry	60-80% Fine Fescue 10% Perennial Ryegrass remainder Kentucky Bluegrass rate: 4 - 5 lbs./ M or 80% Shade tolerant Kentucky Bluegrass 20% Shade tolerant Perennial Ryegrass rate: 3 - 4 lbs./ M
Shady Wet	70% Rough Bluegrass 30% Shade tolerant Kentucky Bluegrass rate: 2 - 3 lbs./ M

III.7.5.6 Mulch or seed mixture applied by hydro-seeding with wood and paper fiber mulch at one (1) ton per acre.

III.7.6.2 PROCEDURE

The grading of areas shall include the removal of loose or unstable stones, rock or other debris. Piles of soil or other material shall be leveled to fill gullies, pits and ruts and to secure a smooth mulching bed free from local humps, ridges, or depressions to produce a smooth mulching bed as approved.

All disturbed areas shall be hydroseeded with a mixture of fertilizer, lime, seed, inoculants, and soil sealer. On sloped areas apply the following quantities per acre, measured on basis of true slope face:

	Per <u>1000 SF</u>	Per <u>Acre</u>	
Water, gallons	25	1,000	
Seed mixture, pounds	1-1/2	200	
Limestone, pounds	70	3,000	(if required)
Fertilizer mix, pounds	25	250	
Inoculants, pounds	10	400	
Soil seal, pounds	per recommendations of manufacturer		

Fertilizer Mixture: Use 1/2 by weight of Type 1 and Type 2

Type 1	5-10-10
Type 2	Uremite or Mitroform or Borden's 38 or equal

Mulch, of wood and paper fiber, shall be placed over slope areas along with above mixture. It shall be applied at a rate of 1/2 ton to 1 ton per acre. Guare soil seal shall be applied at the manufacturer's recommended rate.

or

A mechanical blower may be used to apply mulch material at a rate of 2 tons per acre. Then a mixture of 300 to 500 pounds of wood and paper fiber mulch with Guare soil sealer shall be applied over the straw or hay with a Hydro-seeder.

III.7.6.3 MAINTENANCE

The Developer or his contractor shall, during the construction and prior to acceptance, properly care for all grassed sloped areas, performing all mulching operations necessary to provide protection and establish growth on the treated areas. Mulch which becomes displaced shall be reapplied at once, together with any necessary relining, refertilizing, reseeding; all at no expense to the Town. Acceptance shall be made when all areas have an established ground cover.

III.7.7 GUARANTEE

All work shall be guaranteed for a minimum one (1) year period from the date of initial acceptance of the work. Initial acceptance shall be made at the time that a vigorous healthy stand of grass, and all plantings have been established as determined by the Town Representative. During the guarantee period the Developer or his contractor shall replace without charge all seeding, sod and plants that are dead, are in an unhealthy or unsightly condition in the opinion of the Town Representative. Final acceptance shall be acknowledged after seeded and sodded areas and plantings have been in place for one (1) year in a vigorous healthy condition. The guarantee period shall end at that time.

III.8 TREES

III.8.1 GENERAL

The Developer shall place trees at the locations shown on the plans and as directed by the Planning Board. Trees shall be a min. of 1-1/2" diameter and placed outside the R.O.W. line or as otherwise directed by the Town Highway Superintendent. Spacing shall be at 100' intervals on both sides of the R.O.W. Shade trees shall be Emerald Queen Maple, Crimson King Maple, Shademaster Locust, Greenspire Linden, Marshall's Seedless Ash, Autumn Purple Ash; other varieties shall be Bradford Pear (maturity 30') and Campstre Maple (maturity 25') as required by the Planning Board or approved equal. Trees shall not be planted next to fire hydrants, house laterals and services.

III.8.2 PLANTS

III.8.2.1 QUALITY

Plants shall be in accordance with American Standard for Nursery Stock Z60.1 latest version of rules and grading adopted by the American Association of Nurserymen, Inc.

All plants shall have a normal habit of growth and shall be sound, healthy, vigorous plants with well-developed root systems. Plants shall be free of disease, insect pests, eggs or larvae.

Plants shall not be pruned before delivery. Trees, which have a damaged or crooked leader, or multiple leaders, unless specifically specified, will be rejected. Trees with abrasion of the bark, sunscalds, disfiguring knots, or fresh cuts on limbs over 1-1/4 inches, which have not completely callused, will be rejected. Plants shall be freshly dug. No heeled in plants, or plants from cold storage will be accepted.

III.8.2.2 SIZE

Plants shall be measured when branches are in their normal position. Height and spread dimensions specified refer to the main body of the plant and not from branch tip to branch tip. Caliper measurement

shall be taken at a point on the trunk 6" above natural ground line. If a range of size is given, no plant shall be less than the minimum size, and not less than 50% of the plants shall be as large as the upper half of the range specified. The measurements specified are the minimum size acceptable and are the measurements after pruning, where pruning is required. Plants that meet the measurements specified, but do not possess a normal balance between height and spread, shall be rejected.

III.8.2.3 INSPECTION OF PLANT MATERIAL

The Developer shall notify the Town in advance when the plant material is to be delivered and shall furnish an itemized list of the actual quantity of plant material in each delivery in order to coordinate inspection at the point of delivery.

III.8.2.4 DIGGING, WRAPPING AND SHIPPING

Plants should be dug up and prepared for shipment in a manner that will not cause damage to the branches, shape and future development of the plants after replanting. Plant material labels shall be securely attached by wire to all plant material delivered to the planting site, for the purpose of inspection and plant identification. All plant materials being transported more than 10 miles between grower and planting site will be covered.

III.8.2.5 BALLED AND BURLAPPED PLANTS

Plants designated "B" and B" on the proposal or on any subsequent list furnished shall be adequately balled with firm natural balls of earth of diameter and depth not less than that recommended by the American Standard for Nursery Stock. Balls shall be firmly wrapped with burlap.

All plants which are 2" in caliper or over shall be drum-laced. No balled plants shall be planted if the ball is cracked or broken either before or during the process of planting.

III.8.2.6 PROTECTION AGAINST DRYING

All root balls of all plants shall be adequately protected at all times from sun and from drying winds. All balled and burlapped plants which cannot be planted immediately upon delivery shall be set on the ground and shall be well protected with soil, or other acceptable material. Plants shall not remain unplanted for longer than two days after delivery.

III.8.3 PLANTING PREPARATION

III.8.3.1 The Contractor shall stake out on the ground locations for trees to be planted.

III.8.3.2 Rock, existing underground work, tree roots or obstructions encountered in the excavation of shrub and tree pits shall be brought to the attention of the Town.

III.8.3.3 Work shall proceed after alternate locations have been designated or approved by the Town.

III.8.3.4 Notify the Town in writing of all soil or drainage conditions which the Developer considers detrimental to growth of plant material.

III.8.3.5 Planting areas shall be free of debris or other deleterious matter prior to the placement of planting soil mixture.

III.8.4 PLANTING

III.8.4.1 Place planting soil mixture in layers not to exceed eight inches and roll or tamp to the satisfaction of the Town.

- III.8.4.2 Plants shall be set at the same relationship to finished grade as they bore to the ground from which they were dug. Planting soil shall be used to backfill approximately 2/3 full. The Developer shall water thoroughly before installing remainder of the planting soil to top of pit, eliminating all air pockets. The Developer shall not backfill beds with planting soil until approved by the Town.
- III.8.4.3 The Developer shall set planting plumb and brace rigidly in position until the planting soil has been tamped solidly around the ball and roots.
- III.8.4.4 Ropes or strings shall be cut from top of ball after plant has been set and burlap or cloth wrapping shall be left intact around balls. The Developer shall turn under and bury portions of burlap exposed at top of ball.
- III.8.4.5 A four (4) inch deep saucer shall be formed around tree pits.
- III.8.4.6 The Developer shall mulch all planting areas and beds two (2) inches deep immediately after planting and shrub planting.
- III.8.4.7 All plants shall be watered immediately after planting. Planting areas shall be reshaped to conform to specified grades after full settlement has occurred and mulch shall be restored.
- III.8.4.8 Trunks of deciduous trees of 1-1/2 inch caliper or more shall be wrapped with a spiral wrapping minimum height of third branches or 2/3 height of tree, whichever is highest. Wrap from top down, and tie wrapping securely in place.
- III.8.4.9 All trees shall be guyed and staked immediately after planting. Plants shall stand plumb after guying.
- III.8.4.10 New Plants shall be pruned only at time of planting and in accordance to standard horticultural practice to preserve the natural character of the plant. Pruning shall be done under the supervision of the Town. Pruning and trimming shall include the following:
1. Remove all dead wood, suckers and broken or badly bruised branches.
 2. Use only clean, sharp tools.
- III.8.5 CLEAN-UP
- The Developer shall at the completion of planting operations remove all rubbish, dirt, and rejected materials no longer necessary for the completion of the remaining work.
- III.8.6 REPLACEMENT
- III.8.6.1 The Developer shall replace, without cost to the Town, and as soon as weather conditions permit and within a specified planting period, all dead plants and all plants not in vigorous, thriving condition. The plants shall be free of dead or dying branches and branch tips, and shall bear foliage of a normal density, size and color. Replacements shall closely match adjacent specimens of the same species. Replacements shall be subject to all requirements stated in this Specification.
- III.8.6.2 The Developer shall make all necessary repairs due to plant replacements. Such repairs shall be done at no extra cost to the Town.
- III.8.7 GUARANTEE
- III.8.7.1 Trees planted in accordance with these specifications shall be guaranteed for one (1) year from the date of initial acceptance by the Town. Trees found dead or not in a healthy growing condition shall be replaced by trees of the same size and species, by the Developer at his own expense.

III.8.7.2 The Guarantee of all replacement plants shall extend for an additional period of one year from the date of their acceptance after replacement. If replacement plant material is not acceptable during or at the end of the said extended guarantee period, the Town may elect subsequent replacement or credit for each item.

III.8.8 Final Inspection and Final Acceptance

III.8.8.1 At the end of the guarantee period, the Municipal Engineer shall inspect all guaranteed work for final acceptance upon written request of the Developer. The request shall be received at least ten (10) calendar days before the anticipated date for final inspection.

III.8.8.2 Upon completion and reinspection of all repairs or renewals necessary, if the work will be found satisfactory in the judgment of the Municipal Engineer at that time, the Engineer shall certify in writing to the Town as to the Final Acceptance of the work performed under Subsection III.8: Trees.

III.9 PORTLAND CEMENT CONCRETE SIDEWALK

III.9.1 GENERAL

The Developer shall construct Portland cement concrete sidewalks with the dimensions and to the lines and grades shown on the plans, in accordance with these specifications, or as directed by the Town. The driveway locations should be shown on the plans and have welded wire mesh placed in the concrete sidewalk and aprons at all driveway locations.

III.9.2 MATERIALS

III.9.2.1 The materials shall meet the requirements of applicable ASTM Standards and shall conform to the following specifications:

III.9.2.2 Portland Cement - ASTM C-150, Type II. No change will be allowed in the type of the cement without proper authorization by the Town.

III.9.2.3 Fine aggregate for concrete shall meet ASTM C-33 specifications. Fine aggregate must also meet NYS Dept. of Transportation Standard Specifications, Section 703.01. Recent State tests made within the last twelve (12) months or a statement of acceptance and use by the local NYS DOT office will be acceptable.

III.9.2.4 Coarse aggregate for concrete shall meet ASTM C-33 specifications. Coarse aggregate must also be a crushed dolomite, or limestone meeting NYS DOT Standard Specifications, Section 703.02. Recent State tests made within the last twelve (12) months or a statement of acceptance and use by the local NYS DOT office will be acceptable.

III.9.2.5 Gradations of coarse aggregate for various applications:

ASTM #57 1" - #4	
<u>Sieve Size</u>	<u>% Passing</u>
1-1/2"	100
1"	93 - 100
3/4"	
1/2"	27 - 58
3/8"	
1/4"	0 - 8

III.9.2.6 Mixing water shall be fresh, clean, and free from injurious amounts of alkali, organic matter, or other injurious substances.

- III.9.2.7 Admixtures - Air-entraining admixtures shall conform to ASTM C-260 Specifications for air-entraining admixtures for concrete.
- III.9.2.8 Water reducing admixtures and retarding admixtures shall conform to ASTM C-494 Specifications for chemical admixtures for concrete.
- III.9.2.9 Storage of Materials - Cement and aggregates shall be stored in accordance with ACI 318 and ACI 614.
- III.9.2.10 6 x 6 x 6/6 Reinforcing Mesh - Welded wire mesh shall conform to ASTM Specification A-185. Prior to placing reinforcing mesh, all grease, dirt, mortar, excessive mill scale, injurious rust and any other foreign substance must be removed from the mesh. (Cannot be used with slip form)
- III.9.2.11 The mesh reinforcement shall be placed in the position indicated and within the allowable tolerances specified. Before concrete is placed, all reinforcement shall be securely fastened and supported with approved metal chairs or other approved devices.
- III.9.3 CONCRETE PREPARATION
- III.9.3.1 Proportioning Ingredients - Proportions of cement, aggregates, and water to attain required strengths by the water/cement ratio shall be in accordance with ACI 318, Section 502, Methods for Determining the Proportions of Concrete, Method 2. Adjustments for particular applications may be made with Town's approval.
- III.9.3.2 All concrete shall be air-entrained. Ranges of total air content shall be:
- | | |
|---------|----|
| Minimum | 4% |
| Desired | 6% |
| Maximum | 8% |
- III.9.3.3 All concrete shall contain a water reducing admixture. (Follow manufacturer's recommendations)
- III.9.3.4 All concrete shall have a minimum cement content of 6 bags (606#). No reductions shall be made for admixture.
- III.9.3.5 All concrete shall have a minimum compressive strength of 4000 psi at 28 days.
- III.9.3.6 Slump range of concrete shall not exceed 2-1/2" \pm 1" at point of discharge.

III.9.4 CONCRETE MIXING

- III.9.4.1 Hand mixing will not be permitted. Approved transit mixers may be used with the following qualifications.
- a. The water shall be added to the mix at the site of the work and not more than 10 minutes prior to discharging the concrete into the forms.
 - b. Mixing time shall be at least 5 minutes.
 - c. Not more than 10 minutes shall elapse between placing of consecutive batches, unless an expansion joint is placed to separate concrete from consecutive batches.
 - d. Mixers shall be thoroughly cleaned after each batch. They shall not be cleaned in the street or on lawns along the site of the work.
 - e. The Company furnishing the concrete in the transit mixers shall furnish the Town a letter signed by a responsible official of the company certifying that the materials and proportioning conform to this specification.
 - f. No re-tempering of concrete shall be permitted.

III.9.5 SUBGRADE PREPARATION

- III.9.5.1 After preparing the site the Developer shall remove subsoil to the subgrade elevation. A string line shall be placed along the side of the cut in order to maintain proper grade and alignment.
- III.9.5.2 Tree roots shall be neatly cut and trimmed at least 2 inches below and to the side of the "boxed-out" sub-grade.
- III.9.5.3 The Developer bears the responsibility of contacting appropriate water and gas utility companies in order to have curb shut-offs staked out prior to starting the work.
- III.9.5.4 Where fill material is required to meet the proper grade it shall consist of compacted crushed stone acceptable to the Town.

III.9.6 CRUSHED STONE BASE MAY BE OMITTED ON VIRGIN SOIL

The Developer shall install a washed #1 & #2 crushed stone base course that has a total compacted thickness of 4 inches. This base course shall be placed under all proposed concrete sidewalks and shall be compacted as approved by the Town.

III.9.7 FORM WORK AND CONCRETE PLACEMENT

- III.9.7.1 Metal or wood forms of a type satisfactory to the Town shall be placed upon the base course. They shall be set true to line and grade. Sufficient form pins and other braces shall be used to prevent movement during concrete placement or finishing. Forms shall have a height equal to the full depth of the walk.
- III.9.7.2 A "scratch-plate" shall be employed by the Developer in fine grading to assure full depth of concrete walk.
- III.9.7.3 Before placing concrete, the forms and base course shall be thoroughly wetted.
- III.9.7.4 Concrete may be placed directly in the forms from the chutes of transit mixers, placing it as neatly as possible to its final position.

Concrete shall be thoroughly spaded and worked along both sides of forms in order to get a dense mortar finish along both sides of the walk.

III.9.7.5 Concrete shall be placed to an elevation slightly higher than the top of the forms. It shall be worked with hand shovels in order to obtain a dense, well-consolidated mix.

III.9.7.6 Welded wire mesh shall be placed in the concrete at sidewalks and aprons for all driveway locations. (Cannot be used with slip form)

III.9.8 FINISHING AND CURING

III.9.8.1 After placing and leveling-off the concrete to an elevation slightly higher than the forms it shall be rough screeded with a heavy screed riding on the forms. Excess concrete shall be continually removed from in front of the screed to prevent its raising up.

III.9.8.2 After rough screeding, a second pass shall be made to remove any transverse indentations caused by the rough screeding. Following this the surface shall receive a light broom finish. The broom shall be moist, but not dripping wet. It shall be clean and free of dirt or hardened cement particles which would mark the surface.

III.9.8.3 The sidewalk shall be edged with a proper metal edging tool.

III.9.8.4 Curing shall be accomplished by placing colorless membrane sealer.

III.9.8.5 Forms shall be carefully removed after the end of the curing period.

III.9.9 JOINTS

Full-depth joints every 40 ft. shall be placed using 1/8" expansion board (or an approved equal) for the full depth of the joint. After concrete has sufficiently set-up, this plate shall be removed. In addition to the full-depth joints, dummy transverse joints (scoring) shall be formed every 5' using a "deep-edge" tool. Both longitudinal edges shall be finished in a similar manner.

III.9.10 CONVENIENCE OF PROPERTY OWNERS

The Developer or his contractor shall provide an access ramp over the walk for each establishment until concrete is sufficiently hardened.

III.9.11 TESTING

Consistency of each mix will be determined by the Town in the field, depending upon the effect provided by the ingredients. The Developer or his contractor shall furnish standard equipment for making slump tests. Any batch that does not fall within the specified range of slumps shall be rejected by the Town and removed from the site of the work.

III.9.12 BATCHING

All concrete will be batched from a NYS DOT accepted automated plant. Each concrete mixer shall be accompanied with a ticket showing weights of ingredients in loads. The Town is to get a copy of the ticket at time of delivery.

III.10 LIGHTING

III.10.1 GENERAL

The Developer shall provide adequate street lighting and fixtures at the locations shown on the plans and as directed by the Town Planning Board.

Note: Where required by Planning Board, lights shall be installed at 300' intervals, on alternating sides of the street. Lighting fixtures must be placed no later than the development and construction of 50% of the subdivision or section thereof.

III.10.2 SITE LOCATION

The lighting utility shall be located within the roadway a minimum of 6 feet behind gutter or curb in accordance with approved plan.

III.10.3 MATERIALS

III.10.3.1 Wiring, light poles, lights and foundations shall meet N.E.C. and the National Board of Fire under writer's standards.

III.10.3.2 The Developer shall provide the lighting plan, design standards and specifications prepared in conjunction with the Electrical Power Corporation having jurisdiction in the service area.

III.10.3.3 The capital cost, maintenance and cost for electrical energy shall be described in detail as part of the lighting plan.

III.10.4 COSTS

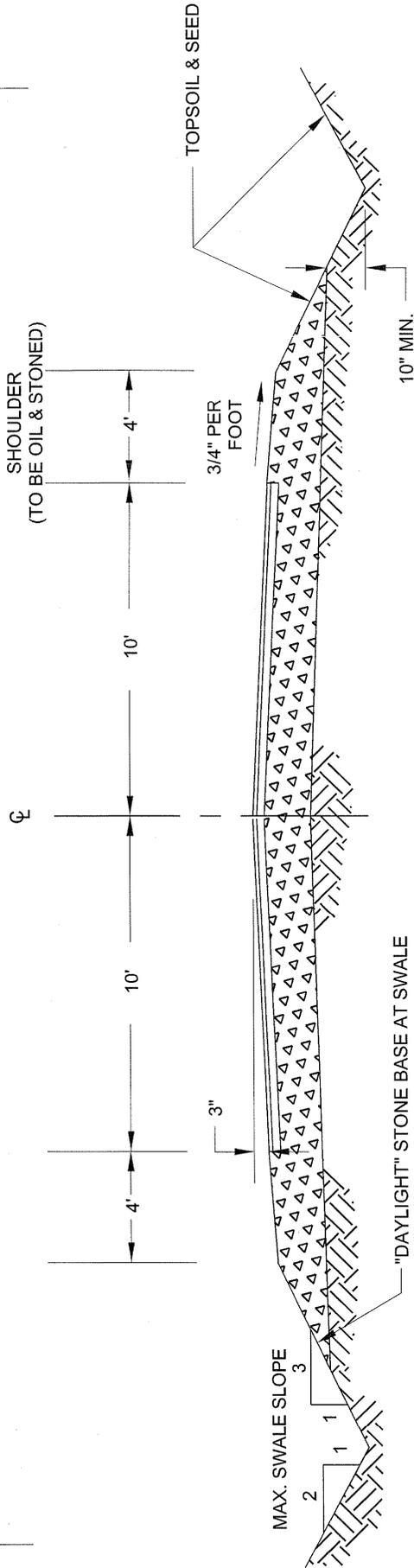
The Developer, as part of the lighting plan, shall include a cost estimate for the proposed work and include the cost in the Letter of Credit.

END OF DIVISION III

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60' R.O.W.



12" CRUSHED STONE PAVEMENT BASE SHALL CONSIST OF 6" NO. 2 CRUSHER RUN ROLLED AND COMPACTED FOLLOWED BY 6" OF NO. 2 CRUSHER RUN COMPACTED. STONE SHALL BE CRUSHED LIMESTONE MEETING NYS DOT SECTION 304.

ASPHALT CONCRETE SURFACE SHALL CONFORM TO NYS DOT SPECIFICATIONS:

BINDER: 2 1/2" ITEM 403.13 TYPE 3

TOP: 1 1/2" ITEM 403.17 TYPE 7F

CONSTRUCTION SHALL BE IN ACCORDANCE WITH NYS DOT GENERAL SPECIFICATIONS FOR BITUMINOUS CONCRETE. TOP COURSE SHALL BE PLACED ONE YEAR FOLLOWING THE INSTALLATION OF THE BINDER SURFACE. MINIMUM OUTSIDE TEMPERATURE AT TIME OF PLACEMENT 50°F. TACK COAT TO BE PLACED PRIOR TO PLACEMENT OF TOP COURSE OF ASPHALT.

DOUBLE SURFACE TREATMENT:

NYS DOT SECTION 410-3.02 AS FOLLOWS:

EQUIPMENT REQUIRED: A BITUMINOUS MATERIAL SPREADER, A PNEUMATIC RUBBER TIRED ROLLER, AN AGGREGATE SPREADER, A ROTARY POWER BROOM, AND A DRAG BROOM. BITUMINOUS MATERIAL TO BE AN ASPHALT EMULSION, NYS DOT MATERIAL DESIGNATION 702-3101. AGGREGATE SIZE TO BE No. 1 FOR THE FIRST COURSE AND No. 1A FOR THE SECOND COURSE.

BITUMINOUS MATERIAL	AGGREGATE
GAL./SQ. YD.	LB./SQ. YD.

1st COURSE	.50 - .75	25 - 35
2nd COURSE	.25 - .40	15 - 25

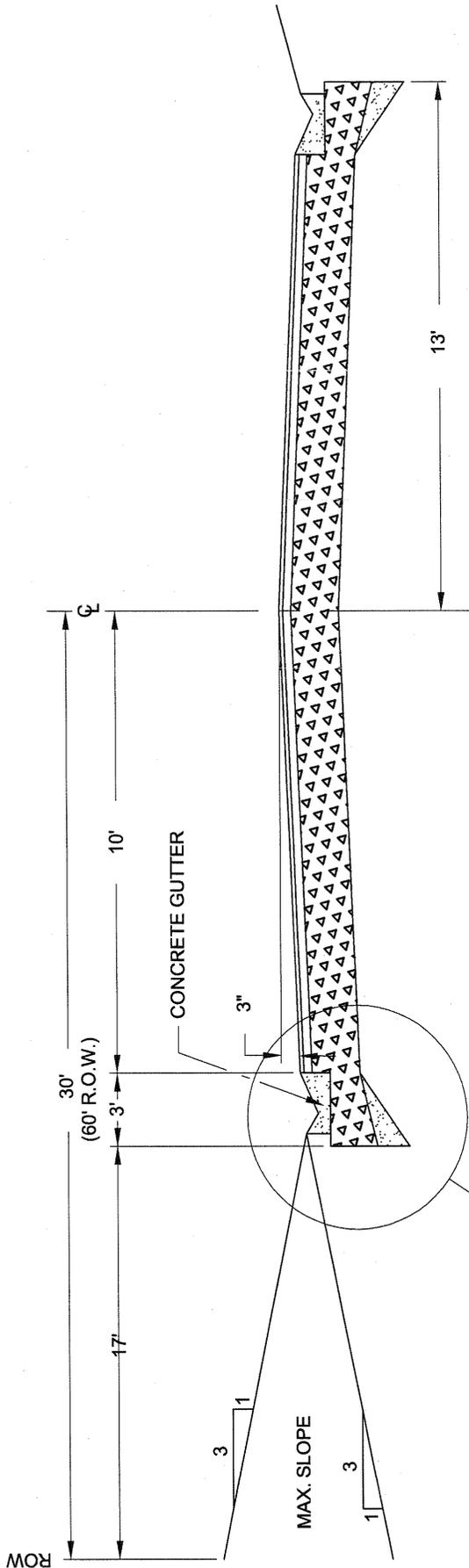
NOTE: PREPARATION OF SURFACE AND APPLICATION OF MATERIALS SHALL BE IN ACCORDANCE WITH NYS DOT SECTION 410-3.

ALL TOPSOIL, STUMPS, ROOTS, OR OTHER ORGANIC MATERIAL TO BE REMOVED PRIOR TO PLACING FILL OR SHAPING ROAD BOX.

ROAD SECTION OPEN DRAINAGE TYPE ROADS

(If Approved by Planning Board and D.P.W. Superintendent)

NOT TO SCALE



12" CRUSHED STONE PAVEMENT BASE SHALL CONSIST OF 6" NO. 2 CRUSHER RUN ROLLED AND COMPACTED, FOLLOWED BY 6" OF NO. 2 CRUSHER RUN COMPACTED IN TWO (2) 3" LIFTS. STONE WILL BE CRUSHED LIMESTONE MEETING NYS DOT SECTION 304.

ASPHALT CONCRETE SURFACE SHALL CONFORM TO NYS DOT SPECIFICATIONS:
 2-1/2" BINDER: ITEM 403.13, TYPE 3
 1-1/2" TOP: ITEM 403.17 TYPE 7F

ASPHALT CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH NYS DOT GENERAL SPECIFICATIONS FOR BITUMINOUS CONCRETE WITH THE EXCEPTION THAT THE TOP COURSE SHALL BE PLACED A MINIMUM OF ONE (1) YEAR AFTER THE INSTALLATION OF THE BINDER ASPHALT, MINIMUM OUTSIDE TEMPERATURE AT TIME OF PLACEMENT 50° F. TACK COAT SHALL BE APPLIED BETWEEN THE BINDER COURSE AND THE TOP COURSE.

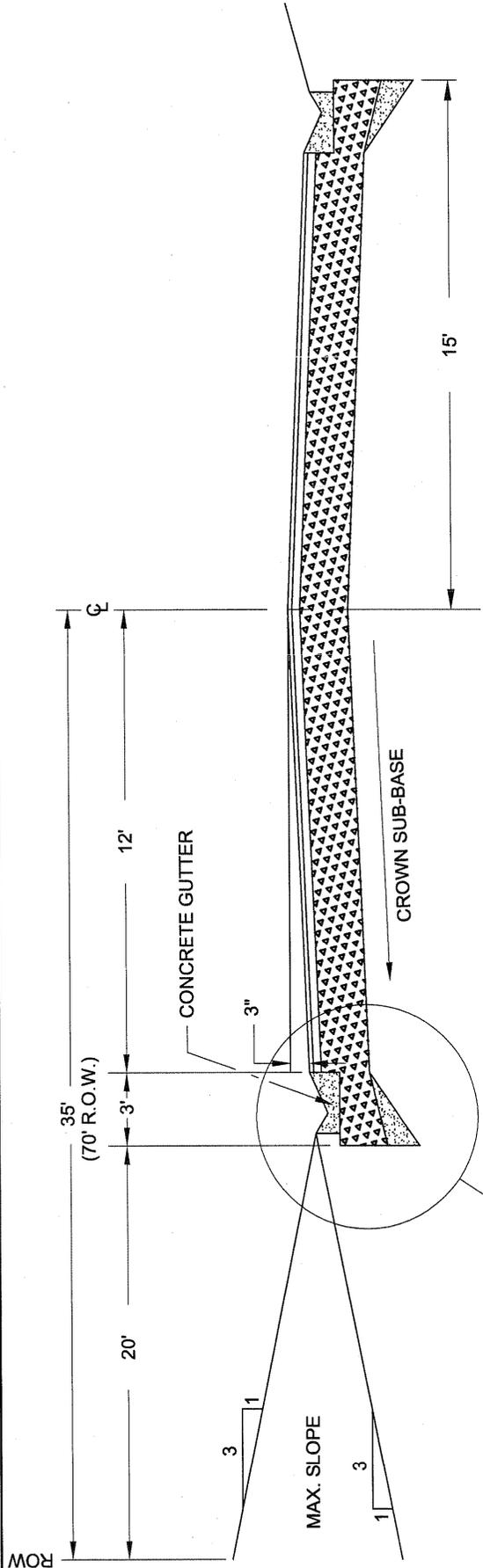
NOTES:

1. BASE SHALL BE ROLLED AND COMPACTED WITH A VIBRATORY ROLLER CAPABLE OF PRODUCING A MINIMUM DYNAMIC VIBRATION FORCE OF 27,000 LBS. OR EQUIVALENT 3 WHEEL 10 - 12 TON ROLLER.
2. ALL TOPSOIL, STUMPS, ROOTS, OR OTHER ORGANIC MATERIAL IS TO BE REMOVED PRIOR TO PLACING FILL OR SHAPING THE ROAD BOX.
3. ROAD CONSTRUCTION SHALL GENERALLY OCCUR BETWEEN MAY 15th AND OCT. 15th.
4. ALL UNPAVED AREAS WITHIN THE RIGHT-OF-WAY ARE TO BE TOPSOILED, FERTILIZED AND SEEDDED. MIN. 4" COMPACTED TOPSOIL.
5. THE ROAD SHALL BE TACK COATED PRIOR TO PLACEMENT OF TOP COURSE OF ASPHALT.

GUTTER CURING AGENT SHALL BE APPLIED THE SAME DAY THE GUTTERS ARE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

PROVIDE EXPANSION JOINTS WITH APPROVED FILLER MATERIAL EVERY 50 FEET. DUMMY JOINTS SHALL BE MADE IN UNIFORM INTERVALS OF NOT MORE THAN 10 FEET.

TYPICAL ROAD SECTION
 NOT TO SCALE



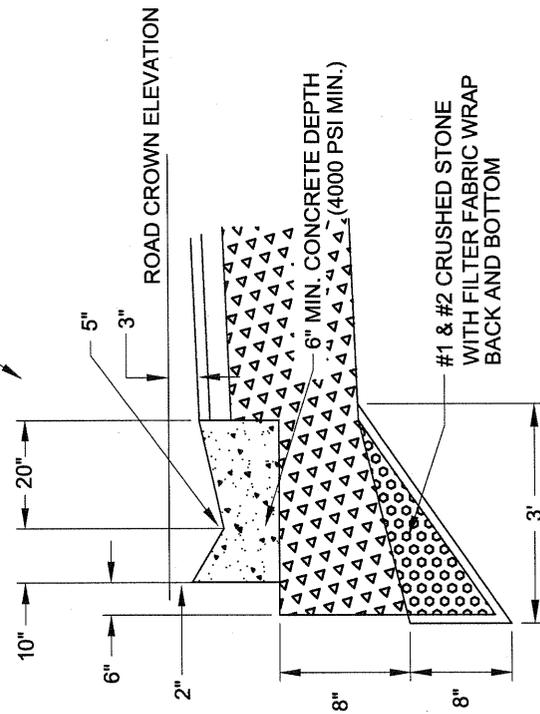
12" CRUSHED STONE PAVEMENT BASE SHALL CONSIST OF 6" NO. 2 CRUSHER RUN ROLLED AND COMPACTED, FOLLOWED BY 6" OF NO. 2 CRUSHER RUN COMPACTED IN TWO (2) 3" LIFTS. STONE SHALL BE CRUSHED LIMESTONE MEETING NYS DOT SECTION 304.

ASPHALT CONCRETE SURFACE SHALL CONFORM TO NYS DOT SPECIFICATIONS:
 2 1/2" BINDER: ITEM 403.13, TYPE 3
 1-1/2" TOP: ITEM 403.17 TYPE 7F

ASPHALT CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH NYS DOT GENERAL SPECIFICATIONS FOR BITUMINOUS CONCRETE WITH THE EXCEPTION THAT THE 1-1/2" TOP SHALL BE PLACED ONE (1) YEAR AFTER THE INSTALLATION OF THE BINDER SURFACING, MINIMUM OUTSIDE TEMPERATURE AT TIME OF PLACEMENT 50° F. TACK COAT SHALL BE APPLIED BETWEEN THE BINDER COURSE AND THE TOP COURSE.

NOTES:

1. BASE SHALL BE ROLLED AND COMPACTED WITH A VIBRATORY ROLLER CAPABLE OF PRODUCING A MINIMUM DYNAMIC VIBRATION FORCE OF 27,000 LBS. OR EQUIVALENT 3 WHEEL 10 - 12 TON ROLLER.
2. ALL TOPSOIL, STUMPS, ROOTS, OR OTHER ORGANIC MATERIAL IS TO BE REMOVED PRIOR TO PLACING FILL OR SHAPING THE ROAD BOX.
3. ROAD CONSTRUCTION SHALL GENERALLY OCCUR BETWEEN MAY 15th AND OCT. 15th.
4. ALL UNPAVED AREAS WITHIN THE RIGHT-OF-WAY ARE TO BE TOPSOILED, FERTILIZED, AND SEEDED. MIN. 4" COMPACTED SOIL.

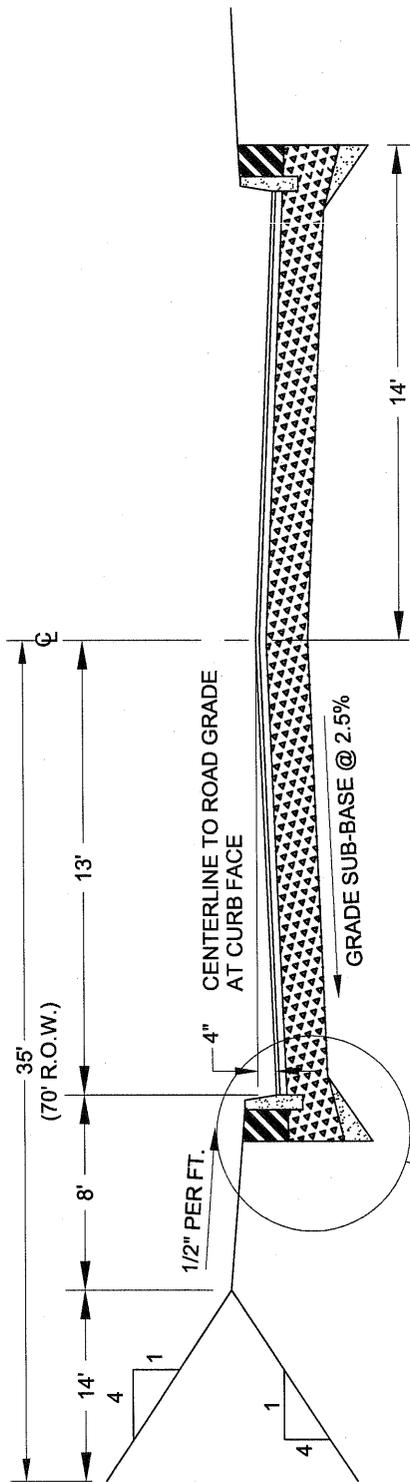


GUTTER CURING AGENT SHALL BE APPLIED THE SAME DAY THE GUTTERS ARE CONSTRUCTED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.

PROVIDE EXPANSION JOINTS WITH APPROVED FILLER MATERIAL EVERY 50 FEET. DUMMY JOINTS SHALL BE MADE IN UNIFORM INTERVALS OF NOT MORE THAN 10 FEET.

COLLECTOR ROAD SECTION

NOT TO SCALE



15" CRUSHED STONE PAVEMENT BASE SHALL CONSIST OF 9" NO. 2 CRUSHER RUN ROLLED AND COMPACTED, FOLLOWED BY 6" OF CRUSHER RUN COMPACTED IN TWO (2) 3" LIFTS. STONE SHALL BE CRUSHED LIMESTONE MEETING NYS DOT SECTION 304.

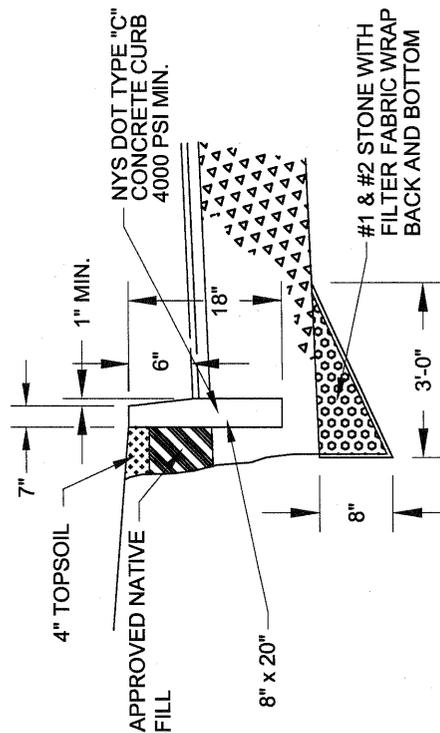
ASPHALT CONCRETE SURFACE SHALL CONFORM TO TO NYS DOT SPECIFICATIONS:

- 2-1/2" ASPHALT BASE: ITEM 403.11, TYPE 1
- 1-1/2" ASPHALT BINDER: ITEM 403.13, TYPE 3
- 1-1/2" ASPHALT TOP: ITEM 403.16, TYPE 6F

ASPHALT CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH NYS DOT GENERAL SPECIFICATIONS FOR BITUMINOUS CONCRETE WITH THE EXCEPTION THAT THE 1-1/2" TOP SHALL BE PLACED ONE (1) YEAR AFTER THE INSTALLATION OF THE BINDER COURSE. TACK COAT SHALL BE APPLIED BETWEEN THE TOP COURSE AND THE BINDER COURSE. MINIMUM OUTSIDE TEMPERATURE AT THE TIME OF ASPHALT PLACEMENT 50 F.

NOTES:

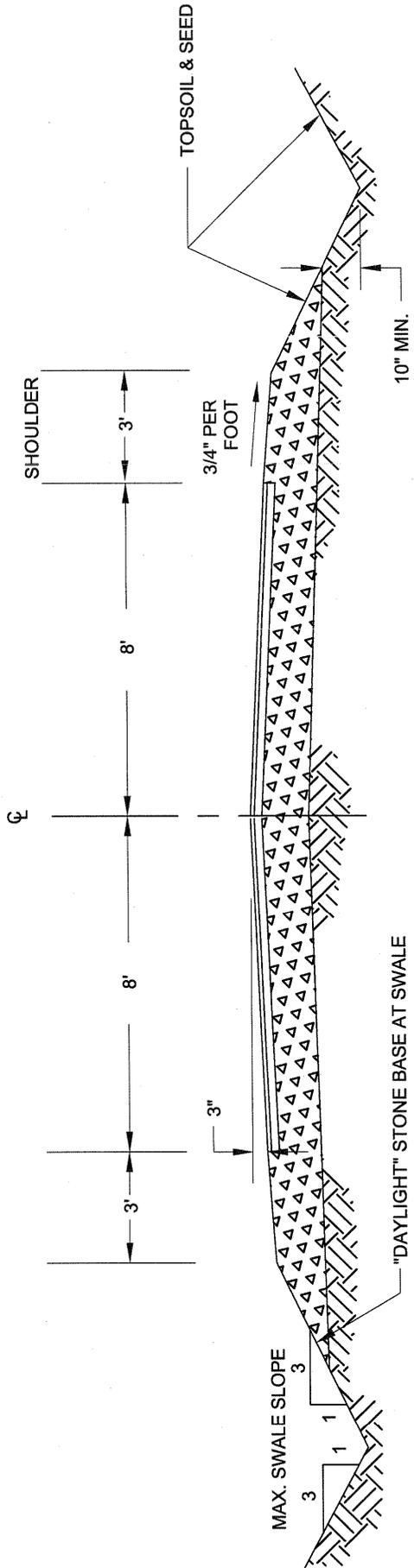
1. BASE SHALL BE ROLLED AND COMPACTED WITH A VIBRATORY ROLLER CAPABLE OF PRODUCING A DYNAMIC VIBRATION FORCE 27,000 LBS. OR EQUIVALENT 3 WHEEL 10-12 TON ROLLER.
2. ALL TOPSOIL, STUMPS, ROOTS, OR OTHER ORGANIC MATERIAL IS TO BE REMOVED PRIOR TO PLACING FILL OR SHAPING ROAD BOX.
3. ROAD CONSTRUCTION SHALL GENERALLY OCCUR BETWEEN MAY 15th AND OCT. 15th.
4. ALL UNPAVED AREAS WITHIN THE RIGHT-OF-WAY ARE TO BE TOPSOILED AND SEEDED. MIN. 4" COMPACTED TOPSOIL.



ALL DRIVEWAYS ARE TO HAVE 1" REVEAL WITH 3' TRANSITION CURB ON EACH SIDE OF THE ENTRANCE

INDUSTRIAL ROAD SECTION

NOT TO SCALE



9" CRUSHED STONE PAVEMENT BASE SHALL CONSIST OF 5" NO. 2 CRUSHER RUN ROLLED AND COMPACTED FOLLOWED BY 4" OF NO. 2 CRUSHER RUN COMPACTED. STONE SHALL BE CRUSHED LIMESTONE MEETING NYSDOT SECTION 304.

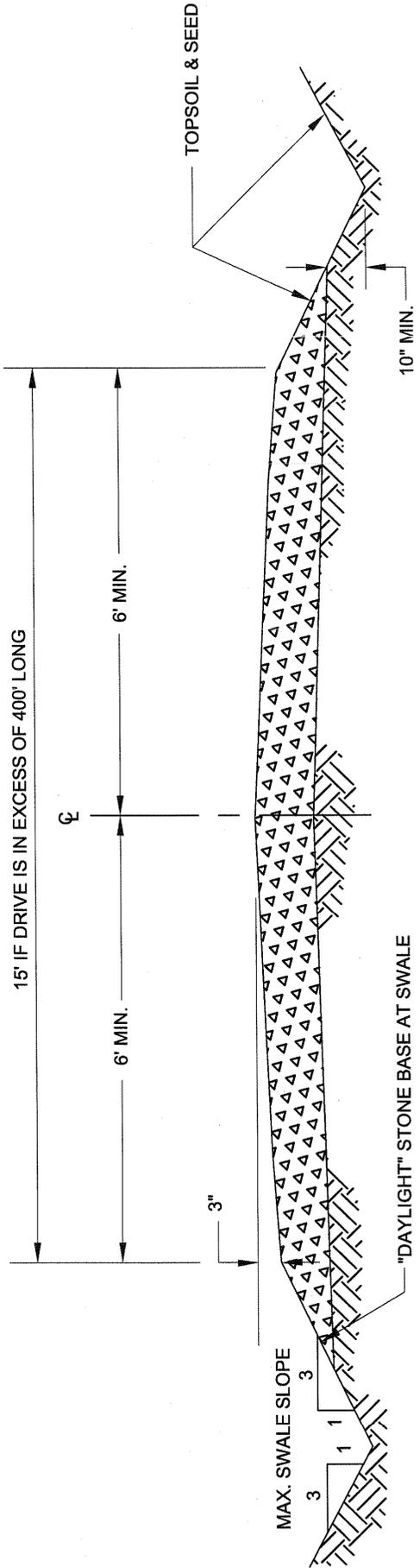
ASPHALT CONCRETE SURFACE SHALL CONFORM TO NYS DOT SPECIFICATIONS:
 BINDER: 2" ITEM 403.13 TYPE 3
 TOP: 1" ITEM 403.17 TYPE 7F

CONSTRUCTION SHALL BE IN ACCORDANCE WITH NYS DOT GENERAL SPECIFICATIONS FOR BITUMINOUS CONCRETE. TOP COURSE SHALL BE PLACED ONE YEAR FOLLOWING THE INSTALLATION OF THE BINDER SURFACE. MINIMUM OUTSIDE TEMPERATURE AT TIME OF PLACEMENT 50°F. TACK COAT TO BE PLACED PRIOR TO PLACEMENT OF TOP COURSE OF ASPHALT.

ALL TOPSOIL, STUMPS, ROOTS, OR OTHER ORGANIC MATERIAL TO BE REMOVED PRIOR TO PLACING FILL OR SHAPING ROAD BOX.

PRIVATE ROAD SECTION

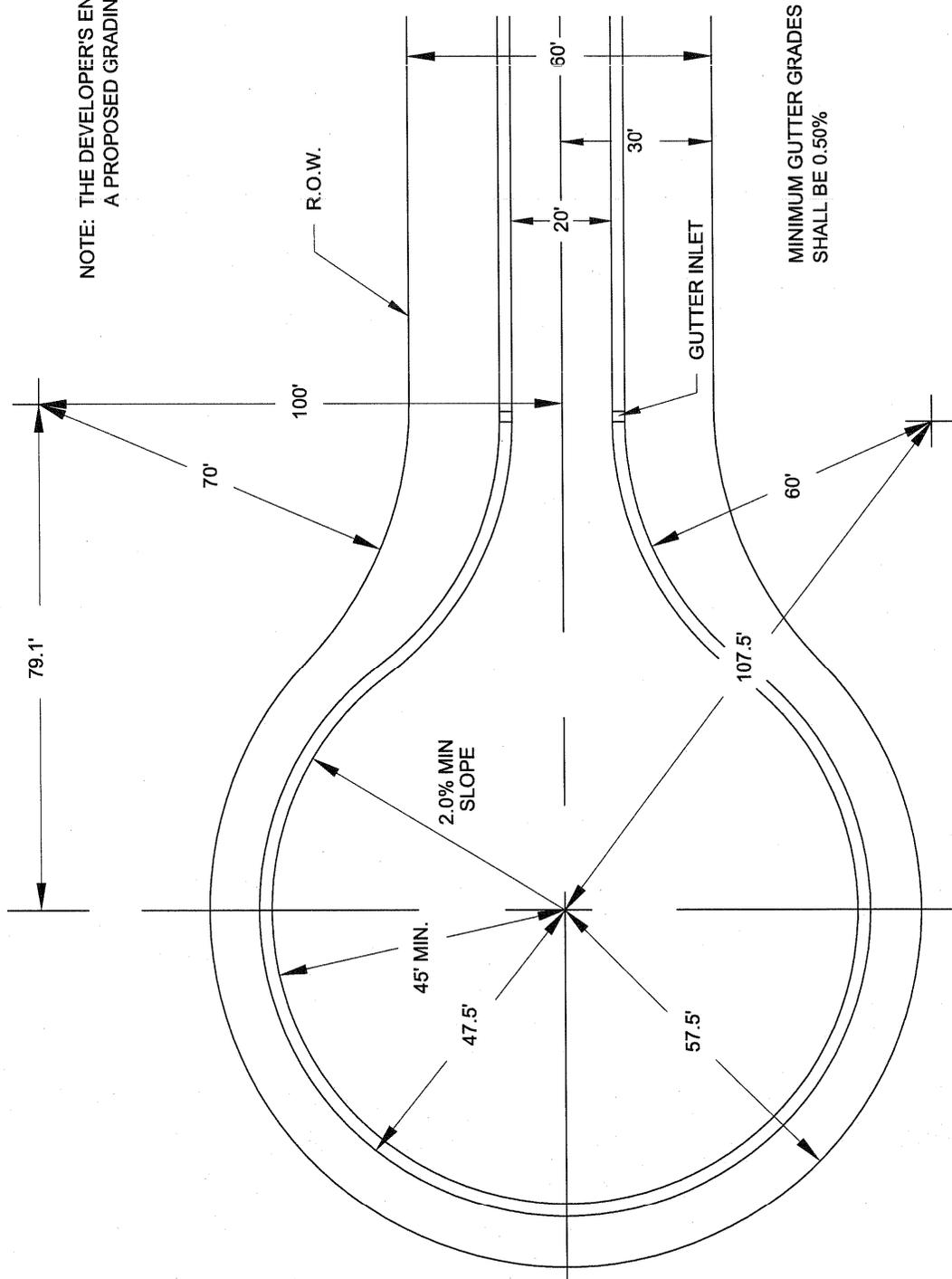
(To serve 3 to 4 units)
 NOT TO SCALE



9" CRUSHED STONE PAVEMENT BASE SHALL CONSIST OF 5" NO. 2 CRUSHER RUN ROLLED AND COMPACTED FOLLOWED BY 4" OF NO. 2 CRUSHER RUN COMPACTED IN TWO (2) LIFTS. STONE SHALL BE CRUSHED LIMESTONE MEETING NYS DOT SECTION 304.

ALL TOPSOIL, STUMPS, ROOTS, OR OTHER ORGANIC MATERIAL TO BE REMOVED PRIOR TO PLACING FILL OR SHAPING ROAD BOX.

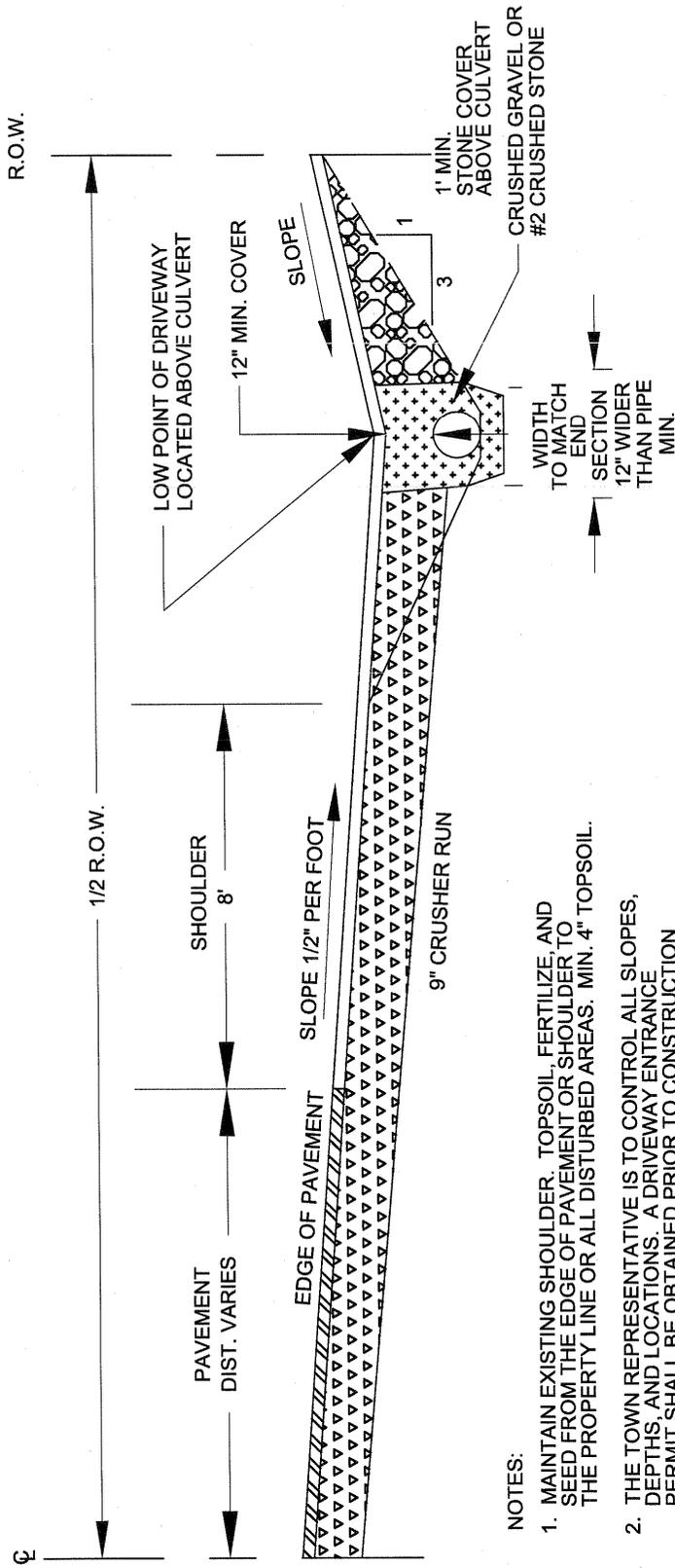
PRIVATE DRIVE SECTION
 (To serve 1-2 units)
 NOT TO SCALE



NOTE: THE DEVELOPER'S ENGINEER SHALL SUBMIT A PROPOSED GRADING PLAN FOR APPROVAL.

STANDARD CUL DE SAC WITH GUTTER

NOT TO SCALE

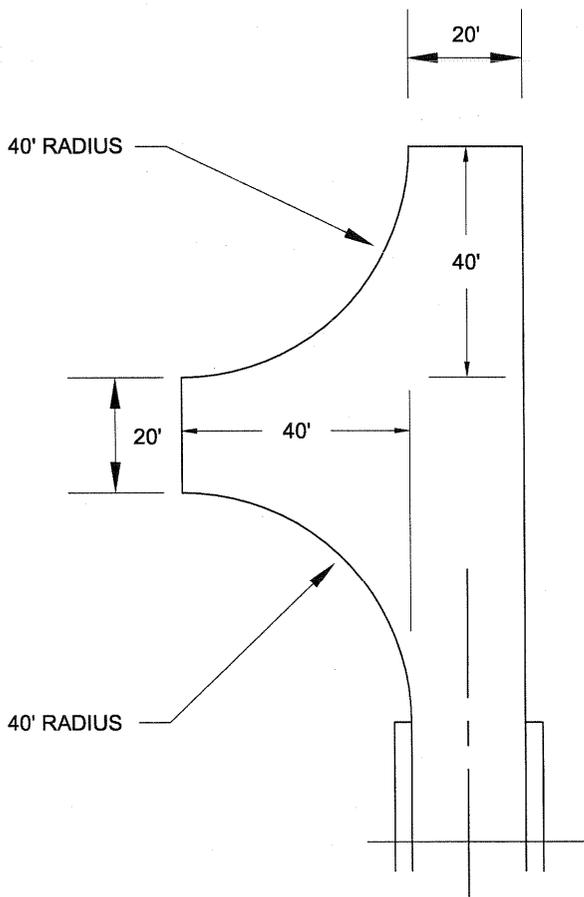


NOTES:

1. MAINTAIN EXISTING SHOULDER, TOPSOIL, FERTILIZE, AND SEED FROM THE EDGE OF PAVEMENT OR SHOULDER TO THE PROPERTY LINE OR ALL DISTURBED AREAS. MIN. 4" TOPSOIL.
2. THE TOWN REPRESENTATIVE IS TO CONTROL ALL SLOPES, DEPTHS, AND LOCATIONS. A DRIVEWAY ENTRANCE PERMIT SHALL BE OBTAINED PRIOR TO CONSTRUCTION ON DEDICATED TOWN ROADS ONLY.
3. DRIVEWAY CULVERT, TYPE AND SIZE TO BE DETERMINED BY TOWN REPRESENTATIVE. (ON DEDICATED TOWN ROADS ONLY)
4. EDGE OF PAVT TO BE SAWCUT - FULL WIDTH.

DRIVEWAY ENTRANCE DETAIL

SECTION THROUGH EXISTING ROADWAY AND DITCH
 NOT TO SCALE

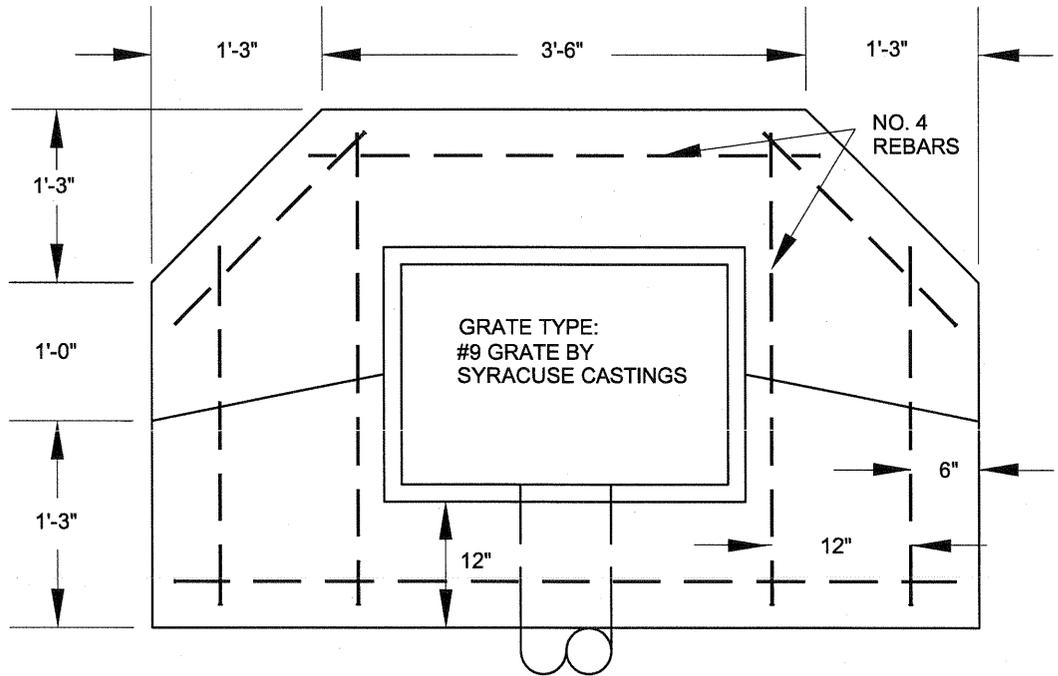


NOTES:

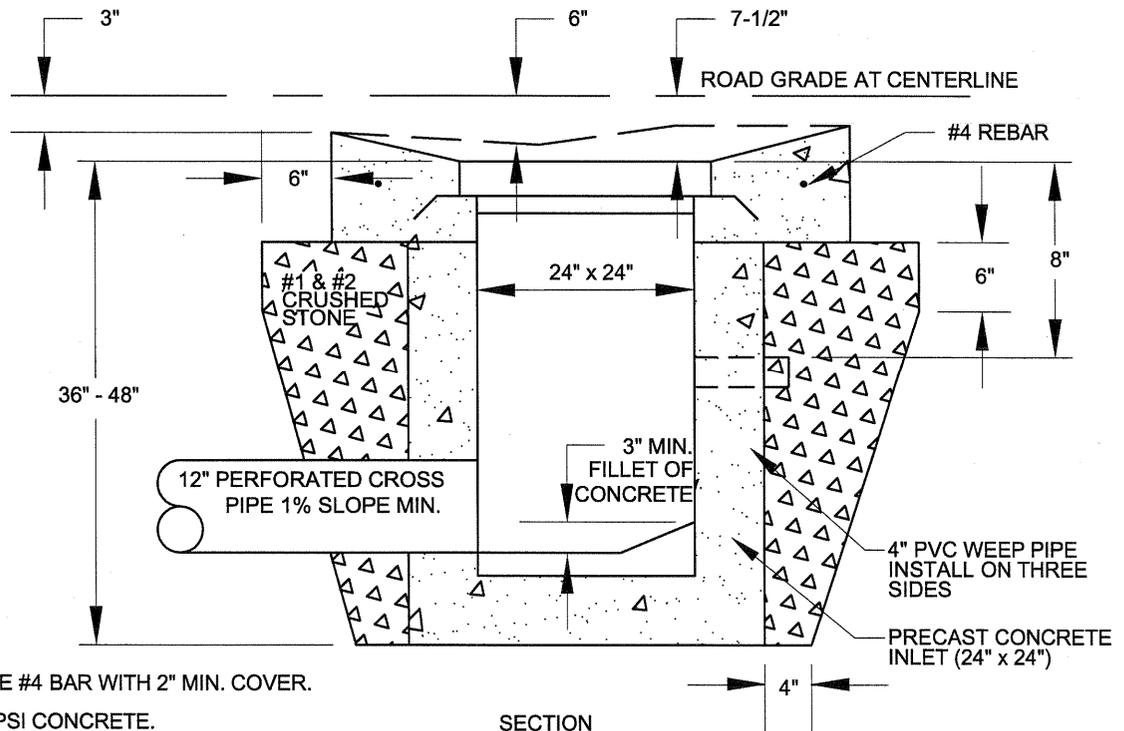
1. PROVIDE PERMANENT EASEMENT FOR FUTURE CUL-DE-SAC.
2. PRIVATE DRIVEWAYS SHALL NOT EXIT INTO OR WITHIN 20' OF TEMPORARY TURN-AROUND.
3. THE LETTER OF CREDIT SHALL INCLUDE AN ITEM FOR A PERMANENT CUL-DE-SAC. THIS ITEM SHALL BE HELD BY THE TOWN UNTIL DEVELOPMENT OF FUTURE SECTIONS.
4. TEMPORARY TURN-AROUND SHALL BE CONSTRUCTED OF 9" CRUSHER RUN COMPACTED THICKNESS AND PAVED IF IN USE MORE THAN ONE (1) YEAR.

TEMPORARY TURN-AROUND DETAILS

NOT TO SCALE



PLAN

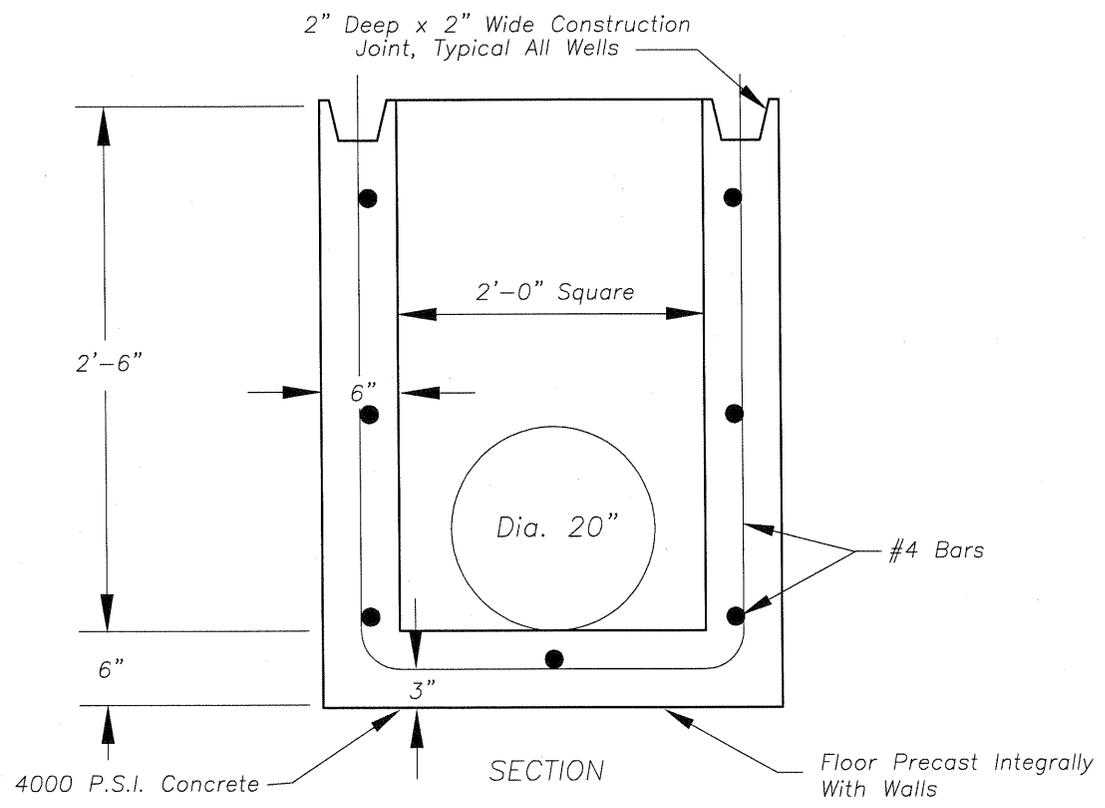
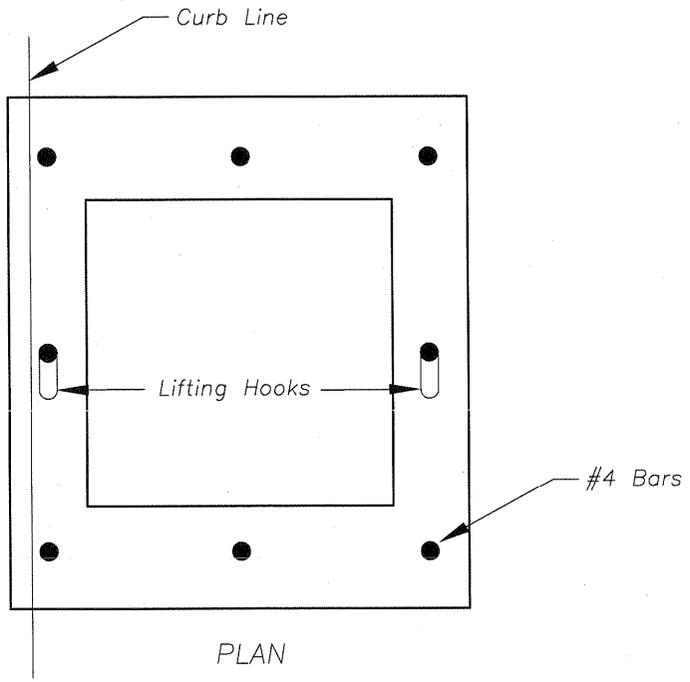


SECTION

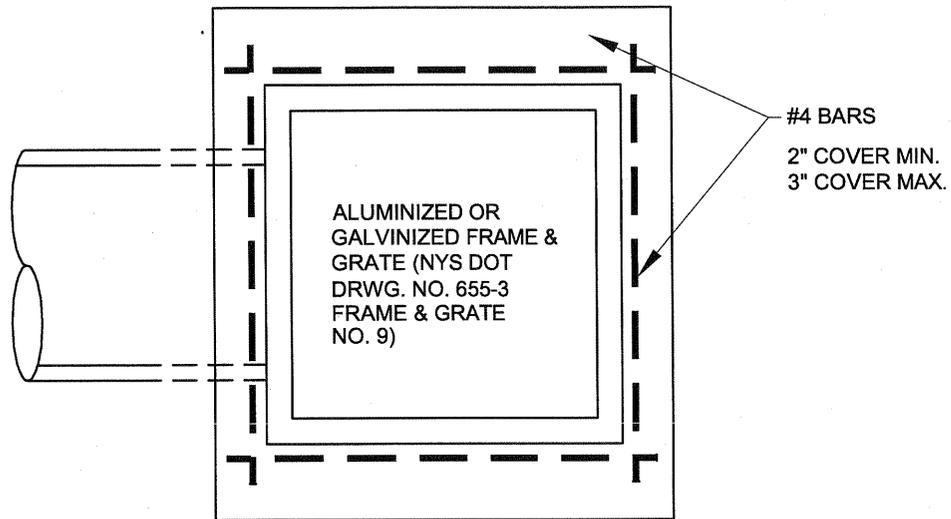
NOTES:

1. ALL REBAR SHALL BE #4 BAR WITH 2" MIN. COVER.
2. SET FRAME IN 4000 PSI CONCRETE.
3. FILL EXCAVATED AREA WITH #1 & #2 STONE COMPACTED IN 6" LIFTS.
4. PAINT INSIDE OF INLET WITH ONE (1) COAT OF KOPPERS BITUMASTIC 300M, HYDACIDE 700B OR APPROVED EQUAL. PAINT BOTTOM OF INLET WITH TWO (2) COATS.
5. CATCH BASIN SHALL BE MODEL CB315BS AS MANUFACTURED BY KISTNER OR APPROVED EQUAL.
6. MAX. PIPE SIZE INTO OR OUT OF CATCH BASIN SHALL BE 12" DIA.
7. UNUSED KNOCKOUTS OT BE FILLED W/ BLOCK/MORTAR TO A FULL 6" THICKNESS.

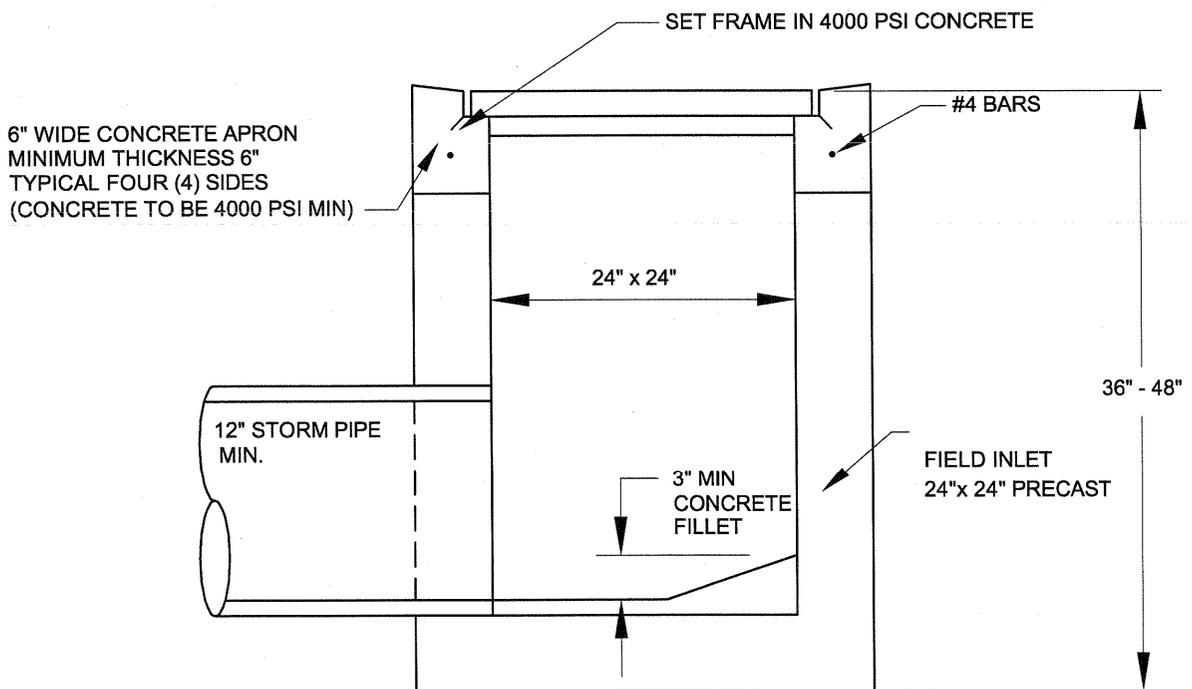
STANDARD DROP INLET
NOT TO SCALE



TYPE A DROP INLET
NOT TO SCALE



PLAN



SECTION

NOTES:

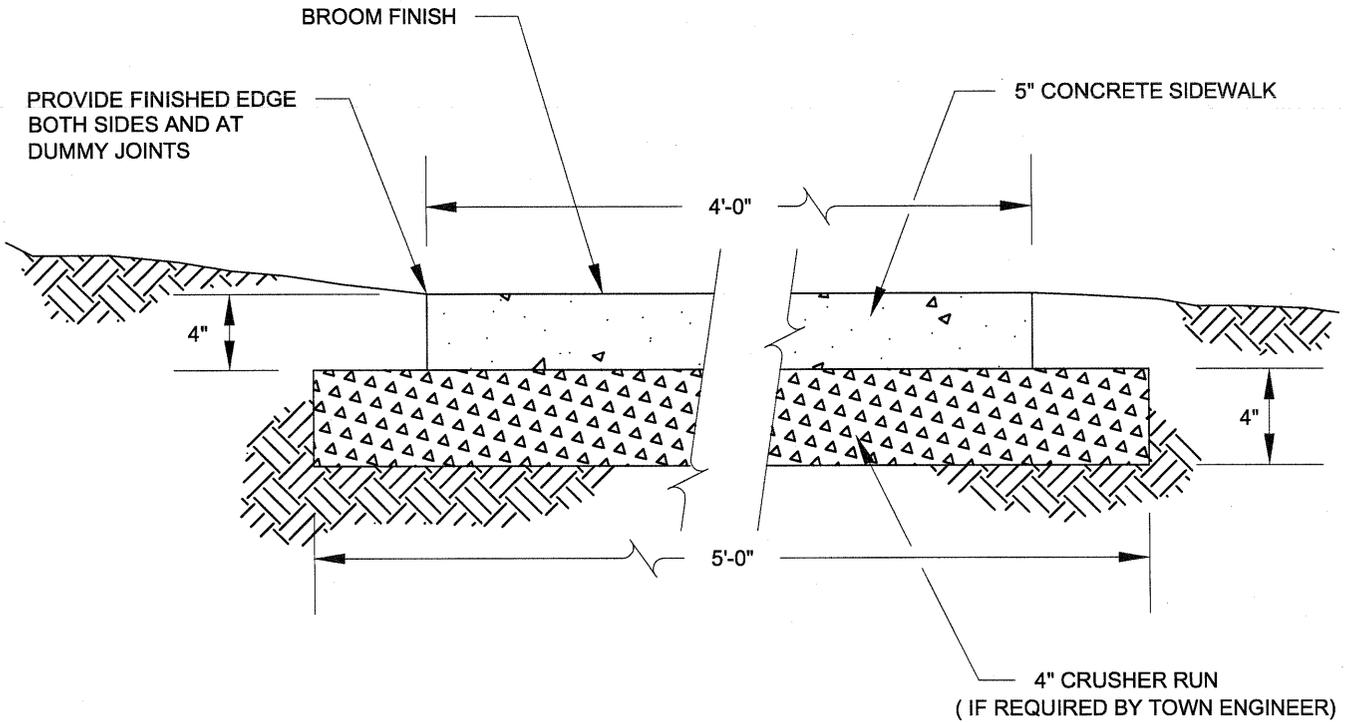
1. FILL EXCAVATED AREA WITH #1 & #2 CRUSHED STONE COMPACTED IN 6" LIFTS.
2. SLOPE CONCRETE APRON TO INLET (1% MIN.)
3. PAINT INSIDE OF INLET WITH ONE (1) COAT OF KOPPERS BITUMASTIC 300M, HYDACIDE 700B OR APPROVED EQUAL. PAINT BOTTOM OF INLET WITH TWO (2) COATS.
4. PAINT INSIDE OF INLET WITH ONE (1) COAT OF KOPPERS BITUMASTIC 300M, HYDACIDE 700B OR APPROVED EQUAL. PAINT BOTTOM OF INLET WITH TWO (2) COATS.
5. CATCH BASIN SHALL BE MODEL CB315BS AS MANUFACTURED BY KISTNER OR APPROVED EQUAL.
6. MAX. PIPE SIZE INTO OR OUT OF CATCH BASIN SHALL BE 12" DIA.
7. UNUSED KNOCKOUTS OT BE FILLED W/ BLOCK/MORTAR TO A FULL 6" THICKNESS.

STANDARD FIELD INLET

NOT TO SCALE

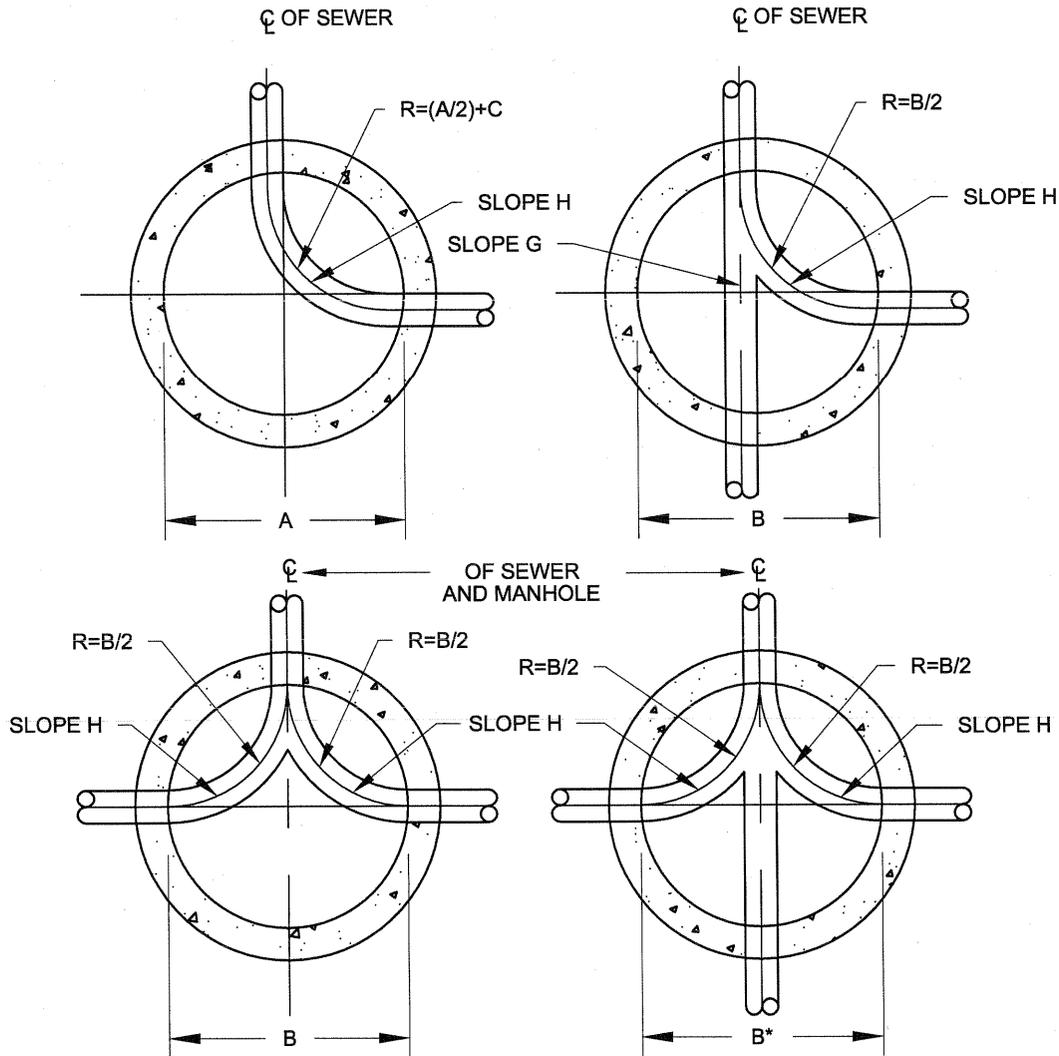
NOTES:

1. CONCRETE SHALL BE 4000 PSI, CLASS A, AIR ENTRAINED CONCRETE. SHOWN.
2. FULL DEPTH EXPANSION JOINTS SHALL BE PROVIDED EVERY 25 FEET. "DUMMY" JOINTS SHALL BE AT 5 FEET INTERVALS.
3. SIDEWALK SHALL BE SEALED. SEAL WITH TWO COATS "CURE & SEAL", "HORN-CURE" OR APPROVED EQUAL.
4. PROVIDE 1/4" PER FOOT CROSS SLOPE ON SIDEWALK. SLOPE TOWARD ROAD GUTTER.



TYPICAL SIDEWALK DETAIL

NOT TO SCALE



NOTES:

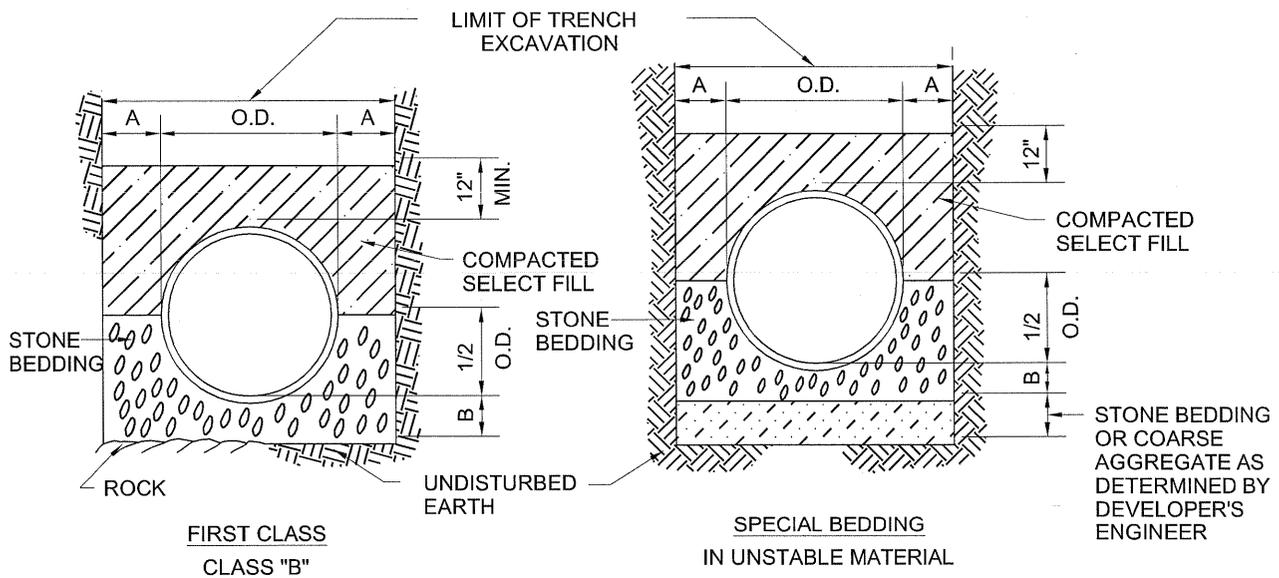
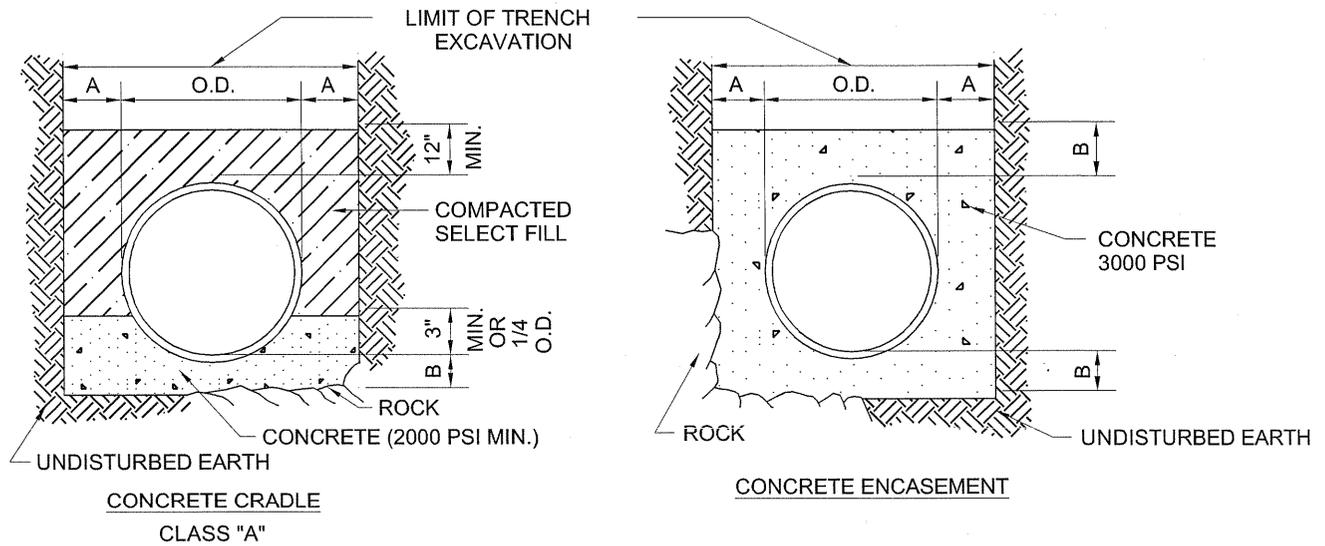
1. WHEN A SMALLER SEWER JOINS A LARGER SEWER THE TOP OF THE PIPES SHALL BE SET AT THE SAME ELEVATION.
2. * THE DESIGN ENGINEER SHALL PROVIDE DESIGN DETAILS SHOWING MANHOLE SIZE, MATERIAL, INVERT, BENCH WALLS, AND OTHER PERTINENT DETAILS.
3. MANHOLES WITH PIPES LARGER THAN 36" WILL REQUIRE SPECIAL DETAIL SIZE, MATERIAL, INVERT, BENCH WALLS, AND OTHER PERTINENT DETAILS.

MAX. PIPE DIA.	8"	10"	**12"	18"	24"	30"	36"
A	4'-0"	4'-0"	5'-0"	5'-0"	5'-0"	6'-0"	6'-0"
B	5'-0"	5'-0"	5'-0"	5'-0"	5'-0"	6'-0"	8'-0"
C	4"	5"	6"	9"	12"	15"	18"
*G	0.01'	0.01'	0.01'	0.01'	0.01'	0.01'	0.01'
*H	0.30'	0.30'	0.30'	0.30'	0.30'	0.30'	0.30'

* UNLESS GIVEN PERMISSION TO VARY FROM SUPT. OF HIGHWAYS.

** FOR 90° 5' DIA.

STANDARD MANHOLE DIMENSIONS
NOT TO SCALE

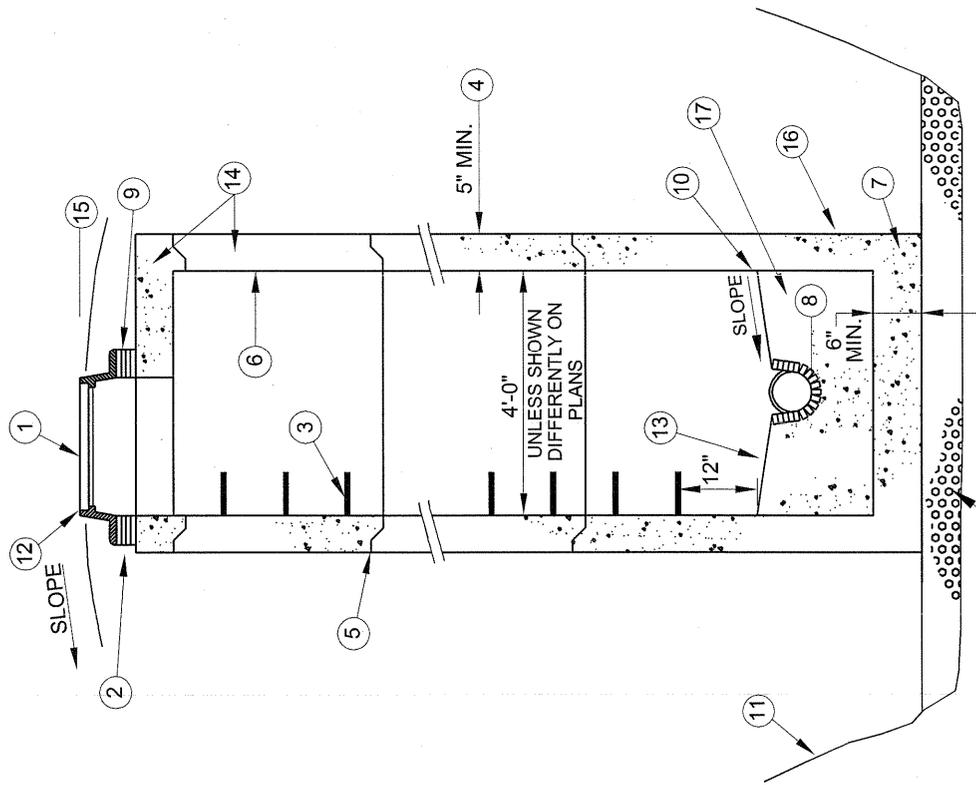


PIPE DIA.	DIM. A	DIM. B
UP TO 18"	1.0'	6"
21" TO 36"	1.5'	9"
OVER 36"	1.5'	12"

1. TRENCH BACKFILL SHALL BE AS REQUIRED BY THE HIGHWAY OWNER.
2. SELECT FILL SHALL BE SAND, GRAVEL, AND SIMILAR MATERIAL WHICH SHALL BE FREE FROM CLAY, LOAM, ORGANIC MATERIAL, DEBRIS, FROZEN MATERIAL AND SHALL CONTAIN ONLY SMALL AMOUNTS OF STONE, PEBBLES OR LUMPS OVER ONE INCH IN GREATEST DIMENSION BUT NONE OVER TWO INCHES IN GREATEST DIMENSION.
3. STONE BEDDING SHALL MEAN APPROVED IMPORTED AGGREGATE MEETING THE REQUIREMENTS OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATION, JAN 2, 1990 EDITION, AS REVISED, SUBSECTION 703-0201 "CRUSHED STONE". PRIMARY SIZE 1 OR A MIXTURE OF PRIMARY SIZES 1 AND 2.
4. COARSE AGGREGATE SHALL MEAN APPROVED IMPORTED AGGREGATE MEETING THE REQUIREMENTS OF THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATION, JAN 2, 1990 EDITION, AS REVISED, SUBSECTION 703-0201 "CRUSHED STONE". PRIMARY SIZE 3 AND/OR 4
5. THIS FIGURE APPLIES TO MAINLINE AND LATERAL PIPE INSTALLATION AS WELL AS FORCEMAINS.

STANDARD TRENCH DETAILS
STORM & SANITARY SEWERS
 NOT TO SCALE

1. CAST IRON FRAME AND COVER. SEAL WITH ASPHALT BASE CEMENT. SYRACUSE CASTINGS #1032.
2. CONCRETE OR MORTAR OUTSIDE OF FRAME ALL THE WAY AROUND.
3. MANHOLE STEPS SHALL BE M-A INDUSTRIES INSERTED PLASTIC STEPS
4. STANDARD REINFORCED CONCRETE RISER SECTIONS CONFORMING ASTM C-78-64T SPECIFICATION.
5. TONGUE AND GROOVE JOINTS WITH "O" RING SEAL.
6. PAINT INTERIOR WITH 2 COATS OF KOPPERS SUPER SERVICE BLACK OR APPROVED EQUAL.
7. CONCRETE SHALL BE 3000 PSI IF CAST IN PLACE.
8. INVERT TO BE OF SEWER BRICK MEETING ASTM C-32 GRADE MA SPECIFICATION LAID IN CEMENT MORTAR. INVERT SHALL BE TRUE TO LINE & GRADE. HALF PIECE SECTIONS OF PIPE MAY BE USED FOR BOTTOM HALF OF INVERT IN STRAIGHT THROUGH MANHOLES. STORM MANHOLE INVERT SHALL BE CONSTRUCTED OF 3000 PSI FILL CONCRETE. SEWER BRICK NOT REQUIRED FOR STORM MANHOLES.
9. PRECAST CONCRETE GRADE RINGS OR BRICK. MAXIMUM BUILD-UP 8" PLASTER ALL EXPOSED SURFACE WITH MORTAR INSIDE & OUTSIDE COAT INSIDE WITH 2 COATS OF KOPPERS 300M BITUMASTIC COATING OR APPROVED EQUAL.
10. FORM WITH RING TEMPLATE. CONTRACTOR IS RESPONSIBLE FOR WATER TIGHTNESS OF MANHOLE.
11. ALL SLOPES ARE TO CONFORM TO OSHA STANDARDS.
12. FINISH GRADE (F.G.) FOR TOPS OF MANHOLE FRAMES & COVERS. PROVIDE POSITIVE SLOPE AWAY FROM MANHOLE COVER.
13. BENCH WORK SHALL BE PROTECTED WITH 2 COATS OF SIKAGARD HI-BUILD 667 DURALKOTE OR APPROVED EQUAL. COATS SHALL BE DIFFERENT COLORS. FIRST COAT ON BENCH SURFACES TO CONTAIN ANTI-SLIP NODULES.
14. FLAT SLABS SHALL BE USED WHERE MANHOLE HEIGHT IS LESS THAN 6 FEET. OPENINGS SHALL BE ECCENTRIC.
15. FINISH GRADE IS APPROXIMATE ONLY. CONTRACTOR TO VERIFY IN THE FIELD PRIOR TO ORDERING MANHOLES.
16. AT CONTRACTORS OPTION PRECAST MANHOLE BASE MAY BE USED IN LIEU OF CAST IN PLACE ASTM C-478-64T.
17. 3000 PSI CONCRETE BENCH WORK.
18. MAX. SPACING BETWEEN MANHOLES TO BE 300'.



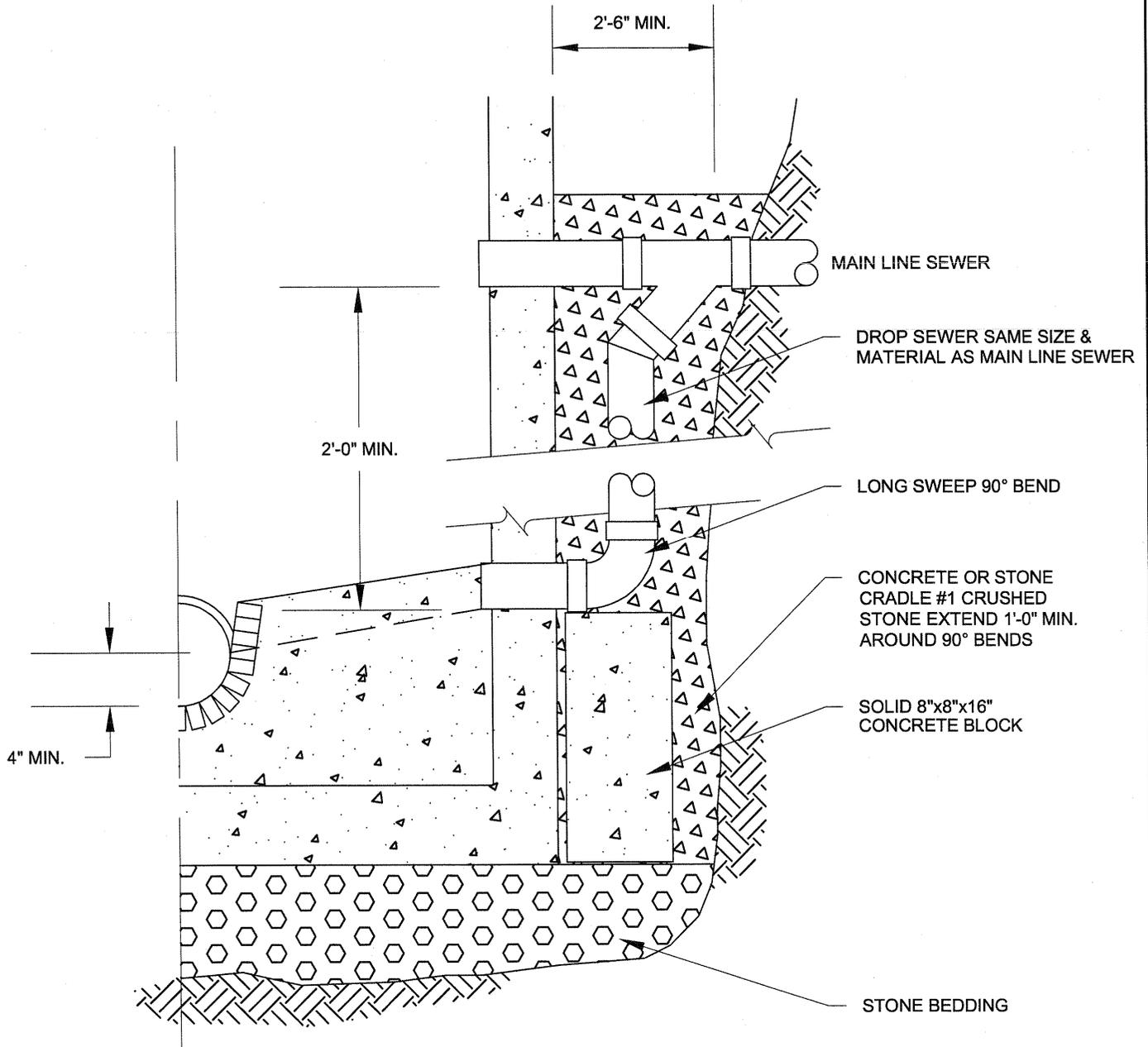
SEWER SIZE (PER PG. IV-13)	MANHOLE DIAMETER
8" - 10"	4'-0"
12" - 24"	5'-0"
30" - 48"	6'-0"
3 & 4 WAY	5'-0" MIN. SPECIAL INVERT DETAIL REQUIRED

PROVIDE 6" THICKNESS
#1 & #2 CRUSHED STONE
BASE FOUNDATION BELOW
MANHOLE

STANDARD MANHOLE DETAIL
NOT TO SCALE

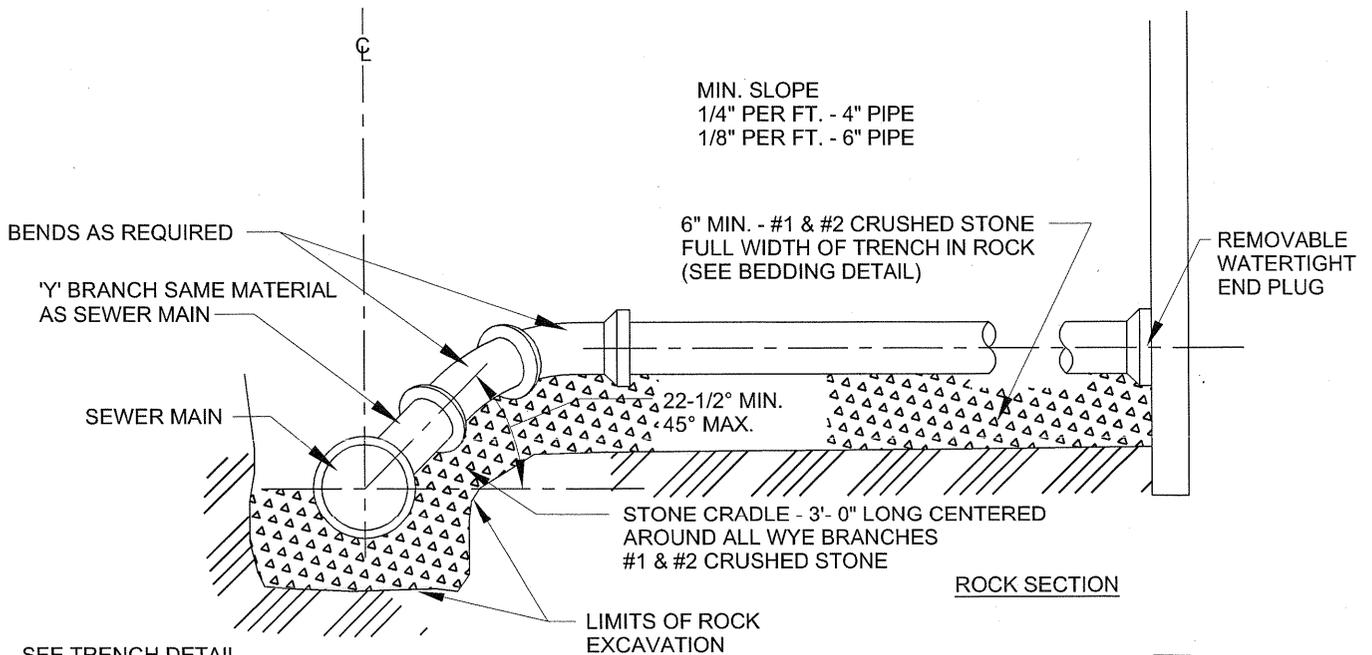
NOTES:

1. SEE STANDARD SANITARY MANHOLE DETAIL FOR ALL CONSTRUCTION FEATURES NOT SHOWN.
2. SEWER PIPES SHALL NOT ENTER MANHOLE AT JOINTS BETWEEN SECTIONS OF THE MANHOLE BARREL.
3. CONCRETE ENCASMENT STONE BEDDING SURROUNDING DROP SEWER SHALL BE A MINIMUM OF 9" THICKNESS ON ALL SIDES OF PIPE WALL.
4. SANITARY SEWER AND DROP SHALL BE OF THE SAME DIAMETER AND MATERIAL (SDR-35) CRADLED IN STONE AS SHOWN IN DETAIL BELOW.
5. PROVIDE BENCH FOR DROP AS SHOWN ON STANDARD SANITARY MANHOLE DETAIL.

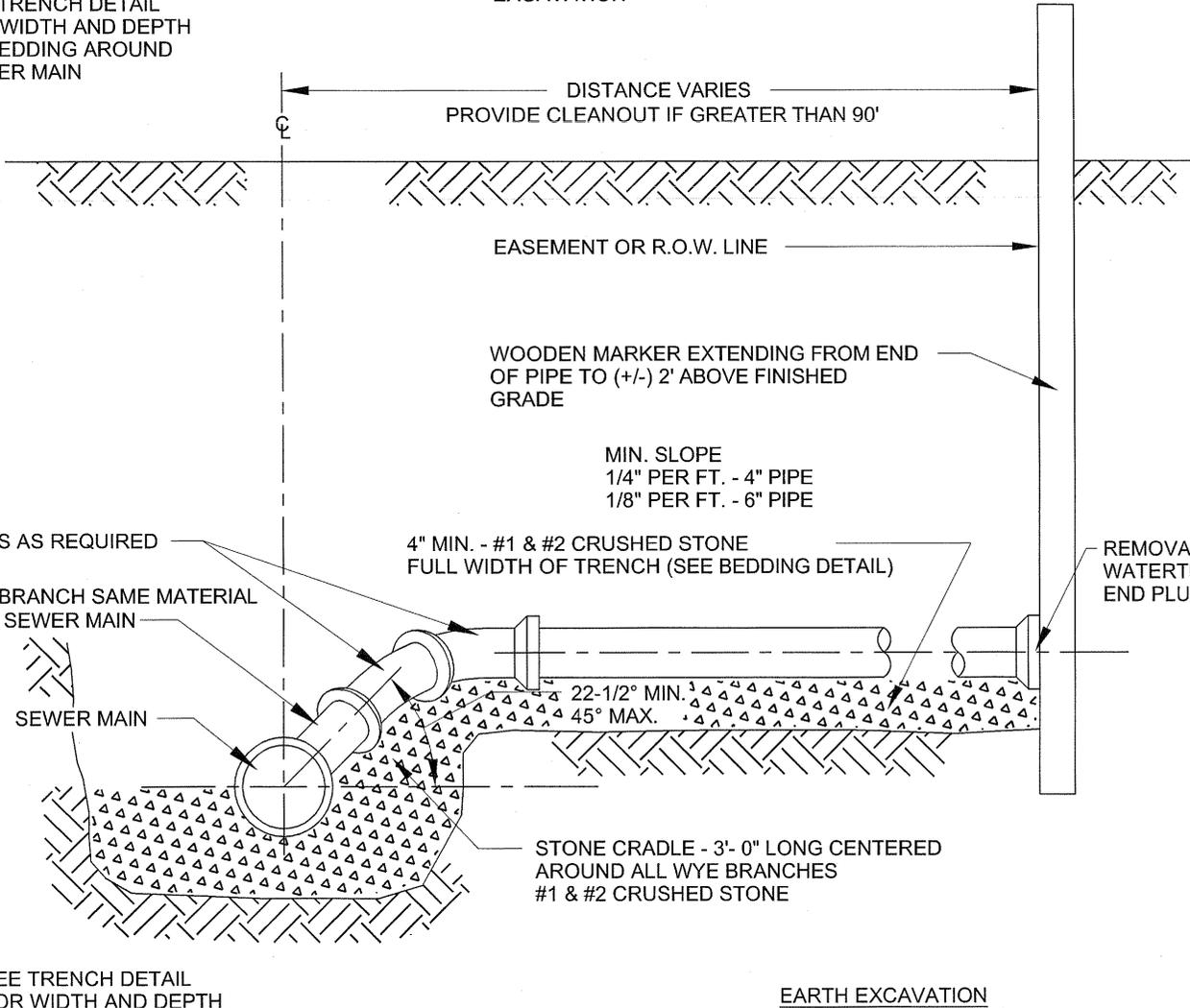


**STANDARD DROP
CONNECTION DETAIL**

NOT TO SCALE



SEE TRENCH DETAIL FOR WIDTH AND DEPTH OF BEDDING AROUND SEWER MAIN

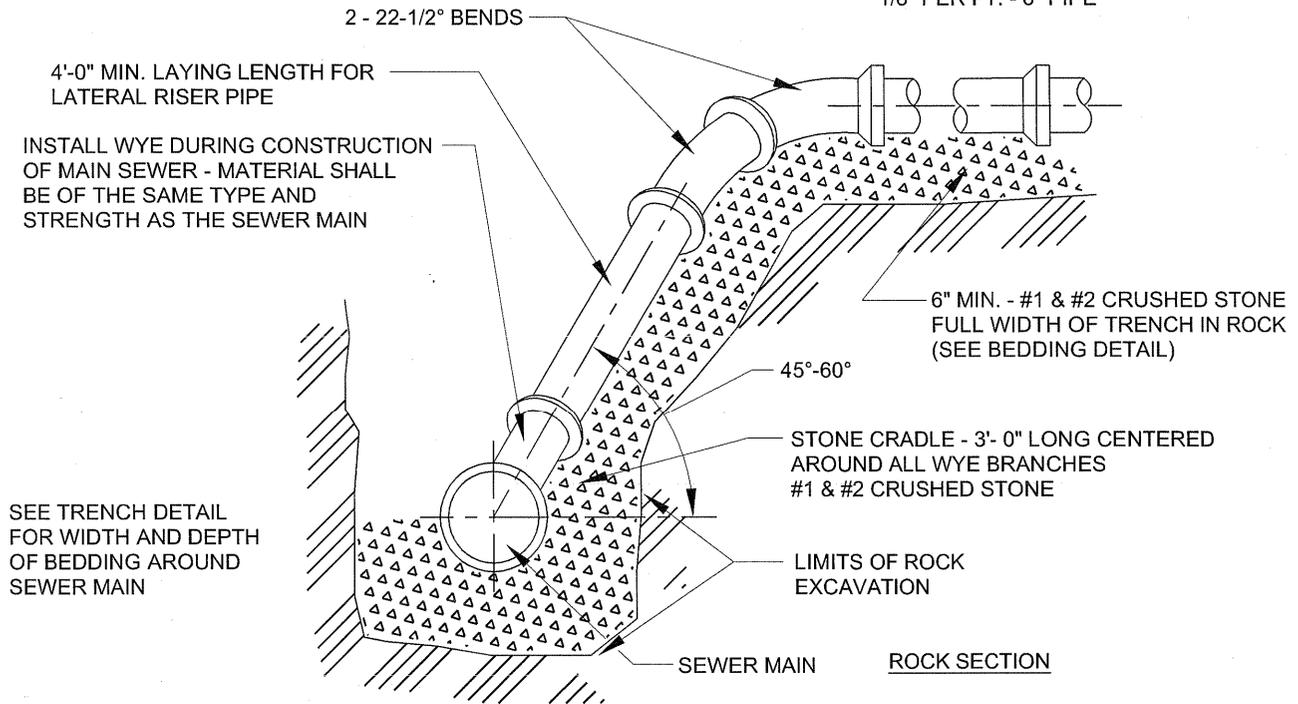


SEE TRENCH DETAIL FOR WIDTH AND DEPTH OF BEDDING AROUND SEWER MAIN

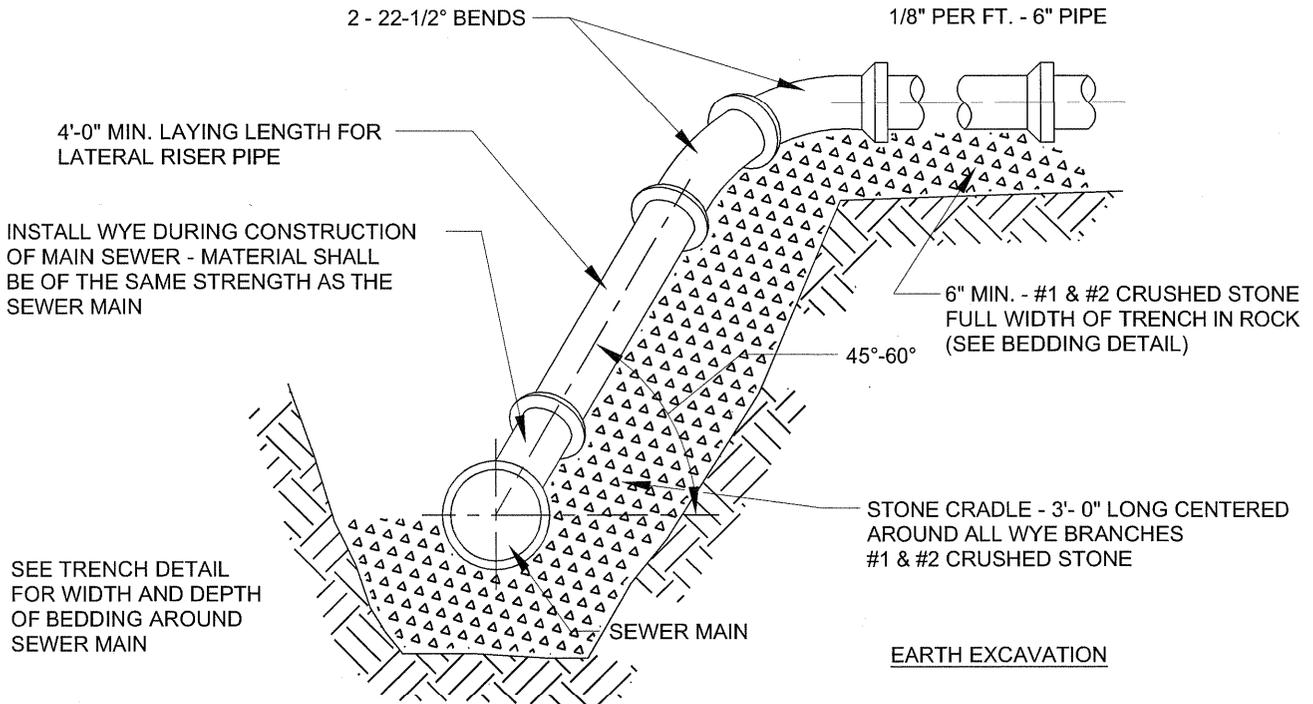
STANDARD STORM & SANITARY SEWER LATERAL DETAILS

NOT TO SCALE

MIN. SLOPE
1/4" PER FT. - 4" PIPE
1/8" PER FT. - 6" PIPE



MIN. SLOPE
1/4" PER FT. - 4" PIPE
1/8" PER FT. - 6" PIPE

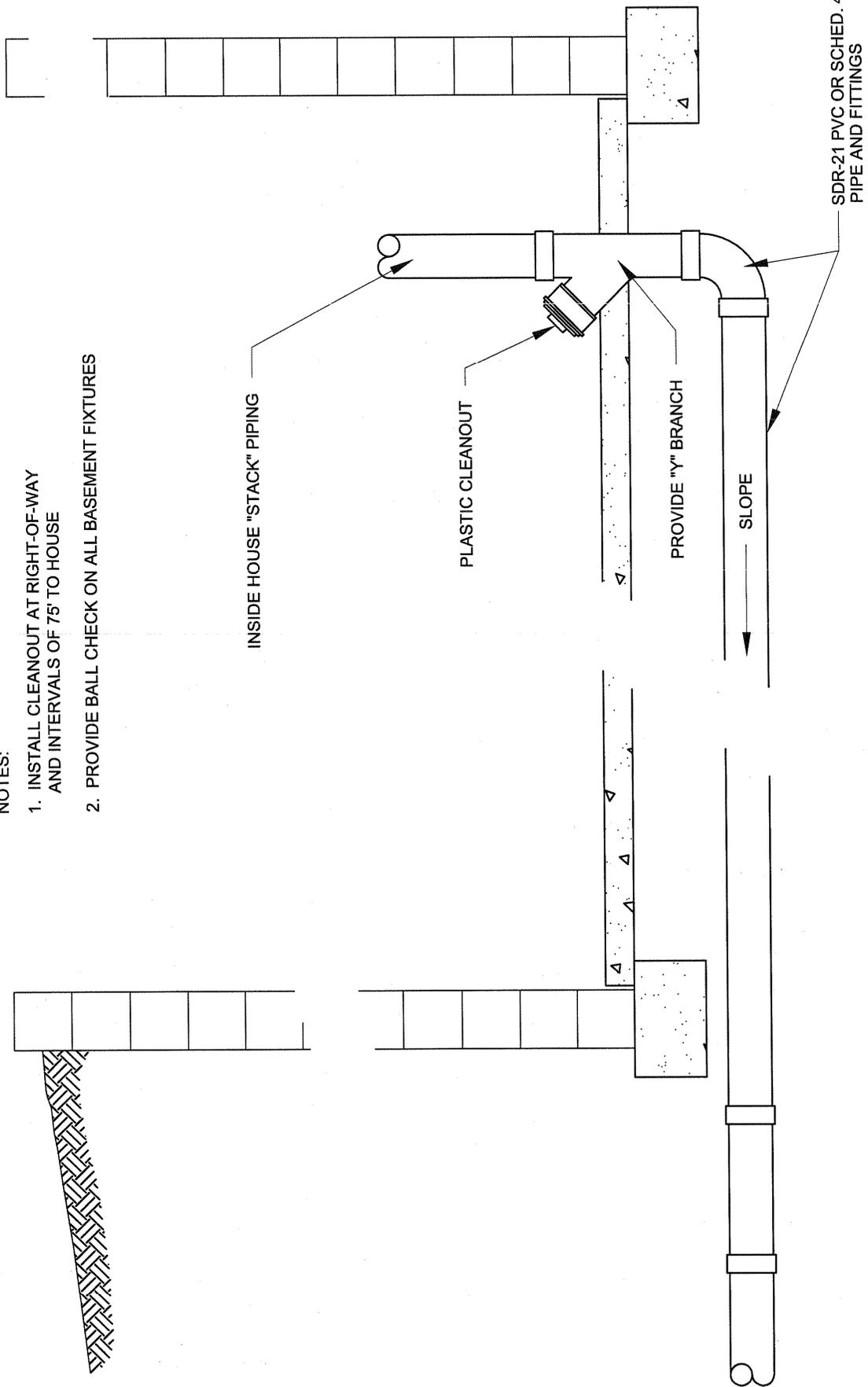


STANDARD STORM & SANITARY SEWER RISER LATERAL DETAIL

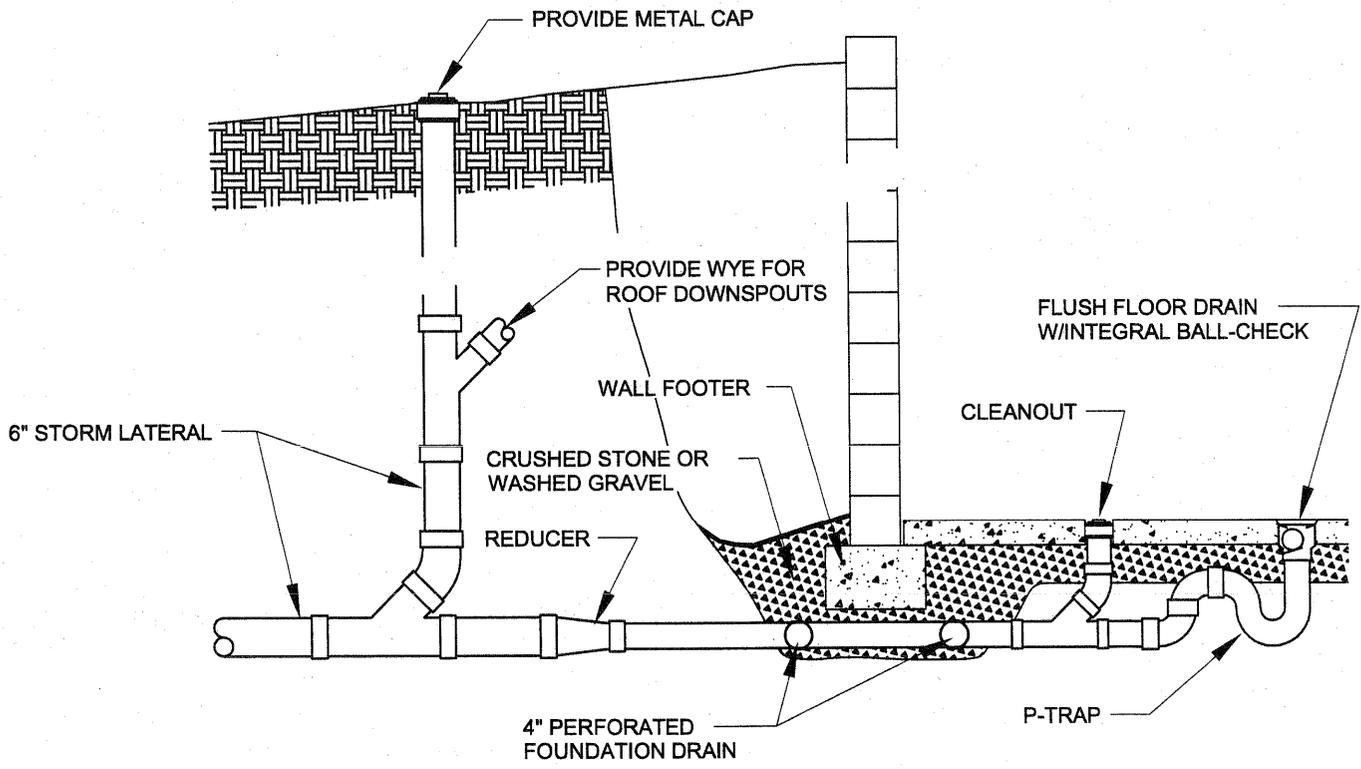
NOT TO SCALE

NOTES:

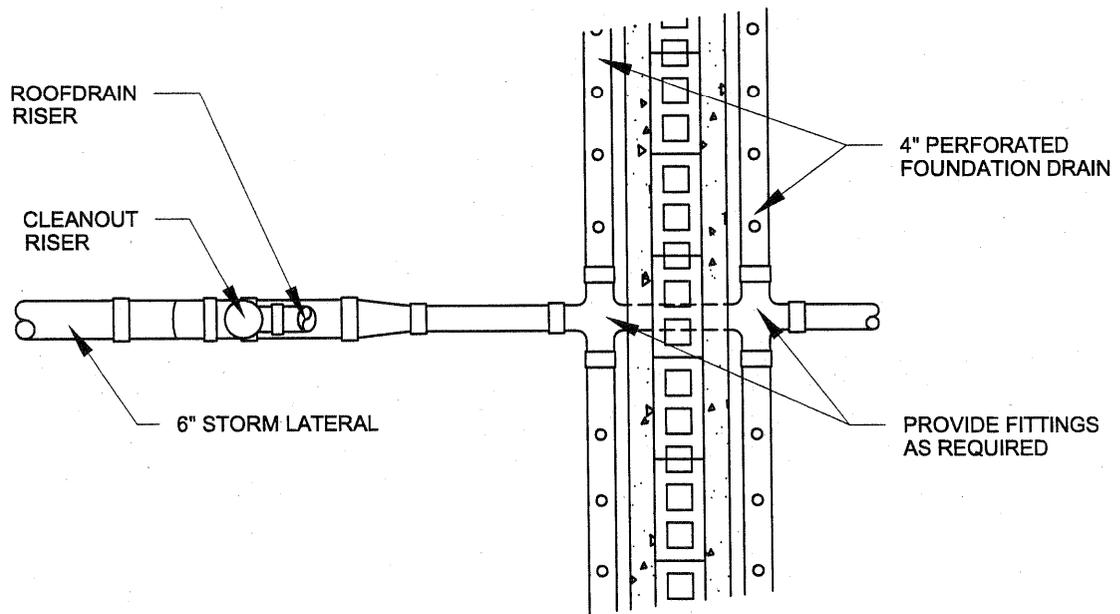
- 1. INSTALL CLEANOUT AT RIGHT-OF-WAY AND INTERVALS OF 75' TO HOUSE
- 2. PROVIDE BALL CHECK ON ALL BASEMENT FIXTURES



SANITARY LATERAL
NOT TO SCALE



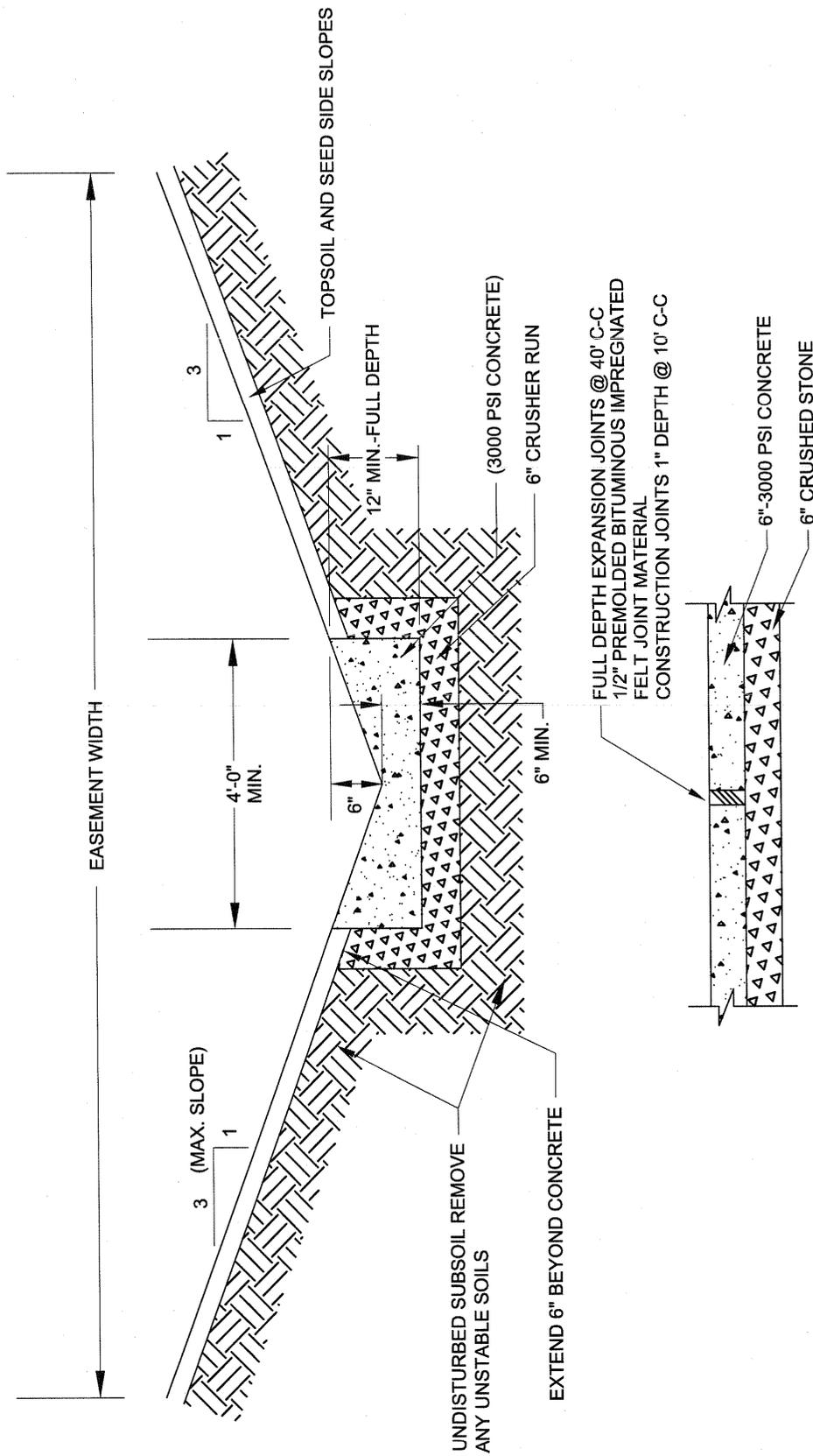
SECTION



PLAN

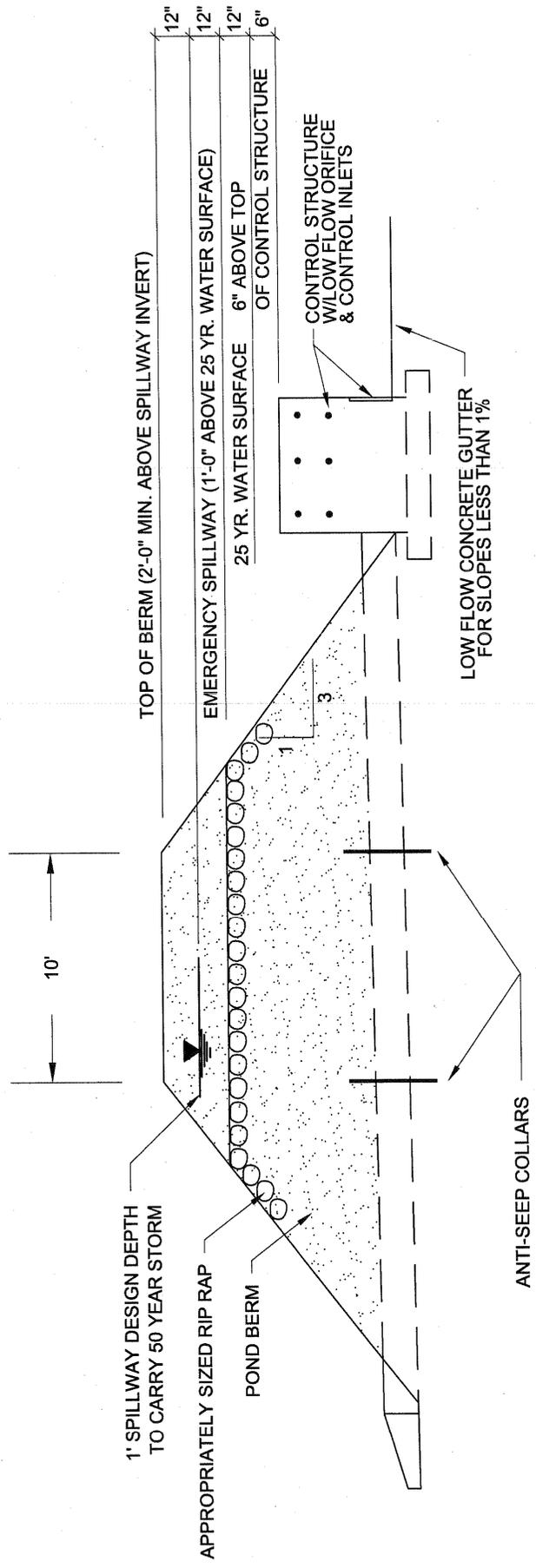
STORM LATERAL - FOUNDATION DRAIN

NOT TO SCALE



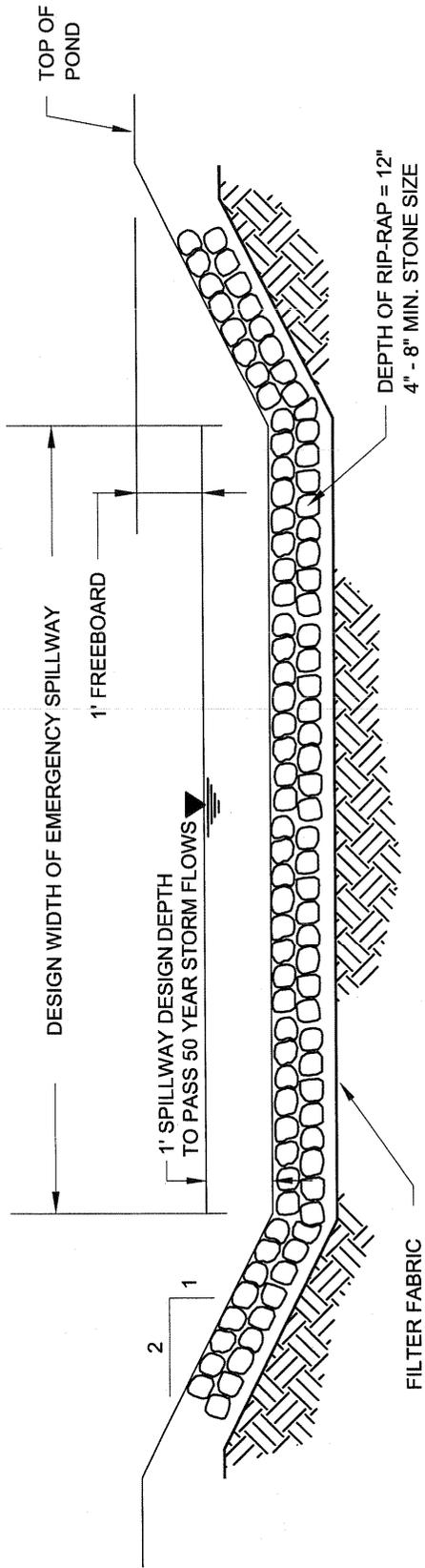
CONCRETE INVERT DETAIL

NOTE: TO BE USED WHEN CHANNEL SLOPES
ARE LESS THAN 1%
NOT TO SCALE

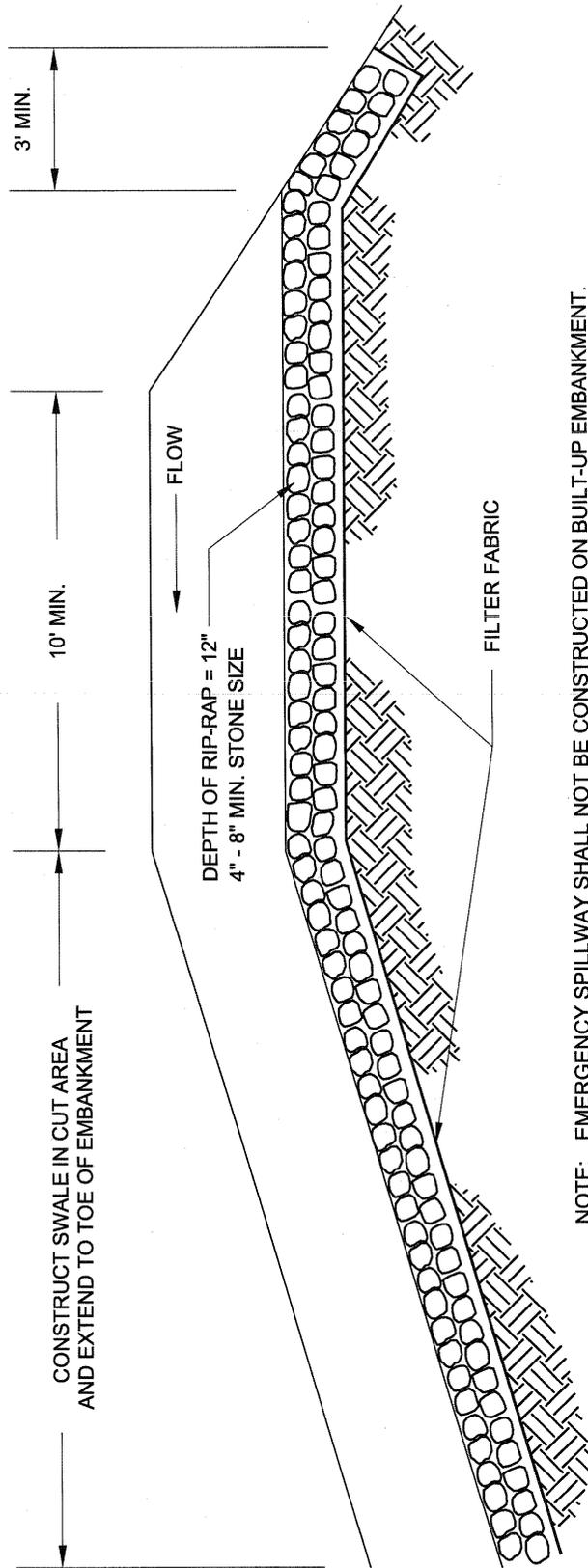


- NOTES:
1. THE CONTROL STRUCTURE SHALL HAVE A MINIMUM HEIGHT OF 2'-0".
 2. THE OUTFALL PIPE SHALL BE FITTED WITH WATERTIGHT CONNECTION BANDS.
 3. THE CONTROL STRUCTURE SHALL BE FITTED WITH A TRASH RACK AND ANTI-VORTEX PLATE.
 4. THE SPILLWAY SHALL NOT BE CONSTRUCTED IN AN AREA OF FILL.

DETENTION POND SECTION
NOT TO SCALE



PROFILE



NOTE: EMERGENCY SPILLWAY SHALL NOT BE CONSTRUCTED ON BUILT-UP EMBANKMENT. CONSTRUCT SWALE IN CUT AREA AND SWALE AROUND DETENTION POND EMBANKMENT TO THE TOE OF THE SLOPE.

CROSS-SECTION

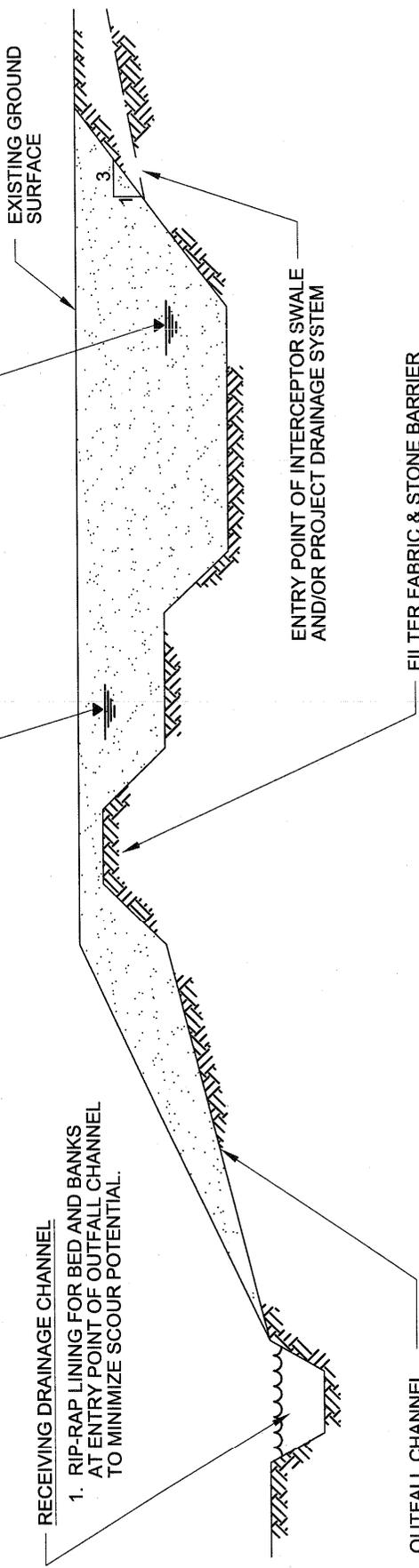
EMERGENCY SPILLWAY DETAIL
NOT TO SCALE

TEMPORARY SEDIMENTATION FACILITY

1. PROVIDE STORAGE FOR 2 YR. - 24 HR. STORM EVENT.
2. MINIMUM LENGTH TO WIDTH RATIO SHALL BE 2:1 (GREATER RATIO PREFERRED).
3. SEDIMENTATION FACILITY SHALL BE FILLED AND REGRADED UPON PROJECT COMPLETION, EXCEPT WHERE SEDIMENTATION FACILITY IS DESIGNED AS PERMANENT DETENTION FACILITY.

SEDIMENT SINK

1. UNDERCUT SEDIMENTATION FACILITY 3' MINIMUM.
2. PROVIDE 0.8 ACRE-INCH PER ACRE OF DRAINAGE AREA TRIBUTARY TO SEDIMENTATION FACILITY.
3. THE CONTRACTOR SHALL CLEAN ACCUMULATED SEDIMENT FROM FACILITY WHEN SEDIMENT DEPTH REACHES 2' OR AS DIRECTED BY MUNICIPAL REPRESENTATIVE.



- RECEIVING DRAINAGE CHANNEL
1. RIP-RAP LINING FOR BED AND BANKS AT ENTRY POINT OF OUTFALL CHANNEL TO MINIMIZE SCOUR POTENTIAL.

OUTFALL CHANNEL

1. PROVIDE ADEQUATE PROTECTION TO OUTFALL CHANNEL TO PREVENT EROSION.
2. OUTFALL CHANNEL AND SEDIMENTATION FACILITIES SHOULD BE CONSTRUCTED PRIOR TO BEGINNING MASS EARTHWORK.
3. VEGETATION SHOULD BE ESTABLISHED PRIOR TO PLACING FACILITY IN OPERATION.

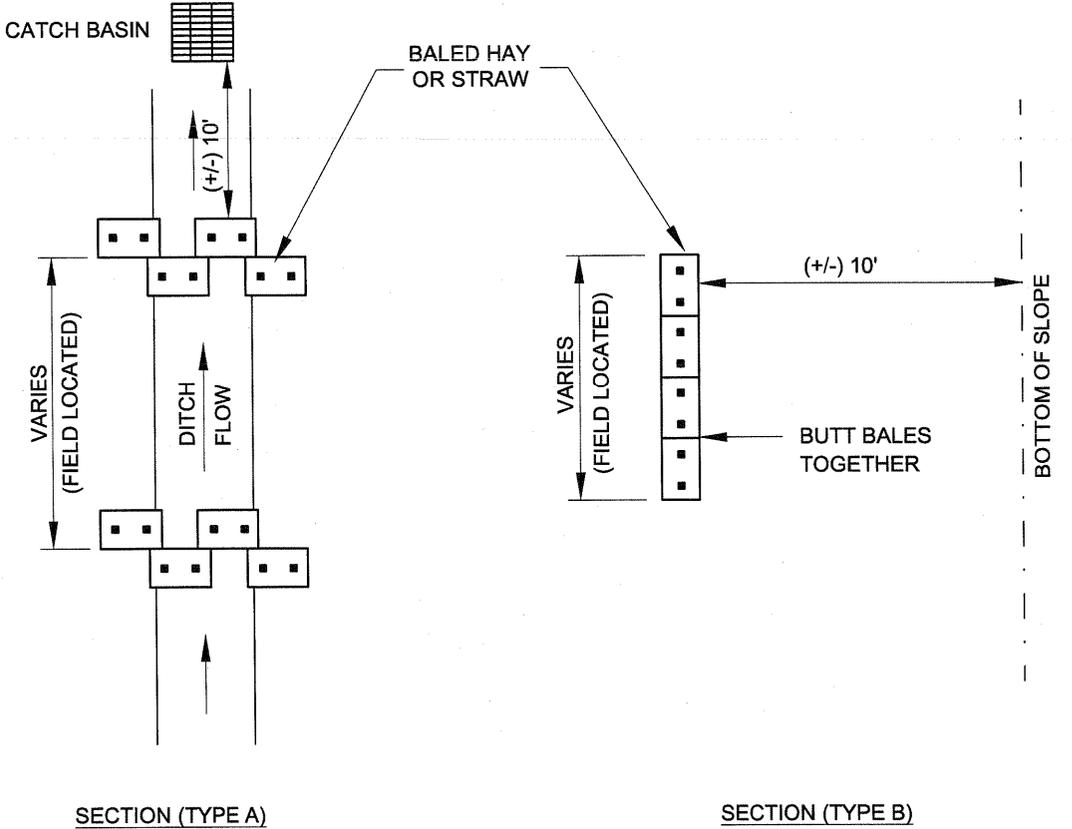
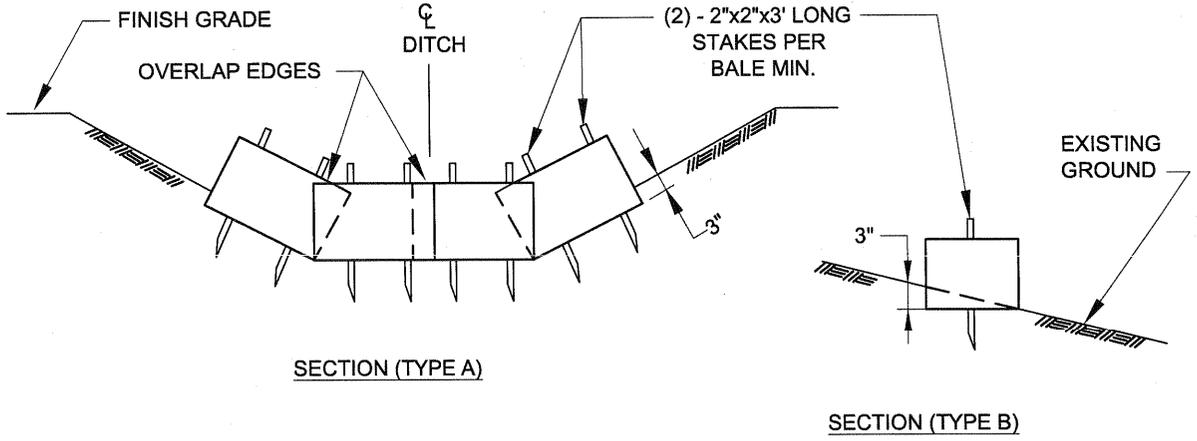
ENTRY POINT OF INTERCEPTOR SWALE AND/OR PROJECT DRAINAGE SYSTEM

FILTER FABRIC & STONE BARRIER

1. BARRIER SHALL BE CONSTRUCTED OF #1 & #2 STONE WITH FILTER FABRIC COVERING ON UPSTREAM FACE.
2. FILTER FABRIC SHALL BE KEYED INTO TOE AND END OF BARRIER.
3. MAINTAIN AS REQUIRED TO MEET PERFORMANCE STANDARDS OR AS DIRECTED BY MUNICIPAL REPRESENTATIVE.

TEMPORARY SEDIMENTATION FACILITY

NOT TO SCALE



**TYPICAL STRAW BALE PLACEMENT
EROSION CONTROL DETAILS**
NOT TO SCALE