**BEFORE THE BOARD OF COMMISSIONERS**
**OF SALISBURY TOWNSHIP**

**ORDINANCE NO. 01-2024-667**

**AN ORDINANCE OF THE BOARD OF COMMISSIONERS OF SALISBURY TOWNSHIP, LEHIGH COUNTY, PENNSYLVANIA AMENDING CHAPTER 21, PARTS 1 AND 4, ENTITLED "OPENINGS AND EXCAVATIONS" and "CURBING AND SIDEWALKS", RESPECTIVELY, OF THE SALISBURY TOWNSHIP CODE OF ORDINANCES TO ESTABLISH REGULATIONS WITH RESPECT TO CERTAIN ROAD DEGRADATION, CURBING AND SIDEWALK INSTALLATION AND REPAIR ACTIVITIES ALONG PUBLIC STREETS, ROADWAYS AND RIGHT-OF-WAYS WITHIN THE TOWNSHIP**

**WHEREAS**, the Township of Salisbury is a First-Class Township organized and operating under the laws of the Commonwealth of Pennsylvania and the Township of Salisbury Code of Ordinances (the "Township"); and

**WHEREAS**, pursuant to the PA First Class Township Code, 53 P.S. § 56401 et seq., the Township is authorized to establish regulations with regards to roadway openings, excavations, curbing and sidewalk installations and repairs activities within public street, alleys or thoroughfare; and

**WHEREAS**, the Township Board of Commissioners believe it would benefit the health, safety, and general welfare of the citizens of the Township to amend certain provisions of Parts 1 and 4 of Chapter 21 of the Salisbury Township Code of Ordinances.

**NOW, THEREFORE, BE IT ORDAINED AND ENACTED,** by the Board of Commissioners of the Township of Salisbury, Lehigh County, Pennsylvania that the Township of Salisbury Code of Ordinances, Chapter 21, Parts 1 and 4 shall be amended in their entirety to read as follows:

**ARTICLE I. Chapter 21, Part 1** is hereby amended to read as follows:

***Part 1***

***OPENINGS AND EXCAVATIONS***

***§ 21-101 Permit Required.***

*From and after the passage of this Part 1, it shall be unlawful for any person, firm, association, copartnership or corporation to make any opening or excavation in or under any street, alley or other public thoroughfare within the limits of the Township of Salisbury unless and until a permit therefore is secured from the Township for each such separate undertaking, such permit and the application therefore to be on forms prepared, prescribed and furnished by the Township.*

***§ 21-102 Permit Issuance Fee.***

*At the time of making application for the permit for any such opening or excavation, the applicant shall pay to the Township a permit issuance fee, escrow deposit, plus a Road Degradation Fee to be calculated based upon the age of the road surface, as established on the Fee Schedule attached hereto and incorporated by reference herein, and as may be revised from time to time by resolution or ordinance by the Board of Commissioners, for the use of the Township.*

***§ 21-103 Application for Permit.***

*The application shall set forth the location and purpose of the proposed excavation, the dates between which the excavation is to be open, the length, width and depth of the trench and the area and type of the roadway surfaces to be removed. The applicant shall agree to protect and defend and indemnify and save harmless the Township and its officers for or on account of any and all injuries or damages to persons or property on public or private property caused by said excavation and/or restoration of same or the materials, equipment or appliances used in such work.*

***§ 21-104 Completion of Work.***

*Excavations and road restorations shall comply with construction standards set forth in the Salisbury Township Construction Standards Manual ("Township Standards") a copy of which is attached hereto and incorporated herein by reference.*

***§ 21-105 Restoration of Road Surface.***

*1. The applicant is responsible for restoration of the permanent road surface.*

*2. At the time the application is made for a permit, the applicant shall pay to the Township a road degradation fee at the established rates based on the age of the road surface and number of square feet of the proposed opening.*

*Should the area of any opening made exceed the area set forth in the application for the permit, the cost of restoring the permanent road surface of the excess area shall be calculated at the rates herein provided and shall be paid by the applicant within 30 days of the restoration of said surface.*

***§ 21-106 Failure to Secure a Permit.***

*Failure to secure a permit or conviction under the provision of § 21-109 of this Part 1 shall not excuse any person, firm, association, copartnership, or corporation from restoring the permanent road surface to any area opened contrary to the provisions of this Part 1.*

***§ 21-107 Emergency Excavations.***

*In case of an emergency where an immediate excavation may be necessary for the protection of public or private property, the same may be made without application for a permit provided, however, that an application in the regular manner must be made for such excavation within 48 hours thereafter.*

***§ 21-108 Provisions for Public Safety.***

*The applicant shall at all times provide for the safety of the public by guard rails where necessary, and by the use of red signs in the daytime and red lights at night.*

***§ 21-109 Penalties.***

*Any person, firm, association, copartnership or corporation violating any provision of this Part 1 shall, upon conviction thereof before a District Justice of Salisbury Township, be subject to a fine of not less than $300 and not*

*more than $1,000 and in default of the payment of the fine or costs of such prosecution, shall be imprisoned for a period not exceeding 90 days. Each day a violation occurs shall constitute a separate and distinct violation of this Part.*

**ARTICLE II. Chapter 21, Part 4** is hereby amended to read as follows:

## *Part 4*

## *CURBING AND SIDEWALKS*

### *§ 21-401 Conditions and Provisions for Installation.*

*No person, firm or corporation shall install or cause to be installed any curbing or sidewalks along any public Township Street or along any proposed street that has been dedicated to public use in the Township of Salisbury, Lehigh County, Pennsylvania (the "Township") except in accordance with the provisions and conditions of this Part 4.*

### *§ 21-402 Cartways and Road Areas.*

*Every public Township Street and every proposed public street which has been dedicated to public use shall be divided into a cartway or road area in the center thereof with curbing, planting, and sidewalk areas on each side thereof of widths depending upon the overall width of the street right-of-way from property line to property line, as referenced in the Township Standards.*

### *§ 21-403 Curbing Specifications and Requirements.*

*All curbing hereafter shall be installed in accordance with the Township Standards.*

### *§ 21-404 Sidewalk Specifications and Requirements.*

*All sidewalks hereafter installed in the Township shall be constructed in accordance with the Township Standards.*

### *§ 21-405 Permit Required.*

*A property owner may apply for a permit to voluntarily install curbing and/or sidewalks at any time providing the appropriate permit application and fee are received by the Township and the appropriate permit is issued. However, Salisbury Township reserves the right to refuse to issue a curb and/or sidewalk permit in those instances where the cost of design and stakeout is judged to be unreasonably high, or it is judged that the installation of curbing and/or sidewalk would result in no public benefit. Nothing herein would prevent the issuance of a permit if the applicant agreed to pay the total cost for establishing line and grade.*

### *§ 21-406 Notice and Inspection of Work.*

*After the excavation has been made and the forms have been set for the pouring of any curbing or sidewalk, the Township Engineer, or his designee, shall be notified so that he may inspect the work before any concrete is poured. No concrete shall be poured until such inspection has been made and approval is given by the Township Engineer, or his designee, to proceed with the pouring. Any curbing and/or sidewalks installed contrary to the provisions of this § 21-406 or of any other provision of this Part 4 is hereby declared to be a nuisance per se and shall, notwithstanding any prosecution being brought under § 21-408 of this Part 4, be removed within 15 days of written notice to do so given by the Township to the owner of the subject property.*

***§ 21-407 Failure to Install or Repair.***

*1. The Board of Commissioners of the Township shall have the right to compel the owner of any private property abutting on any public street or on any proposed public street dedicated to public use in the Township to install curbing and/or sidewalk along said private property, or to repair or replace existing curbing and/or sidewalk which is in need of repair or replacement, in accordance with the terms of this Part 4. Curbing and/or sidewalk shall not be required when a building permit application is received for a lot in an older subdivision or an established neighborhood, except where the installation of curbing and/or sidewalk will result in the extension of curbing and/or sidewalk already existing on an adjacent property or properties or will complete the curbing and/or sidewalk for a block.*

*2. If the owner of such property fails to install, repair or replace such curbing and/or sidewalk, as the case may be, after 30 days' written notice from the Township to do so, the Township shall install, repair or replace such curbing and/or sidewalk and collect the cost of such work and the Township Engineer's charge for establishing the line and grade for such curbing, plus an additional 10% of such cost, from the owner of the property along which the curbing has been installed, repaired, or replaced, said charges to be collectible by the Township in the manner provided by law for the collection of Township claims or by an action in assumpsit.*

***§ 21-408 Penalties.***
*Any person, partnership or partner thereof, or any corporation or officer thereof, who violates any provision of this Part 4 shall, upon conviction thereof before any District Justice in the Township, be sentenced to pay a fine of not less than $300 nor more than $1,000, plus costs of prosecution, and in default of payment thereof, shall undergo imprisonment for a period of not more than 90 days. Each day a violation occurs shall constitute a separate and distinct violation of this Part.*

**ARTICLE III.** If any provision, sentence, clause, section, or part of this Ordinance is for any reason found to be unconstitutional, illegal or invalid, such unconstitutionality, illegality, or invalidity shall not affect or impair any of the remaining provisions of this Ordinance. It is hereby declared as the intent of the Township that this Ordinance would have been adopted had such stricken provisions not been included herein.

**ARTICLE IV.** All other Ordinances or parts thereof which are contradictory with the provisions hereof, are repealed to the extent of such inconsistencies.

**ARTICLE V.** This Ordinance shall become effective immediately after its enactment.

**DULY ADOPTED** this 25th day of January, 2024, by the Board of Commissioners of the Township of Salisbury, Lehigh County, Pennsylvania, in lawful session duly assembled.

TOWNSHIP OF SALISBURY
Lehigh County, Pennsylvania

BY: _____
Debra J. Brinton, President
Board of Commissioners

ATTEST:

_____
Township Secretary

## FEE SCHEDULE

### ROAD DEGRADATION

If the applicant seeks to excavate upon a street within seven years after the completion of paving the street, the applicant shall pay a Degradation Fee to the Township based on the following:

| Paving Completion Time Frame | Cost Per Square Foot | Minimum Charge |
|---|---|---|
| Greater than seven (7) years | $ 0.00 / square foot | $ 0.00 |
| Greater than six (6) but less than seven (7) years | $ 2.00 / square foot | $ 1,000.00 |
| Greater than five (5) but less than six (6) years | $ 4.00 / square foot | $ 2,000.00 |
| Greater than four (4) but less than five (5) years | $ 8.00 / square foot | $ 4,000.00 |
| Greater than three (3) but less than four (4) years | $12.50 / square foot | $ 6,250.00 |
| Greater than two (2) but less than three (3) years | $15.00 / square foot | $ 7,500.00 |
| Greater than one (1) but less than two (2) years | $18.00 / square foot | $ 9,000.00 |
| Less than one (1) year | $20.00 / square foot | $ 10,000.00 |

### RIGHT-OF-WAY PERMIT FEES

**Excavation in a Street** - $100 plus escrow
**Excavation Behind the Curb** - $50 plus escrow
**Driveway Apron with Curb Cut** - $50 plus escrow
**Curb Ramp** - $50 plus escrow
**Sidewalk Repair or Replacement without Curbing** - $50 plus escrow
**Curbing Repair or Replacement** - $50 plus escrow
**Zoning Review** (if required) ($50 residential / $75 commercial)

### RIGHT-OF-WAY PERMIT ESCROWS

**Excavation in a Street** - $ 2,000 (up to 100 sf of pavement restoration plus $10 per each additional sqft)
**Excavation Behind the Curb** - $ 2,000
**Driveway Apron** - w/Curb Cut - $ 2,000
**Curb Ramp** - $ 2,000 ($5,000 if survey work required by Township)
**Sidewalk without Curbing** - $2,000 first 50 ft (no survey or cutsheet required) plus $2 per additional foot or;
$5,000 first 50 ft (with survey, design, cutsheet) plus $4 per additional foot

**Curbing** - $2,000 first 50 ft (no survey or cutsheet required) plus $2 per additional foot or;
$5,000 first 50 ft (with survey, design, cutsheet, inspection) plus $4 per additional foot

**Note 1.** Escrow amounts are only noted as the initial amount posted. Should escrow need to be replenished, the amount will be determined by the Director of Community Development.

**Note 2.** Any applicant seeking to excavate upon or open a street shall, after obtaining a street excavation work permit, notify the Township at least five (5) days prior to the commencement of any construction, overlay or other work, so that the Township may, at its discretion, have an inspector observe work being performed.

**Note 3.** For the purposes of releasing escrow, the Township will define the "completion" date of the project to be 6 months after the initial restoration of paving inspection. The escrow will be released at "completion" after an inspection of the work to assess any settling that may occurred.

# SALISBURY TOWNSHIP

LEHIGH COUNTY, PENNSYLVANIA

# STANDARD CONSTRUCTION DOCUMENTS

DECEMBER 2023

Approved and adopted by the
Salisbury Township Board of Commissioners
January 25, 2024

# PREFACE

These Standard Construction Documents are comprised of the General Provisions, Technical Specifications, and Standard Construction Details. The utilization of any portion of these Documents shall consider the content of the full Documents in their entirety.

These Standard Construction Documents are intended to be used for required public interest improvements installed as part of subdivisions/land developments within Salisbury Township. It is not intended that these Standard Construction Documents be a substitute for comprehensive project construction specifications as prepared by the Design Engineer for a Developer. These Standard Construction Documents have not attempted to address all issues typically addressed in the complete set of plans and specifications by the Design Engineer including but not limited to, safety, measurement of quantities for payment, waiver of liens, insurance, etc.

These Standard Construction Documents are intended to be used in conjunction with the current edition of the Commonwealth of Pennsylvania, Department of Transportation, Specifications Publication 408, and Bureau of Design, Standards for Roadway Construction. The Provisions of the Commonwealth of Pennsylvania, Department of Transportation, Specifications Publication 408, and Standards for Roadway Construction shall govern where applicable, except as specifically modified by the requirements of the Standard Construction Documents.

All work and installations as outlined in these Documents shall be required to comply with all applicable federal, state and local standards and regulations, including but not limited to, Occupational Safety and Health Administration (OSHA) regulations, Department of Labor & Industry regulations, state and local blasting permit requirements, regulations governing earth disturbance, stormwater management, environmental protection, etc.

CONTENTS

# SECTION A - **GENERAL PROVISIONS**

The following GENERAL PROVISIONS are to be used for Work within Salisbury Township.

Art. 1 - DEFINITIONS:

CONTRACTOR - The term "Contractor" shall in every case be held to mean the individual, co-partnership or corporation performing the Work of the project for the Developer.

DESIGN ENGINEER - The Engineer responsible for preparation of the plans for the Developer.

DEVELOPER - The Developer, where referred to in these Specifications, shall be the individual, partnership, corporation, or other entity, undertaking the improvement of property within the Township pursuant to the Subdivision and Land Development Ordinance, Zoning Ordinance, or any other Ordinance for the Township of Salisbury governing public improvements.

DOCUMENTS - These General Provisions, Technical Specifications and Standard Construction Details for the Township.

ENGINEER - The term "Engineer" shall be held to mean the Township Engineer, acting directly or through duly authorized representatives, such representatives acting within the scope of the particular duties and authority assigned to them by Salisbury Township.

The term "Engineer" may also be held to mean such other person, persons or authority as may hereafter be appointed to succeed to the functions, duties and employment herein specified to be performed by the said Engineer.

GEOTECHNICAL ENGINEER - The Geotechnical Engineer shall be the Geotechnical Engineer advising the Township on geotechnical issues.

HAZARDOUS ENVIRONMENTAL CONDITION - The presence at the site of Asbestos, PCB's, Petroleum, Hazardous Waste, Radioactive Material, Sinkholes, etc.

OBSERVER - An authorized representative of the Engineer assigned to make observations of the Work performed or being performed. The Observer is not authorized, and the Contractor shall not rely upon the Observer, to assume any responsibility for the Contractor’s means, methods, techniques, sequences, and safety of construction.

PLANS - The plans or drawings of a subdivision, land development or plot plan as approved by the Township for substantial compliance with the applicable Ordinances, Regulations, etc.

SHOP DRAWINGS - All drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the Contractor, a Subcontractor, manufacturer, supplier or distributor, and which illustrates the equipment, material or some portion of the Work.

TOWNSHIP – Salisbury Township.

WORK - Any and all obligations, duties, and responsibilities necessary to the successful completion of the project undertaken by a Contractor which shall include such obligations, duties, and responsibilities not only of the Contractor, but also of each and every Subcontractor.

## Art. 2 - RESPONSIBILITY OF THE DEVELOPER:

A. The Developer and its Contractors shall be responsible for compliance with all applicable federal, state, and local laws and ordinances, including but not limited to, Department of Labor & Industry regulations, state and local blasting permit requirements, regulations governing earth disturbance, and other applicable safety codes, etc;

B. The Developer shall provide a superintendent or other person responsible for overseeing the Work on a day-to-day basis. In cases where such superintendence is not provided, the Developer or his authorized representative shall meet with the Engineer's representative on a pre-arranged basis to discuss any problems and the general condition of the project;

C. The Developer shall be responsible to procure all permits, licenses, agreements, easements, etc. and shall be responsible for any and all necessary fees for completion of the Work;

D. It shall be the responsibility of the Developer anticipating earth disturbance activities on the site of the proposed development to have plans and specifications prepared for soil erosion and sedimentation control. The plans and specifications shall be prepared by a Design Engineer familiar with the requirements of the Department of Environmental Protection (DEP). The plans and specifications shall be prepared pursuant to guidance and procedures provided by all applicable DEP documents. The Developer shall have a copy of the approved plans and specifications available at the site before proceeding with the work.

## Art. 3 - RESPONSIBILITY OF THE CONTRACTOR:

A. The Developer and its Contractors shall be responsible for compliance with all applicable federal, state, and local laws and Ordinances, including but not limited to, Department of Labor & Industry regulations, state and local blasting permit requirements, regulations governing earth disturbance, and other applicable safety codes, etc;

B. The Contractor is responsible for notifying all owners of utilities in the Municipality. It is the responsibility of the Contractor to arrange for the field identification, location and protection of all overhead and subsurface utilities--both public and private--which may be encountered during the course of this project;

C. The Contractor shall provide a superintendent or other person responsible for overseeing the Work on a day-to-day basis. In cases where such superintendence is not provided, the Contractor or his authorized representative shall meet with the Engineer representative and Township representative on a pre-arranged basis to discuss any problems and the general condition of the project.

## Art. 4 - PRECONSTRUCTION REQUIREMENTS:

A. Before any Work at the site can commence, the following must be completed:

1. All necessary Agreements with the Township shall be executed and any required improvements security and/or escrow shall be posted;

2. Satisfactory proof of insurance as required by the Township must be secured by the

Developer and approved by the Township Solicitor's office;

3. The Contractor shall submit to the Township and Engineer a preliminary progress schedule indicating the starting and completion dates of the various stages of the Work, and a schedule of shop drawing submissions. The Contractor shall provide a minimum of 48 hours' notice to the Engineer for observation of work;

4. If, in the opinion of the Engineer, the Work is of such complexity to require a Preconstruction Conference, such a conference will be held to review the above schedules, to establish procedures for handling shop drawings and other submissions, processing escrow release requests, and to establish a working understanding between the parties as to the project. The conference is to be attended by an authorized representative of the Developer, Contractor, his superintendent, and others as appropriate, and by the Engineer and Township as deemed necessary by the Township. Additionally, as Work continues, if in the opinion of the Engineer or Township that job progress meetings are necessary, these meetings are to be attended by the Contractor and Developer;

5. Copies of all permits and easements necessary to execute the Work must be provided to the Township and Engineer.

**Art. 5 - SCOPE OF OBSERVATION BY THE ENGINEER:**

A. General observation of the construction of the Work, including but not limited to proposed water, sanitary, and storm sewerage systems, streets, overall grading, traffic signals, etc. shall be performed to the extent deemed necessary by the Engineer given the scope of the Work. Accessory to this observation is the review of all grade sheets, catalog and shop drawing submittals, processing of improvements security release requests, required surveying, etc. The Engineer shall not have the authority to stop the Work; that authority is reserved to the Township and Developer/Contractor;

B. Any Work done or materials installed without proper notification of the Engineer for observation may be ordered removed or replaced by the Township;

C. The Engineer will coordinate with Township staff personnel regarding their observation of the planting of shade trees, buffer strip landscaping, etc.;

D. For Work along any State Routes, the Contractor shall meet with PENNDOT to identify the scope of PENNDOT construction observation and shall comply with PENNDOT standards for undertaking such work including safety procedures.

## Art. 6 - APPROVALS AND STANDARDS:

A. Plans. Should revisions be proposed to the approved plans, revised plans should be submitted promptly to the Township and to the Engineer. Although the plans have been approved by the Township for substantial compliance with the Township Ordinances and Regulations, changes may be required due to field conditions which were unknown, or incorrectly or insufficiently described on the drawings. In such instances, it will be the responsibility of the Developer, through the Design Engineer, to propose any changes to the Plans for review by the Township prior to proceeding with the Work. Observers do not have the authority to approve, in the field, any changes from the approved Plans. Any and all requests for deviation from the approved Plans shall be submitted in writing by the Developer to the Engineer and the Township for review and must be accompanied by supporting engineering data. No oral agreements may be substituted for this process;

B. PENNDOT Publication 408 and PENNDOT Standards for Roadway Construction (latest edition), the Township Subdivision and Land Development Regulations, these Documents, and the Plans and conditions of Plan approval by the Township are the documents which shall apply to Work in a subdivision/land development;

C. Although relevant technical portions of these Documents may be relied upon in the specifications prepared by the Developer's engineer for his client, the Professional Engineer's Seal to be put on the specifications and on the Plans shall be that of the Developer's engineer who has the professional responsibility for the complete set of specifications, typically addressing matters of safety, blasting, measurement of quantities for payment, etc. Incorporation of portions or all of these Documents into the project construction documents by the Developer and/or the Developer's engineer constitutes an acceptance of and endorsement of these Documents by the Developer and the Developer's engineer.

## Art. 7 - DIFFERING SUBSURFACE AND PHYSICAL CONDITIONS:

If the Contractor believes that any subsurface or physical condition at or contiguous to the Site that is uncovered or revealed either differs materially from that shown or indicated in the Plans or is of a hazardous or unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in Work of the character provided for in the Plans, then the Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency) notify the appropriate regulatory agency as determined by the Developer/Contractor, and advise the Township and the Township’s Environmental Consultant and/or Geotechnical Engineer in writing about such condition. The Contractor shall not further disturb such condition or perform any Work in connection therewith (except as aforesaid) until receipt of approval to do so by the Township Environmental Consultant and/or Geotechnical Engineer.

## Art. 8 - REQUIRED SUBMITTALS:

A. The Contractor shall review, stamp with its approval and submit, an electronic copy of all material lists, catalog submissions, shop drawings, pipe certifications, concrete and asphalt mix designs, and samples for improvements as proposed by the Plans. All submittals should be properly identified. At the time of submission, the Contractor shall inform the Engineer in writing of any deviation in the submittals from the requirements of the Plans.

Mix design information for all materials used in constructing streets shall be submitted to and reviewed by the Engineer prior to the delivery of the materials on the project. PENNDOT pre-approval of these mix designs is required. A certification, by type and class, shall be provided to the Engineer to show that all pipe to be used on the project conforms to these Documents.

By approving and submitting shop drawings and samples, the Contractor thereby represents that it has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that it has checked and coordinated each shop drawing and sample with the requirements of the Work and of the approved plans.

No portion of the Work requiring a shop drawing or sample submission shall be commenced until the submission has been reviewed by the Engineer. All such portions of the Work shall be in accordance with reviewed shop drawings and samples, and no release of security for any improvement will be made until all required documentation has been supplied.

The Engineer's review is only for general conformance with the Township Standards and general compliance with the information given in the Plans. The Contractor is responsible for dimensions to be confirmed and correlated at the job site; for information that pertains solely to the fabrication processes or to the means, methods, techniques, sequences, and procedures of construction; and for coordination of the Work of all trades. Review of catalog submissions or shop drawings by the Engineer in no way relieves the Developer or Contractor from their responsibility to complete all work in accordance with these Documents. Any risk of error or omission or liability resulting therefrom is entirely assumed by the Developer and/or Contractor.

B. For improvements included in the Work where delegation of professional design services are required by the Plans (e.g., retaining walls, box culverts, etc.) or where the Contractor is proposing an alternative to the Work shown on the Plans, the Calculations and Shop Drawings or plan revisions submitted must be signed and sealed by the design engineer responsible for their preparation. In addition, the Calculations and Shop Drawings or plan revisions submitted must be annotated by the Design Engineer to indicate that they have "Approved" the Calculations and Shop Drawings or plan revisions as being in compliance with the design as shown on the Plans.

## Art. 9 - SAFETY AND PROTECTION:

A. Solely the Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. The Contractor shall take all necessary precautions for the safety of, and shall provide necessary protection to prevent damage, injury or loss to:

1. All persons on the Site or who may be affected by the Work;

2. All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and

3. Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, utilities, and underground facilities not designated for removal, relocation, or replacement in the course of construction.

B. The Contractor shall comply with all applicable laws and regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; including but not limited to, Occupational Safety and Health Administration (OSHA); Work Zone Traffic Control or 67 PA Code, Chapter 203; e.g., "all workers or persons at the project sites in or alongside the public streets shall wear hard hats and safety vests at all times"; and other applicable safety codes, etc., The Contractor shall erect and maintain all necessary safeguards for such safety and protection. The Contractor shall notify owners of adjacent property and of underground facilities and other utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property. The Observer does not have the authority to stop the Work because of a safety violation. Nothing in these Documents shall be construed to obligate the Township or the Engineer to enforce the regulations and Standards of the Occupational Safety and Health Administration (OSHA) or other laws and regulations relating to protection of persons or property;

C. All damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of Developer or Design Engineer, or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly, or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, or other individual or entity directly or indirectly employed by any of them);

D. Contractor's duties and responsibilities for safety and for protection of the Work shall continue until such time as all the Work is completed and expiration of the maintenance period.

E. Maintenance and Pavement Marking and Traffic Signage - The scope of the Work may require the removal or temporary alteration of existing pavement marking and traffic signage. The Contractor shall maintain proper traffic control at all times (day and night) and provide temporary lighting of traffic signage in the event permanent lighting systems are removed or destroyed. The Contractor shall immediately re-establish all pavement markings and traffic signage destroyed, temporarily removed or obscured as a result of the Work.

The Contractor shall maintain traffic and protect the public from all damage to persons and property within the limits of the Work and for the duration of the Contract Period and as a minimum in accordance with the Plans. The Contractor shall furnish and erect all necessary signs, barricades, and bridging, and provide for the adequate lighting of all signs, barricades, and points of special hazard. The Contractor shall be responsible for settling all claims arising from failure on its part to adequately protect vehicular and pedestrian traffic.

The Contractor shall provide temporary bridging and plating in the event the traffic lanes are damaged or altered. Permanent construction of the traffic lanes shall be completed as soon as possible by the Contractor. The Contractor shall provide necessary pavement marking at temporary bridging and plating.

In order to minimize hazard and inconvenience, excavation in driveway areas shall be commenced only after receipt and review by the Engineer of all materials required to complete the particular installation.

No trench shall be allowed to remain partially or totally open overnight without proper signs, barricades, and temporary lighting. Traffic lanes shall be identified, marked, and maintained at all times.

It shall be the duty of the Contractor during the progress of the Work to maintain crossings, walks, and roadways open to traffic in a satisfactory condition, and to keep all fire hydrants, water valves, and fire alarm boxes accessible for use. The Contractor shall continually patrol the project area throughout the Contract Period to detect the existence of trench subsidence or other conditions resulting from its Work which constitute hazards to the public and it shall immediately remedy all such unsafe conditions. It shall not await notification from the Engineer or the Developer that hazardous conditions exist before acting to correct same.

In the event a road closure and detour is planned, a Detour Plan meeting all applicable requirements related to signs, sign locations, sign durations, etc. must be prepared by a Professional Engineer licensed in the Commonwealth of Pennsylvania, and certified as to compliance with PENNDOT Publication 213, and Federal Highway Manual for Uniform Traffic Control Devices. The Detour Plan shall be submitted to the Township for review prior to implementation;

F. The Contractor shall employ the necessary care and safety provisions for trench excavation close to or below the elevation of existing foundations of buildings or other structures, trees, streets, etc. The Contractor alone will be held responsible for any damage to such buildings or their foundation or other structures resulting from its Work.

The Contractor's attention is particularly directed to utility lines which may be in the vicinity of the Work whether or not shown on the Plans. It shall be the responsibility of the Contractor alone to communicate with the owners of such utility lines in advance of performing any Work in the vicinity of said lines and to take precautions adequate to protect said lines from the Contractor's Work which protection shall be the responsibility of the Contractor alone. The Contractor shall be familiar with all federal, state, and local laws and regulations governing excavation and construction, and shall carry out its construction operations in accordance with the provisions thereof,

G. If the Developer has obtained temporary or permanent construction easements to facilitate the Work in areas outside the public right-of-way, the Contractor is advised that it is to use care to stay within the limits of these easements as indicated on the Plans. It is further advised that all reasonable care shall be taken to protect existing features, such as fences, shrubs, trees, etc., within these easements, and that any damage thereto shall be repaired, or damaged features replaced, at the Contractor's expense alone;

H. Dust Control - The Contractor shall furnish and apply water and/or other materials, as appropriate and required, and acceptable to all applicable regulatory agencies, for the allaying of dust within the project limits. The dust palliative shall be applied using suitable sprinkler allaying or spreading equipment whenever necessary to prevent dust pollution of the atmosphere;

I. The following notice shall be posted at the project site at a location accessible to all workers.

NOTICE TO WORKERS

Barry Isett & Associates (Isett), acting on behalf of Salisbury Township, assume no responsibility for or control over the Contractor's safety programs, nor any responsibility for the Contractor's work procedures, methods, sequences, techniques of construction, equipment, etc. Representatives of Isett are at the site only on behalf of Salisbury Township to determine general compliance with applicable Township documents and to determine the acceptability of the final product. Should any worker think that the work is proceeding in an unsafe manner, it is recommended that the foreman, the project superintendent, the Pennsylvania Department of Labor and Industry, the Occupational Safety and Health Administration, and/or any other regulatory agency having jurisdiction be notified by the worker.

**Art. 10 - SURVEY:**

A. The Developer shall provide engineering surveys to establish reference points for construction which in the Engineer's judgment are necessary to enable the Contractor to proceed with the Work and to enable the Engineer to confirm its installation in accordance with the Plans. The Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior approval of the Engineer;

B. All survey and grade control will be the responsibility of the Developer through its engineer and/or Contractor;

C. Easements for storm drainage facilities and utilities, property lines adjacent to detention basins or other locations as may be required by the Engineer, shall be visibly staked prior to construction;

D. Grade sheets for waterline, sanitary sewers, storm sewers, swales, etc. shall be submitted for review a minimum of three days before construction. The Developer is responsible for the accuracy thereof,

E. The Observer will "spot-check" points during construction, as may be necessary. If necessary, the Observer may request the Engineer Survey Department to verify locations. Municipality costs of surveying checks will be treated as an observation charge to the Developer;

F. The Developer shall have the basin construction baseline and the controlling site features staked, and shall set grade stakes for the bottom of the basin and the top of berm. Following the Developer's grading operations for the detention basin and prior to placement of the basin liner and topsoil, the Engineer will complete a preliminary basin as-built survey and volume calculations to verify that the basin location and volume generally conform to the approved plans. If applicable, prior to placement of topsoil and seeding, permeability/density test results of the liner material should be furnished to both the Township and Engineer by the Developer to confirm the limiting permeability is achieved, or a Certification as to the acceptable installation of the geotextile basin liner shall be provided by the liner manufacturer.

   Upon completion of topsoiling and seeding, a final basin survey will also be completed by the Engineer. Basin surveys will be treated as an observation charge.

## Art. 11 - MATERIAL TESTING:

All testing shall be as required to satisfy the requirements of the Township Specifications and industry-standard protocols (as appropriate) and shall be in accordance with the applicable specifications.

## Art. 12 - RELEASE OF IMPROVEMENTS SECURITY/COMPLETION OF IMPROVEMENTS:

Procedures for release of improvements security and the Final and Maintenance Inspections shall be in accordance with the Improvements Agreement with the Township and with Township policies as applicable.

## Art. 13 - RECORD AS-BUILT PLANS:

Record As-built Plans shall be prepared by the Design Engineer from information recorded during construction. Information obtained by an Observer is not available for and is not to be used for preparation of the Record As-built Plans. Such plans shall be submitted to the Township and Engineer upon the completion of construction. Following are the record as-built plans submission and drawing requirements:

A. Submission Requirements: The Developer shall have its Design Engineer locate all of the items identified in B. Drawing Requirements with GPS to cm accuracy and prepare and provide one print, one pdf copy, and one ESRI file format copy for inclusion in the Township Master Plans of the final record as-built plan, drawn in a neat and legible manner, and identified as "Record As-built Plans". The plan preparer and date should be identified. Prior to submitting these plans, one PDF copy of the plan(s) shall be submitted to the Township and Engineer for review and analysis prior to any final escrow release;

B. Drawing Requirements: All construction changes shall be noted by drawing a line through the design data and adding the record data adjacent thereto, or in cases where the plan would be unclear, redrawing the plan to reflect the actual installation. The following specific information shall also be noted:

1. Roads: "Record" curb and/or pavement grades for intersections. Any significant deviations in the centerline profile shall be noted on the plan;

2. Storm Sewerage System: Invert and top elevations at all manholes, inlets, endwalls, and sewer lengths, slopes, pipe diameters, and types of pipe;

3. Water Distribution System: each gate valve, bend, tee, cross, plug, lateral, curb stop and valve box. The location and depth of the water main with respect to the street centerline or utility easement line shall be shown and dimensioned;

4. Sanitary Sewerage System: Invert and top elevation at all manholes, depth, length, and station of each lateral. In the case of skewed laterals, additional reference ties shall be provided. Stationing shall be based on the commonly accepted practice of applying station 0+00 to the centerline of the nearest manhole base slab;

5. Traffic Improvements: Signal equipment, signs, striping, depressed curbs, etc. shall be noted on the plan;

6. Other Underground Utilities: Location and depth of sanitary sewerage system, electric, telephone, cable TV, and gas lines within the rights-of- way. Any encasement of the above utilities should be identified and the utility location and depth should be shown;

7. Abandoned utilities should be identified by a note and by drawing a line through the original location data.

# SECTION B - **TECHNICAL SPECIFICATIONS**

SALISBURY TOWNSHIP

TECHNICAL SPECIFICATIONS

STREETS

Materials and Construction

All materials and construction methods used in the construction of streets shall meet the requirements as set forth in Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408 except as specifically modified by the requirements herein and except that the use of any type of slag material is prohibited.

EXCAVATION:

It is required that the Developer maintain all areas in a well-drained condition during the construction period so as to avoid pooling or ponding of water. If a sinkhole should develop during construction, the Developer shall immediately repair the sinkhole at its expense alone and in accordance with the following:

Upon detection of a sinkhole, the Developer or its Contractor shall notify the Township, contact its own geotechnical engineer who shall propose a repair solution and have that procedure reviewed by the Geotechnical Engineer. The Developer's geotechnical engineer and the Geotechnical Engineer shall monitor the repair in accordance with the reviewed procedure and upon completion of the repair and before any construction activity resumes in the area, the Developer's geotechnical engineer shall send a written report to the Township and to the Geotechnical Engineer that the sinkhole has been repaired in accordance with the reviewed procedure and that construction activities may continue.

Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for lawns, fields, subgrades, roads, shoulders, or any areas intended for turfing shall be excavated to a minimum depth of 12 inches, or to the depth below subgrade as specified by the Developer and its geotechnical engineer and acceptable to the Geotechnical Engineer. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth designated by the Geotechnical Engineer. The excavated area shall be refilled with suitable material, obtained from the grading operations or borrow areas and thoroughly compacted by rolling. The necessary refilling will constitute a part of the embankment. Where rock cuts are made and refilled with select material, any pockets created in the rock surface shall be provided with proper drainage.

Compaction Requirements. In cut areas, the upper six inches of the subgrade material under areas to be paved shall be compacted to a density of not less than 98 percent of maximum density for cohesive soils or 100 percent of maximum density for non-cohesive soils as determined by the Standard Proctor Density Test (AASHTO T 99 - Method C).

In cut areas, the upper six inches of the subgrade material under areas to be turfed shall be compacted to a density of not less than 90 percent of maximum density for cohesive soils or 95 percent of the maximum density for non-cohesive soils as determined by the Standard Proctor Density Test (AASHTO T 99 - Method C).

The in-place field density shall be determined in accordance with AASHTO T 191, Sand Cone Method, or AASHTO T 310, Nuclear Method.

Blasting. Blasting may be permitted only when proper precautions are taken for the safety of all persons, the work, and the property. All damage done to the work or property shall be repaired at the Developer's expense. All operations of the Contractor in connection with the transportation, storage, and use of explosives shall conform to all federal, state and local regulations, explosive manufacturers' instructions, with applicable approved permits to be submitted to the authority having jurisdiction for review. Any review given, however, will not relieve the Contractor of its responsibility in blasting operations.

Blasting shall be performed only after obtaining all necessary permits from state and local agencies and the Township Fire Inspector, as applicable.

PREPARATION OF EMBANKMENT AREA. Where an embankment is to be constructed, all sod, vegetative and deleterious matter shall be removed from the surface upon which the embankment is to be placed, and the cleared surface shall be broken up by plowing or scarifying to a minimum depth of six inches. This area shall then be compacted as indicated in Formation of Embankments. Where embankments are to be placed on natural slopes steeper than 3 to 1, horizontal benches shall be constructed.

FORMATION OF EMBANKMENTS. Embankments shall be formed in successive horizontal layers of not more than eight inches in loose depth for the full width of the cross section, unless otherwise specified by the Developer and its geotechnical engineer and acceptable to the Geotechnical Engineer. The grading operations shall be conducted, and the various soil strata shall be placed, to produce a soil structure as shown on the typical cross section or as directed. Materials such as brush, hedge, roots, stumps, grass or other organic matter shall not be incorporated or buried in the embankment.

Operations on earthwork shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, or other unsatisfactory conditions in the field. The Contractor shall drag, blade, or slope the embankment to provide proper surface drainage.

Embankment material under areas to be paved shall be compacted to a density of 100 percent of the maximum dry density per Standard Proctor Density Test (AASHTO T 99 - Method C) for the top 3 feet, and 98 percent of the maximum dry density per Standard Proctor Density Test (AASHTO T 99 - Method C) for the remainder for cohesive soils. Embankment material shall be compacted to a density of 100 percent of the maximum dry density per Standard Proctor Density Test (AASHTO T 99 - Method C) for the entire depth for non—cohesive soils.

The in-place field density shall be determined in accordance with AASHTO T 191, Sand Cone Method, or AASHTO T 310, Nuclear Method.

No layer in an embankment area shall be covered by another until the proper density is obtained.

During construction of the embankment, the Contractor shall route its equipment whenever practical, both when loaded and when empty, over the layers as they are placed and shall distribute the travel evenly over the entire width of the embankment. The equipment shall be operated in such a manner that hardpan, cemented gravel, clay, or other chunky soil material will be broken up into small particles and become incorporated with the other material in the layer.

When the excavated material to be used in the embankment consists predominantly of rock fragments of such size that the material cannot be placed in layers of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment in layers not exceeding two feet in thickness. Each layer shall be leveled and smoothed with suitable leveling equipment and by distribution of spalls and finer fragments of rock. This type of lift shall not be constructed above an elevation four feet below the finished subgrade. Density requirements will not apply to portions of embankments constructed of materials which cannot be tested in accordance with specified methods. Methods based on performance criteria established from test sections shall be used where the fil1 gradation does not accommodate traditional in-place density measurements. These procedures establish a performance criterion with test strips consisting of lifts of fill placed in various thickness and number of passes with the compaction equipment. The Developer's engineer shall establish acceptable placement and compaction criteria based on the test strips, as reviewed by the Township.

FINISHING AND PROTECTION OF SUBGRADE. After the subgrade has been substantially completed, the full width shall be conditioned by removing any soft or other unstable material which will not compact properly. The resulting areas and all other low areas, holes or depressions shall be brought to grade with suitable select materials. Scarifying, blading, rolling and other operations shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the Plans.

Grading of the subgrade shall be performed so that it will drain readily. The Contractor shall take all precautions necessary to protect the subgrade from damage. Hauling over the finished subgrade is prohibited. All ruts or rough places that develop in a completed subgrade shall be smoothed and recompacted.

No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been reviewed by the Engineer and/or the Geotechnical Engineer, as applicable.

BITUMINOUS CONCRETE PAVEMENT

The following sections of PENNDOT Specifications, Publication 408 shall apply:

| Material | Section |
|---|---|
| Excavation | 203, 204, and 205 |
| Embankment | 206 |
| Subgrade | 210 |
| Subbase | 350 |
| Superpave Asphalt Mixture Design, Standard Construction, Base Course | 313 |
| Superpave Asphalt Mixture Design, Fine-Graded Course | 410 |

The following procedure will govern the placement of bituminous concrete pavement on streets and/or roads within the Township:

1. Backfilling of utility trenches (such as for sanitary and storm sewers, water mains, gas mains, electrical facilities, etc.) shall be accomplished in accordance with these specifications, unless otherwise specified by the owner of the utility and reviewed by the Township. All trenches and excavations shall be backfilled promptly after the utilities are installed. Method of backfilling shall be as follows:

    a. Within State Highway Right-of-Way: Backfilling shall be done in accordance with requirements of the State Highway Occupancy Permit;

    b. Within existing streets, the backfill shall consist of:

        (1) A proper bedding of granular material properly formed to fully support the entire length of pipe;

        (2) PENNDOT No. 2A stone for initial backfill of sides and top of the pipe to eight inches below the existing subgrade;

        (3) In lieu of 1. and 2. above and with written approval from the Township, "flowable fill"; i.e., "Controlled Low Strength Material" (CLSM), with late-age strength of 80 to 100 psi may be placed to existing subgrade elevation. The 120-day settlement period (as referenced below) is replaced by the time required to reach late-age strength;

        (4) New base and surface courses at least equivalent to the material of the existing roadway (if applicable), as determined by the Engineer;

(5) When excavation of an existing Township street is necessary, it shall be done in accordance with requirements of the Township; i.e., the Road Opening Permit.

c. Within proposed streets the backfill shall consist of:

(1) A proper bedding of granular material properly formed to fully support the entire length of pipe;

(2) Clean clay or PENNDOT No. 2A stone for initial backfill of the sides and for 12 inches above the pipe. For HDPE and PVC pipe, only PENNDOT No. 2A shall be used to 12 inches above the pipe, which envelope shall be maintained throughout the construction period and shall not extend into subbase materials for roadways;

(3) Approved material free from organic matter, large or frozen lumps or stones over ten inches in their largest dimensions. Stones which are used in backfilling shall be so distributed through the mass that all interstices are filled with fine material.

The material shall be moistened or dried, if necessary, to obtain the required compaction. Backfill material shall be reviewed by the Engineer. The use of slag in any form for bedding or backfill is prohibited. Special care shall be taken in placing the backfill. Particular care shall be used to obtain thorough compaction under the haunches and along the sides to the top of the pipe.

All backfill shall be placed in loose layers not exceeding six inches in depth under and around the pipe, and not exceeding eight-inch lifts over the pipe. Successive layers shall be added and thoroughly compacted by hand and pneumatic tampers until the trench is completely filled to the elevation as directed. Backfilling shall be done in such a manner as to avoid injurious top or side pressures on the pipe.

Underground warning tape shall be installed a minimum of two feet above any pipe in the backfill of any mainline or lateral trench. Tape shall be alkali resistant, 4 mils polyethylene, 4 inches minimum width, continuously printed with name or symbol of utility buried below, color coded as follows:

Red: Electric.
Yellow: Gas, oil, and dangerous materials.
Orange: Telephone, cable TV, and other communications.
Blue: Water systems.
Green: Sewerage systems.

Where plastic water or sewer pipe is used the tape shall be appropriately colored and able to conduct a signal generated by a locating device.

Backfill shall be compacted to a density of not less than 98 percent of maximum density. The maximum density is the maximum dry weight density in pounds per cubic foot as determined by the Standard Proctor Density Test (AASHTO T 99 - Method C).

All backfilled trenches shall be allowed to settle for at least 120 days before the permanent base course or pavement may be constructed. Where less than 120 days of settlement time is anticipated and permitted by the Engineer, all trench backfill shall be PENNDOT No. 2A stone, tamped and when required by the Engineer/Township, capped with eight-inches of clay at subgrade elevation, wherever permanent base course and pavement is to be constructed. In such cases, the delay time until paving is permitted is to be determined by the Engineer/Township.

2. Weather Limitations.

a. Bituminous Base Course -- Superpave. Bituminous base course shall only be placed within the allowable temperature specified in PennDOT Publication 242, Pavement Policy Manual, latest edition.

b. Bituminous Wearing Course -- Superpave. Placement shall be permitted during the period 1 April to 15 October annually, provided temperature conditions as listed in (c) below are met and provided further that no paving will be permitted during inclement weather.

Prior to the placement of the wearing course, if the base course is dirty or has set longer than two weeks, the base course shall be satisfactorily cleaned and tacked. The Engineer/Township shall make the above determination when the wearing course is not immediately placed on the base course.

c. Bituminous Wearing Course -- Superpave. Placement may be permitted during the period 16 October to 15 November under the following conditions:

(1) Bituminous wearing course shall be hauled in properly covered and insulated trucks;

(2) Bituminous wearing course shall not be placed on damp or wet surfaces;

(3) Bituminous wearing course shall not be placed when the air temperature is 40 degrees F or lower, nor when the temperature of the base or binder on which it is to be placed is 40 degrees F or lower;

(4) Extra precautions shall be taken in drying the aggregate to be used in the mix, controlling the temperature of the delivered material, and compacting the mixture;

(5) Bituminous wearing course shall not be placed if, on the date preceding placement, it rained or snowed, and the temperature fell below freezing during the previous evening;

(6) Bituminous wearing course shall not be placed after November 15 without a written request from the Developer and the subsequent express written consent of the Township Manager and Engineer.

3. Extents of Roadway Restoration

a. If the street opening is within 36 inches of the center of the roadway, the entire roadway width is to be overlayed, extending 5 feet beyond the extents of excavation on either side of the trench.

b. If the street opening is not within 36 inches of the center of the roadway, overlay of a single lane of traffic is acceptable in most cases, extending 5 feet beyond the extents of excavation on either side of the trench.

SHOULDERS: Where applicable, the shoulder shall consist of the same pavement structure as the cartway.

UNDERDRAIN: Pipe underdrain shall meet the requirements of PENNDOT Specifications, Publication 408, Section 610 and be reviewed by the Engineer. The inside diameter of pipe shall be six inches, unless otherwise shown on the approved plans.

NOTIFICATION: No connections shall be made to existing Township streets without prior approval and without three working days advance notice to the Township to allow for scheduling of Township observation personnel.

TRAFFIC SIGNAL EQUIPMENT: The Developer and its Contractor shall follow all applicable signalization system design and installation standards and codes including but not limited to standards and codes of IEEE, ASTM, ANSI, International Municipal Signal Association (IMSA), Institute of Traffic Engineers (ITE), and PENNDOT, and shall bear the label of approval of the National Board of Fire Underwriters and Laboratory where applicable. New, first-quality, PENNDOT approved materials, made by a manufacturer of established recognized reputation, shall be furnished, and used unless otherwise specified. The Contractor shall follow PENNDOT Publication 408, Sections 930-936, 950-957, 960-966, 1101, 1103, and 1104, as well as Title 67 Chapter 221, Publication 148 (TC-7800), Publication 149, Publication 236, and Publication 111 (TC-8700).

A signal corridor analysis shall be provided for any proposed traffic signal within the limits of an existing coordinated corridor or if timing changes are proposed to a traffic signal within the limits of an existing coordinated corridor.

Unless otherwise directed by the Township, all existing equipment to be removed (signs, signal heads, mastarms, controller cabinets, and all hardware within the cabinet) shall remain the property of the Township and shall be inventoried and stored at the location designated by the Township. The Township reserves the right to require the Contractor to legally dispose of any equipment not desired by the Township.

Prior to final acceptance, as-built drawings shall be provided to the Township for review. A copy of the as-built drawing shall be provided for storage in the controller cabinet.

Controllers. All Traffic Signal Controllers shall be the 820A Series, as manufactured by Multisonics and shall be capable of integration into a Closed Loop System. Equivalent models may be considered by the Township. The Controller shall include a hand-held cord in the police compartment, an EDI NEMA 12- channel conflict monitor, a PDC Model SSF-96.3 Solid State Flasher, PDC Model SSS-86 Solid State Load Switches in an EDC Large Single Door Enclosure for NEMA 3R application with a front door compartment and sufficient shelving for the necessary equipment. All Controller Cabinets shall be sized for future Fiber-Optic Telemetry equipment, Equivalent models may be considered by the Township.

Interconnect, if any is required, shall be Fiber Optic cable, 6 fiber 62.5/125 micron multimode, terminated in patch panels with ST connectors. In situations where attachment to utility poles is not available or where conduit and trenching is not feasible, interconnect shall be accomplished with radio, provided a site survey has been performed and the testing substantiates reliability. The approval to proceed with a radio interconnect option shall be at the sole discretion of the Township. A copy of the closed loop software shall be supplied to the Township, if applicable. Equivalent models may be considered by the Township.

All controllers shall be equipped with a battery back-up unit that will automatically switch to battery power unit when the incoming power is interrupted. The controller cabinet must have a 1" red LED indicator which must illuminate when utility power is lost. The controller cabinet shall be equipped with a generator hook-up connection in a separate cabinet.

Signal Support. All Traffic Signals shall be supported with Valmont SMA42X Series of Traffic Signal Mastarms or equal, capable of having an extension to the shaft, and having a luminaire mounting arm added at a future date. Certification by a Pennsylvania Registered Professional Engineer shall be provided indicating that all components at the vertical poles and mastarms are designed by the manufacturer to adequately support the loads shown on the plans or the maximum load requirements established by AASHTO specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, latest edition, whichever is greater. Copies of the PENNDOT Certifications for the signal supports shall be supplied to the Engineer. Design calculations shall be provided to the Engineer for review before fabrication of all non-PENNDOT standard poles. Wire mesh shall be provided between the top of the foundation and the bottom of the base plate to prevent rodent access but permit adequate drainage in place of mortar. For foundations in fill, the required foundation depth shall be measured from the point of minimum grade at the foundation. For foundations in cut,

slope protection walls, connected to the top of the foundation, shall be provided. Slope protection wall designs prepared by a Pennsylvania Registered Professional Engineer shall be submitted to the Engineer for review prior to construction. Abandoned Signal Foundations shall be removed to a depth of 1' below final grade, and the existing ground shall be restored in the area of the foundation to provide a uniform level surface. The area disturbed by removal shall be restored to match the adjoining undisturbed area.

Signal Heads. All Vehicular and Pedestrian Signal Head indications shall contain the following Dialight modules, or equivalent:

8" Red: 433-1110-003
8" Yellow: 433-3130-001
8" Green: 433-2120-001
12" Red: 433-1210-003
12" Yellow: 433-3230-001
12" Green: 433-2220-001
12" Yellow Arrow: 430-3334-001
12" Green Arrow: 430-2374-001

The pedestrian signal heads shall have Portland Orange and Lunar White LED indications representing the 'Hand' and 'Walking Person', respectively, manufactured by an approved PENNDOT supplier. All vehicular and pedestrian signal improvements shall be contained in a polycarbonate housing manufactured by PEEK traffic. Back plates, visors, and louvers shall be provided as indicated on the permit plans. Signal heads shall be securely mounted, using signal mounting brackets, where indicated, and in accordance with the regulations. Signal heads shall be installed over roadways with the top of the housings at the same elevation. Where vehicular and pedestrian signals are to be installed on the same support, the assemblies should be separated. Vehicular signal heads shall be aimed, as directed, toward a point approximately 150 feet in advance of the stop line and in the center of the traveled traffic approach. Pedestrian signals shall be aimed to the far side of the crosswalk they are to control. Signals shall be hooded securely with burlap material until the signal is put into operation.

Electrical Distribution. The Contractor shall coordinate with the local power company to obtain metered power for each traffic signal controller cabinet. All meter equipment shall be housed in the Small Single Door Enclosure.

Conduit runs shall be sized for future use. All conduit street crossings will be 3" conduit. Controllers should be located at the intersection of conduit runs, and not at the end of a conduit loop. Each controller foundation or pole foundation (if the controller is pole mounted) will have the equivalent of two 3" conduits entering it from an adjacent junction box. Multiple conduit runs between common terminals shall be installed in a common trench. All effort shall be made to install conduits prior to construction of final grade (i.e., driveways, road widening, et al.). All loops will terminate in junction boxes, and there will be at least one junction box on each corner.

Detection. Pedestrian Push Buttons shall be as manufactured by General Traffic Equipment Corp. Model PB-3-1000. Detector Lead-In cable shall be IMSA Spec No. 50-2, 14 AWG. Detector Loop wires shall be IMSA Spec. No. 51-5, 14 AWG. Loop Amplifiers shall be Intersection Development Corporation Model 913A/913A-SS, Single Channel Digital Inductive Loop Vehicle Detectors. Equivalent models may be considered by the Township.

SIGNS: All signalized intersections shall be signed with Street Name signs of the size and designation as required by PENNDOT. All overhead street name signs (Series D3-4 and D3-5) shall include stiffeners. All standalone traffic signs shall be mounted on PENNDOT Breakaway Type 'B' posts.

For sign removal, the identified sign shall be removed from the current location. All sub-surface equipment shall be removed to a depth of 1' below grade and the existing ground in the area of the sign shall be restored to provide a uniform level surface. The area disturbed by removal shall be returned to match the adjoining undisturbed area. All existing aluminum and steel removed shall be inventoried and stored at the location designated by the Township. The Contractor shall exercise care during removal, storage, bundling, and delivery to prevent additional damage or deterioration of the sign materials, particularly aluminum sign blanks.

For sign relocations, signs shall be removed per sign removal above. The sign shall be installed in the new location, as identified on the plans, or as directed by the Engineer. The Contractor shall provide any anchoring equipment necessary to provide anchoring as originally installed. The Contractor shall be responsible for replacing in kind all signs or posts damaged during removal or reinstallation.

PAVEMENT MARKINGS: Long Lane line pavement markings are to be painted and shall conform to Sherwin Williams Highway Products, Hotline Traffic Paints Premium Waterbome TM 2152 White or TM 2153 Lead Free Yellow. Gore transverse stripping is to be epoxy. All other pavement markings are to be cold inlaid plastic or hot surface applied thermoplastic. Pavement markings shall be repainted at the close of the 18-month maintenance period.

SALISBURY TOWNSHIP

TECHNICAL SPECIFICATIONS

# CURBING

GENERAL: All materials and construction methods used in the construction of curbing shall meet the requirements as set forth in Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408 except as specifically modified by the requirements herein.

Curbing shall be plain cement concrete vertical curb having a height of twenty-one inches (21") and tapering from a top width of six inches (6") to a base width of eight inches (8"), with a front face batter of one in twelve, and conforming to the requirements of Section 630 of PennDOT Publication 408 and RC-64 of the PennDOT Standards for Roadway Construction. A six inch (6") exposed curb reveal shall be used on all Township roads, unless otherwise directed by the Township Engineer.

## Materials

CONCRETE: Concrete shall meet the requirements of PennDOT Publication 408, latest editions, Section 704 for Class A Cement Concrete. No concrete shall be mixed or placed when the air temperature is below 40°F. Cold and hot weather curing methods shall be used when required by the Township Engineer.

## Construction

SUBGRADE: The subgrade shall be substantially dry, unfrozen, firmly compacted soil. Thorough compaction shall be attained by using an approved pneumatic compactor or self-contained compactor, capable of delivering a minimum of 800 to 1,000 pounds at the shoe.

BASE: A stone bed shall be placed thoroughly compacted to a depth of four inches (4") using the above-mentioned compactors. The stone shall be 2B subbase material.

FORMS: Forms shall be made of approved substantial material, preferably of steel, and shall be smooth, free of warp, and sufficiently rigid and supported to prevent misalignment. These forms shall be of a depth equal to that of the proposed curb. Prior to pouring the concrete, all forms and templates shall be thoroughly cleaned and treated with an approved material to prevent the concrete from adhering thereto. Material which will adhere to or discolor the concrete shall not be used.

POURING: Curbs shall be carefully poured without segregation of constituents, tamped and screeded true to grade and section, eliminating all voids. Sufficient mortar shall be brought to the surface for finishing in a smooth, neat, and even manner using approved tools.

JOINTS: Each curb section shall be constructed in lengths of ten feet (10'). In no case shall a section be less than five feet (5') long. Each section shall be separated when pouring by a 1/8-inch steel template equal to the full depth of the curb.

Expansion joints of approved 3/8-inch pre-molded bituminous material shall be placed for the full curb depth at all points adjoining sidewalk and existing curb, at point of tangency of street returns and intersection curbs, and in no case more than thirty feet (30') apart.

FINISHING: Forms may be removed no earlier than twelve (12) hours after placement of the concrete. All construction joints shall then be filled with approved dry, sharp sand. Minor defects and honeycombing shall be corrected by patching with mortar; no plastering will be permitted. All exposed concrete shall be rubbed to a smooth surface and edges at joints finished with a suitable tool.

HANDICAP ACCESSIBILITY REQUIREMENTS: Handicap accessible ramps shall be constructed at all intersection in accordance with the requirements of the Americans with Disabilities Act (ADA) and PennDOT Publication 72, Roadway Construction Standards, latest edition.

CURB MACHINES: Construction of concrete curb through the use of a curb machine shall be permitted in accordance with Section 630.3 (d) of PennDOT Form 408. Any sections not on proper grade shall be removed and reset using curb forms. Excess concrete at the bottom of the curb shall be separated from the curb. Wasted concrete must be property disposed of. All inlets shall be set prior to curb construction. Any sections not on proper grade shall be removed and reset using curb forms.

SALISBURY TOWNSHIP

# TECHNICAL SPECIFICATIONS

## SIDEWALKS

GENERAL: All materials and construction methods used in the construction of sidewalks shall meet the requirements as set forth in Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408 except as specifically modified by the requirements herein.

### Materials

CONCRETE: Concrete shall meet the requirements of PennDOT Publication 408, latest editions, Section 704 for Class A Cement Concrete. No concrete shall be mixed or placed when the air temperature is below 40°F or above 90°F. Cold and hot weather curing methods shall be used when required by the Township Engineer.

### Construction

SUBGRADE: The subgrade shall be substantially dry, unfrozen, firmly compacted soil. Thorough compaction shall be attained by using an approved pneumatic compactor or self-contained compactor, capable of delivering a minimum of 800 to 1,000 pounds at the shoe.

BASE: A stone bed shall be placed and thoroughly compacted to a depth of six inches (6") using the above-mentioned compactors. The stone shall be PennDOT 2A subbase material.

FORMS: Forms shall be made of approved substantial material, preferably of steel, and shall be smooth, free of warp, and sufficiently rigid and supported to prevent misalignment. These forms shall be of a depth equal to that of the proposed curb. Prior to pouring the concrete, all forms and templates shall be thoroughly cleaned and treated with an approved material to prevent the concrete from adhering thereto. Material which will adhere to or discolor the concrete shall not be used.

POURING: Sidewalks shall be carefully poured without segregation of constituents to a full depth (see details) and screeded true to grade and sections, eliminating all voids. Sufficient mortar shall be brought to the surface for finishing in a smooth, neat, and even manner using approved wood floats.

All sidewalks shall be poured to a depth of five inches (5"). All driveway aprons shall be poured to a depth of six inches (6") and reinforced the full length and width of the apron with a 6"x6" #6 wire mesh (see details).

Sidewalk shall slope toward the street at a rate of ¼" per foot. It shall be constructed in separate slabs of thirty feet (30') in length. These slabs shall be separated for the full depth by expansion joints of approved 3/8-inch pre-molded bituminous material. The pre-molded material shall also be placed longitudinally at the joint where sidewalk slabs abut concrete curb and existing sidewalk. Between transverse expansion joints, the slabs shall be divided into blocks five feet (5') in length by using steel templates equal in depth to that of the slab.

HANDICAP ACCESSIBILITY REQUIREMENTS: Handicap ramps shall be constructed at all intersections in accordance with the requirements of the Americans with Disabilities Act (ADA) and PennDOT Publication 72, Roadway Construction Standards, latest edition.

SALISBURY TOWNSHIP

TECHNICAL SPECIFICATIONS

# EXCAVATION

GENERAL: The contractor shall perform the complete excavation of all types of materials and all characters of substance encountered in the installation of all pipelines and any demolition, together with all necessary and specified appurtenances. The Contractor shall, at his own expense, shore or otherwise protect all structures adjacent to any excavation which may be disturbed during the progress of work.

CLEARING AND STRIPPING UTILITY TRENCHES: In lawn areas, the Contractor shall strip topsoil and store the removed topsoil for placement during final restoration. Topsoil shall be stockpiled at an approved location, temporarily seeded, and protected to prevent erosion and sediment from leaving the surface area.

Where trenches to be excavated are in private rights-of-way containing trees, shrubs or any manmade structures, the Contractor shall inquire of the Property Owner and Township concerning the extent to which such obstacles to trenching can be cleared or stripped before proceeding. All other removal or damages made shall be replaced and restored at the Contractor's expense. No tree trimming or cutting of any trees from the project area will be allowed without the written approval of the Property Owner and Township.

WIDTH OF TRENCH: Utility trenches shall be sufficiently straight between manholes to permit the pipe to the laid true to line in the approximate center of the trench. The trench widths below the top of the pipe when laid to the required grade shall be such as to provide a free working space on each side of the pipe as shown on the details which are a part of these specifications. Where sheeting and shoring are used, the maximum allowable width shall be measured between the closest interior faces of the sheeting or shoring as placed. The overall width of the excavating bucket shall not exceed the maximum allowable trench width.

Whenever, for any reason, the maximum allowable trench width is exceeded at the top of the pipe, the Contractor shall, at his expense, employ one or more of the following procedures:

a. The pipe shall be bedded in a cradle of flowable fill having a minimum thickness of one-fourth the inside pipe diameter or a minimum of six inches (6") under the barrel and extending up the side for a height equal to one-half the outside diameter. The cradle shall have a width at least equal to the outside diameter of the pipe barrel plus eight inches (8"). Backfill above the cradle and extending to two feet (2') above the crown of the pipe shall be compacted carefully.

b. Install permanent sheeting and shoring while the pipe is being installed with the backfill placed and compacted to a height of at least one foot (1') above the top of the pipe.

To permit the installation of outside wooden forms for pipes to be encased in concrete, the overall trench width below the top of the pipe may be increased.

UNSUITABLE BEDDING CONDITIONS (OVEREXCAVATION): If any unsatisfactory bedding condition is found at the bottom of the pipe, the Township may require additional excavation and placement of PennDOT 2A Crushed Stone to be placed in the bottom of the trench.

TRENCH DEWATERING: The Contractor shall remove by pumping or draining all water which may accumulate in the trenches and other excavation, whether it be from groundwater infiltration, surface run off or any other source. The Contractor shall properly grade the ground surface in the vicinity of the excavation, build dams and do all other work necessary to keep the trenches or other excavations as free from water as possible.

The Contractor shall at all times have sufficient pumping equipment available on site to dewater trenches and other excavations as necessary.

LENGTH OF TRENCH: No trench at any single location shall be opened more than fifty linear feet (50') in advance of where pipe lines have been laid, or more than one hundred linear feet (100') ahead of where backfilling has been completed. Where rock excavation is encountered, all trenches must be fully opened at least thirty feet (30') in advance of any pipe being laid. At the end of each work day, the Contractor shall completely backfill all trenches and remove all construction equipment to a safe location, where placement shall cause a minimum of inconvenience to pedestrian and vehicular traffic.

MAINTAINING RIGHT-OF-WAY IN USE: The Contractor shall at all times keep storm drainage facilities open so that storm or other surface waters shall not have their flow obstructed. Work at all times shall be conducted as to cause a minimum of inconvenience to pedestrian and vehicular traffic and to private properties along the line of work. It shall be the duty of the Contractor during the progress of the work to maintain crossings, walks, sidewalks, and driveways open to traffic and to keep all fire hydrants, water valves, fire alarm boxes, and letter boxes accessible for use. Whenever it is necessary to maintain pedestrian traffic over open trenches, timber bridges at least three feet (3') in width and equipped with side railing shall be provided. Where the trench is close to the curb or sidewalk, the Contractor shall erect a plank fence together with other necessary material to keep the sidewalk and property clear.

When it is necessary to haul the excavated material over the streets near the job location, the Contractor shall provide suitable equipment for this work, and the Contractor shall promptly and thoroughly clean up all material dropped on streets and highways outside of the immediate trenching area.

All signs disturbed, altered, or damaged in any way by the construction activities shall be promptly restored to a condition equal to original and shall be replaced in proper alignment. All such facilities discolored or defaced in any way by the construction activities shall be refinished by the Contractor by washing, repainting in an approved manner or replaced in kind.

SHEETING AND SHORING: The Contractor must support the sides and ends of all excavations wherever necessary with timber sheeting, sheet piping, braces, shoring and stringers. It shall be of sufficient strength to serve the purpose for which it is intended. Sheeting and shoring shall be installed and securely braced in position to prevent cave-ins, slips or washouts and to adequately protect life and property. Determination of the type, strength, and spacing of the sheeting or shoring shall be withdrawn and removed as the work progresses, except where damage may result by thorough removal. The right of the Township to order sheeting, etc., left in place, shall not render the issuance of such orders obligatory on the part of the Township. All sheeting shall be arranged so that it may be withdrawn as the trenches are backfilled, without injury to the pipe and its appurtenances and without injury to or settlement of adjacent structures, pavement, and other public or private property. Sheeting shall not extend to the bottom of the trench but only to the top of pipe unless soil conditions require otherwise.

All voids caused by withdrawal shall be immediately filled with sand or other satisfactory material and compacted by ramming or other methods. All sheeting left in place shall be cut off at least one foot (1') below the finished grade.

ROCK EXCATATION: The term "rock" shall mean any material which cannot be excavated except by drilling and blasting, drilling and wedging, or by hand methods, such as jackhammers, hydraulic hammers, or by other approved methods, or if one-half (1/2) cubic yard or more in volume. Foundations of concrete, brick, or stone laid in cement mortar will be classified as rock if the volume at any single location exceeds one-half (1/2) cubic yard. Any material, other than the above specified, will not be classified as rock. No soft or disintegrated rock removed with pick or sledgehammer, nor any ledge or single boulders under one-half (1/2) cubic yard in volume; no loose, shaken, or previously blasted rock, nor broken stone in rock filling will be considered as rock.

If rock below the specified grade is shattered due to excessive blasting, and if, in the opinion of the Geotechnical Engineer it is unfit for foundation, such shattered rock shall be removed, and the area backfilled to the proper subgrade with PennDOT 2A Crushed Limestone, Class B Concrete, or other material acceptable to the Geotechnical Engineer, at the expense of the Contractor.

USE OF EXPLOSIVES: The Contractor shall at all times exercise the utmost care in the use of explosives so as not to endanger life or property and shall at all times comply with Title 25, "Rules and Regulations for the Storage, Handling, and Use of Explosives", as set forth by the Pennsylvania Department of Environmental Resources.

Explosive materials shall be stored as directed by the Department of Environmental Protection, and these shall at all times be made accessible for inspection by representatives of the Department of Environmental Protection. The Contractor, prior to initiation of any drilling or blasting operations, shall thoroughly familiarize himself with all Federal, State, County, Local, and private laws, ordinances, rules, and regulations pertaining to the use and storage of explosives and methods of drilling. Under no conditions shall detonating devices, firing caps, priming cord, etc. be stored or transported in proximity to explosive materials.

The conduct of all blasting operations shall be under the direct control and supervision of a competent and responsible person who is an experienced blaster, licensed and approved by the

Department of Environmental Protection. No person shall be permitted to fire any charge of explosives except the licensed blaster who is designated as being in charge.

Drilling and blasting operations in the vicinity of utility lines and structures shall be done in conformance with all applicable rules and regulations for the storage, handling, and use of explosives as set forth by the Pennsylvania Department of Environmental Protection.

The Township shall be informed in writing of any waiver of the regulations granted by the Department of Environmental Protection as provided under Section 211.52 of the Regulations.

The Contractor shall be required to employ seismic instrumentation during all blasting operations. The required instrument shall be of three component portable seismograph type having a direct reading of particular velocity and shall meet the requirements of the above DEP Rules and Regulations. Also required will be daily reports and monthly summary reports which shall include the name and signature of the person operating the seismograph, the exact location of the seismograph with respect to the blast, the number and depth of drill holes, the amount and type of dynamite used in each hole, and any other pertinent data.

PIPE BEDDING: All PVC Pipe mains shall be bedded on 2A stone. The base of the excavated area of PVC Pipe mains shall be shaped to the contour of the pipe and shall have depressions for the pipe bells so that the entire length of the pipe and shall have depressions for the pipe bells so that the entire length of pipe sets flat on the 2A stone. In the event rock is encountered in the base of the trench excavation, PVC pipe main shall be bedded on crushed stone base. In rock areas, the base on the trench shall be over excavated to a depth of eight inches (8") below finished grade. Type 2A crushed aggregate stone shall then be placed in the base of the trench, compacted and shaped to the contour of the pipe, have depressions for pipe bells, and allow the entire length of pipe to set flat on the trench bottom.

BACKFILL TRENCHES: The following requirements for backfilling of trenches are intended to specify materials and methods which will result in maximum compaction of the backfilled material without displacing the pipe grade and alignment. If displacement of the pipe or settlement of the backfilled material does occur, it will be considered conclusive evidence of improper backfilling materials, and it shall be the Contractor's responsibility, at his expense, to remove the backfilled material, re-grade and realign the pipe, backfill and re-compact the material. The procedure for backfilling shall be as follows:

a. Backfill shall not be placed around or over the pipelines, conduits, or concrete or masonry structures until such lines or structures have been entirely completed and have attained sufficient strength to sustain the loads imposed. Backfill around pipes shall be placed immediately after installation. Backfill shall be carefully placed around and over the pipe and structures and shall not be permitted to fall directly on the pipe or structures from a height, which may cause damage.

b. After proper installation of the pipe/conduit bedding and pipe envelope, backfilling may be performed. A thoroughly and satisfactorily compacted backfill is defined as having a minimum dry density of 98 percent of the maximum density. The maximum density is the maximum dry weight density in pounds per cubic foot as determined by the AASHTO Standard Density Test, T 99, Method C. Where the backfill material

consists of sand or silt containing less than 20 percent by weight of particles passing the No. 200 mesh sieve, a minimum dry density of 100 percent of the maximum density will be required.

c. All backfill shall be thoroughly compacted through the use of mechanical or vibratory tampers. Compaction of each layer shall not be less than 98% maximum density at optimum moisture control over the entire area. Backfilling shall be placed in a manner so as not to damage or disturb the pipe or other structures.

d. All utility trenches shall be backfilled with select material and shall be properly compacted with approved mechanical tampers to a minimum compaction of 98%. Compaction testing is required and shall be performed as determined by the Township Engineer. All unsuitable or unstable material shall be replaced with suitable backfill material.

e. Prior to construction of the bituminous concrete wearing course, all trench settlement areas shall be excavated to the depth of the unconsolidated or unacceptable backfill material, as determined by the Township Engineer. The excavated areas shall be backfilled with crushed stone material compacted in maximum lifts of six inches (6") to a minimum compaction of 98%, after which the base course shall be replaced.

f. All trenches backfilled with earth shall be allowed to settle for at least 180 days before the permanent base course or pavement may be constructed.

g. In unimproved or lawn areas located outside of the Township right-of-way, or as directed by the Township, the trench shall be backfilled with 2A stone material and be extend to a point one foot (1') above the top of the utility line or pipe, compacted in eight inch (8") layers. After placement of the initial backfill, the remainder of the trench shall be completed by filling the trench with suitable excavated material, machine-compacted in layers not more than one foot (1') in depth. No rock larger than six inches (6") in diameter will be permitted in the backfill material.

h. Within the Township Roads or Township right-of-way, or paved/improved areas, upon proper installation and compaction of the bedding, pipe and envelope material the trench shall be two inches (2") of compacted bituminous stockpile patching material (cold patch) or with bituminous base course, as may be directed by the Engineer. After 90 days of settlement time, cold patch, if used, and backfill material shall be removed and the trench shall be sawcut an additional one foot (1') beyond the initial cut and paved in accordance with Township Specifications. If base course is used on the initial trench restoration, then the trench, plus one (1) additional foot on either side of the trench, shall be milled and the wearing course installed. If bituminous wearing course is not constructed within two years after the base course is completed. The maintenance period for the roadway shall be extended to three years.

i. All work within the State right-of-way shall be done in accordance with the Highway Occupancy Permit and inspected by representatives of PennDOT. The Contractor shall notify PennDOT seventy-two (72) hours in advance of any anticipated work within State right-of-way.

EXCESS MATERIAL: Excess materials created from trench excavation shall be removed by the Contractor to some acceptable and convenient place provided by the Contractor. The Contractor shall bring back as much of the material removed as may be required to properly refill the trench. If the removed soil is not suitable for backfilling, the Contractor shall furnish such other suitable material as may be necessary for completion.

SALISBURY TOWNSHIP

TECHNICAL SPECIFICATIONS

SANITARY SEWERAGE

SYSTEMS

GENERAL: All materials and construction methods used in the construction of sanitary sewers and appurtenances shall meet the requirements as set forth in Pennsylvania Department of Transportation (PennDOT) Specifications, Publication 408 except as specifically modified by the requirements herein, and except that the use of any type of slag material is prohibited.

## Materials

PIPE FOR GRAVITY SEWERS: All gravity sanitary sewers shall be:

1. Ductile iron pipe, Class 50 metal thickness; or
2. Polyvinyl chloride pipe (PVC) for 15 inch (15") diameter or smaller pipe only;
3. Other material, as reviewed by the Engineer/Township.

All PVC pipe to be installed for gravity sewers less than fourteen feet (14') deep shall conform to ASTM D3034, SDR-35, and for sewers between fourteen feet (14') and twenty-four feet (24') in depth shall conform to ASTM D3034, SDR 26. Sewers greater than twenty-four (24') in depth shall be ductile iron. The entire run, from manhole to manhole, shall be constructed in accordance with the type of pipe required for the maximum depth of the entire run. Standard pipe length shall be twelve and a half feet (12 ½') for eight inch (8") and larger diameter pipe and ten feet (10') for six inch (6") diameter pipe.

PIPE FOR PRESSURE SEWERS: All pressure sewers shall be material as reviewed by the Engineer/Township.

PIPE JOINTS: All ductile iron pipe joints shall be of the push-on type and shall conform to ANSI A21.11 (current issue). All PVC pipe joints shall be of an integral bell design with a rubber gasket joint which conforms to ASTM D 3212 – Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals – and ASTM F 477 – Elastomeric Seals (Gaskets) for Jointing Plastic Pipe.

MANHOLES: Manholes shall be constructed of precast concrete sections, including grade rings, eccentric cones, riser sections, and/or flat slab top sections conforming to ASTM C 478 Standard Specifications for Precast Reinforced Concrete Manhole Sections. Manhole base shall be cast-in-place. Precast concrete bases may be permitted subject to the approval of shop drawings for the manholes by the Engineer/Township. In general, after tamping the excavated area, a leveling course of nine inches (9") of compacted PennDOT No. 2A stone, shall extend to the walls of the excavation beneath the precast manhole base. If the installation of the precast bases does not meet the approval of the Engineer/Township, further use will be prohibited.

MANHOLE JOINTS: Joints in precast concrete manhole sections shall be sealed with a mastic material (such as Rub-R-Nek). The material shall have a minimum cross-section one inch by one and one-half inches or one and one-half inches diameter. A double ring of mastic shall be used so that a continuous ring of mastic is forced from the joint on both the inside and outside manhole surfaces. Where PVC sewer pipes connect to manholes the joints shall be made with resilient connections which meet the requirements of ASTM C-923 Standard Specifications for Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes.

STEPS: All manholes shall be provided with steps. Steps shall conform to PENNDOT Specifications, Publication 408, Section 605.

MANHOLE FRAMES AND COVERS: Standard manhole castings shall be as approved by the Township.

All castings shall be true to form and dimensions, and shall be free from inclusions of foreign material, casting faults, injurious blow holes, cracks, sponginess, and other defects rendering them unsuitable. The finished frame and cover or grate shall have the bearing surfaces machined or ground so that there will be no variations that will permit rocking or rattling, and the diameter of the cover or grate shall be such as to fit the frame without wedging.

PUMPING AND METERING STATIONS: Detailed plans, design calculations, and specifications for all pumping and metering stations shall be submitted for review by the Engineer/Township. The Developer shall arrange with the manufacturer to provide the services of a factory-trained representative to perform the initial start-up of the station and to instruct the operating personnel in the operation and maintenance of the station. In addition, three copies of a complete operating and maintenance manual shall be provided to the Engineer before the station will be accepted by the Township. The station shall be designed and constructed so as to be controlled and monitored by the Township's S.C.A.D.A. System. All programming and connection costs are to be borne by the Developer.

CONCRETE: All concrete required for channels, drop connections, etc. shall conform to the requirements of Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408, Section 704, Class A concrete minimum.

## Construction

EQUIPMENT: The Contractor shall provide equipment to handle the pipe in unloading and placing in its final position, without damage to the pipe.

The Contractor shall provide hand tampers and pneumatic tampers sufficient to obtain the compaction of the pipe bedding and backfill as specified.

> Use of the Hydra-Hammer or impact type equipment similar to the Hydra-Hammer will not be permitted for compacting backfilled trenches.

EXCAVATION: Refer to Excavation Section

BEDDING: Unless otherwise directed by the Engineer/Township, all pipe to be installed, including that which is laid on an eight-inch (8") cushion in areas of rock excavation, shall bear the full length on firm, flat compacted PENNDOT No. 2A stone bedding which is properly shaped to receive the pipe configuration at the joints. The bedding and initial backfill around the pipe shall be placed as follows:

1. For ductile iron pipe - minimum compacted thickness of four inches beneath the pipe;

2. For PVC pipe - when compacted the granular bedding shall extend from a minimum of four inches (4") beneath the pipe to a minimum of twelve inches (12") over top of the pipe.

Wherever the Geotechnical Engineer may deem it necessary, the pipe shall be laid on a concrete pad or cradle of sufficient size to span areas of unsatisfactory bearing.

LAYING AND INSTALLING PIPE: Pipe shall be laid to true alignment and regular grade. Before the pipe is laid, all dirt shall be removed from inside the pipe and all lumps, blisters, dirt, oil, grease and moisture shall be removed from inside and outside the ends. After the pipe is laid, care shall be taken to prevent the entrance of dirt or water from the trench. Every open end of a pipe or fitting shall be plugged before leaving the work for the day or before backfilling the trench. Plugs shall be on the site before the Contractor commences construction of the pipeline.

Installation methods for PVC pipe shall be in accordance with Uni-Bell UNI-B-5, Recommended Practice for the Installation of PVC Pipe and the Uni-Bell Plastic Pipe Association Handbook of PVC Pipe.

Cutting of pipe for closure pieces, or other reasons, shall be done in a neat and workmanlike manner by a method which will not damage the pipe. All such cutting of pipe shall be done in conformance with the manufacturer's recommendations.

The Engineer/Township may inspect all pipe before it is laid, and reject any section that is damaged by handling or is found to be defective to a degree which will materially affect the function and service of the pipe.

Pipe shall not be laid on frozen ground. Pipe which is not true in alignment, or which shows any settlement after laying, shall be taken up and re-laid.

The Contractor shall provide for the temporary diversion of stream flow, as may be necessary and where approved by the Department of Environmental Protection, in order to permit the installation of the pipe under dry conditions.

DEWATERING: Any water which collects in an excavation shall be removed by the Contractor before proceeding with the construction of the pipe line or structures.

LINE AND GRADE: The location (line) and/or grade of all sewers and pipe lines to be constructed shall be established by means of offset stakes, pins or other survey marks. Grades shall be furnished at intervals of 50 feet (50') for grades of 0.80 percent and over, and at

intervals of 25 feet (25') for grades under 0.80 percent. When the Contractor uses a laser to obtain line and grade for laying the pipe, periodic checks shall be made by the Contractor from grade stakes. The first grade stake shall be furnished at 25 feet (25') and at intervals not greater than 100 feet (100') thereafter. When the Observer checks for vertical and/or horizontal alignment of the pipe, the Contractor shall assist him. Grade cut sheets shall be prepared by the Developer's Engineer and submitted to the Engineer for review a minimum of three working days prior to construction.

A minimum horizontal separation of ten feet (10') and a minimum vertical separation of eighteen inches (18") shall be maintained between waterlines and sanitary or storm sewers in accordance with Pennsylvania Department of Environmental Protection Public Water Supply Manual, Part II, Community System Design Standards, Chapter 8, Section 8.7 inclusive, or latest version of the governing regulations. When conflicts occur with existing facilities and the separations are less than mentioned above, the corrective methods shall be reviewed by the Engineer/Township.

MANHOLES: Manholes shall be constructed to the requirements of PENNDOT Specifications, Publication 408, Section 605 and Section 714; the latest details of the PENNDOT Standards for Roadway Construction; these Specifications and the Township Standard Construction Details. All manholes which are less than seven feet (7') from top of manhole to invert shall be constructed with "flat slab" top sections in lieu of the standard conical-shaped top sections.

When PVC pipe connects into a manhole, a water stop gasket produced from elastomeric material shall be used to prevent leakage while allowing longitudinal pipe expansion. This gasket shall be approved by the Engineer/Township. Grout shall be placed around the gasket and shall be of a type that expands, rather than shrinks, upon curing.

The cast-in-place base slab shall consist of reinforced Class A concrete (minimum) mixed, prepared, and placed in accordance with the requirements of PENNDOT Specifications, Publication 408. All manholes shall have flow channels built to the correct elevation and shall be finished to cause the least possible resistance to flow. The flow channel may be formed directly in the concrete of the manhole base, or be constructed by laying half sections of pipe through the manhole and casting the concrete bench around the pipe. The base slab shall be a minimum of twelve inches (12") thick below the invert.

To provide for future adjustment of the manholes, grade rings shall be used for a minimum height of four inches (4") and a maximum height of twelve inches (12") between the top precast section and the manhole frame.

External drop pipes shall be installed for all sewers entering the manhole at elevations 3.0 feet or more above the manhole invert, unless an inside drop is specifically approved by the Engineer. The drop pipe and fittings shall be sewer pipe of the same material, type and class as that used for the collector system and shall be completely encased in a minimum of six inches (6") of concrete. The concrete encasement shall conform to requirements of PENNDOT Specifications, Publication 408, for Class A concrete (minimum). All drop manholes shall be constructed in accordance with the Township Standard Construction Details.

All connections of new sanitary pipe to existing manholes shall be performed with a coring machine, unless otherwise approved by the Engineer/Township. The Contractor shall be required to obtain a "Confined Space Entry Permit" from the Township's Public Works

Department prior to commencing work within the manhole.

INSTALLATION OF STEPS: The steps shall be installed as indicated on the Plans, or as directed by the Engineer. When the steps are to be set in concrete they shall be placed and secured in position before the concrete is poured. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least seven days. After this period has elapsed, the steps shall be cleaned and painted, unless they have been galvanized, or coated satisfactorily.

When steps are required with precast concrete pipe structures, they shall be cast into the sides of the pipe at the time the pipe sections are manufactured or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

Typical step configuration shall be in accordance with PENNDOT, Standards for Roadway Construction.

FITTINGS AND SERVICE LATERALS: The Contractor shall lay six inch (6") "Y" branches for the purpose of making service lateral connections at each lot shown on the subdivision plan, and elsewhere if so directed by the Engineer/Township or Developer. "Y" branches shall be laid at an angle with the horizontal compatible with a lateral slope of 1/4 inch per foot, and have their ends plugged with an approved stopper.

Service laterals from sewer to property line, or to the point designated by the Engineer/Township, shall be laid by the Contractor, when so ordered by the Engineer/Township. Service laterals shall be of sufficient depth to serve basements unless otherwise ordered by the Engineer/Township. Service laterals shall have their ends plugged with an approved stopper.

The Contractor is cautioned that the sewer is to be tested by a leakage test as described elsewhere in these Specifications, and that the method used to secure the plugs in the branches and laterals must be such that the plugs will withstand the internal pressure of the test.

In general, specifications regarding materials, workmanship and watertight construction for fittings and service laterals shall be the same as those for main line sewers.

The Contractor shall mark the location of the plugged end of each lateral by placing a two (2) lb./ft. steel channel bar post, painted green. It shall be placed at the end of the pipe so that it extends from the pipe invert to four feet above the surface of the ground. The Contractor shall also provide the Engineer/Township with a record of stations and offsets, measured from the preceding manhole and centerline of sewer, for the end of each service lateral.

BACKFILLING: Refer to Excavation Section.

LEAKAGE TEST FOR GRAVITY SEWERS: The Contractor shall clean debris of whatever nature from the pipes and shall repair all apparent leaks, after which the loss of water from the sewer or the infiltration of water into the sewer in each test section shall not exceed 50 gallons per inch of inside pipe diameter per mile of sewer per 24 hours for polyvinyl chloride (PVC) and ductile iron pipe, as determined by the following leakage tests, to be conducted by, and at the expense of, the Contractor.

Each pipe section between manholes, or longer sections if permitted by the Engineer/Township, shall be tested by one of the following methods, either 1, 2, or 3 or under certain high ground water conditions, a combination of 1 and 3 or 2 and 3 at the option of the Engineer/Township:

1. Each section shall be tested by an Exfiltration Test.

   The Section to be tested shall be filled with water under a head maintained at four feet (4') above the top of the pipe at the highest point or four feet (4') above the prevailing ground water level, whichever is higher, for a period of 30 minutes, after which period the leakage test shall be conducted, under the same head of water, for an additional 30 minutes. The test shall be repeated until satisfactory.

   The Contractor is cautioned that the loosening of plugs in branch fittings and laterals will not be grounds for waiving the leakage test. In such instances the trench shall be excavated and the plugs replaced, after which the leakage test will be repeated.

2. Each section shall be tested by a low-pressure air test.

   Polyvinyl Chloride Pipe shall be tested in accordance with the following procedure:

   a. Clean the pipe to be tested;

   b. Plug all pipe outlets with suitably braced plugs;

   c. Add air slowly to the test section of the pipe until the internal air pressure is 4.0 pounds per square inch gauge (psig);

   d. After the pressure decreases to 3.5 psig, the time required for the pressure to drop one-half psig from 3.5 psig to 3.0 psig shall be measured. The sewer line will have passed the test if the measured time is greater than the minimum pressure holding time recommended by the Uni-Bell Plastic Pipe Association in the "Recommended Practice for Low Pressure Air Testing of Installed Sewer Pipe" for the respective diameter of pipe.

SPECIFICATION-MINIMUM HOLDING TIME REQUIRED FOR A 0.5 PSIG PRESSURE DROP
FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015 CFS

| Pipe Dia. (in.) | Min. Time (min: sec.) | for Min. Time (ft.) | for Longer Length (sec.) | 100 f1. | 150 ft. | 200 ft. | 250 ft. | 300 ft. | 350 ft. |
|---|---|---|---|---|---|---|---|---|---|
| 4 | 1:53 | 597 | .190L | 1:53 | 1:53 | 1:53 | 1:53 | 1:53 | 1:53 |
| 6 | 2:50 | 398 | .427L | 2:50 | 2:50 | 2:50 | 2:50 | 2:50 | 2:50 |
| 8 | 3:47 | 298 | .760L | 3:47 | 3:47 | 3:47 | 3:47 | 3:48 | 4:26 |
| 10 | 4:43 | 239 | 1.187L | 4:43 | 4:43 | 4:43 | 4:57 | 5:56 | 6:55 |
| 12 | 5:40 | 199 | 1.709L | 5:40 | 5:40 | 5:42 | 7:08 | 8:33 | 9:58 |
| 15 | 7:05 | 159 | 2.671L | 7:05 | 7:05 | 8:54 | 11:08 | 13:21 | 15:35 |

Ductile iron pipe used in a gravity system shall be pressure tested in accordance with the same procedure as outlined for polyvinyl chloride pipe.

The gauge used for measurements in the above tests shall be graduated in increments no greater than 0.25 psig.

For any of the above procedures, if the prevailing groundwater level is above the top of the pipe to be tested, the required test pressure will be increased by an amount equal to the groundwater pressure exerted on the pipe;

3. Under certain circumstances where there is high ground water, the Engineer/Township may require an Infiltration Test for some or all sections of the sewers in the contract. This test shall meet the leakage test requirements previously cited, and shall be used only where directed by the Engineer/Township. The Infiltration Test shall consist of segregating that portion of the line to be tested and measuring the amount of infiltration by a method approved by the Engineer/Township, such as with a V-notch weir or a timed overflow.

LEAKAGE TEST FOR MANHOLES: Each manhole shall be tested by an exfiltration test or vacuum test as outlined below. Any manhole that is adjusted, damaged or in any way altered after passing the leakage test shall be retested and/or repaired to the satisfaction of the Engineer/Township.

EXFILTRATION TEST: All pipes entering the manhole to be tested shall be plugged and the manhole shall be filled with water to within three inches of the proposed top elevation of the manhole casting. The test shall be placed on the manhole for a period of 30 minutes after which the drop in water level shall be measured. The manhole will have passed the exfiltration test if the drop in water level does not exceed 1/4 inch; or

VACUUM TEST: All pipes entering the manhole to be tested shall be plugged and the vacuum testing ring shall be installed on the manhole frame so that all joints, including the joint between the manhole frame and the leveling courses are tested. A vacuum equivalent to a minimum of ten inches (10") of mercury shall be drawn on the manhole and all test valves shall be closed. The manhole will have passed the vacuum test if the vacuum loss is no more than the equivalent of one inch of mercury within 60 seconds for a forty-eight-inch (48") diameter manhole, within 75 seconds for 60-inch diameter manhole or within 90 seconds for a seventy two-inch (72") diameter manhole.

CAUTION FOR PRESSURE TESTING. The following caution is applicable to all pressure testing on the project.

> CAUTION. WHEN PIPING SYSTEMS ARE PRESSURE TESTED, IT IS EXTREMELY IMPORTANT AND ESSENTIAL THAT ALL PLUGS INCLUDING TEST PLUGS AND ALL PIPE JOINTS ARE INSTALLED AND RESTRAINED IN SUCH A WAY THAT BLOWOUTS ARE PREVENTED. IT MUST BE REALIZED THAT SUDDEN EXPULSION OF A POORLY INSTALLED PLUG OR SECTION OF PIPE OR OF A TEST PLUG WHICH IS PARTIALLY DEFLATED BEFORE THE PIPE PRESSURE IS RELEASED CAN BE VERY DANGEROUS. FOR THIS REASON, IT IS RECOMMENDED THAT EVERY PLUG AND PIPE JOINT BE POSITIVELY BRACED OR OTHERWISE RESTRAINED DURING PRESSURE TESTING AND THAT NO ONE BE ALLOWED IN THE VICINITY OF AN EXPOSED PLUG OR PIPE SO LONG AS PRESSURE IS MAINTAINED IN THE LINE.

DEFLECTION TEST: Deflection testing shall be performed on all portions of the main line PVC sewer. Laterals will not be subjected to this test but shall have been constructed before this test is conducted. This test shall be performed in sections between manholes not less than 30 days or not more than 12 months following backfill of the trench.

Deflection testing shall be performed in accordance with the procedure outlined below and any section of the PVC sewer system not meeting the minimum requirements for deflection shall be excavated, repaired, and retested to the Engineer's/Township's satisfaction.

The maximum allowable deflection (reduction in vertical inside diameter) for all installed PVC sewer pipe, meeting the SDR 35 and minimum wall thickness requirements shall not exceed five percent of the original internal diameter of the pipe.

Deflection testing shall be performed with a "go, no-go" mandrel which is sized to such dimensions that it will not "go" when encountering deflection greater than permissible. The test mandrel shall have an outside diameter equal to 95 percent of the base inside diameter of the pipe being tested and shall be supplied at the Contractor's expense. All tests shall be performed without mechanical pulling devices.

VIDEO INSPECTION: The Developer shall video inspect at its expense, the installed pipe so as to verify alignment, joint seals, etc. This inspection will be performed prior to acceptance. Any defects discovered thereby are to be corrected at the Contractor's expense.

NOTIFICATION: No connections shall be made to existing Township systems without a valid Pennsylvania Department of Environmental Protection sewer extension permit, where required, and without prior approval and three working days advance notice to the Township to allow for scheduling of Township observation personnel. Connections to the Township sanitary sewerage system require a "Confined Space Entry Permit".

SINKHOLES: It is required that the Developer maintain all areas in a well-drained condition during the construction period so as to avoid pooling or ponding of water. If a sinkhole should develop during construction, the Developer shall immediately repair the sinkhole at its expense alone and in accordance with the following:

Upon detection of a sinkhole, the Developer or its Contractor shall notify the Township, contact its own geotechnical engineer who shall propose a repair solution and have that procedure reviewed by the Geotechnical Engineer. The Developer's geotechnical engineer and the Geotechnical Engineer shall monitor the repair in accordance with the reviewed procedure and upon completion of the repair and before any construction activity resumes in the area, the Developer's geotechnical engineer shall send a written report to the Township and to the Geotechnical Engineer that the sinkhole has been repaired in accordance with the reviewed procedure and that construction activities may continue.

SALISBURY TOWNSHIP

TECHNICAL

SPECIFICATIONS

WATER SUPPLY AND

DISTRIBUTION SYSTEMS

GENERAL: All materials and construction methods used in the construction of water mains and appurtenances shall meet the requirements as set forth in Pennsylvania Department of Transportation (PennDOT) Specifications, Publication 408 except as specifically modified by the requirements herein, and except that the use of any type of slag material is prohibited.

## Materials

ANSI/NSF STANDARDS: All materials to be used in construction or modification of a public water system including waterline extensions which may come in contact with or affect the quality of the water shall be certified for conformance with ANSI/NSF Standard 61 (Drinking Water System Components – health Effects – National Sanitation Foundation). An acceptable certification shall be provided by the NSF or other certification organization acceptable to the Pennsylvania Department of Environmental Protection.

DUCTILE IRON PIPE: All pipe shall be Ductile Iron centrifugally cast in accordance with ANSI Specification A21.51 and shall have a Class 52 metal thickness.

PIPE JOINTS: All joints shall be the push-on type except as noted and shall conform to ANSI Specification A21.11. Pipe shall be furnished complete with all joint accessories including the continuous, molded, rubber ring gasket and the gasket lubricant.

FITTINGS: All fittings shall conform to ANSI Specification A21.10 for ductile iron and gray iron fittings for three-inch (3”) through forty-eight-inch (48”) diameters for water and other liquids or to ANSI Specification A21.53 for ductile iron compact fittings for three-inch (3”) to twelve-inch (12”) diameters for water and other liquids.

CEMENT LINING: All pipe and fittings shall be double cement lined and asphaltic seal coated inside, and bituminous seal coated outside in accordance with ANSI Specification A21.4. Minimum thickness of double cement lining shall be 1/8 inch.

VALVE AND VALVE BOX\: Refer to Standard Construction Details – VALVE AND VALVE BOX.

FIRE HYDRANTS: Fire hydrants shall conform to AWWA Specification C502 and shall be as shown on the Standard Construction Detail – FIRE HYDRANT.

SERVICE CONNECTIONS: Refer to Standard Construction Detail – SMALL SERVICE CONNECTION or RESIDENTIAL SERVICE CONNECTION.

BLOW-OFF ASSEMBLY: Refer to Standard Construction Detail – 2" SURFACE BLOWOFF.

COPPER SERVICE LINES: Service connections from the main to the curb stop of sizes three-quarter-inch (3/4") (minimum) through two-inch (2") diameter shall be Type K copper tubing, conforming to ASTM B88 (current issue), designed for a working pressure of not less than 150 psi. The copper service line shall be one continuous section of copper tubing from the corporation to the curb stop and shall not include any couplings.

DUCTILE IRON SERVICE LINES: Service connections from the main to the curb stop of sizes larger than two inch (2") diameter shall be ductile iron conforming to the AWWA C151 and C153.

CONCRETE: All concrete required for thrust blocks, concrete mats, etc. shall conform to the requirements of Pennsylvania Department of Transportation (PennDOT) Specifications, Publication 408, Section 704, Class A concrete minimum.

METER PITS: Refer to Standard Construction Detail – RESIDENTIAL SERVICE CONNECTION.

PUMP STATIONS: Detailed plans, design calculations, and specifications for all water booster pumping stations or other special installations shall be submitted for review by the Engineer/Township. The Developer shall arrange with the manufacturer to provide the services of a factory-trained representative to perform the initial start-up of the station and to instruct the operating personnel in the operation and maintenance of the station. In addition, three (3) copies of a complete operating and maintenance manual shall be provided to the Engineer before the station will be accepted by the Township. The station shall be designed and constructed so as to be controlled and monitored by the Township's S.C.A.D.A. System. All programming and connection costs are to be borne by the Developer.

## Construction

EQUIPMENT: The Contractor shall provide equipment to handle the pipe in unloading and placing in its final position, without damage to the pipe.

The Contractor shall provide hand tampers and pneumatic tampers sufficient to obtain the compaction of the pipe bedding and backfill as specified.

EXCAVATION: Refer to Excavation Section

BEDDING: Refer to Excavation Section.

LAYING AND INSTALLING PIPE: Pipe shall be laid to true alignment and regular grade. Any

change in horizontal direction which exceeds the deflection tolerance recommended by the pipe manufacturer shall be made by restrained fittings.

Cutting of pipe for closure pieces, or other reasons, shall be done in a neat and workmanlike manner by a method which will not damage the pipe. Cut ends of the pipe shall be ground smooth and beveled as recommended by the manufacturer.

The Engineer/Township may inspect all pipe before it is laid, and reject any section that is damaged by handling or is found to be defective to a degree which will materially affect the function and service of the pipe.

Pipe shall not be laid on frozen ground. Pipe which is not true in alignment, or which shows any settlement after laying, shall be taken up and re-laid.

The Contractor shall provide for the temporary diversion of stream flow, as may be necessary and where approved by the Department of Environmental Protection, in order to permit the installation of the pipe under dry conditions.

Push-on joints shall be applied in accordance with the manufacturer's recommendations, with special care given to cleaning the joint and gasket thoroughly, applying the recommended lubricant, positioning the gasket carefully and avoiding any contact which might tend to cut the gasket. Where mechanical joints are specified, similar care shall be exercised. Mechanical joints shall be made as recommended by the manufacturer.

Pipes, fittings, hydrants and valves shall be carefully handled so as to avoid damage or contamination. Before pipe is laid, all dirt shall be removed from inside the pipe and all lumps, blisters, dirt, oil, grease and moisture shall be removed from inside and outside the ends. Afler pipe is laid, care shall be taken to prevent the entrance of dirt or water from the trench. Every open end of a pipe or fitting shall be plugged before leaving the work for the day or before backfilling the trench. Plugs shall be on the site before the Contractor commences construction of the waterline.

Concrete thrust blocks shall be poured at all tees, horizontal bends, plugs, and fire hydrants. At each vertical bend in the main, or such other location specifically reviewed by the Engineer, the Contractor shall perform one or more of the following steps to prevent movement of the pressurized pipe:

1. Pour a properly sized block of concrete and harness the pipe to the concrete when required;

2. Use "Mega-lug" retainer glands as manufactured by EBAA Iron Sales, Inc. Any restrained fitting shall be no closer than one full pipe length from an unrestrained pipe joint;

3. Use steel "all-thread" rods from fitting to fitting and a harness from fitting to the pipe; the type, number and location of which will depend on field conditions;

4. Use other methods satisfactory to the Engineer/Township Public Works Department.

Pipe sleeves, couplings, bell clamps, etc. shall not be used in the completed installation.

DEWATERING: Any water which collects in an excavation shall be removed by the Contractor before proceeding with the construction of the pipeline or structure.

LINE AND GRADE: The location (line) and grades, if deemed necessary by the Engineer for the water main, shall be established by means of offset stakes, pins or other survey marks. Grades, when necessary, shall be furnished at intervals of fifty feet (50'), minimum. Grade cut sheets shall be prepared by the Developer's Engineer and submitted to the Engineer for review a minimum of three working days prior to construction.

A minimum horizontal separation of ten feet (10') and a minimum vertical separation of eighteen inches (18") shall be maintained between waterlines and sanitary or storm sewers in accordance with Pennsylvania Department of Environmental Protection Public Water Supply Manual, Part II, Community System Design Standards, Chapter 8, Section 8.7 inclusive, or latest version of the governing regulations. When conflicts occur with existing facilities and the separations are less than mentioned above, the corrective methods shall be reviewed by the Engineer/Township.

SETTING VALVES, FIRE HYDRANTS AND FITTINGS: Valves for fire hydrants shall be located four feet (4') in front of the curb or as directed by the Engineer/Township. Main line valves in general shall be located on the extensions of right-of-way lines of intersecting streets. Particular care shall be taken to see that all valves are in proper working order. Construction of waterlines in developments consisting of Phases or Sections shall be accomplished in such a manner that subsequent Phases or Sections can be constructed without disruption of water service to a previous Phase or Section. This requirement may involve the installation of valves and/or blow-off assemblies additional to those shown on the plans. These valves and/or blow-off assemblies shall be secured by a method reviewed by the Engineer/Township (see LAYING AND INSTALLING PIPE) or secured by extending the line a minimum of one full pipe length past the valve and by backfilling properly. This extension shall be capped with a blow-off assembly and be pressure tested as described herein. The valve shall be tested with a listening device as described herein. Care shall be taken in setting the mainline valve so that the pipe extension terminates at the project limit. Where hydrant tees are allowed, hydrant valves shall be secured to the hydrant tee using acceptable fastening methods.

Fire hydrants shall be set to line and grade and located as shown on the Standard Construction Details - FIRE HYDRANT or as directed by the Engineer/Township Public Works Department. Excavations for fire hydrants shall be three feet square and extend down to a depth eighteen inches (18") below the bottom of the hydrant. The excavation shall be filled to the bottom of hydrant elevation with AASHTO No. 3 stone. Hydrants shall be set with the 4-1/2-inch pumper connection facing the street, unless otherwise directed by the Engineer/Township Public Works Department. After setting the hydrant, AASHTO No. 3 stone shall be placed to six inches (6") above the flange, and the balance of the excavation filled with suitable material. Particular care shall be taken to set all hydrants vertical and to see that they are in proper working order. Thrust blocks shall not cover the hydrant drains. The traffic break-away section shall be no greater than 4 inches above final grade.

Blow-off valves and other fittings shall be installed where shown on the plans, or as directed by the Engineer/Township Public Works Department and as shown on the Standard Construction Details – 2" SURFACE BLOWOFF.

SERVICE LATERALS: Service laterals shall be installed from the main to the curb stop, which shall be located generally two feet (2') behind the curb, four feet (4') deep below the top of the curb or existing road grade. Corporations, curb stops, and laterals shall be installed only when the water main is at normal working pressure, and shall be observed by the Engineer/Township Public Works Department prior to backfilling. Bury depth shall not be greater than five feet nor less than four feet (4'). An eight-inch (8") clay envelope shall be placed around all copper service laterals.

Curb boxes shall be positioned over the curb stops so that there is equal adjustment above and below final grade. The final check of the curb box alignment shall be made by the Observer and personnel of the Township or agency having jurisdiction. A curb stop key shall be satisfactorily placed on every curb stop, if alignment is in question.

When directed by the Engineer/Township Public Works Department, the water lateral shall be extended from the curb stop to a location ten feet from the property line toward the house. This extension is commonly referred to as the "pigtail" of the water lateral. The end of the "pigtail" shall be marked by installing a two lb. per ft. (2 lb/ft) steel post painted with a fluorescent blue paint extending from the pipe end to five feet (5') above grade.

BACKFILLING: Refer to Excavation Section

FILLING, DISINFECTION, AND TESTING PROCEDURES: It shall be the responsibility of the Developer and/or its Contractor to notify Salisbury Township Public Works Department prior to performing each of the following consecutive procedures. Forty-eight (48) hours' notice is required before each of the following procedures.

1. FILLING OF MAINS
2. DISINFECTION OF COMPLETED MAINS
3. DISINFECTION OF TAPPING SLEEVES
4. LOW VOLUME PURGE
5. BACTERIOLOGICAL TESTS
6. HYDROSTATIC TESTS
7. TESTING VALVES
8. HIGH RATE FLOW TEST

1. FILLING OF MAINS: Filling of mains is under the complete control of the Township when the water used for filling is from a Township source. A Record Plan drawing of the segment of the system to be filled shall be available to the Township prior to filling the main. In lieu of Record Plans at this time, two sets of a schematic "line" diagram of the water system shall be prepared by the Contractor and given to the Superintendent or Foreman of Water to review before the Township will fill the lines. All valves and fire hydrants shall be shown on this diagram. A Township waterworks operator will monitor all filling.

2. DISINFECTION OF COMPLETED MAINS: Before being placed in service, the newly constructed water main shall be disinfected and tested in accordance with AWWA C65l and as specified herein. Chlorine may be applied by use of calcium hypochlorite comparable to commercial products known as H.T.H., Perchloron, or Maxochlor. This procedure will be under the control of a Township waterworks operator who will confirm that all applicable backflow and cross connection precautions are followed.

   The chlorinating agent shall be applied in such a manner to treat completely all sections of the system. The chlorinating agent shall be applied in a quantity to produce a dosage of 25 mg/l to 50 mg/1 of free chlorine. Disinfection shall continue for a minimum of 24 hours and the residual free chlorine at the end of that time shall be a minimum of 10 mg/1.

   During the chlorination process all valves and accessories shall be operated.

3. DISINFECTION OF TAPPING SLEEVES: The developer or its Contractor shall thoroughly clean the exterior of the main to be tapped and the interior surface of the tapping sleeve, and shall swab the interior surface of the tapping sleeve with sodium hypochlorite liquid.

4. LOW VOLUME PURGE: After chlorination, the heavily chlorinated water shall be purged from the line at its extremities until the test results of the replacement water are equal chemically and bacteriologically to those of the permanent source of supply. All flushing will be controlled by a Township waterworks operator. The individual service lines shall also be properly flushed. The purged water shall contain no more chlorine or other residual than allowed by the Pennsylvania Department of Environmental Protection or any other agency having jurisdiction.

5. BACTERIOLOGICAL TESTS: After all of the above testing is satisfactory, samples for the bacteriological tests shall be taken by an independent testing laboratory, certified by the Pennsylvania Department of Environmental Protection and approved by the Township waterworks operator. Samples shall be taken at the locations designated by the Engineer/Township Public Works Department and in accordance with AWWA C651. The Developer or its Contractor shall pay for the tests and shall direct the laboratory to submit only the test results directly to the Engineer and the Township Public Works Department. The result for coliform bacteria shall be 0 per 100 ml, and the result for heterotrophic bacteria shall be 0 per 100 ml. The concentration of available chlorine shall be between 0.4 mg/1 and 1.2 mg/1.

Valves isolating new lines from mains already in service shall not be opened until the customary water test certificates have been received from the testing laboratory and approved by the Township waterworks superintendent.

6. HYDROSTATIC TESTS:

CAUTION FOR PRESSURE TESTING: The following caution is applicable to all pressure testing on the project.

CAUTION. WHEN PIPING SYSTEMS ARE PRESSURE TESTED, IT IS EXTREMELY IMPORTANT AND ESSENTIAL THAT ALL PLUGS INCLUDING TEST PLUGS AND ALL PIPE JOINTS ARE INSTALLED AND RESTRAINED IN SUCH A WAY THAT BLOWOUTS ARE PREVENTED. IT MUST BE REALIZED THAT SUDDEN EXPULSION OF A POORLY INSTALLED PLUG OR SECTION OF PIPE OR OF A TEST PLUG WHICH IS PARTIALLY DEFLATED BEFORE THE PIPE PRESSURE IS RELEASED CAN BE VERY DANGEROUS. FOR THIS REASON, IT IS RECOMMENDED THAT EVERY PLUG AND PIPE JOINT BE POSITIVELY BRACED OR OTHERWISE RESTRAINED DURING PRESSURE TESTING AND THAT NO ONE BE ALLOWED IN THE VICINITY OF AN EXPOSED PLUG OR PIPE SO LONG AS PRESSURE IS MAINTAINED IN THE LINE.

The complete system shall be tested by one of the following methods:

a. Before completely backfilling the joints but with sufficient material placed to hold the pipe during the test, the complete installation including the service laterals and fire hydrant (valves to hydrants open) laterals shall be tested at a hydrostatic pressure of 150 psig, or 50 psig greater than working pressure, whichever is higher;

b. In lieu of the above requirement and prior to the installation of the service laterals, the water mains alone may be tested at a hydrostatic pressure of 150 psig, or 50 psig greater than working pressure, whichever is higher. After the service laterals are installed the complete installation, including the service laterals, shall be re-tested at a hydrostatic pressure of 100 psig, for a minimum of one hour. During the re-test at 100 psig, the laterals are assumed to be partially backfilled.

NOTE: All corporations shall be installed at normal working pressure (min.) and each corporation, service lateral, and curb stop shall be visually checked for leaks or defects under normal line pressure.

Any corporations which are tapped into the waterline for the purpose of testing (or expelling air) shall be removed and replaced with appropriate plugs following the completion of the testing.

Each section tested shall be slowly filled with water, care being taken to expel all air from the pipes. All control valves from the Township system shall only be operated by Township personnel. If necessary the pipes shall be tapped at high points to vent the air. The required pressure shall be applied for not less than three hours and all pipe, fittings, valves, hydrants and joints shall be carefully examined for defects. Leaking joints shall be made tight and defective work replaced until the leakage is reduced to the allowable amount, which shall be determined by the following formula:

$L = \frac{SDLP^{1/2}}{133{,}200}$ where

L = allowable leakage, in gallons per hour;
S = length of pipe tested, in feet;
D = pipe diameter, in inches;
$(P)^{1/2}$ = square root of the test pressure, P, in pounds per square inch gauge (psig).

For fire lines, the Township Fire Inspector shall be notified.

7. TESTING VALVES: The following procedure is given as a guideline for testing the valves. Other procedures may be acceptable, and can be offered as an alternative for review by the Engineer. After the pressure test(s) are completed, every internal valve shall be checked for leaks in the following manner:

   a. Starting at the most remote point from the source of pressure, each valve shall be closed;

   b. As each valve is closed, the pressure on the side of the valve away from the source shall be relieved;

   c. Line pressure shall be maintained on the side of the valve toward the source of pressure;

   d. The Developer's utility subcontractor shall supply and operate the proper leak detection equipment, together with the Observer and personnel from the Water Department shall listen to each valve with a device that can detect a flow of water through the valve;

   e. Each valve shall be checked working systematically back to the source of the pressure.

   If there is doubt about the results of the above test on a particular valve, a water pressure test shall be conducted at a differential pressure of at least 100 psig across the valve, as directed by the Engineer.

8. HIGH-RATE FLOW TEST: High-rate flow test shall be performed on all newly installed waterlines only after satisfactory completion of the required hydrostatic and bacteriological tests. The Contractor shall provide advance notice conforming to the

notification requirements listed above. The high-rate flow test shall normally be scheduled for a Wednesday night after 9:30 p.m., weather and allowable conditions permitting. It shall be of sufficient duration to clean the waterlines thoroughly. The Contractor shall make the necessary provisions for the proper disposal of the chlorinated water discharged during the test. Contractor personnel shall be responsible to perform the work required during the test except for operation of water system valves. The minimum size of the discharge pipe shall be 4 inches.

NOTIFICATION: No connections shall be made to the existing Township system without prior approval and without three working days advance notice to the Township to allow for scheduling of Township observation personnel. This includes the operation of Township fire hydrants or any connections to mains or other points of connection.

TOWNSHIP REIMBURSEMENT: The costs for Township personnel to operate water system valves and attend hydrostatic, bacteriological and high-rate flow testing, or to perform similar duties associated with the Developer's project shall be borne by the Developer. The Township will invoice the Developer directly for these costs, payment for which shall be made within 15 days of the date of the invoice. In the absence of such reimbursement to the Township, improvements security releases will not be processed.

SINKHOLES: It is required that the Developer maintain all areas in a well-drained condition during the construction period so as to avoid pooling or ponding of water. If a sinkhole should develop during construction, the Developer shall immediately repair the sinkhole at its expense alone and in accordance with the following:

Upon detection of a sinkhole, the Developer or its Contractor shall notify the Township, contact its own geotechnical engineer who shall propose a repair solution and have that procedure reviewed by the Geotechnical Engineer. The Developer's geotechnical engineer and the Geotechnical Engineer shall monitor the repair in accordance with the reviewed procedure and upon completion of the repair and before any construction activity resumes in the area, the Developer's geotechnical engineer shall send a written report to the Township and to the Geotechnical Engineer that the sinkhole has been repaired in accordance with the reviewed procedure and that construction activities may continue.

SALISBURY TOWNSHIP

TECHNICAL SPECIFICATIONS

STORM SEWERS AND APPURTENANCES

GENERAL: All materials and construction methods used in the construction of storm sewers and appurtenances shall meet the requirements as set forth in Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408 except as specifically modified by the requirements herein, and except that the use of any type of slag material is prohibited.

Materials

PIPE AND STRUCTURES: Reinforced Concrete Pipe (RCP) shall be used for all storm sewers to be constructed within street rights-of-way to be dedicated to the Township or located within drainage easements. High density polyethylene (HDPE) may be permitted by the Township in certain cases. The minimum diameter of any drainage pipe shall be 15 inches. Manholes shall be constructed of precast concrete manhole sections. Inlets and endwalls shall be precast reinforced concrete structures. Manholes and inlets shall not be constructed of precast concrete blocks or sewer brick. Sewer brick shall be used only at the top of the concrete structure to allow for adjustment of the casting. See Construction, LEVELING COURSE.

All materials shall be by a manufacturer listed in PENNDOT, Publication 35, Bulletin 15 (Approved Construction Materials).

CONCRETE STORM SEWER PIPE, REINFORCED: Concrete culvert and sewer pipe, reinforced, shall conform to the requirements of AASHTO M170 (current edition) for Class III, Class IV or Class V pipe, as may be specified.

HIGH DENSITY POLYETHYLENE PIPE (HDPE): HDPE pipe shall meet the requirements of AASHTO M252 or AASHTO M294, Standard Specification for polyethylene corrugated drainage pipe.

MORTAR: Mortar for brick masonry, pipe joints, and connections to other structures shall conform to the requirements of Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408, Section 705.7.

RUBBER GASKET JOINTS: Joints using rubber gaskets shall conform to the requirements of AASHTO M198. Rubber gaskets for concrete pipe shall be continuous rubber rings which fit snugly in the annular spaces between the overlapping surfaces of the ends of the pipes to form a flexible watertight seal under all conditions of service. The gasket shall have smooth surfaces free from all imperfections.

CONCRETE: Plain and reinforced concrete used in structures, pipe cradles, connections of pipes with structures, low flow channels, support of structures or frames, etc. shall conform to the requirements of Pennsylvania Department of Transportation (PENNDOT) Specifications, Publication 408, Section 704, Class A concrète minimum.

BRICK: Brick shall conform to the requirements of AASHTO M91, Grade MM.

PRECAST CONCRETE PIPE MANHOLE SECTIONS: Precast reinforced concrete pipe manhole sections shall conform to the requirements of AASHTO M199. Unless otherwise approved by the Engineer, the sections shall have a minimum inside diameter of 48 inches.

FRAMES, COVERS, AND GRATE CASTINGS: The castings shall conform to one of the following requirements:

1. Gray iron castings shall meet the requirements of AASHTO M105 (current edition);
2. Steel castings shall meet the requirements of AASHTO M103 (current edition).

All castings shall be true to form and dimensions, and shall be free from inclusions of foreign material, casting faults, injurious blow holes, cracks, sponginess, and other defects rendering them unsuitable. The finished frame and cover or grate shall have the bearing surfaces machined or ground so that there will be no variations that will permit rocking or rattling, and the diameter of the cover or grate shall be such as to fit the frame without wedging. All castings shall be thoroughly cleaned by the manufacturer.

Grates for inlets shall be bicycle safe as detailed in PENNDOT Standard for Roadway Construction Steel Grate -- Bicycle Safe.

STEPS: All manholes and inlets shall be provided with steps. Steps shall conform to PENNDOT Specifications, Publication 408, Section 605.

## Construction

EQUIPMENT: The Contractor shall provide equipment to handle the pipe in unloading and placing in its final position, without damage to the pipe. The Contractor shall provide hand tampers and pneumatic tampers sufficient to obtain the compaction of the pipe bedding and backfill as specified.

Use of the Hydra-Hammer or impact type equipment similar to the Hydra-Hammer will not be permitted for compacting backfilled trenches.

EXCAVATION: Refer to Excavation Section

BEDDING: Refer to Excavation Section

LAYING AND INSTALLING PIPE: Pipe shall be laid to true alignment and regular grade. Before pipe is laid, all dirt shall be removed from inside the pipe and all lumps, blisters, dirt, oil, grease and moisture shall be removed from inside and outside the ends. After pipe is laid, care shall be taken to prevent the entrance of dirt or water from the trench. Every open end of a pipe or fitting shall be plugged before leaving the work for the day or before backfilling the trench. Plugs shall be on the site before the Contractor commences construction of the pipe line.

Cutting of pipe for closure pieces, or other reasons, shall be done in a neat and workmanlike manner by a method which will not damage the pipe. All such cutting of pipe shall be done in conformance with the manufacturer's recommendations.

The Engineer/Township may inspect all pipe before it is laid, and reject any section that is damaged by handling or is found to be defective to a degree which will materially affect the function and service of the pipe.

Pipe shall not be laid on frozen ground. Pipe which is not true in alignment or which shows any settlement after laying, shall be taken up and re-laid.

The Contractor shall provide for the temporary diversion of stream flow, as may be necessary and where approved by the Department of Environmental Protection, in order to permit the installation of the pipe under dry conditions.

DEWATERING: Any water which collects in any excavation shall be removed by the Contractor before proceeding with the construction of the pipeline or structures.

LINE AND GRADE: The location (line) and/or grade of all sewers and pipe lines to be constructed shall be established by means of offset stakes, pins or other survey marks. Grades shall be furnished at intervals of 50 feet for grades of 0.80 percent and over, and at intervals of 25 feet for grades under 0.80 percent. When the Contractor uses a laser to obtain line and grade for laying the pipe, periodic checks shall be made by the Contractor from grade stakes. The first-grade stake shall be furnished at 25 feet and at intervals not greater than 100 feet thereafter. When the Observer checks for vertical and/or horizontal alignment of the pipe, the Contractor shall assist him. Grade cut sheets shall be prepared by the Developer's engineer and submitted to the Engineer for review a minimum of three working days prior to construction.

A minimum horizontal separation of ten feet and a minimum vertical separation of 18 inches shall be maintained between waterlines and sanitary or storm sewers in accordance with Pennsylvania Department of Environmental Protection Public Water Supply Manual, Part II, Community System Design Standards, Chapter 8, Section 8.7 inclusive, or latest version of the governing regulations. When conflicts occur with existing facilities and the separations are less than mentioned above, the corrective methods shall be reviewed by the Engineer/Township.

HIGH DENSITY POLYETHYLENE PIPE: HDPE shall be installed in accordance with the requirements of the PENNDOT Specifications, Publication 408, Section 601. However, in all installations, during construction the minimum depth from surface grades to top of pipe shall be 3 feet, and upon final grading in existing or proposed roadways, the minimum depth from road subgrade to top of pipe shall be 2 feet, unless greater depths are recommended by the pipe manufacturer. All pipe shall have watertight joints unless otherwise reviewed by the Engineer upon receipt of documentation to indicate that an alternative joint would be appropriate.

Repair of damaged HDPE shall be according to the pipe manufacturer's recommendations. This shall include but is not limited to removal and replacement or a repair procedure acceptable to the Engineer/Township.

CONCRETE PIPE JOINTS: Joints for concrete storm sewer pipe shall be of the bell and spigot type. One of the following methods of jointing pipe shall be used: portland cement mortar or rubber gasket.

When mortar is used, on the inside of the pipe the lower half of the joint shall be filled flush with mortar for piper up to 27 inches in diameter. For these pipes where only the lower half of the joint is filled on the inside, then the upper half of the joint shall be filled on the outside of the joint. For pipes over 27 inches in diameter, the inside joint shall be filled flush with mortar for the entire inside periphery.

When a rubber gasket is used to make the joint, it shall be installed in accordance with the manufacturer's instructions.

BACKFILLING: Refer to Excavation Section

APPURTENANCES: Manholes, inlets, and endwalls shall be constructed to the requirements of PENNDOT Specifications, Publication 408, Section 605 and Section 714; the latest details of the PENNDOT Standards for Roadway Construction; these Specifications and the Township Standard Construction Details.

LEVELING COURSE: A leveling course of precast concrete adjustment units shall be provided at all manholes and inlets to set each casting at final grade. Brick is to be used for slope adjustment only, and the inside and outside surfaces of the masonry leveling course shall be neatly plastered with mortar to a minimum thickness of one-half inch.

PLACEMENT AND TREATMENT OF CASTINGS, FRAMES AND FITTINGS: All castings, frames, and fittings shall be placed in the positions indicated on the Plans or as directed by the Engineer, and shall be set true to line and to correct elevation. Inlets shall be depressed two inches below the grade of the gutter or ground surface. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and positioned before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

There shall be three weepholes placed in each inlet, as directed by the Engineer/Township. The minimum size of each weephole shall be two inches by four inches. The weepholes shall be placed in the top of the base unit (called "Inlet Box" by the PENNDOT -- Standards for Roadway Construction) or in the leveling course between the "Inlet Box" and the Concrete Top Units. The weepholes shall be spaced evenly unless otherwise directed by the Engineer. The backfill around the weepholes shall not be screened; i.e., place clean stone without screening the voids to allow water to enter the weepholes.

INSTALLATION OF STEPS: The steps shall be installed as indicated on the Plans, or as directed by the Engineer. When the steps are to be set in concrete they shall be placed and secured in position before the concrete is poured. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least seven days. After this period has elapsed, the steps shall be cleaned and painted, unless they have been galvanized, or coated satisfactorily.

When steps are required with precast concrete pipe structures, they shall be cast into the sides of the pipe at the time the pipe sections are manufactured, or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

Typical step configuration shall be in accordance with PENNDOT Standards for Roadway Construction, detail for STANDARD MANHOLES, PRECAST MANHOLES & MANHOLE STEPS, RC-39.

BACKFILLING OF STRUCTURES:

1. After a structure has been completed, the area around it shall be filled with approved material, in horizontal layers not to exceed eight inches in loose depth, and compacted to the density specified. The fill shall be made to the elevation shown on the Plans, or as directed by the Engineer/Township;

2. Backfill shall not be placed against any structure until concrete is given the necessary time to cure;

3. Fill shall be deposited uniformly around the structure while backfilling to prevent unequal lateral pressure. Special care shall be taken to prevent any wedging action against the structure.

UNDERDRAIN: Pipe underdrain shall meet the requirements of PENNDOT Specifications, Publication 408, Section 610 and be reviewed by the Engineer. Inside diameter of pipe shall be six inches, unless otherwise shown on the approved plans.

SECURITY GRATES: Security grates shall be installed on all headwalls, endwalls, end sections, and culverts with openings 15 inches or greater. It shall be the responsibility of the Developer or its Contractor to submit to the Engineer for review a detailed drawing of the proposed security grate prior to fabrication. The number of bars shall be determined by the culvert size with bar spacing not to exceed six inches each way. Structural steel shall conform to ASTM A36 and bars shall conform to ASTM A6l5, Grade 60, epoxy coated or hot-dipped galvanized after fabrication. Grates shall be attached to the structures in a manner permitting ready removal for future cleaning of debris.

DETENTION BASINS: The construction of detention basins shall meet the requirements of PENNDOT Specifications, Publication 408, Sections 200 and 800 and be reviewed by the Engineer/Geotechnical Engineer.

In cut areas or in embankment areas, the upper six inches of the subgrade material beneath the clay blanket, within detention basin construction limits shall be compacted to a density of not less than 98 percent of maximum density. Maximum density is the maximum dry weight density in pounds per cubic foot as determined by the Standard Proctor Density Test (AASHTO T 99 - Method C).

Any required impervious liner shall be as recommended by the Geotechnical Engineer.

UNDERGROUND DETENTION FACILITIES: Underground detention facilities may be constructed of either: reinforced concrete vaults or tanks, large diameter plastic, metal or concrete pipe or commercially-available proprietary underground systems. The underground detention facilities shall be designed by the Developer's design engineer and/or geotechnical engineer and reviewed by the Engineer/Geotechnical Engineer. All materials used in the construction of underground detention facilities shall be watertight, and any required impervious liner shall be as

recommended by the Geotechnical Engineer.

Underground detention facilities must be located a minimum of 10 feet horizontally from other public utilities, 50 feet horizontally from a private well or septic system tank/drain field, and 15 feet down gradient or 100 feet up gradient from building foundations. Percolation tests and test pits or borings must be performed in the location of the proposed underground detention facility as determined to be necessary by the Geotechnical Engineer.

All reinforced concrete vaults or tanks and pipes, bedding and backfill shall be designed to withstand HS-25 loading. All vaults, tanks and pipes shall be continuously sloped at a minimum of 0.25 percent to the outlet. The minimum pipe diameter shall be 36 inches, and pipes may not be closer to one another than 'Z the inside pipe diameter or 3 feet, whichever is greater. A minimum 6 inches pipe bedding shall be provided, and the minimum backfill and cover must be per the manufacturer's specifications, based on the design load and considering flotation, where required. An emergency spillway shall be provided to safely pass the 100-year storm event.

A water quality treatment BMP shall be provided upstream of the underground detention facility. A minimum of one 30-inch diameter access port shall be provided for each vault or tank. A minimum of one 48-inch diameter manhole shall be provided for every 150 feet of pipe with a minimum of two 48-inch diameter manholes for each underground piping facility. Access shall also be provided at the outflow structure. All access ports/manholes shall be bolted.

CLEANING AND RESTORATION OF SITE: After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site.

After the work is completed, the Contractor shall remove all tools and other equipment used, leaving the entire site in good condition.

FINAL OBSERVATION: Prior to final approval of the storm sewerage system, the Township, the Engineer, and the Developer accompanied by the Contractor's representative, shall thoroughly observe the entire installation. Any indication of defects in material or workmanship or obstruction to flow in the pipe system shall be further investigated and corrected by the Contractor.

TESTING: Infiltration/exfiltration testing of the storm sewers shall be in accordance with ASTM C969-02 as may be updated or modified and shall be conducted by, and at the expense of, the Developer/Contractor.

NOTIFICATION: No connections shall be made to existing Municipal systems without prior approval and without three working days advance notice to the Township to allow for scheduling of Township observation personnel.

SINKHOLES: It is required that the Developer maintain all areas in a well-drained condition during the construction period so as to avoid pooling or ponding of water. If a sinkhole should develop during construction, the Developer shall immediately repair the sinkhole at its expense alone and in accordance with the following:

Upon detection of a sinkhole, the Developer or its Contractor shall notify the Township, contact its own geotechnical engineer who shall propose a repair solution and have that procedure reviewed by the Geotechnical Engineer. The Developer's geotechnical engineer and the Geotechnical

Engineer shall monitor the repair in accordance with the reviewed procedure and upon completion of the repair and before any construction activity resumes in the area, the Developer's geotechnical engineer shall send a written report to the Township and to the Geotechnical Engineer that the sinkhole has been repaired in accordance with the reviewed procedure and that construction activities may continue.

SALISBURY TOWNSHIP

# TECHNICAL SPECIFICATIONS

## TREE PLANTING AND LANDSCAPING

GENERAL: A landscape plan shall be required for all subdivision and land developments which locates and provides specifications for all trees, shrubs, or other features planned by the developer.

### Materials

PLANT MATERIALS: Street trees, conifers, and shrubs shall be of nursery stock quality, grown under the same climatic conditions as the development site. All materials shall be of the size indicated on the plans and required by the Subdivision and Land Development Ordinance. They shall be of hearty and symmetrical growth, free of insect pests and disease.

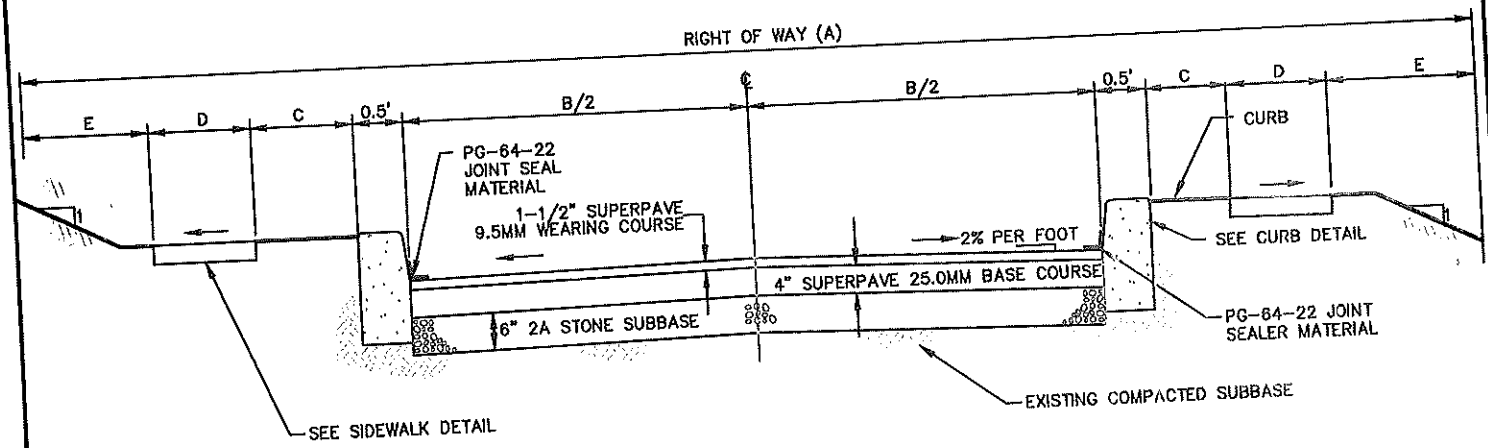
### Construction

PLANTING: All planting shall be at the location and spacing indicated on the plans and required by the Township Zoning and/or Subdivision and Land Development Ordinances and shall be done in conformance with American Association of Nurseryman Standards, latest edition. Any revisions to the plans regarding size species or placement must be submitted by written request and approved by the Township Engineer prior to planting.

PLANTING STRIPS AND RECREATION AREAS: A minimum of eight inches (8”) of topsoil shall be placed and fine graded to the design grades. PennDOT Formula “B” seed mix at twenty-one pounds per square yard (21 lbs./SY) shall be placed. Fertilization and mulching shall be in accordance with PennDOT Publication 408 Specifications.

# SECTION C - **STANDARD CONSTRUCTION DETAILS**

## DETAIL LISTING




| OVERALL RIGHT-OF-WAY WIDTH (A) | CARTWAY WIDTH (B) | PLANTING SPACE BETWEEN CURB AND SIDEWALK (C) | SIDEWALK WIDTH (D) | PLANTING SPACE BETWEEN SIDEWALK AND PROPERTY LINE (E) |
|---|---|---|---|---|
| 80 FEET | 48 FEET | 3 FEET | 5 FEET | 7.5 FEET |
| 60 FEET | 36 FEET | 3 FEET | 5 FEET | 3.5 FEET |
| 50 FEET | 30 FEET | 3 FEET | 5 FEET | 1.5 FEET |
| 45 FEET | 30 FEET | 2 FEET | 5 FEET | N/A |
| 40 FEET | 24 FEET | 2.5 FEET | 5 FEET | N/A |
| 35 FEET | 24 FEET | N/A | 5 FEET | N/A |
| 33 FEET | 24 FEET | N/A | 4 FEET | N/A |
| 30 FEET | 23 FEET | N/A | 3 FEET | N/A |

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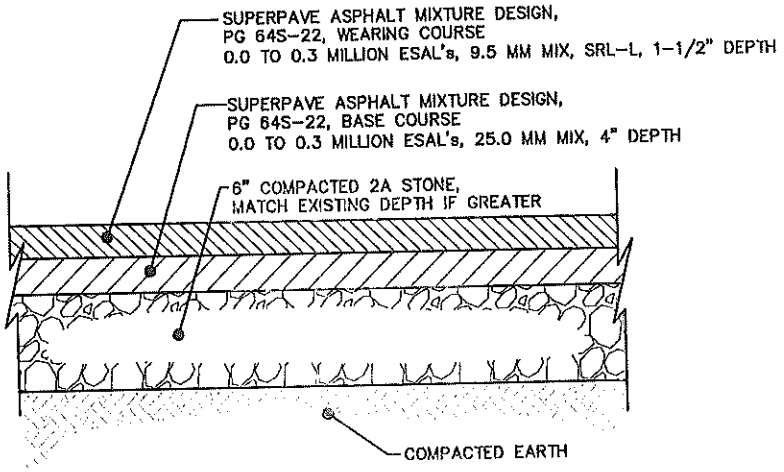
# ROAD CROSS SECTION WITH CURB

SALISBURY TOWNSHIP

DATE: 12/11/2023
REVISED:
SCALE: N.T.S.
SHEET: R-01




NOTE:

1. GEOTECH SHALL CONFIRM SOIL TYPE AND CLASSIFICATION.

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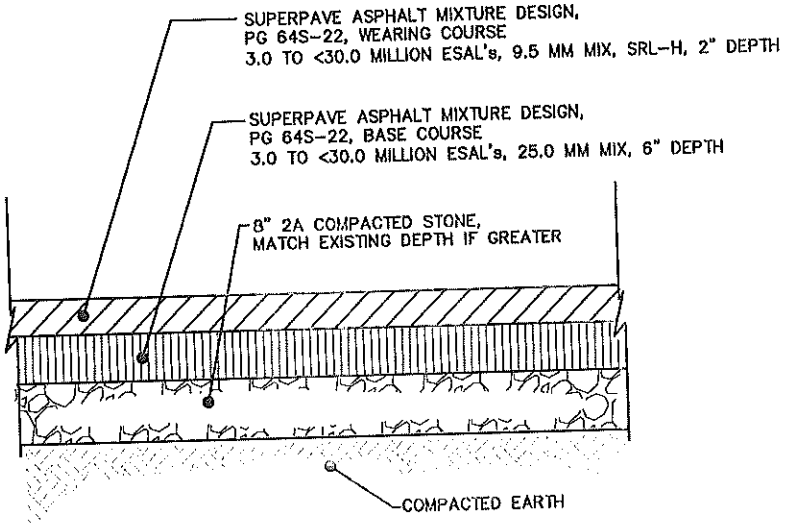
| | |
|---|---|
| LIGHT DUTY PAVEMENT SECTON | DATE: 12/11/2023 |
| | REVISED: |
| | SCALE: N.T.S. |
| SALISBURY TOWNSHIP | SHEET: R-02 |




NOTE:
1. GEOTECH SHALL CONFIRM SOIL TYPE AND CLASSIFICATION.

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# HEAVY DUTY PAVEMENT SECTION

SALISBURY TOWNSHIP

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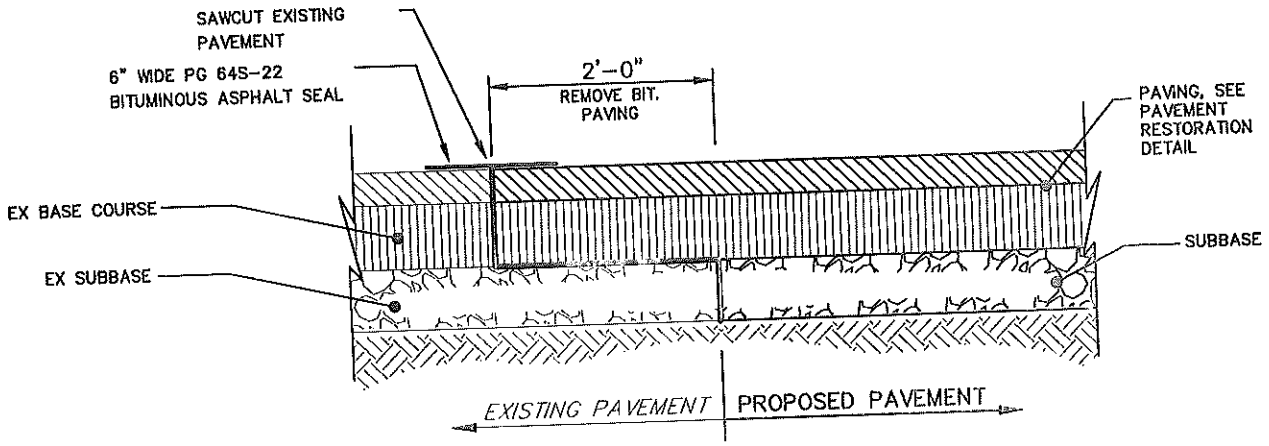
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | R-03 |




NOTES:

1. FOR PAVING MATERIAL AND DEPTH, REFER TO PAVEMENT SECTION DETAILS.

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# PAVEMENT SAWCUT

SALISBURY TOWNSHIP

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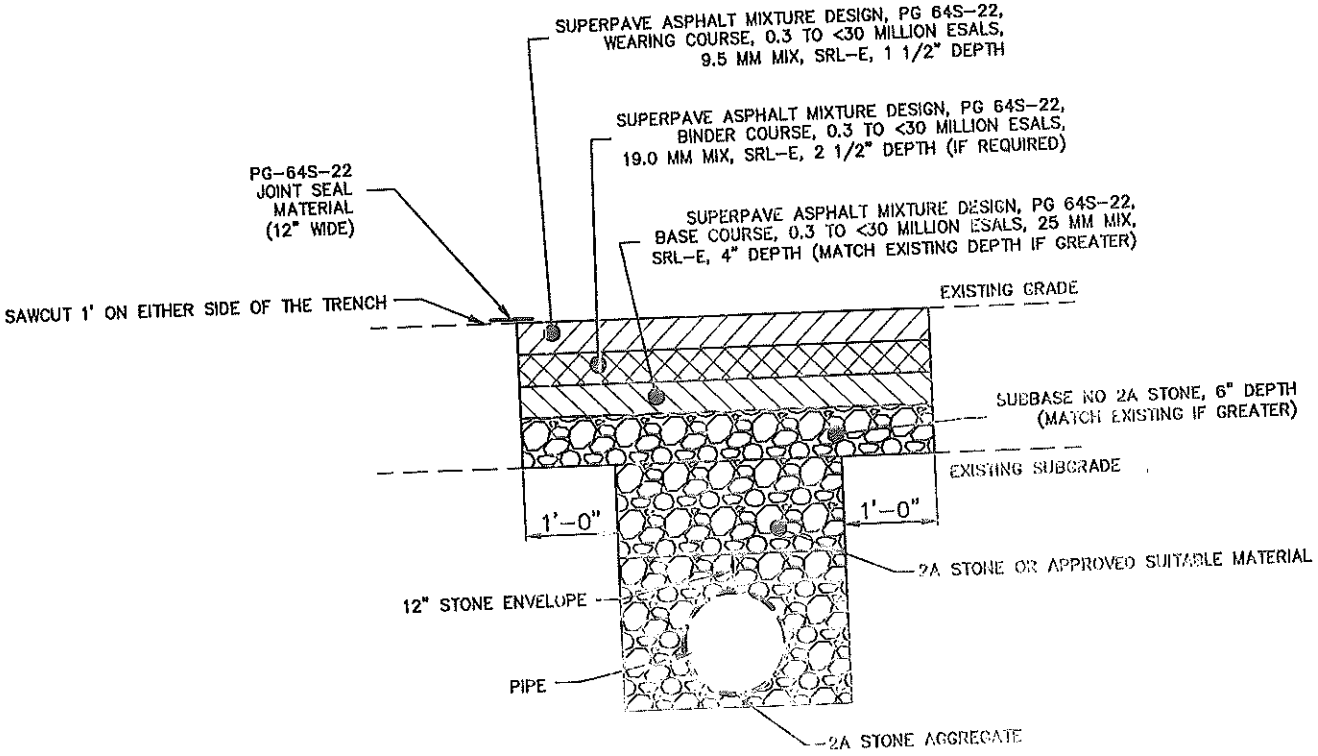
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | R-04 |




TACK COAT ALL JOINTS PRIOR TO PAVEMENT INSTALLATION.
REFER TO PENNDOT RC-30.4, LATEST EDITION

NOTES:

1. ALL BACKFILL MATERIAL SUBJECT TO AUTHORITY APPROVAL.
2. ADDITIONAL DEPTH OF EXCAVATION WILL BE REQUIRED IF SUBSOIL IS UNSUITABLE AS DETERMINED BY ENGINEER.
3. BEDDING AND ENVELOPE SHALL BE 2A STONE AGGREGATE.
4. BEDDING AND ENVELOPE SHALL EXTEND TO UNDISTURBED SOIL ON SIDES AND BOTTOM OF TRENCH.

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# PERMANENT PAVEMENT TRENCH RESTORATION

SALISBURY TOWNSHIP

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|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
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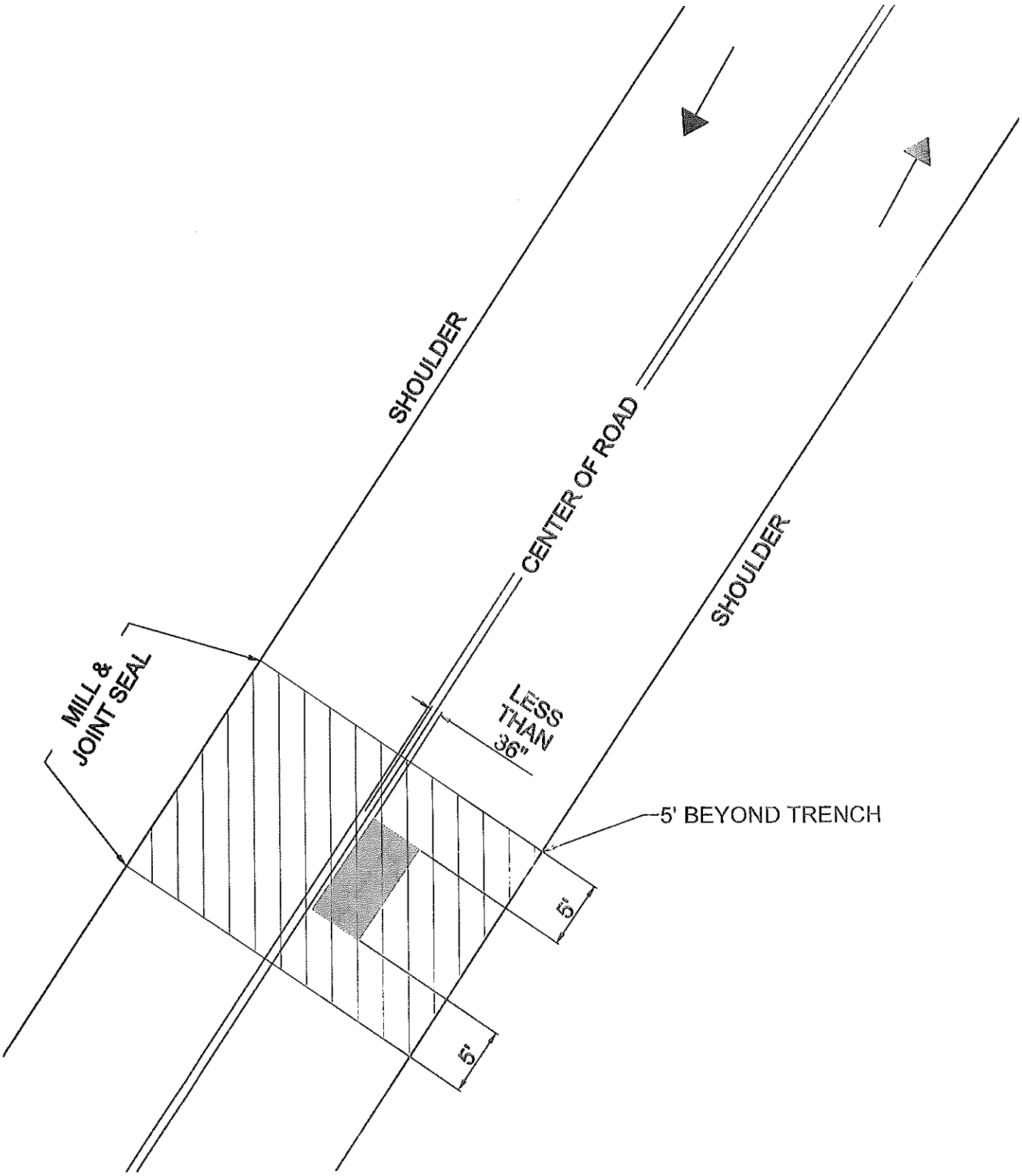
| SHEET: | R-05 |




IF OPENING IS WITHIN 36" OF CENTER OF ROADWAY,
FULL WIDTH OVERLAY REQUIRED.

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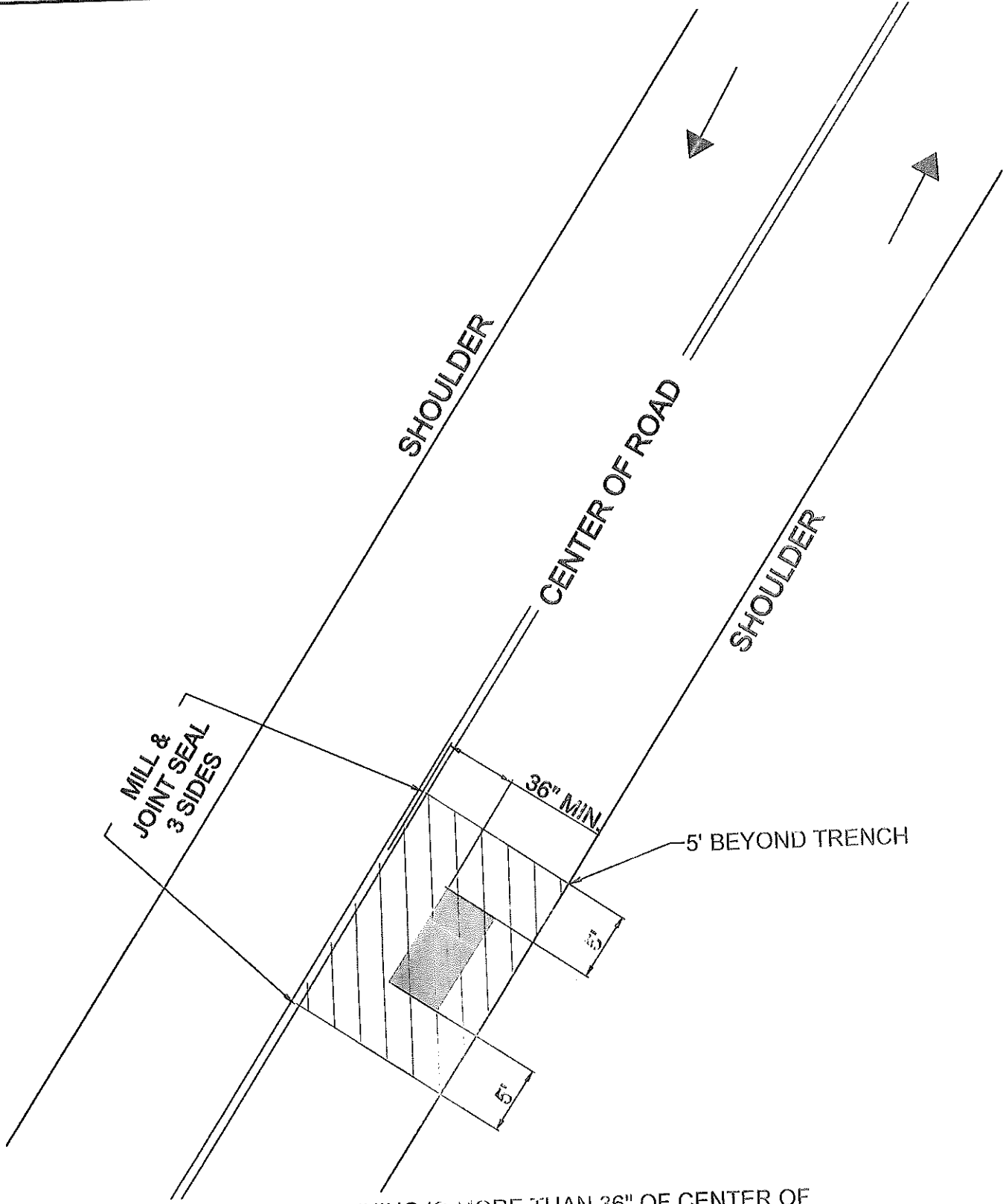
| | | |
|---|---|---|
| MILL AND OVERLAY EXHIBIT A | DATE: | 12/11/2023 |
| | REVISED: | |
| | SCALE: | N.T.S. |
| SALISBURY TOWNSHIP | SHEET: | R-06 |




IF OPENING IS MORE THAN 36" OF CENTER OF ROADWAY, OVERLAY OF SINGLE LANE IS ACCEPTABLE.

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EXHIBIT B

SALISBURY TOWNSHIP

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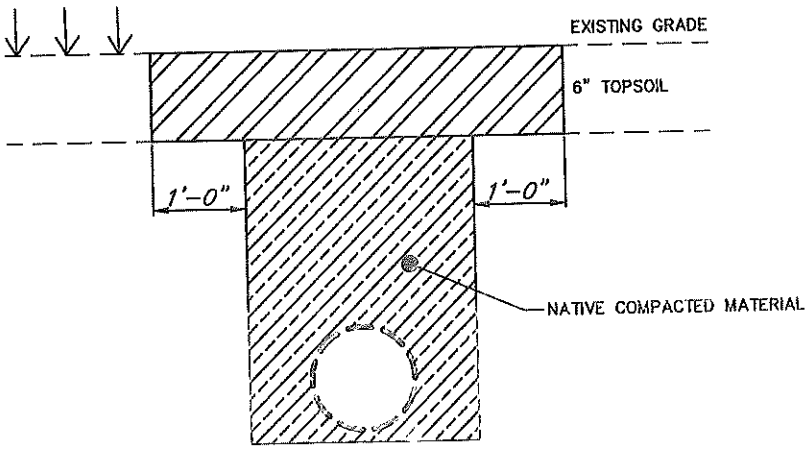
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | R-07 |




NOTES:

1. ORDINARY BACKFILL: CLEAN DRY EARTH WITH MAXIMUM STONE SIZE OF 6".
2. REFER TO PENNDOT RC-30M, LATEST EDITION

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# PERMANENT DIRT TRENCH RESTORATION

SALISBURY TOWNSHIP

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| DATE: | 12/11/2023 |
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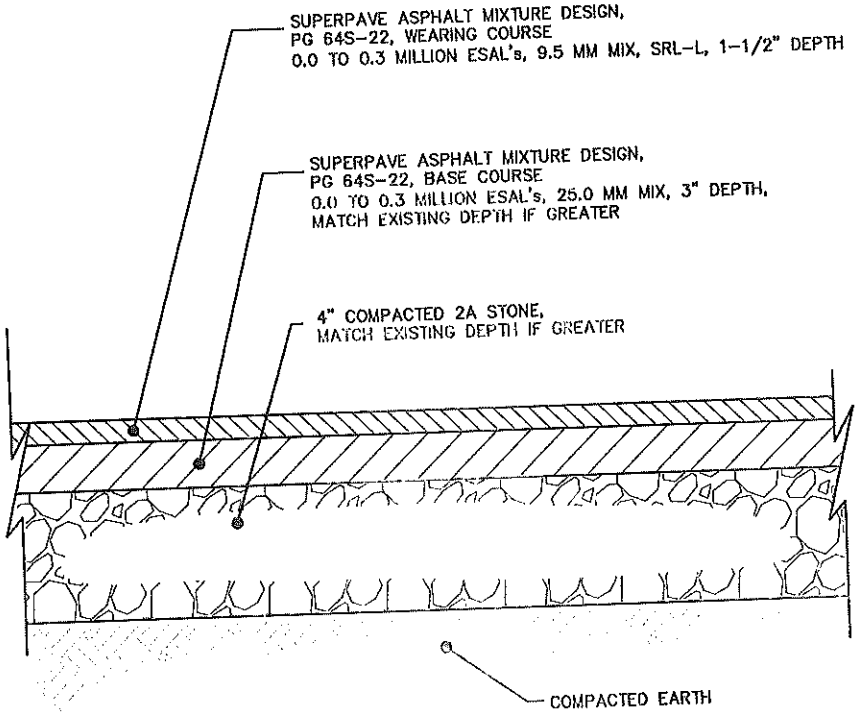


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# RESIDENTIAL DRIVEWAY PAVING SECTION

SALISBURY TOWNSHIP

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| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
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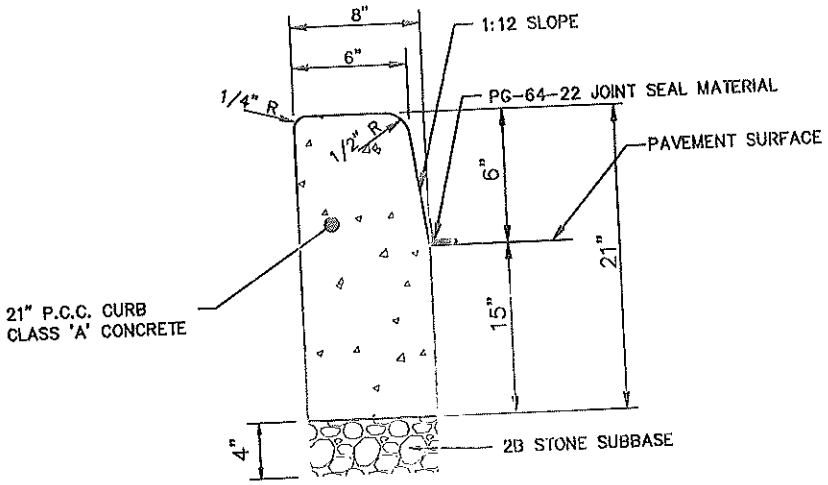


NOTES:

1. REFER TO PENNDOT RC-64M, LATEST EDITION.
2. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408 SECTION 630.
3. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,500 PSI AT 28 DAYS.
4. 3/8 INCH EXPANSION JOINTS OF BITUMINOUS MATERIAL SHALL BE PLACED EVERY 30 FEET, AT STRUCTURES, AND AT THE END OF A DAY'S WORK. CURBING SHALL HAVE SAW CUT CONTRACTION JOINTS EVERY 10 FEET TO THE FULL DEPTH OF CURB.
5. CURBING SHALL BE TIED INTO INLETS WITH TWO NO. 5 REINFORCING BARS TO PREVENT SETTLEMENT.
6. IF ROOF DRAINS ARE INSTALLED THROUGH THE CURB, THERE SHALL BE A MINIMUM OF 2 INCHES OF COVER OVER THE CONDUCTORS AND 1 INCH OF REVEAL OVER THE EXISTING ROADWAY SURFACE TO ALLOW FOR FUTURE OVERLAY.
7. EXCAVATION TO BE MADE TO A DEPTH OF 24 INCHES BELOW FINAL CURB GRADE. THE BOTTOM OF ALL EXCAVATIONS TO BE WELL TAMPED BEFORE FORM WORK IS PLACED.

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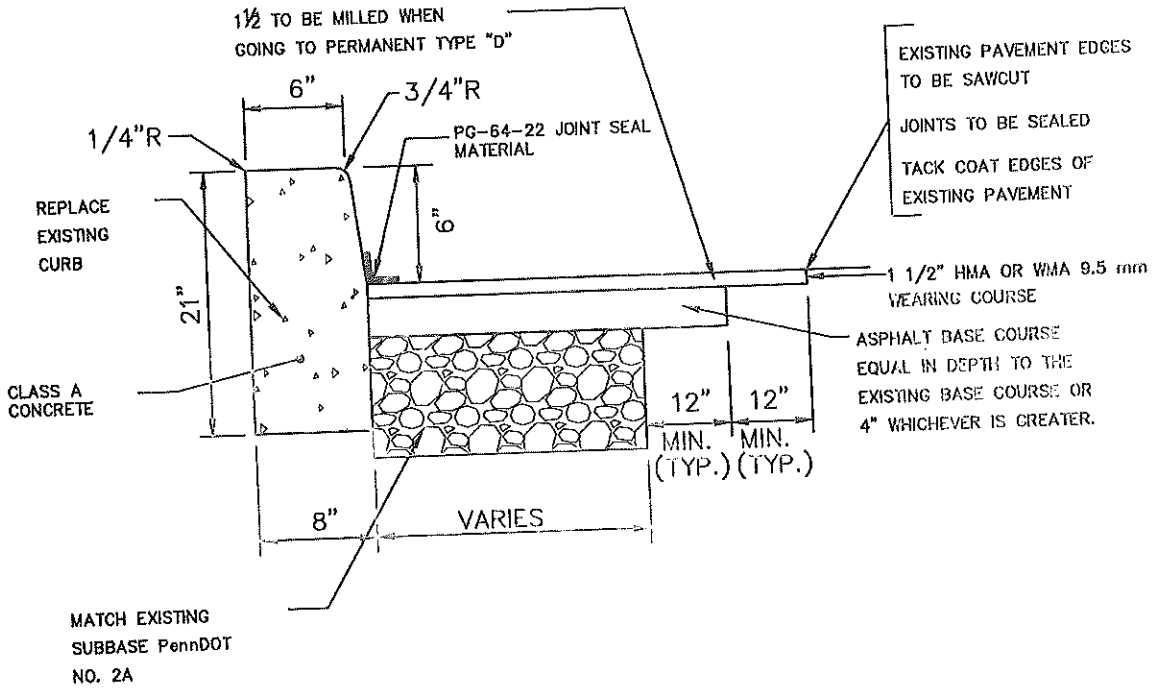
# CURB, 6" REVEAL

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | R-10 |




NOTES:
1. SEAL PAVING AT NEW CURB
2. FOR ALL CURB WITHIN PUBLIC RIGHT-OF-WAY
3. USE 3,500 PSI AIR-ENTRAINED CONCRETE.
4. USE CLASS "A" CONCRETE.

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# CURB REPLACEMENT

SALISBURY TOWNSHIP

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| DATE: | 12/11/2023 |
| REVISED: | |
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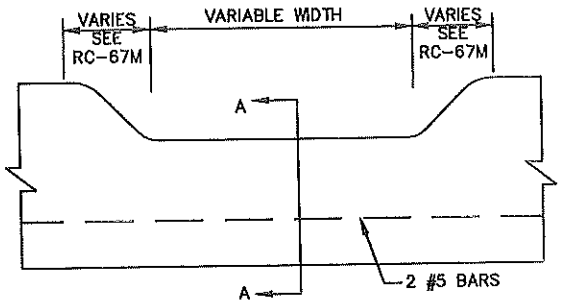
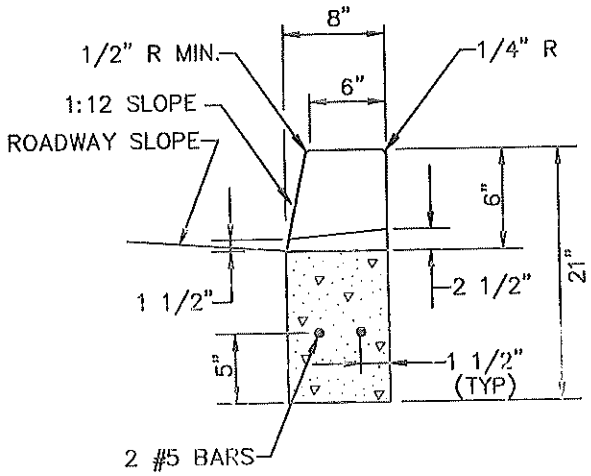



ELEVATION VIEW




SECTION A–A

NOTES:
1. REFER TO PENNDOT RC–64M.
2. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408 SECTION 630.

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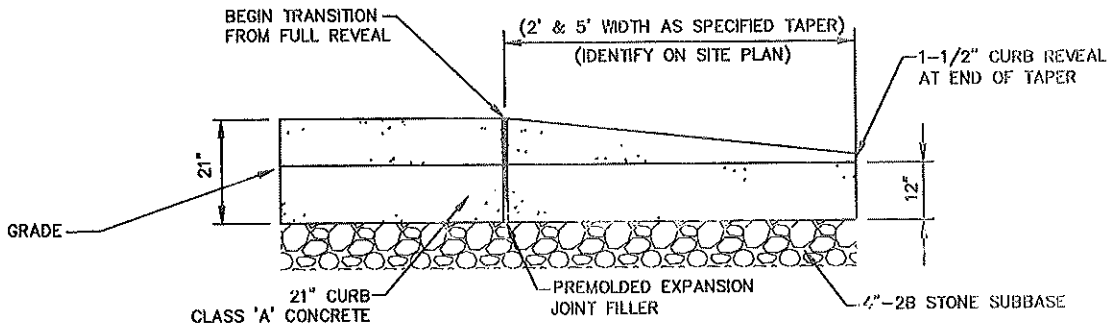
DEPRESSED CURB DETAIL

SALISBURY TOWNSHIP

DATE: 12/11/2023
REVISED:
SCALE: N.T.S.
SHEET: R-12




NOTES:

1. REFER TO PENNDOT RC-64M.
2. PROVIDE MATERIALS AND CONSTRUCTION MEETING THE REQUIREMENTS OF PUBLICATION 408 SECTION 630.

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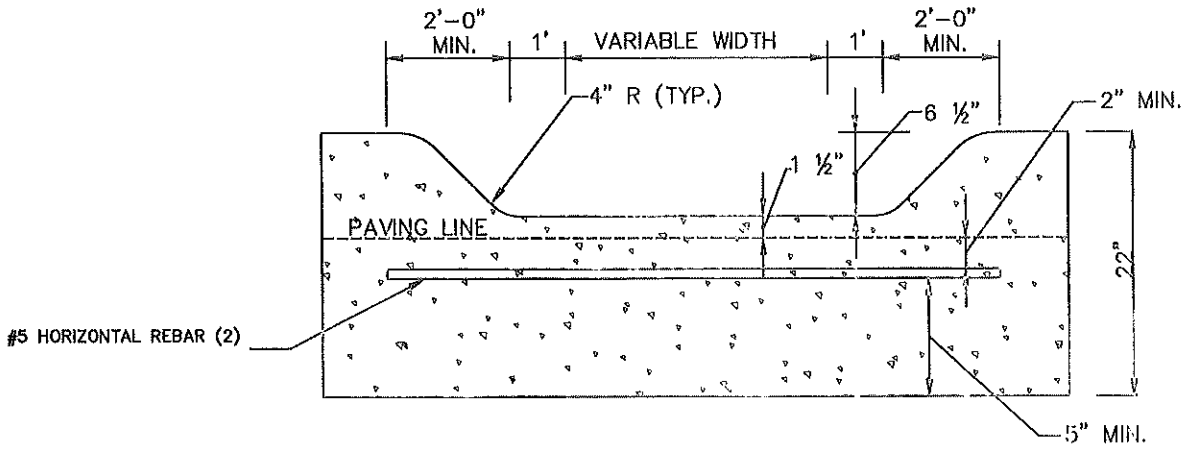
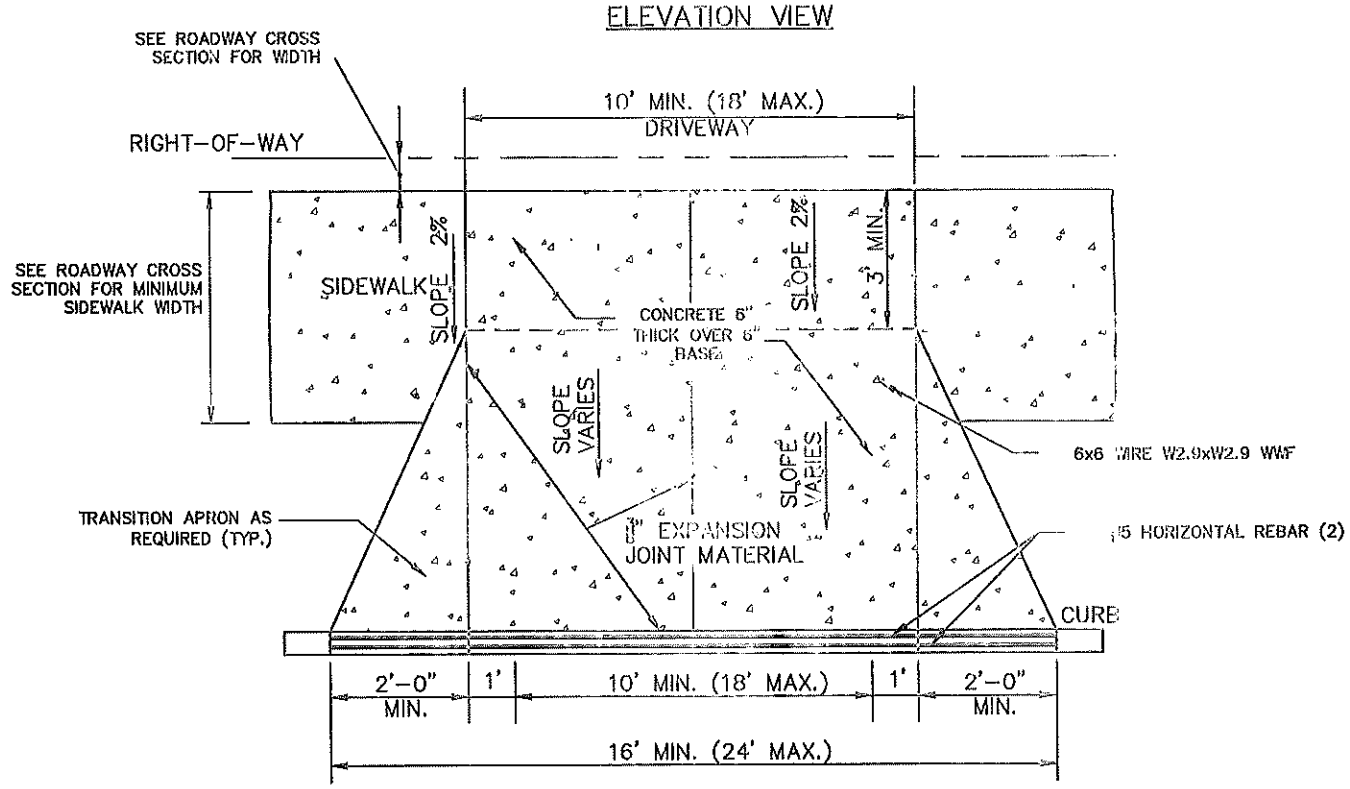
| BARRY ISETT & associates INC<br>MULTI-DISCIPLINE ENGINEERS AND CONSULTANTS<br>610.398.0904<br>barryisett.com | TAPERED CURB | DATE: 12/11/2023<br>REVISED: |
| | | SCALE: N.T.S. |
| | SALISBURY TOWNSHIP | SHEET: R-13 |




ELEVATION VIEW




NOTES:

1. THE APRON IN THE DRIVEWAY AREA SHALL BE 6-INCHES THICK CONCRETE REINFORCED WITH 6-INCH BY 6-INCH, W2.9 x W2.9 WELDED WIRE FABRIC (WWF). THE WWF SHALL BE INSTALLED SO THAT IT IS NOT CLOSER THAN TWO INCHES FROM THE TOP OR BOTTOM SURFACES OF THE CONCRETE. 6-INCHES CRUSHED STONE SHALL BE USED AS A BEDDING UNDER THE DRIVEWAY APRON.
2. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4,000 PSI AT 28 DAYS.
3. CONCRETE SHALL BE AIR ENTRAINED WITH 6.5% AIR ENTRAINMENT, ± 1.5%.
4. CONCRETE SHALL HAVE A MINIMUM WATER CEMENT RATIO OF 0.45 WITH A MAXIMUM SLUMP OF 4-INCHES.
5. CONCRETE SHALL HAVE A BROOM FINISH.
6. DRIVEWAY APRONS SHALL BE SEPARATED FROM BOTH CURBING AND SIDEWALKS BY THREE-EIGHTS-INCH EXPANSION JOINTS TO ALLOW EASY REPLACEMENT.

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# DRIVEWAY APRON

SALISBURY TOWNSHIP

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| DATE: | 12/11/2023 |
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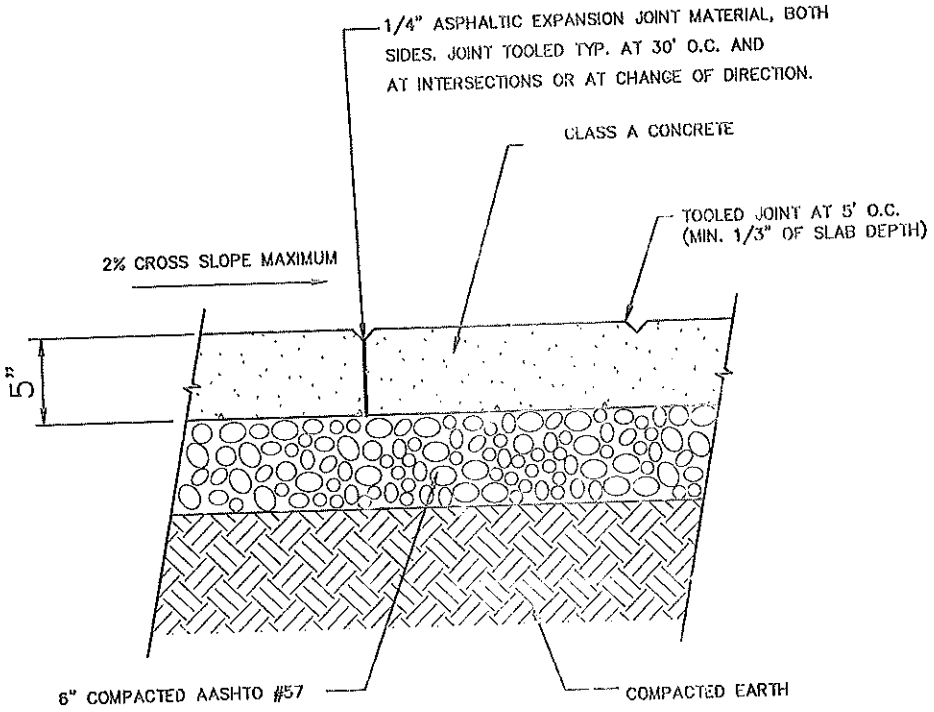
| SCALE: | N.T.S. |
| SHEET: | R-14 |




NOTES:

1. JOINTS, EDGES, AND ENDS TO BE FINISHED WITH A RADIUS OF NOT LESS THEN $\frac{3}{8}$ INCH.
2. ALL SIDEWALK TO BE PITCHED TO DRAIN TOWARD THE STREET.
3. LIGHT BROOM FINISH (UNLESS SPECIFIED OTHERWISE).
4. 3/8" PREMOLDED EXPANSION JOINT MATERIAL. JOINT TOOLED TYP. AT 20' O.C. AND AT INTERSECTIONS OR AT CHANGE OF DIRECTION (UNLESS SPECIFIED OTHERWSIE).
5. TOOLED CONTROL JOINT AT 5' O.C., (MIN. 1/3 OF SLAB DEPTH (UNLESS SPECIFIED OTHERWISE).
6. WELDED WIRE MESH, WHERE SPECIFIED, SHALL BE HELD 1" MIN. ABOVE SUB-GRADE BY BOLSTERS OR CHAIRS MATCHING MATERIAL AND FINISH OF REINFORCING AND SHALL BE 100% CUT AT ALL JOINTS.
7. EXCAVATION TO BE MADE TO A DEPTH OF AT LEAST 12 INCHES BELOW THE SIDEWALK GRADE. THE BOTTOM OF ALL EXCAVATIONS TO BE WELL TAMPED BEFORE FORMING IS PLACED.
8. SEE ROADWAY CROSS SECTION FOR MINIMUM WIDTH OF SIDEWALK.

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# SIDEWALK

SALISBURY TOWNSHIP

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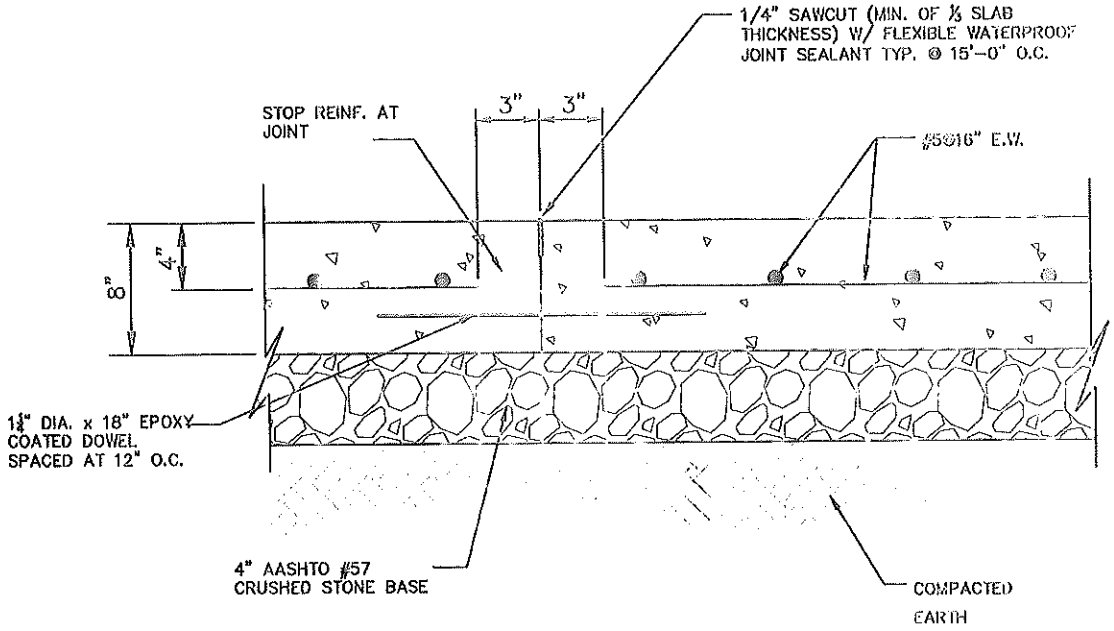
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | R-15 |




HEAVY DUTY CONCRETE NOTES:

1. ALL REBAR TO BE EPOXY COATED.
2. NEW HEAVY DUTY CONCRETE TO BE DOWELED INTO EXISTING BUILDING SLAB/FOUNDATION.
3. CONCRETE STRENGTH TO BE 4,000 PSI.
4. CONTROL JOINT SPACING TO BE CONFIRMED PRIOR TO POUR.
5. PROVIDE EXPANSION JOINT BETWEEN EXISTING PAVING AND NEW HEAVY DUTY CONCRETE.
6. PROVIDE 3/4 INCH CHAMBER AT CONCRETE EDGE.

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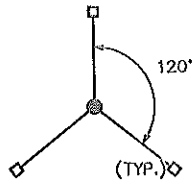
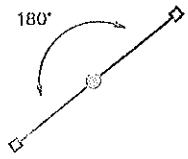
REINFORCED CONCRETE

SALISBURY TOWNSHIP

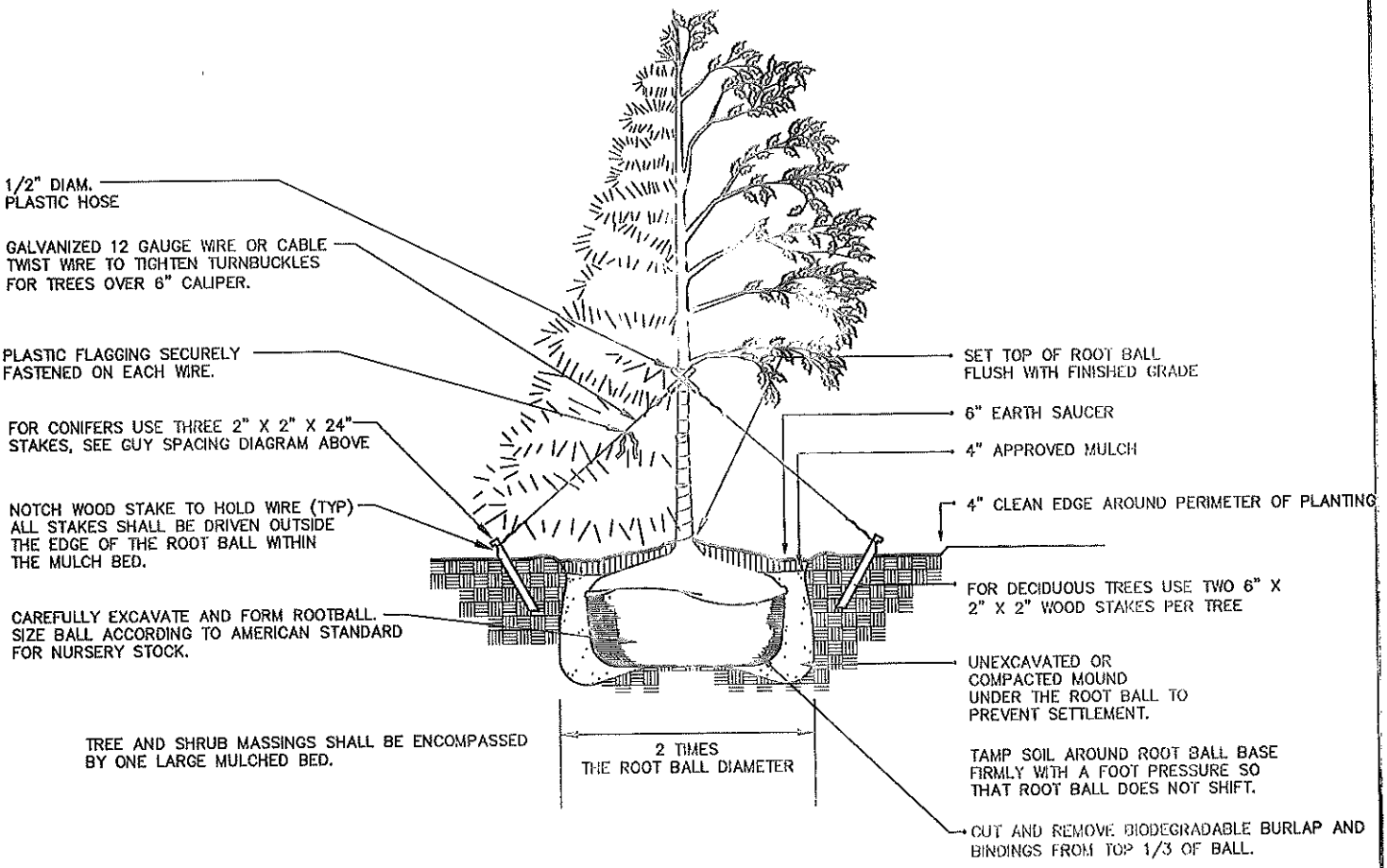
| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | R-16 |




GUY SPACING
DIAGRAM – EVERGREEN




GUY SPACING
DIAGRAM – DECIDUOUS




NOTES:

1. REMOVE PLASTIC, PAPER, OR FIBER POTS FROM CONTAINERIZED PLANT MATERIAL. PULL ROOTS OUT OF THE ROOT MAT, AND CUT CIRCLING ROOTS WITH A SHARP KNIFE. LOOSEN THE POTTING MEDIUM AND SHAKE AWAY FROM THE ROOT MAT. IMMEDIATELY AFTER REMOVING THE CONTAINER, INSTALL THE PLANT SUCH THAT THE ROOTS DO NOT DRY OUT. PACK PLANTING MIX AROUND THE EXPOSED ROOTS WHILE PLANTING AND WATER THOROUGHLY WHEN 50% OF THE BACKFILL IS PLACED. IF WATER DOES NOT INFILTRATE, CONSULT WITH THE LANDSCAPE ARCHITECT BEFORE PROCEEDING. IF THE WATER INFILTRATES WITHIN 30 MINUTES, COMPLETE THE BACKFILL AND FORM A SAUCER AROUND THE TREE. WATER AGAIN.

2. ALL TREES SHALL BE STAKED PER THE STAKING DETAIL ABOVE. CONTRACTOR SHALL MAINTAIN THE STAKING FOR A PERIOD OF NO LESS THAN 1 YEAR. RE-STAKE AND ADJUST TREES AS NEEDED DURING THIS TIME PERIOD.

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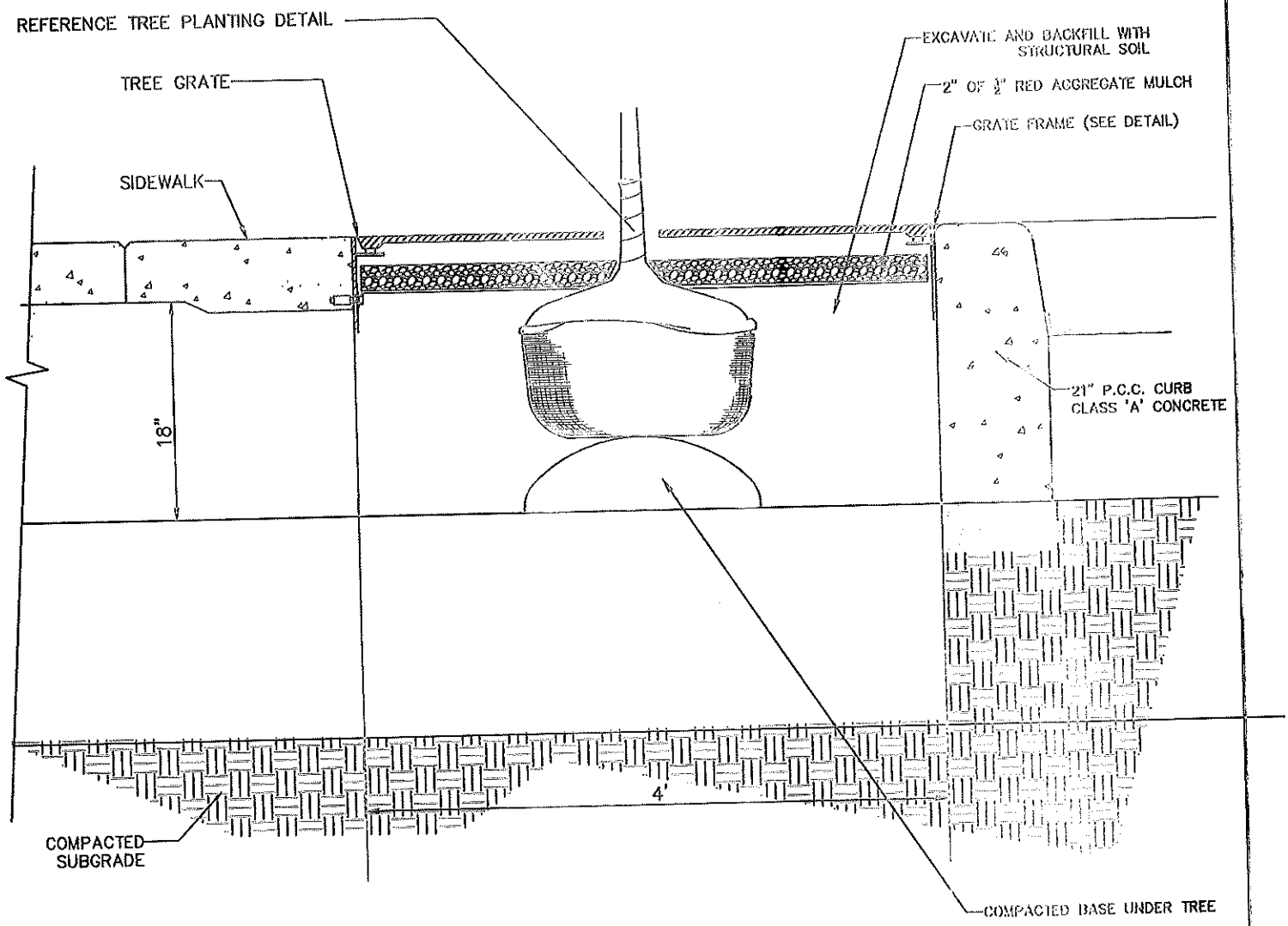
| | |
|---|---|
| TREE PLANTING | DATE: 12/11/2023 |
| | REVISED: |
| | SCALE: N.T.S. |
| SALISBURY TOWNSHIP | SHEET: R-17 |




NOTES:

1. EXTEND STRUCTURAL SOIL 8' BEYOND THE TREE PIT, UNDER THE SURROUNDING SIDEWALK.

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# STREET TREE PLANTING

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| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
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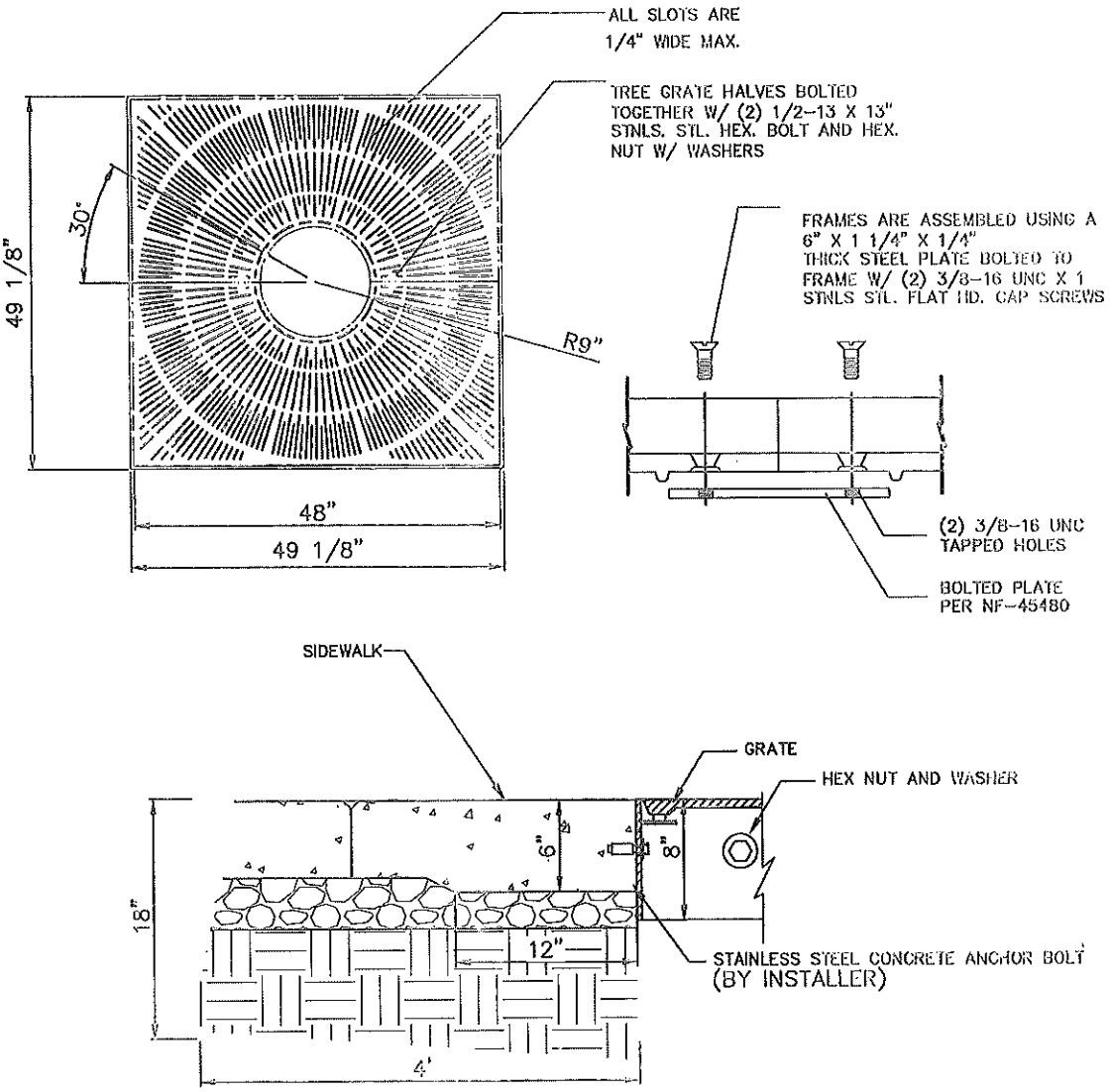


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# TREE GRATE

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| SCALE: | N.T.S. |
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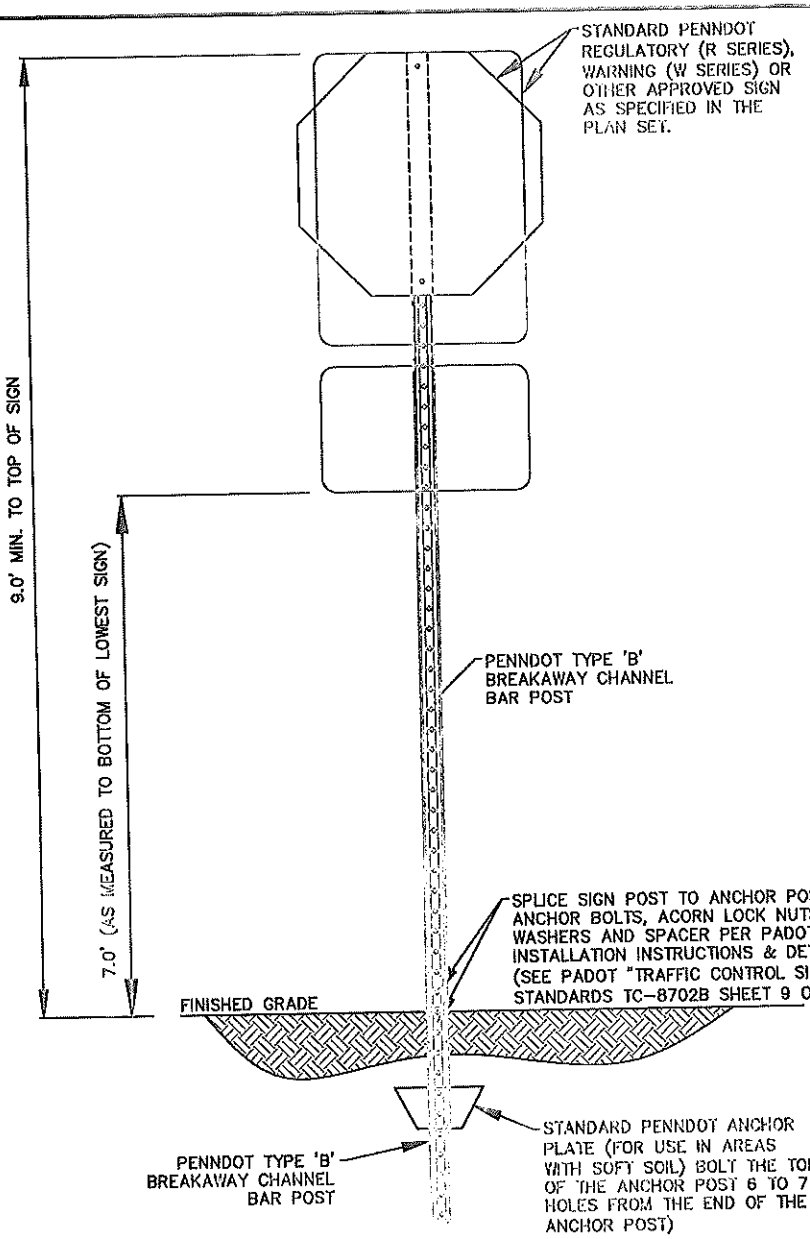


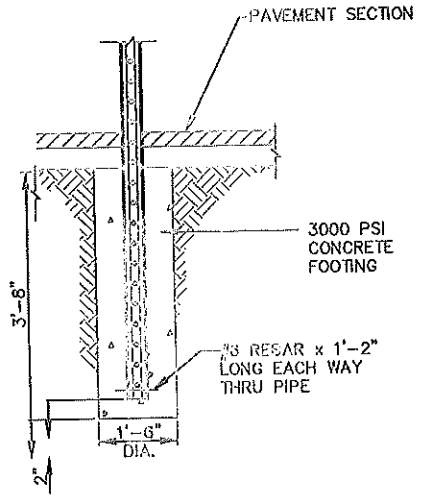


SIGN MOUNTING WITHIN PAVEMENT & CONCRETE AREAS

NOTES:

1. POST MOUNTED SIGNS SHALL BE TYPE B CHANNEL BAR POSTS AND SHALL CONFORM TO PENNDOT "TRAFFIC CONTROL SIGNING STANDARDS" TC-8702B SHEET 8 THRU 11 OF 11. APPROPRIATE POSTS SHALL BE SELECTED BASED ON THE SIZE OF THE SIGN USING THE SELECTION TABLES CONTAINED THEREIN.
2. SIGN INSTALLATION SHALL BE IN ACCORDANCE WITH PENNDOT "TRAFFIC CONTROL SIGNING STANDARDS" TC-8702B SHEETS 8 THRU 11 OF 11 AS AMENDED.
3. ALL REGULATORY (R SERIES) SIGNS SHALL CONFORM TO THE PENNDOT "HANDBOOK OF APPROVED SIGNS", PUBLICATION 236M, AS AMENDED UNLESS OTHERWISE SPECIFIED.
4. ALONG NON-CURBED LOCAL ROADWAYS, SIGNS SHALL BE SETBACK 6.0' FROM THE SHOULDER/PAVEING EDGE AND SHALL BE AT A HEIGHT 5.0' ABOVE THE EDGE OF PAVEMENT SURFACE.
5. ALL SIGNS SHALL BE INSTALLED WITH ACORN NUT FASTENERS
6. FOR "RESERVED PARKING SIGN" (R7-8) REFER TO DETAILS AND SPECIFIED MOUNTING HEIGHTS WHICH ARE LOWER FOR INCREASED VISIBILITY PER ADA REGULATIONS.

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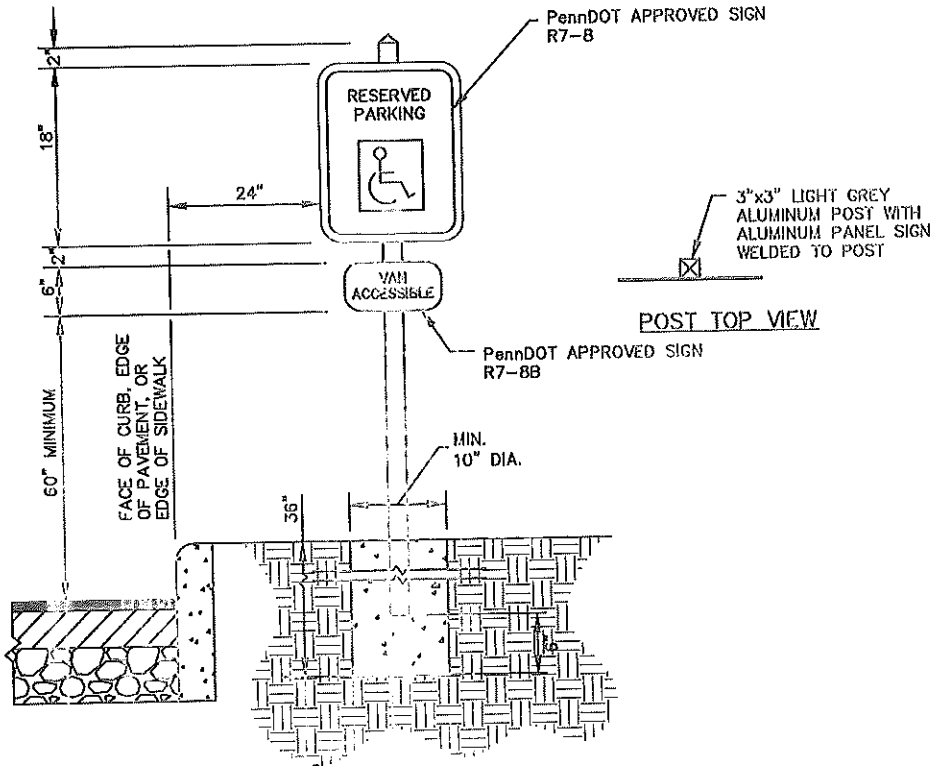
POST MOUNTED SIGN

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | R-20 |




NOTES:
1. ALL SIGNS ARE TO BE BREAKAWAY CONNECTIONS
2. REFERENCE PENNDOT PUBLICATION 236 APPROVED SIGNS

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# RESERVED PARKING SIGN INSTALLATION

SALISBURY TOWNSHIP

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| DATE: | 12/11/2023 |
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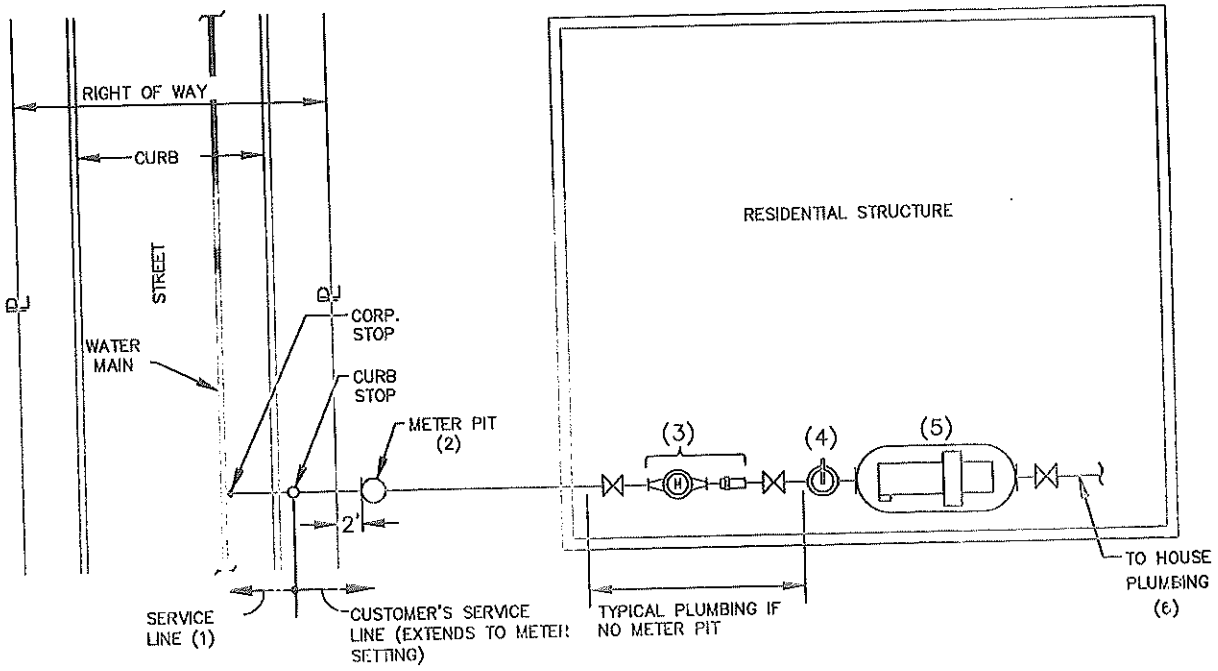
| SHEET: | R-21 |




## PARTIAL SITE PLAN

NOTES:

1. SEE THE SMALL SERVICE CONNECTION DETAIL FOR CONSTRUCTION STANDARDS. A MINIMUM 1" DIAMETER SERVICE LINE IS REQUIRED FOR INSTALLATIONS WITH A METER PIT AND/OR BOOSTER PUMP. THE SIZE OF THE CUSTOMER'S SERVICE LINE SHALL BE NO SMALLER THAN THE SIZE OF THE AUTHORITY'S SERVICE LINE.
2. A METER PIT IS REQUIRED IF THE LENGTH OF THE CUSTOMER'S SERVICE LINE EXCEEDS 100'. SEE THE DOMESTIC SERVICE METER PIT DETAIL.
3. THE METER AND DUAL CHECK VALVE SHALL BE PURCHASED FROM THE AUTHORITY.
4. A PRESSURE REDUCING VALVE IS REQUIRED WHEN PRESSURES WILL EXCEED 80 PSI.
5. A BOOSTER PUMPING SYSTEM MAY BE REQUIRED IF THE STATIC PRESSURE IS LESS THAN 45 PSI. MAJOR COMPONENTS OF A BOOSTER PUMPING SYSTEM SHALL INCLUDE A (A) JACUZZI MODEL #5RP2, SHALLOW WELL JET PUMP, (B) FLEXCON INDUSTRIES MODEL #JR44-HS OR MODEL #WR60-02 JET-RITE DIAPHRAGM - TYPE PRESSURE TANK, OR APPROVED EQUAL, INSTALLED IN ACCORDANCE WITH THE TOWNSHIP PLUMBING CODE OR BOCA NATIONAL PLUMBING CODE.
   BOOSTER PUMPS SHALL HAVE A PROTECTION FUNCTION THAT WILL STOP THE PUMPS IN CASE OF DRY RUNNING.
6. AN AUXILIARY RELIEF VALVE, EXPANSION TANK OR OTHER MEANS OF PROVIDING FOR THERMAL EXPANSION SHALL BE INSTALLED IN THE INTERNAL PLUMBING SYSTEM TO PREVENT DAMAGE TO THE HOT WATER HEATER AND/OR PLUMBING SYSTEM.

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| | |
|---|---|
| RESIDENTIAL WATER SERVICE CONNECTION | DATE: 12/11/2023 |
| | REVISED: |
| | SCALE: N.T.S. |
| SALISBURY TOWNSHIP | SHEET: W-01 |

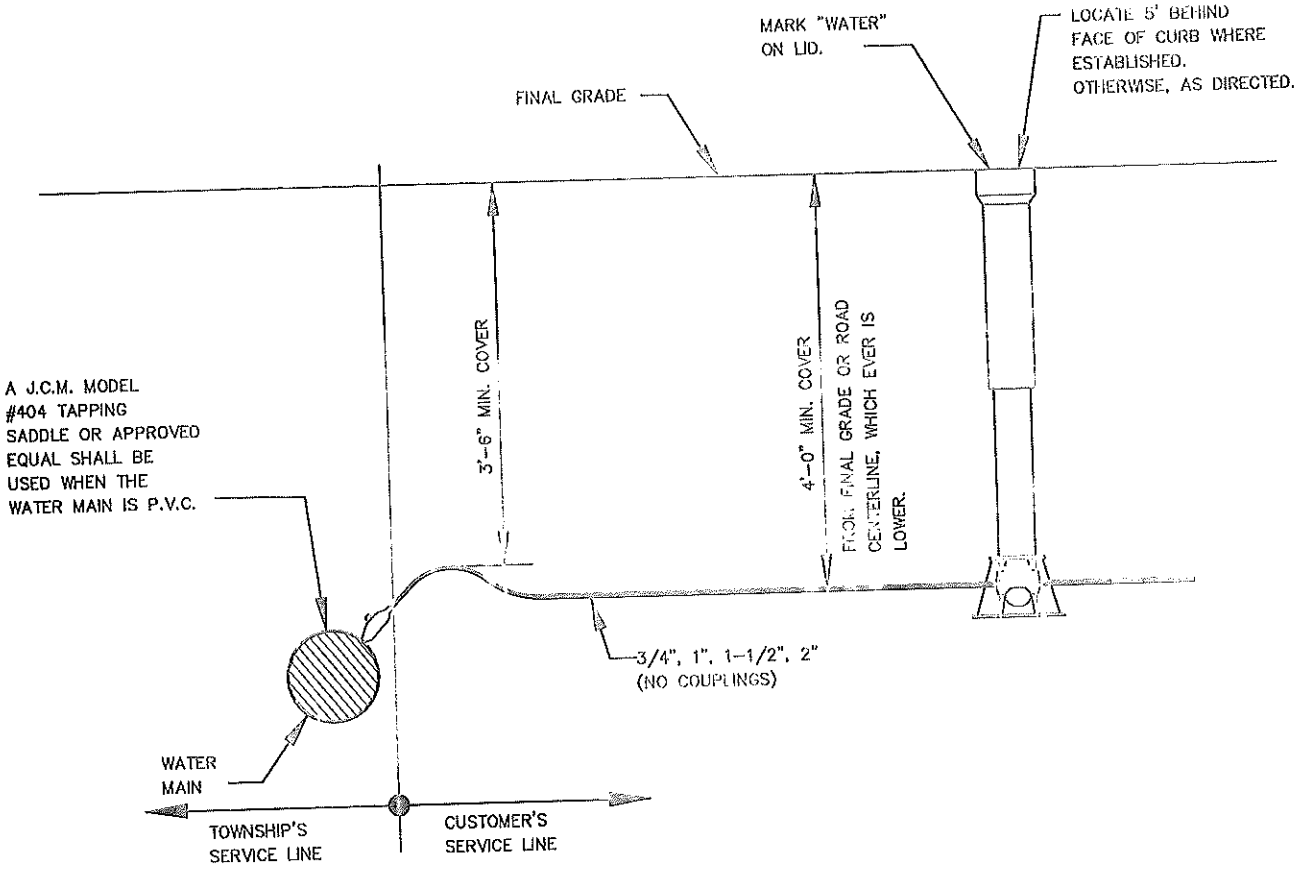
LIST OF MATERIALS

COPPER TUBING – TYPE K (SEE NOTE 3)

CORPORATION STOP – FORD #FB1000-Q, MUELLER #B25008 OR APPROVED EQUAL.

CURB STOP – MUELLER #B25209 (FULLPORT) OR EQUAL.

CURB BOX – BINGHAM & TAYLOR #4901-B WITH FOOT PIECE, #4970 OR APPROVED EQUAL.




NOTES:

1. SERVICE LINE SHALL HAVE A MIN. 4" BEDDING OF LIMESTONE SCREENINGS AND SHALL BE BACKFILLED TO A MINIMUM 12" OVER PIPE WITH LIMESTONE SCREENINGS.
2. AN EXTENSION ROD AND GUIDE RING SHALL BE INSTALLED ON CURB STOPS DEEPER THAN 5 FT. THE TOP OF AN EXTENSION ROD SHALL BE NO DEEPER THAN 5 FT.
3. WHERE CLOSED EXCAVATION IS REQUIRED OR DEEMED NECESSARY, THE SERVICE LINE SHALL BE INSTALLED WITHIN A SCHEDULE 40 P.V.C. CASING, AND BE POLYETHYLENE PRESSURE TUBING, CLASS 160, CONFORMING TO A.W.W.A. C-901 SPECIFICATIONS, LATEST REVISION.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# SMALL SERVICE CONNECTION

SALISBURY TOWNSHIP

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|---|---|
| DATE: | 12/11/2023 |
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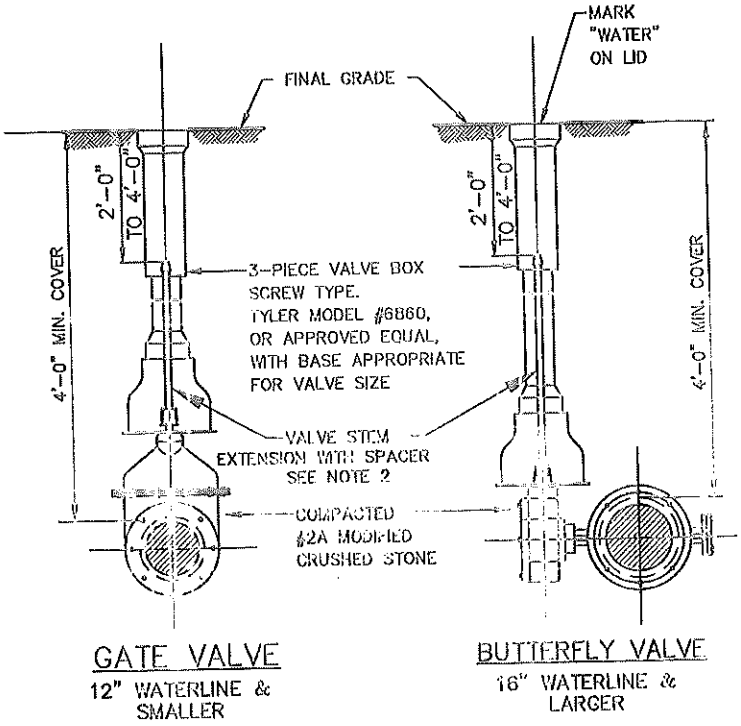
| SHEET: | W-02 |




NOTES:

1. VALVES SHALL BE RESTRAINED TO A FITTING USING MEGALUGS, OR AN APPROVED EQUAL.
2. ANY VALVE WHOSE OPERATING NUT IS GREATER THAN 4 FEET DEEP SHALL BE EQUIPPED WITH AN EXTENSION STEM THAT HAS A MIN. 1 INCH SQUARE SOLID STEEL SHAFT FITTED OVER THE OPERATING NUT AND HAVE A 2 INCH SQUARE OPERATING NUT ON THE TOP. THE SHAFT SHALL BE CENTERED IN THE BOX WITH A SPACER AND BE FASTENED TO THE OPERATING NUT. THE EXTENSION KIT SHALL BE MANUFACTURED BY THE VALVE MANUFACTURER OR APPROVED EQUAL.

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VALVE AND VALVE BOX

SALISBURY TOWNSHIP

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|---|---|
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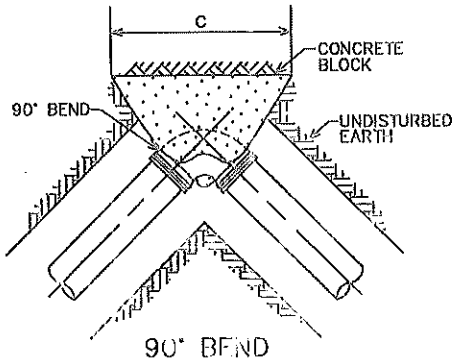
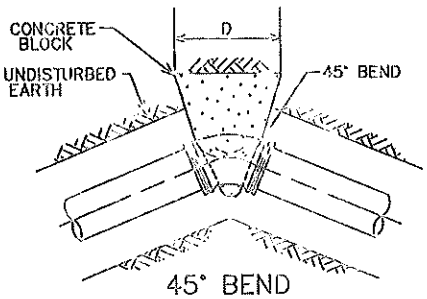
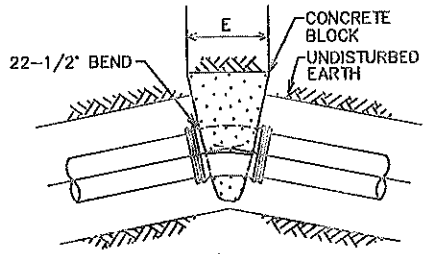


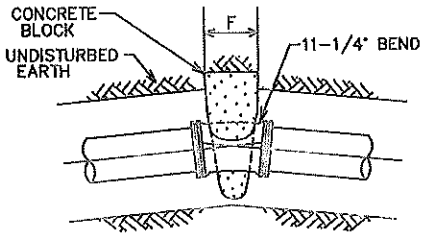

90° BEND



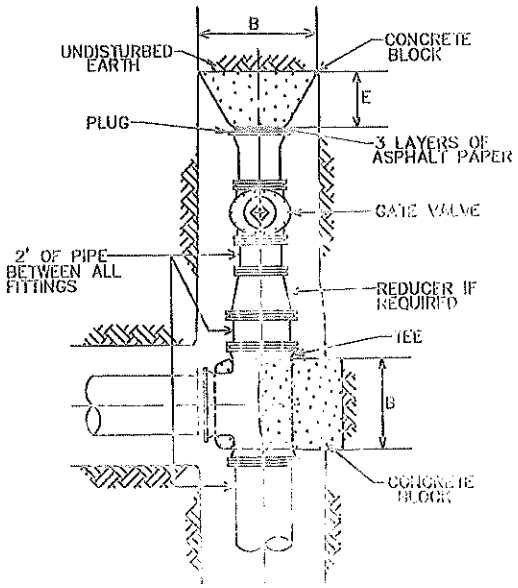

45° BEND



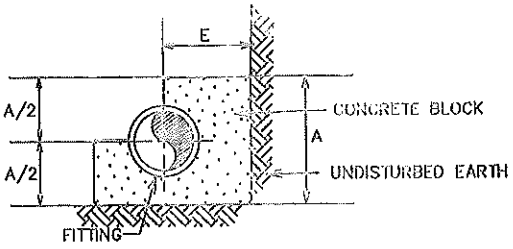

22-1/2° BEND




11-1/4° BEND




TEE & PLUG




SECTION

| PIPE SIZE | REACTION BACKING DIMENSION | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| 20" | 4'- 0" | 6'- 8" | 8'- 4" | 5'- 3" | 2'- 6" | 1'- 5" |
| 16" | 3'- 4" | 5'- 5" | 7'- 0" | 4'- 3" | 2'- 1" | 1'- 3" |
| 12" | 2'- 6" | 4'- 3" | 6'- 0" | 3'- 3" | 1'- 7" | 1'- 0" |
| 8" | 1'- 8" | 3'- 0" | 4'- 3" | 2'- 4" | 1'- 2" | 1'- 0" |
| 6" | 1'- 3" | 2'- 2' | 3'- 4" | 1'- 10' | 1'- 0" | 1'- 0" |

NOTE:

IN ADDITION TO CONCRETE THRUST BLOCKS, MEGALUGS SHALL BE USED TO RESTRAIN MECHANICAL JOINT FITTINGS AND FIELD LOCK GASKETS TO RESTRAIN PUSH-ON JOINTS WITHIN 40-FEET OF BOTH VERTICAL AND HORIZONTAL BENDS FOR 12-INCH DIAMETER AND SMALLER WATER MAINS, AND WITHIN 60-FEET FOR MAINS LARGER THAN 12-INCH.

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# THRUST BLOCKING

SALISBURY TOWNSHIP

DATE: 12/11/2023
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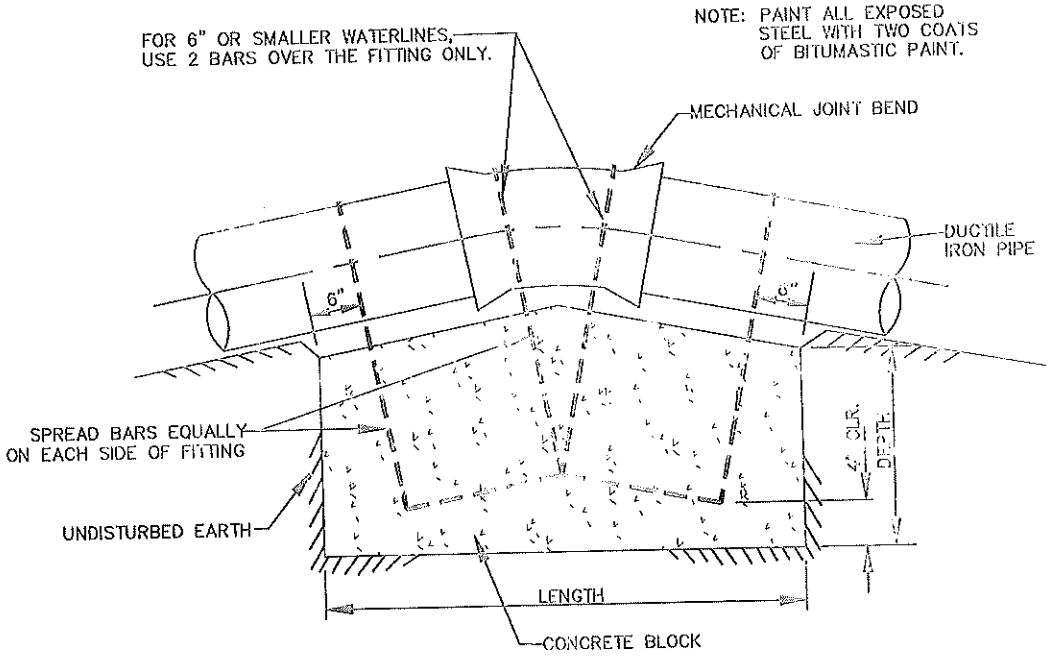
SCALE: N.T.S.
SHEET: W-04




SECTION VIEW

| DIMENSIONS FOR CONCRETE BLOCKING FOR UPWARD THRUST | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PIPE SIZES | LENGTH | | | WIDTH | | | DEPTH | | | REBARS | | |
| | 11-1/4° | 22-1/2° | 45° | 11-1/4° | 22-1/2° | 45° | 11-1/4° | 22-1/2° | 45° | 11-1/4° | 22-1/2° | 45° |
| 6" & 8" | 3' | 4' | 6' | 3' | 3' | 3' | 2' | 3' | 4' | 1-#4 | 2-#4 | 2-#5 |
| 12" | 4.5' | 6' | 8' | 3' | 3' | 4' | 3' | 4.5' | 5' | 2-#4 | 2-#6 | 3-#6 |
| 16" | 6' | 8' | 11' | 3.5' | 3.5' | 5' | 3.5' | 5' | 5' | 2-#5 | 4-#5 | 6-#6 |
| 20" | 7' | 9' | 13' | 4' | 5' | 5.5' | 4' | 5' | 6' | 3-#5 | 6-#5 | 6-#7 |

NOTE:
IN ADDITION TO CONCRETE THRUST BLOCKS, MEGALUGS SHALL BE USED TO RESTRAIN MECHANICAL JOINT FITTINGS AND FIELD LOCK GASKETS TO RESTRAIN PUSH-ON JOINTS WITHIN 40-FEET OF BOTH VERTICAL AND HORIZONTAL BENDS FOR 12-INCH DIAMETER AND SMALLER WATER MAINS, AND WITHIN 60-FEET FOR MAINS LARGER THAN 12-INCH.

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UPWARD THRUST BLOCKING

SALISBURY TOWNSHIP

DATE: 12/11/2023
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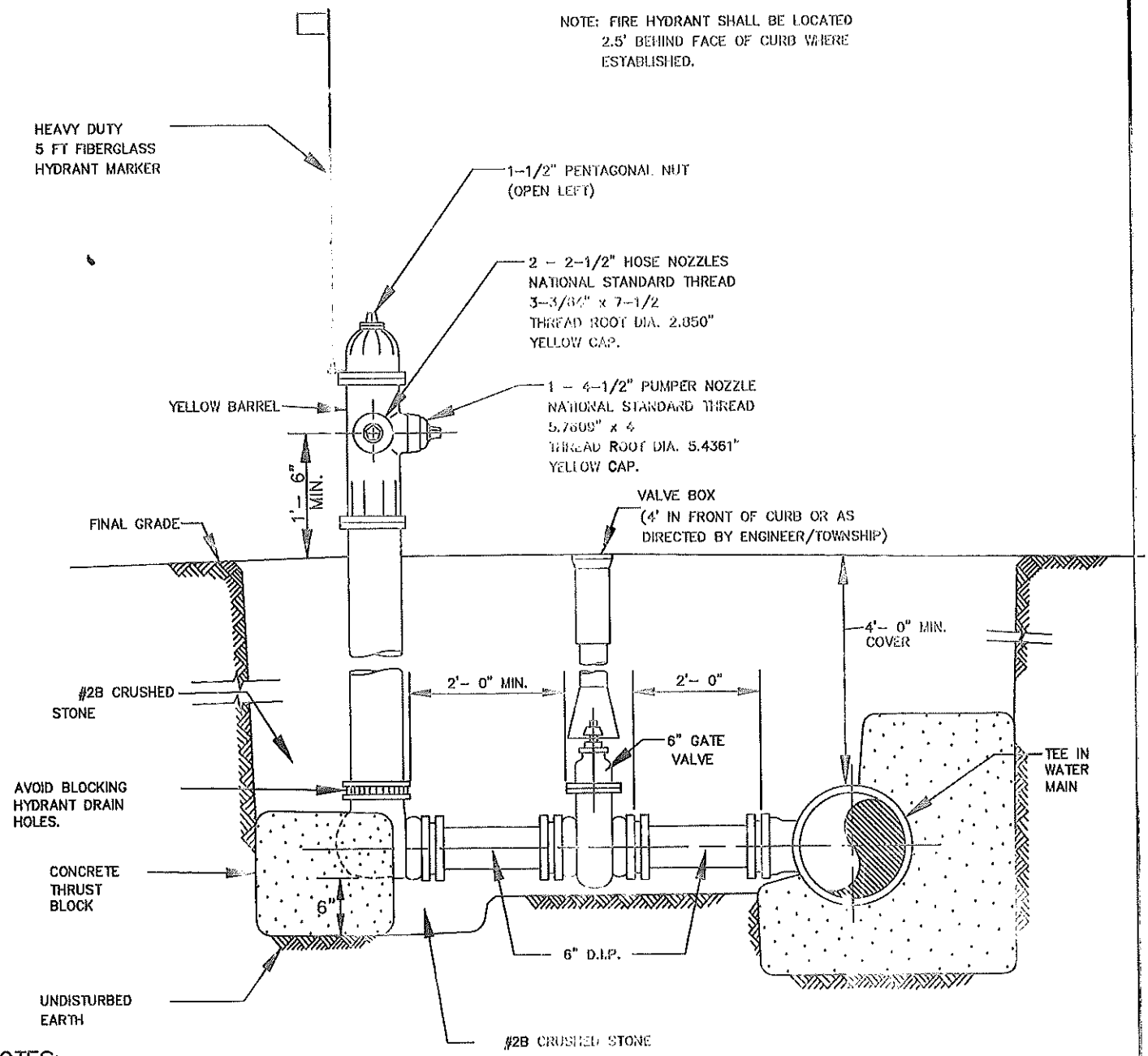
SHEET: W-05




NOTES:

1. THE ENTIRE FIRE HYDRANT ASSEMBLY SHALL BE RESTRAINED. MEGALUGS SHALL BE USED ON MECHANICAL JOINT FITTINGS AND FIELD LOCK GASKETS FOR PUSH-ON JOINTS.
2. A HYDRANT SECURITY DEVICE SHALL BE INSTALLED AS DIRECTED BY LEHIGH COUNTY AUTHORITY. DEVICE SHALL BE PURCHASED FROM LEHIGH COUNTY AUTHORITY.
3. PRIVATE FIRE HYDRANTS SHALL HAVE YELLOW BARRELS AND CAPS.

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# FIRE HYDRANT

SALISBURY TOWNSHIP

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| DATE: | 12/11/2023 |
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| SCALE: | N.T.S. |
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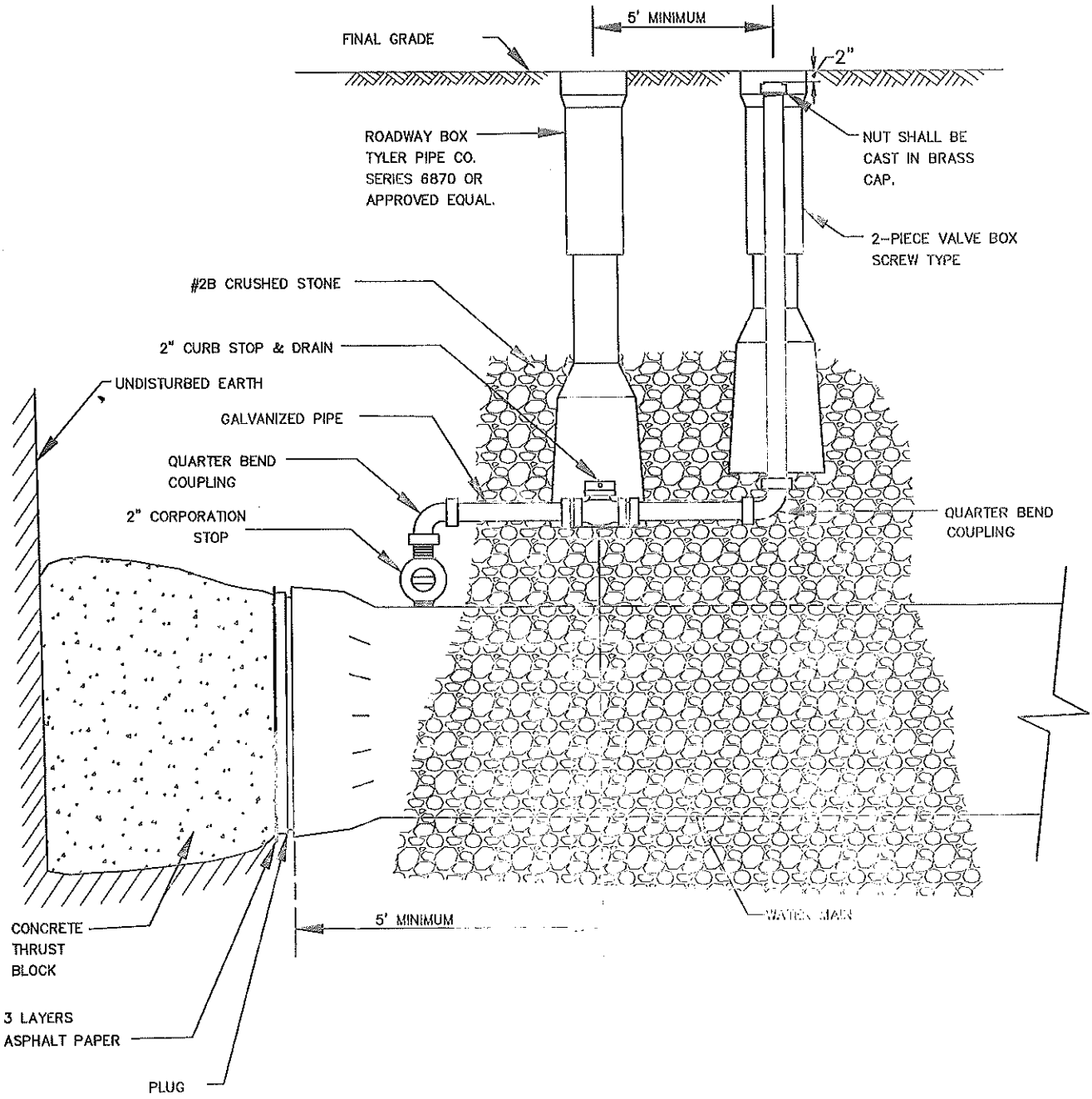


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# 2" SURFACE BLOWOFF

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|---|---|
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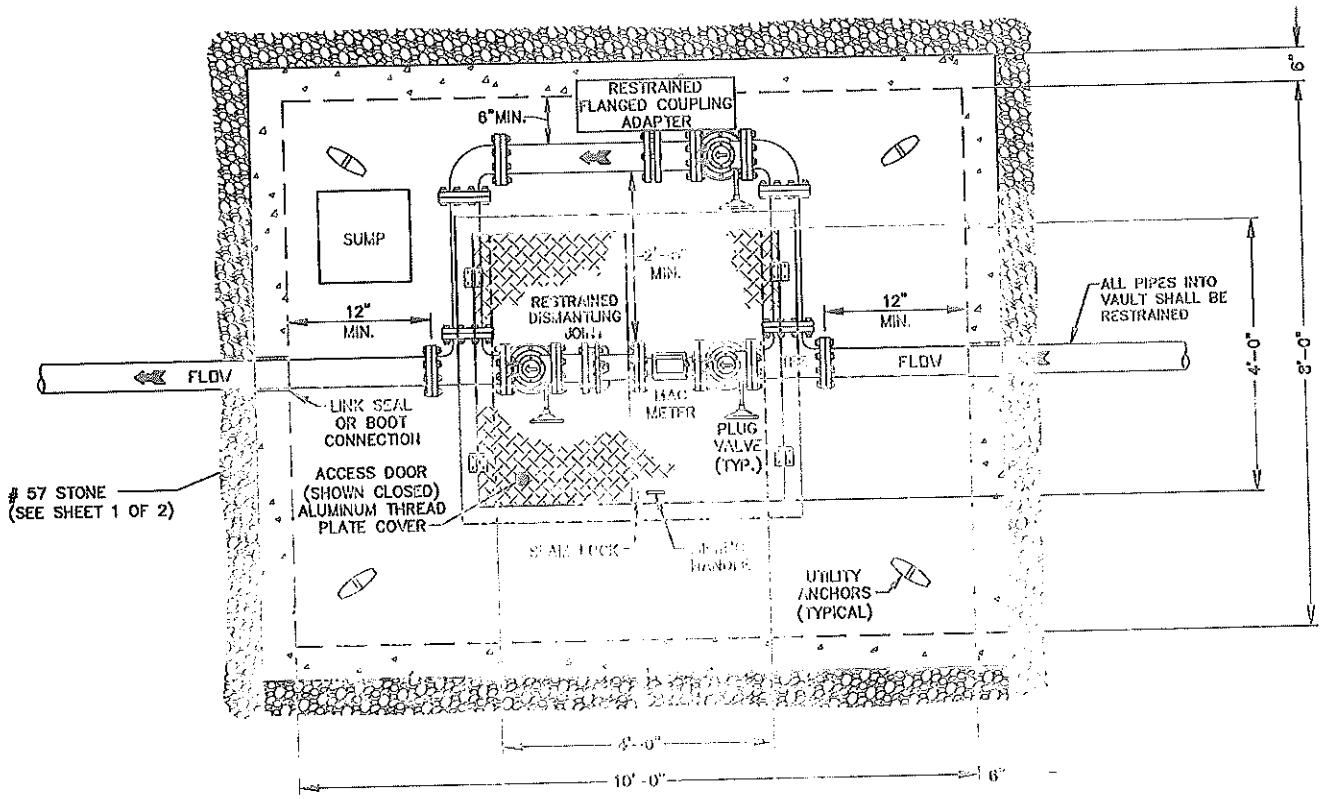
| SHEET: | W-07 |




PLAN VIEW

NOTES:

1. A FULL SCALE ENGINEERED METER PIT DETAIL SHALL BE PROVIDED TO THE TOWNSHIP AND THE ENGINEER FOR REVIEW

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# STANDARD MAG METER INSTALLATION (PLAN)

SALISBURY TOWNSHIP

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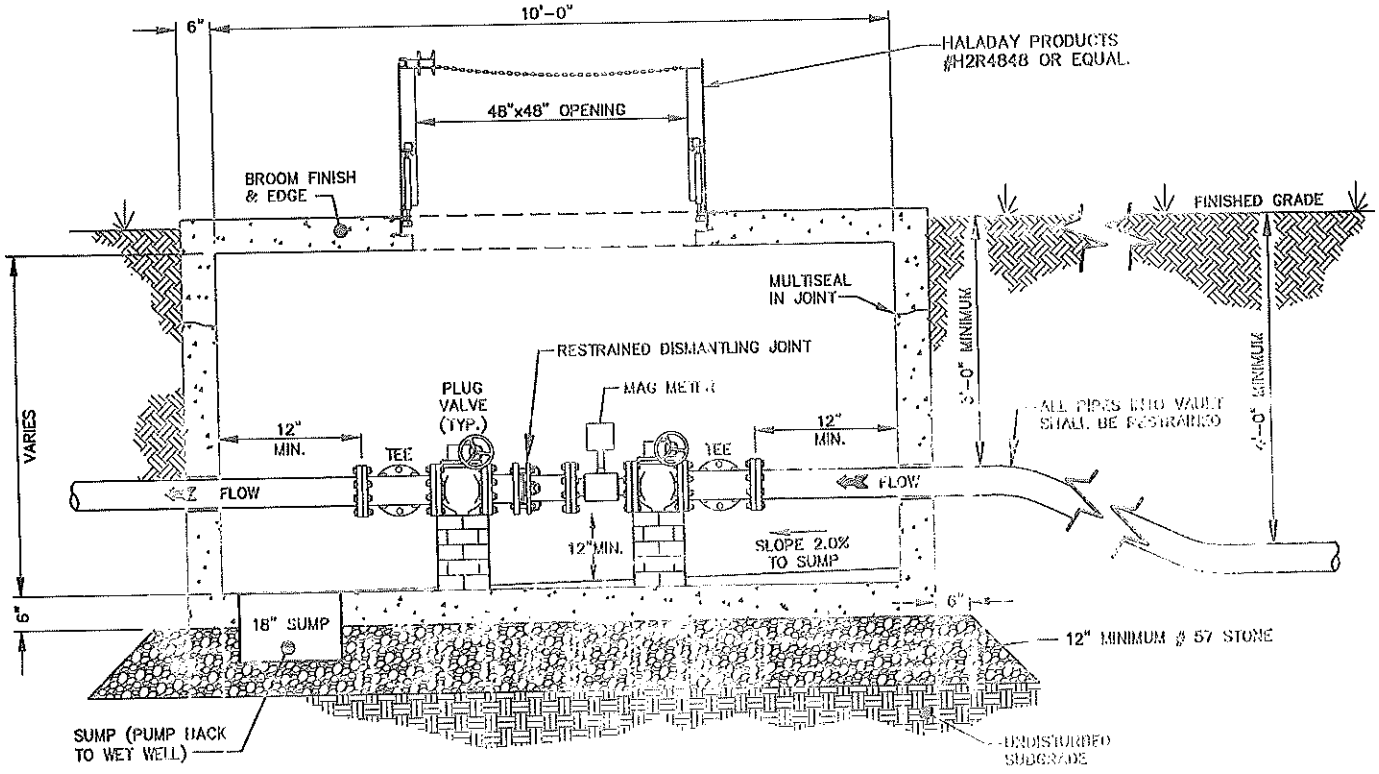
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | W-08 |




SECTION VIEW

NOTE:

1. A FULL SCALE ENGINEERED METER PIT DETAIL SHALL BE PROVIDED TO THE TOWNSHIP AND THE ENGINEER FOR REVIEW

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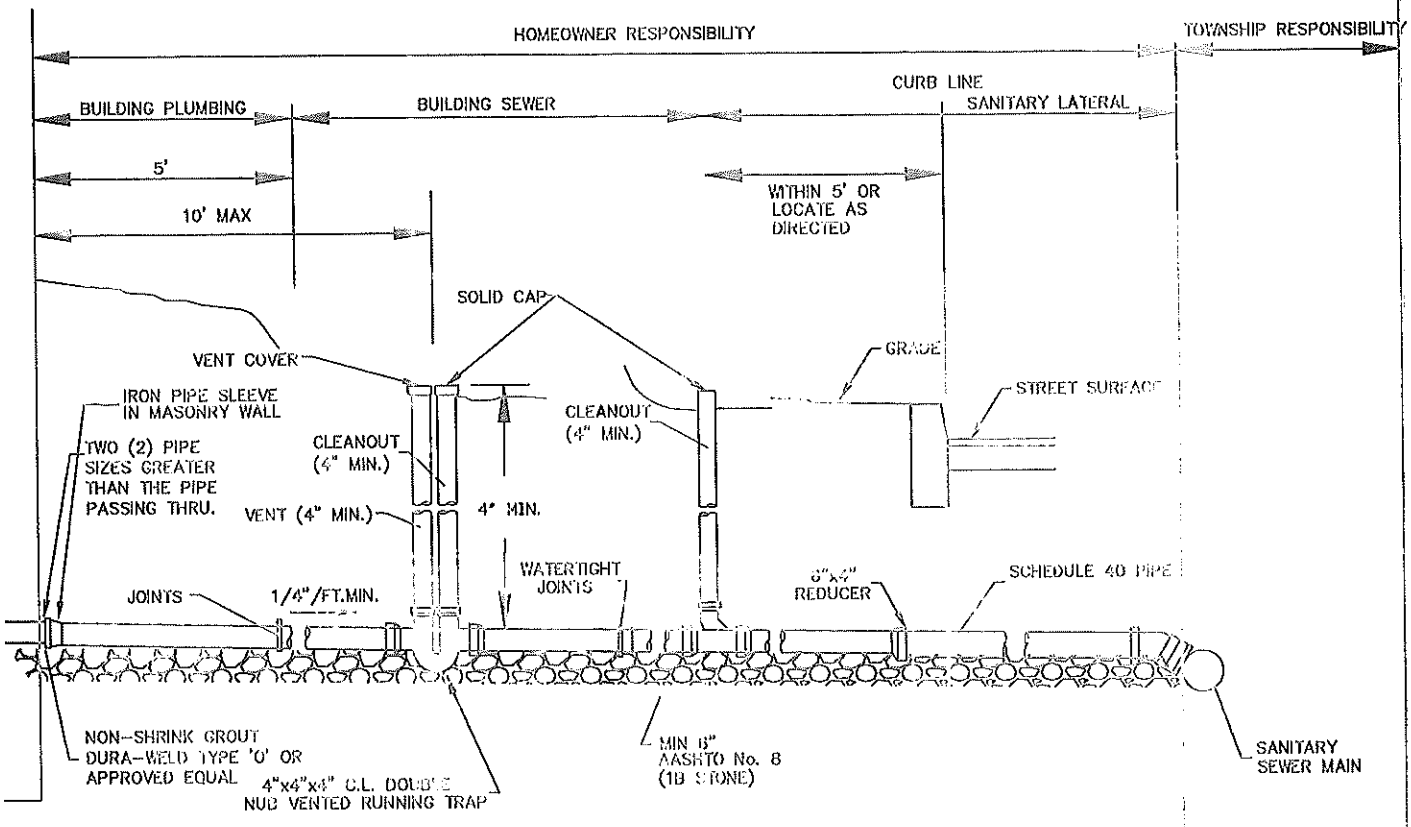
# STANDARD MAG METER INSTALLATION (SECTION)

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | W-09 |




NOTE:

SCHEDULE 40 SOLID WALL PVC PIPE OR HEAVIER WITH AN INTEGRAL BELL, GASKETED JOINT, OR SPIGOT JOINT. FITTINGS SCHEDULE AND JOINTS SHALL CONFORM TO THE SAME REQUIREMENTS AS THE PIPE. ANY SOLUTION CEMENTS USED SHALL CONFORM TO THE ASTM STANDARDS FOR THE MATERIAL BEING USED. PVC PIPE AND FITTINGS MEETING THE REQUIREMENTS OF ASTM CODE SECTION D3034, SDR 35 (EXTRA STRENGTH) ARE ALSO ACCEPTABLE FOR BUILDING SEWER MATERIAL.

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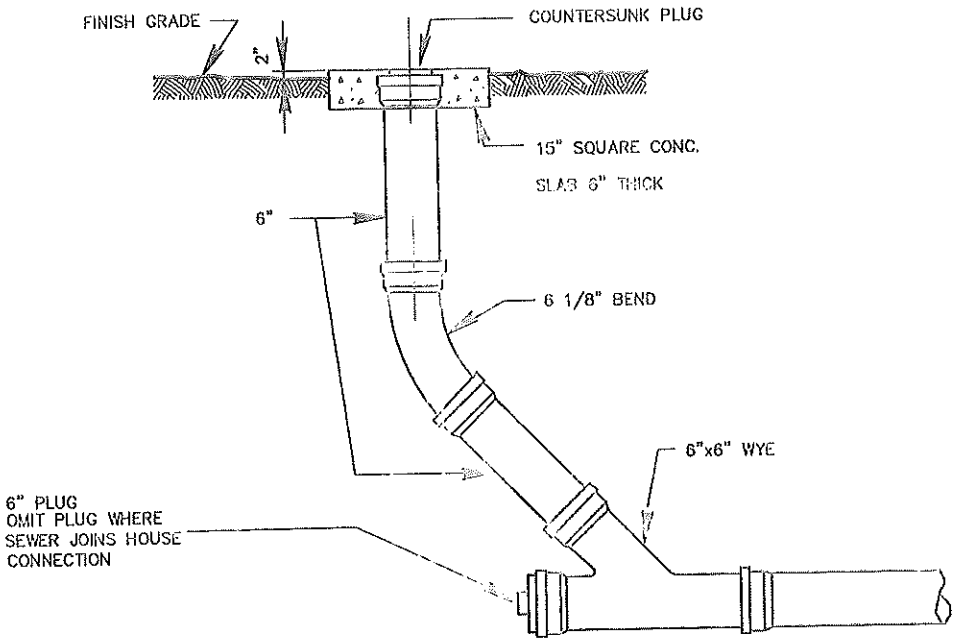
# LATERAL CONNECTION

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-01 |




NOTE:

SCHEDULE 40 SOLID WALL PVC PIPE OR HEAVIER WITH AN INTEGRAL BELL, GASKETED JOINT, OR SPIGOT JOINT. FITTINGS SCHEDULE AND JOINTS SHALL CONFORM TO THE SAME REQUIREMENTS AS THE PIPE. ANY SOLUTION CEMENTS USED SHALL CONFORM TO THE ASTM STANDARDS FOR THE MATERIAL BEING USED. PVC PIPE AND FITTINGS MEETING THE REQUIREMENTS OF ASTM CODE SECTION D3034, SDR 35 (EXTRA STRENGTH) ARE ALSO ACCEPTABLE FOR BUILDING SEWER MATERIAL.

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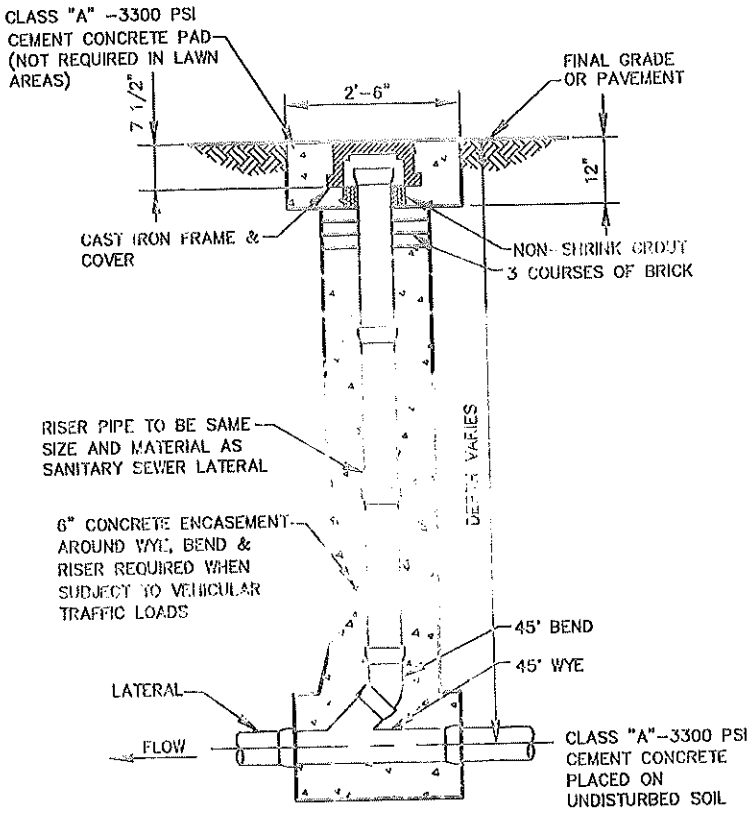
CLEAN-OUT TO GRADE

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-02 |




NOTES:

1. VERTICAL PIPE OF CLEAN-OUT SHALL BE PLUGGED WITH APPROVED WATERTIGHT PLUG AS DIRECTED BY THE ENGINEER.
2. CLEAN-OUTS ARE REQUIRED EVERY 50 FT. FOR 4" LATERALS, EVERY 100 FT. FOR 6" LATERALS AND AT ALL CHANGES IN DIRECTION.

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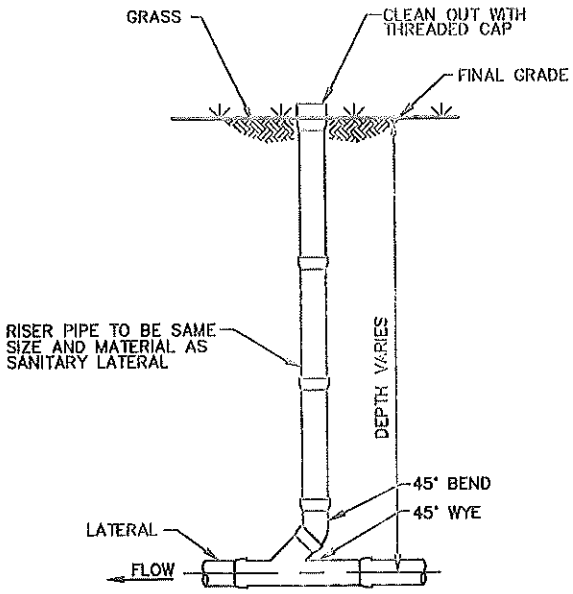
# SANITARY SEWER CLEAN-OUT (IN PAVEMENT)

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-03 |

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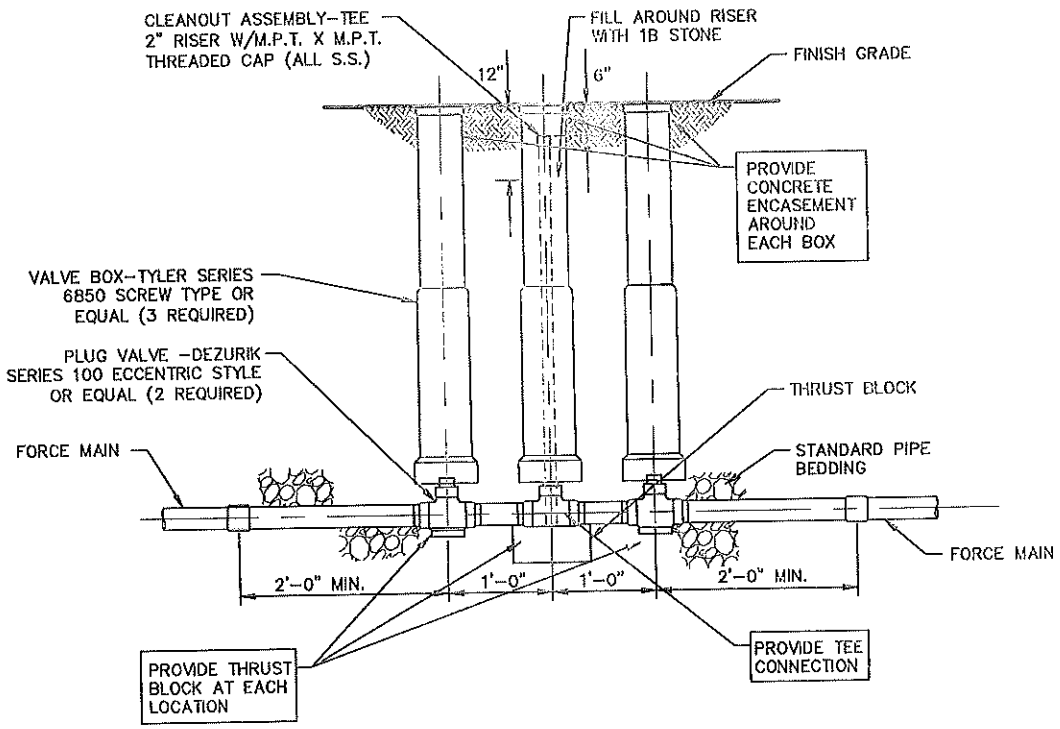
# SANITARY CLEAN-OUT (IN GRASS)

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-04 |




NOTE:

SCHEDULE 40 SOLID WALL PVC PIPE OR HEAVIER WITH AN INTEGRAL BELL, GASKETED JOINT, OR SPIGOT JOINT. FITTINGS SCHEDULE AND JOINTS SHALL CONFORM TO THE SAME REQUIREMENTS AS THE PIPE. ANY SOLUTION CEMENTS USED SHALL CONFORM TO THE ASTM STANDARDS FOR THE MATERIAL BEING USED. PVC PIPE AND FITTINGS MEETING THE REQUIREMENTS OF ASTM CODE SECTION D3034, SDR 35 (EXTRA STRENGTH) ARE ALSO ACCEPTABLE FOR BUILDING SEWER MATERIAL.

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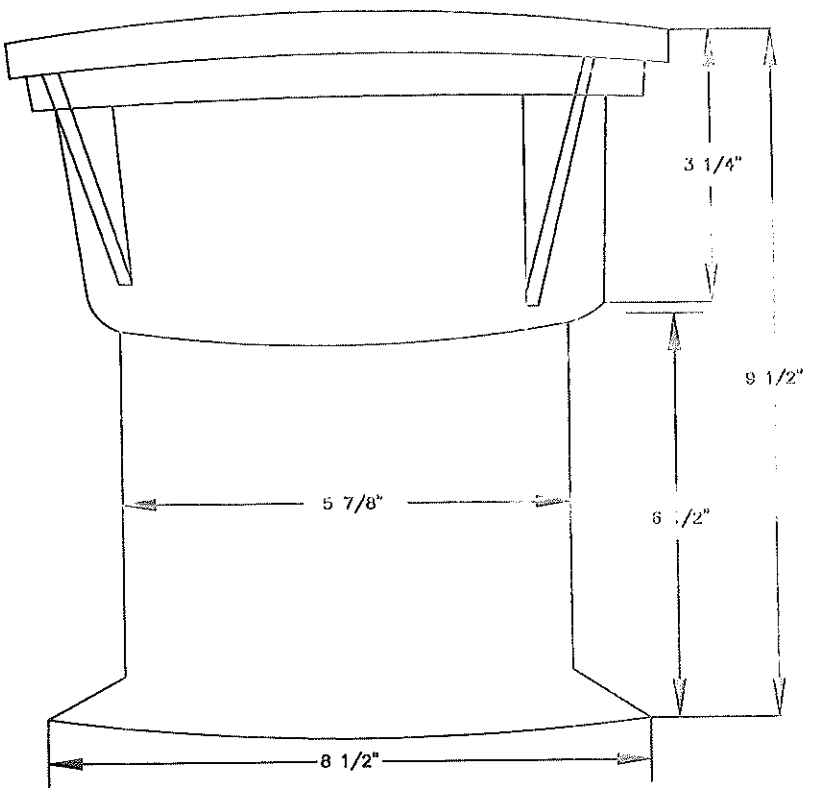
LOW PRESSURE SEWER INLINE CLEAN-OUT

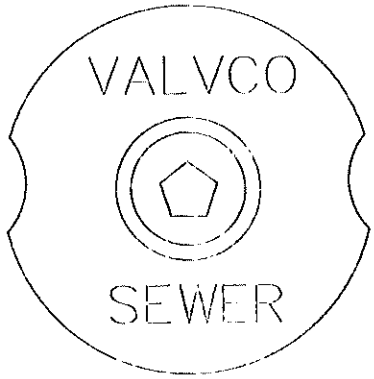
SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-05 |

SEWER CLEANOUT
SIDE VIEW

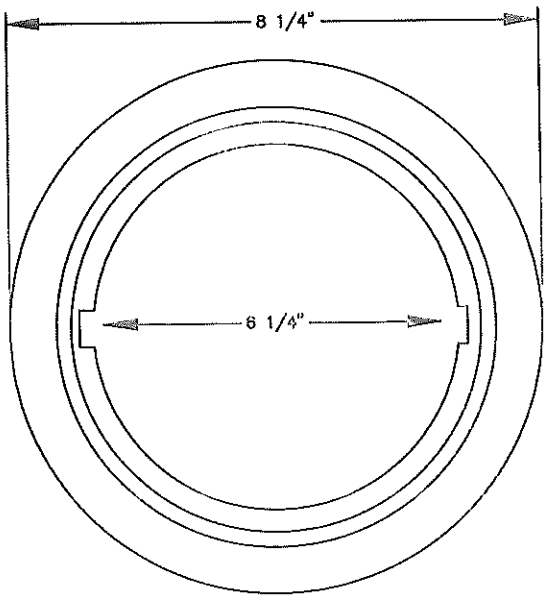



LID TOP VIEW




LID SIDE VIEW


SEWER CLEANOUT
TOP VIEW




SUITABLE FOR LAWN
DUTY USAGE

CASTING CONFORMS TO:
ASTM SPECIFICATION A-48 CLASS 25
COUNTRY OF ORIGIN: USA

ABS CONFORMS TO:
ASTM SPECIFICATION D-1778
CP TEST & VALVE PRODUCTS, INC.

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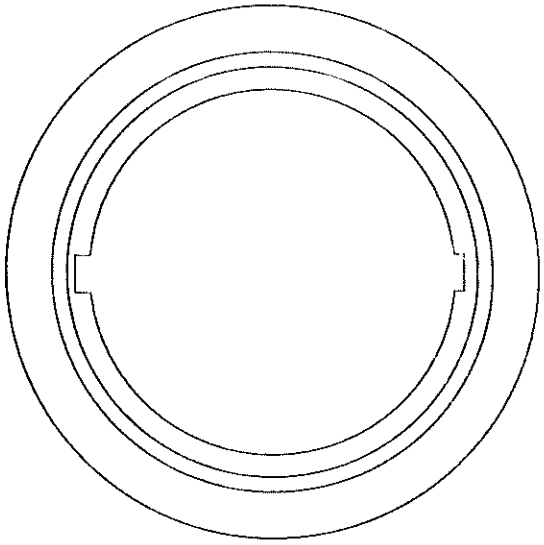
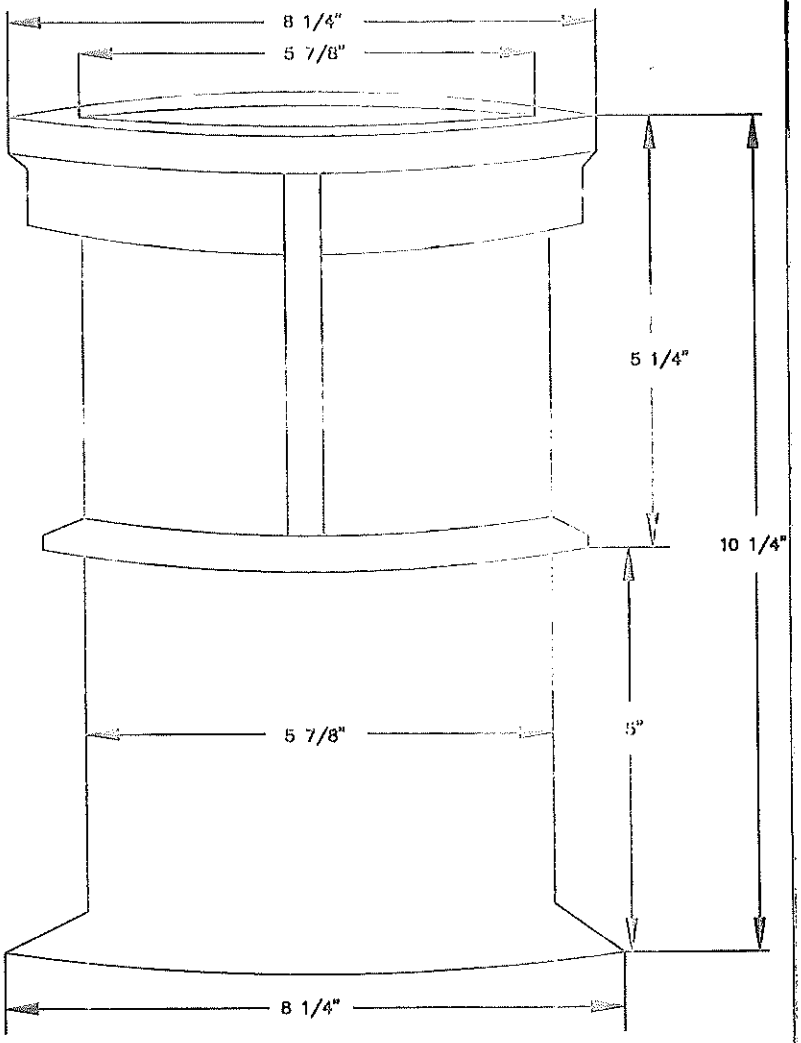
# FIGURE 640 LOCKING SEWER CLEANOUT

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-06 |



SEWER CLEANOUT
TOP INTERIOR VIEW

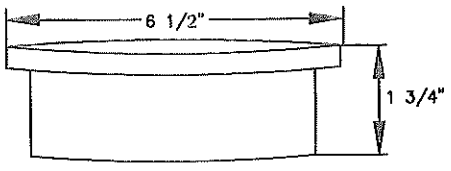



SEWER CLEANOUT
SIDE VIEW


CAP TOP VIEW

CASTING CONFORMS TO:
ASTM SPECIFICATION A-48 CLASS 30
COUNTRY OF ORIGIN: USA

ABS CONFORMS TO:
ASTM SPECIFICATION D-1778
CP TEST & VALVE PRODUCTS, INC.




CAP SIDE VIEW

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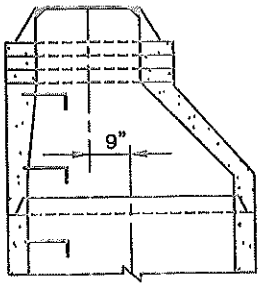
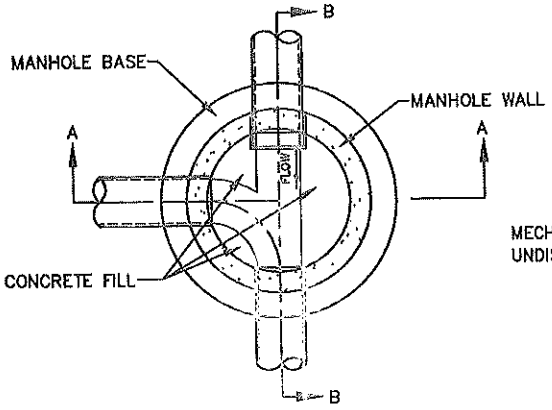
# FIGURE 668 LOCKING SEWER CLEANOUT

SALISBURY TOWNSHIP

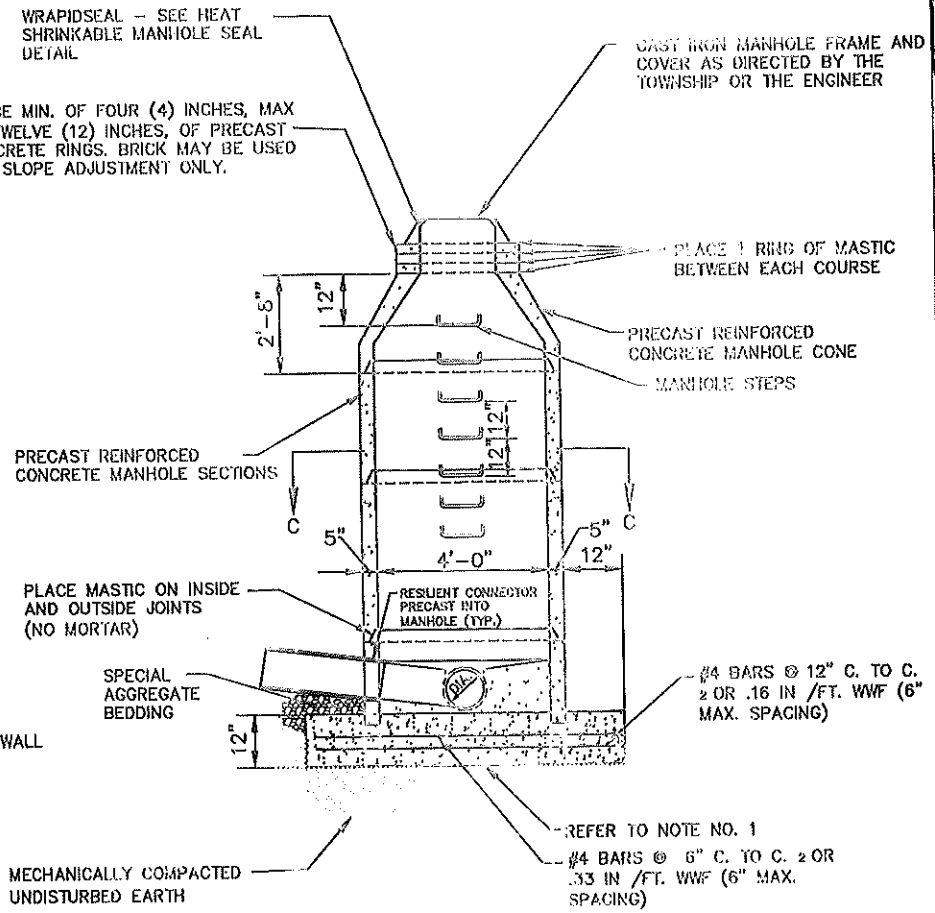
| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-07 |




SECTION B–B




SECTION C–C




SECTION A–A

NOTES:

1. PRECAST BASE MAY BE USED IF PLACED ON A 9 INCH FOUNDATION OF PennDOT NO. 2A SUBBASE.
2. PROVIDE FLEXIBLE GASKET IN MACHINED GROOVE IN LID.
3. PAINT ENTIRE OUTER SURFACE OF MANHOLE WITH ONE (1) COAT OF AN APPROVED BITUMASTIC MATERIAL.
4. STEPS TO BE INSTALLED IN PLASTIC STEP INSERT COMPATIBLE WITH THE STEP.
5. STEP AND STEP INSTALLATION SHALL MEET ALL REQUIREMENTS OF ASTM C–478 AND C497 FOR DIMENSIONS, LOAD RATING, AND PULLOUT RESISTANCE.
6. STEP DIMENSIONS AND CONFIGURATION SHALL BE IN ACCORDANCE WITH PennDOT STANDARDS, (RC–39).

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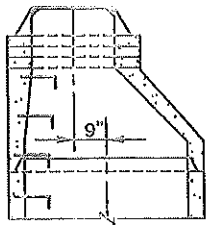
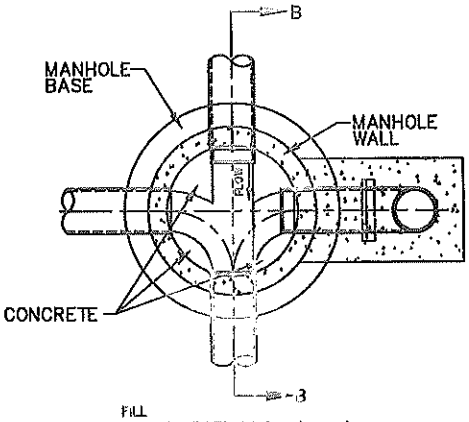
# STANDARD PRECAST CONCRETE MANHOLE

SALISBURY TOWNSHIP

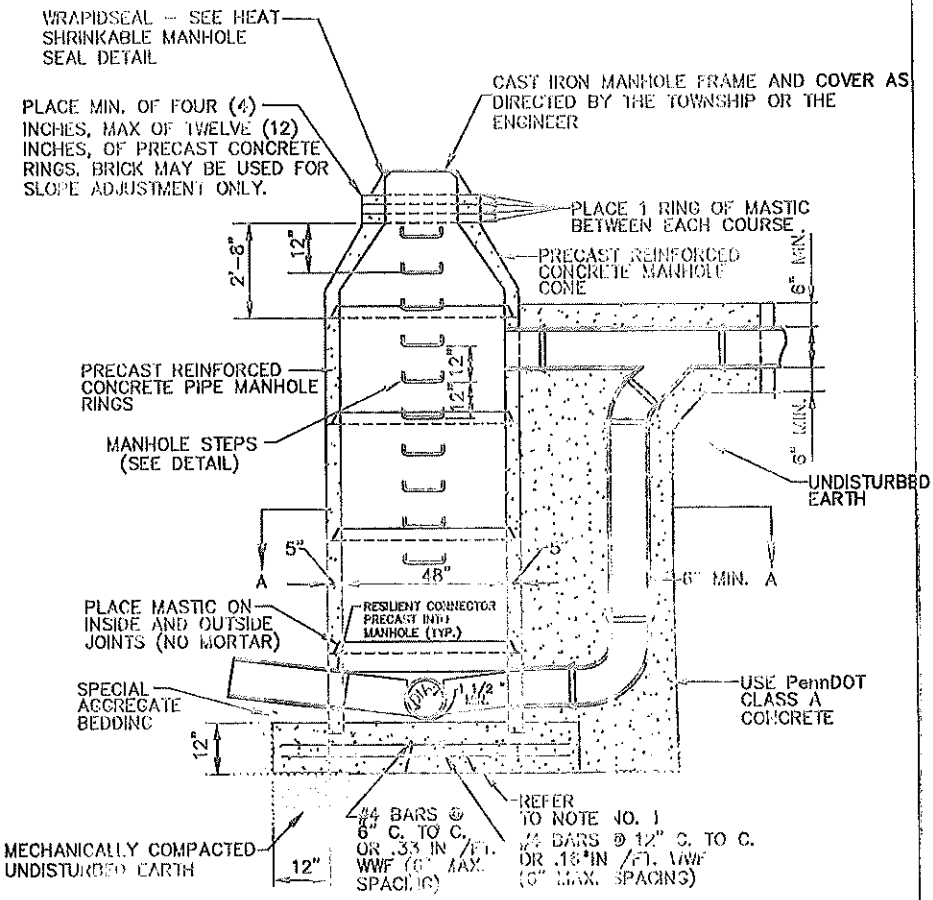
| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-08 |




SECTION B–B




SECTION A–A




MANHOLE SECTION

NOTES:

1. PRECAST BASE MAY BE USED IF PLACED ON A 9 INCH FOUNDATION OF PennDOT NO. 2A SUBBASE.
2. PROVIDE FLEXIBLE GASKET IN MACHINED GROOVE IN LID.
3. PAINT ENTIRE OUTER SURFACE OF MANHOLE WITH ONE (1) COAT OF AN APPROVED BITUMASTIC MATERIAL.
4. STEPS TO BE INSTALLED IN PLASTIC STEP INSERT COMPATIBLE WITH THE STEP
5. STEP AND STEP INSTALLATION SHALL MEET ALL REQUIREMENTS OF ASTM C-478 AND C497 FOR DIMENSIONS, LOAD RATING, AND PULLOUT RESISTANCE.
6. STEP DIMENSIONS AND CONFIGURATION SHALL BE IN ACCORDANCE WITH PENNDOT STANDARDS. (RC-39).

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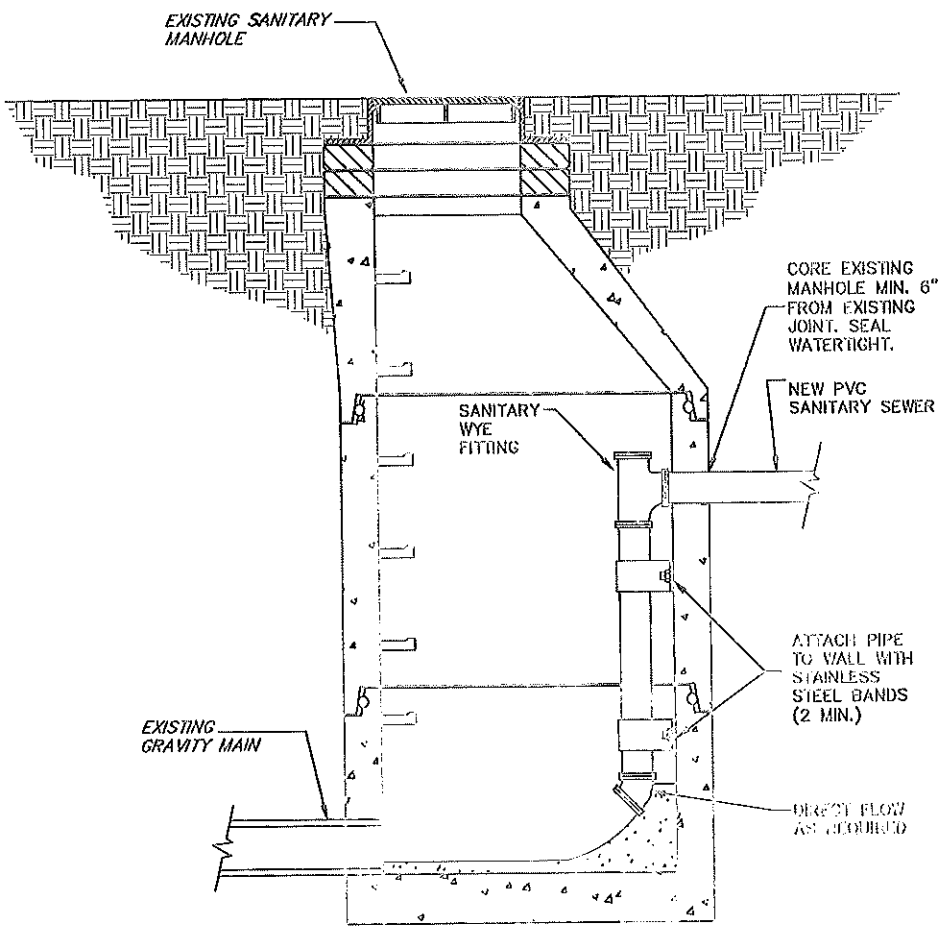
# STANDARD PRECAST CONCRETE PIPE DROP MANHOLE

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-09 |




NOTE:

1. CONFIRM STEP LOCATIONS AND MH SECTION JOINTS PRIOR TO CONSTRUCTION ADJUST AS NEEDED.
2. FORM NEW CHANNEL TO DIRECT FLOW INTO EXISTING CHANNEL

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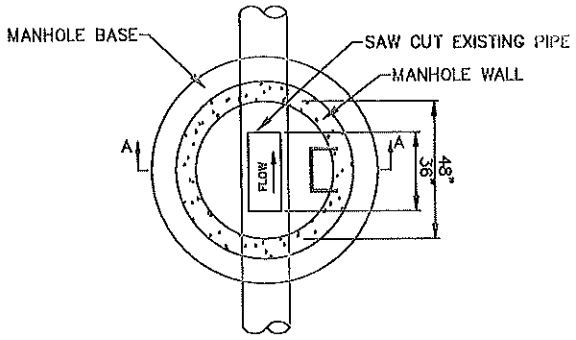
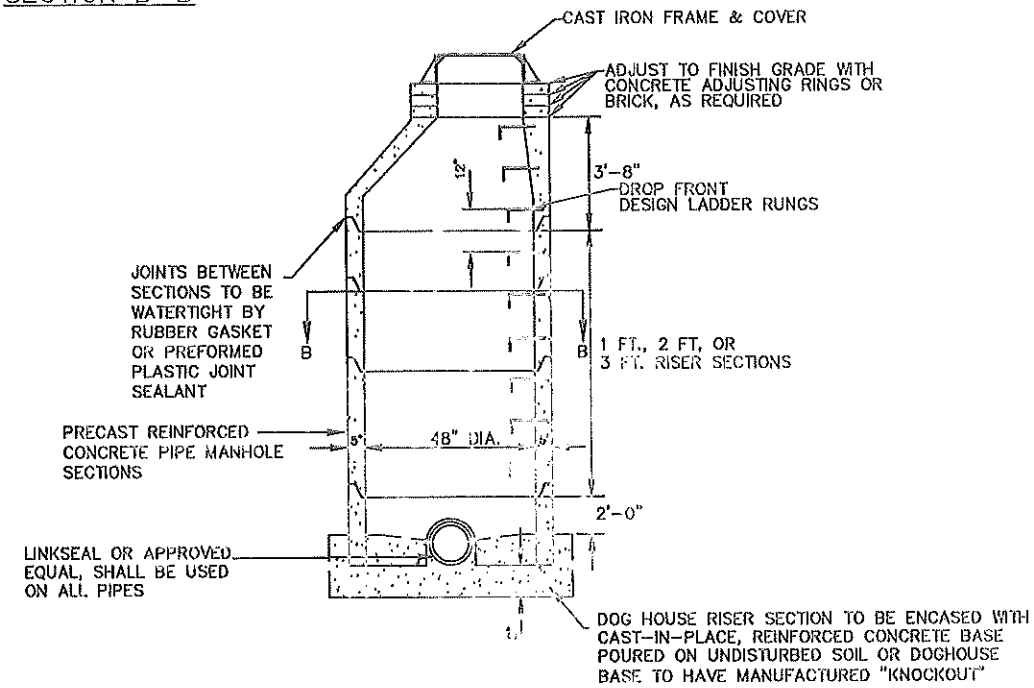
# INTERIOR DROP IN EXISTING MANHOLE CONNECTION

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | SAN-10 |




SECTION B--B




SECTION A-A

NOTES:

1. THE CENTERLINE OF THE MANHOLE SHALL BE LOCATED OVER THE CENTERLINE OF THE MAIN SEWER, WHENEVER POSSIBLE.
2. GRADE ADJUSTMENT RINGS SHALL BE PRECAST CONCRETE AND NOT EXCEED 12" IN HEIGHT. BRICK MATERIALS ARE NOT PERMITTED.
3. ALL TESTING TO BE COMPLETE BEFORE THE CROWN OF THE EXISTING SANITARY LINE IS REMOVED FROM INSIDE THE NEW DOGHOUSE MANHOLE.

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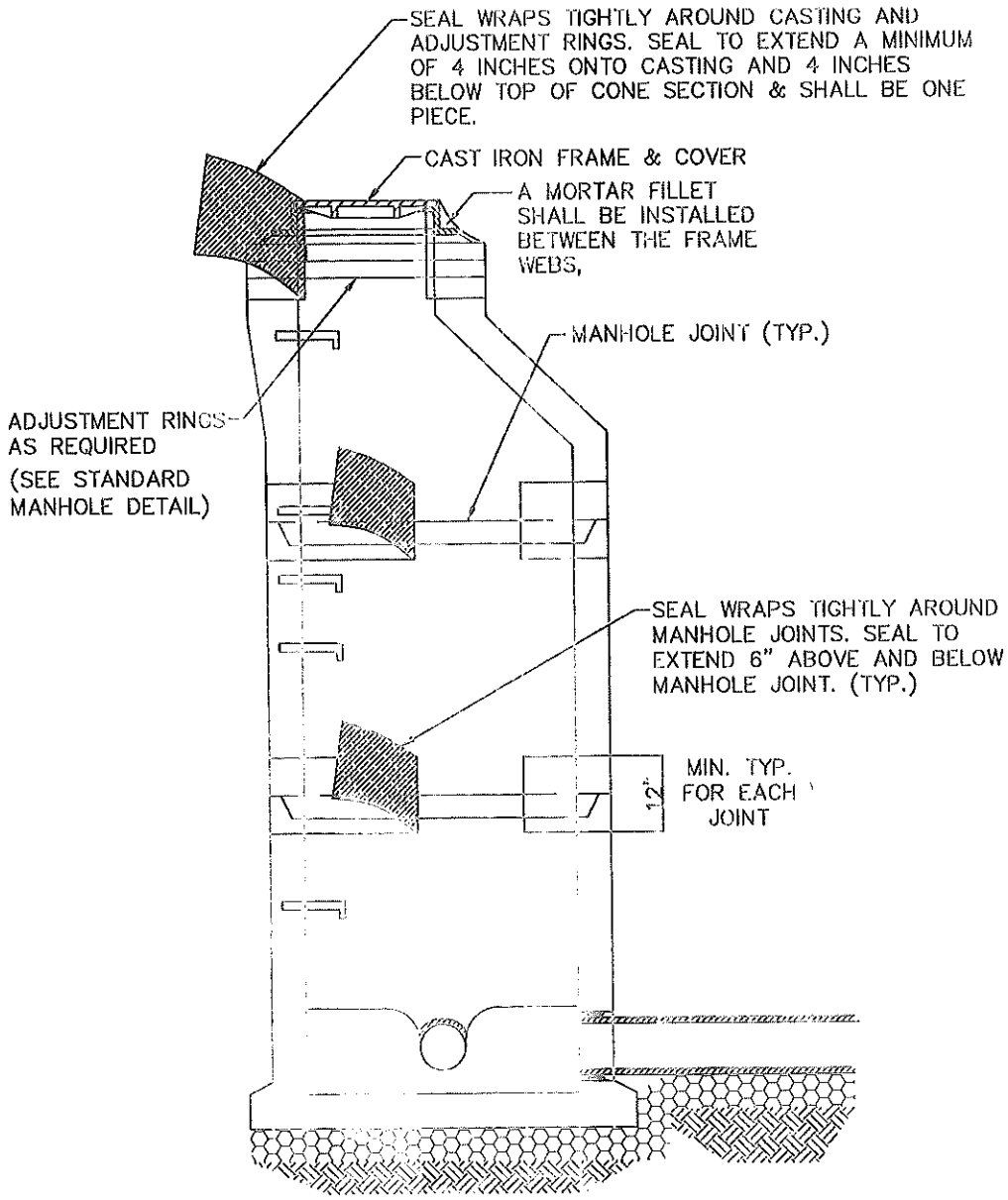
| | |
|---|---|
| DOGHOUSE SANITARY SEWER MANHOLE | DATE: 12/11/2023 |
| | REVISED: |
| | SCALE: N.T.S. |
| SALISBURY TOWNSHIP | SHEET: SAN-11 |




NOTES:

1. MANHOLE SEAL TO BE "WRAPIDSEAL" ℠ MANUFACTURED BY CANUSA-CPS OR APPROVED EQUAL.
2. MANHOLE JOINT SEAL SHALL BE INSTALLED ON ALL JOINTS.

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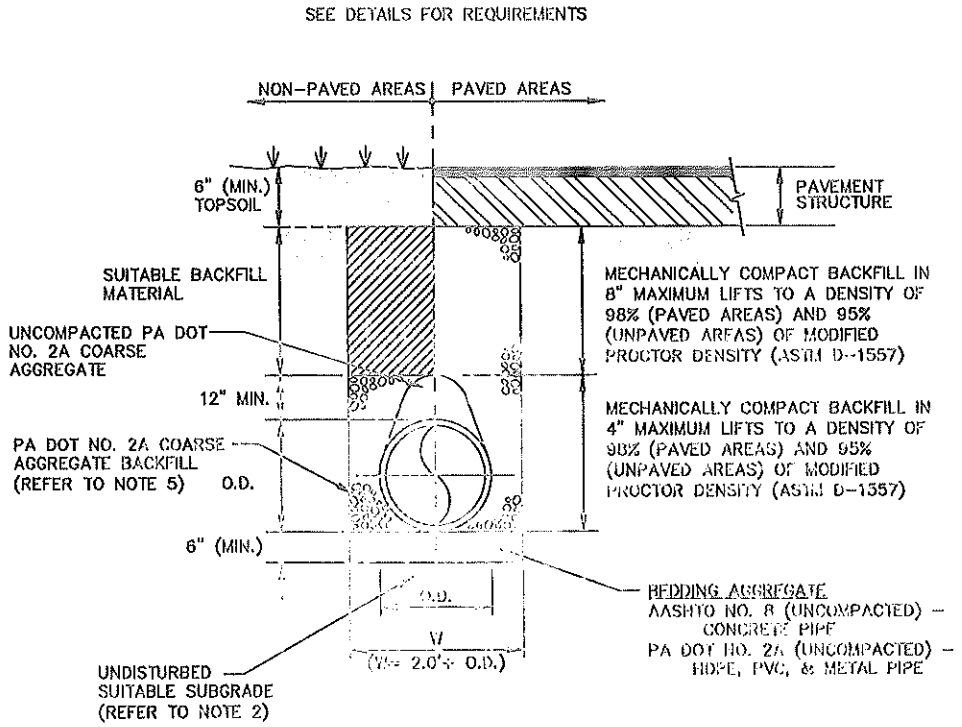
HEAT SHRINKABLE MANHOLE SEAL

SALISBURY TOWNSHIP

DATE: 12/11/2023
REVISED:
SCALE: N.T.S.
SHEET: SAN-12




NOTES:

1. EXCAVATE TRENCH BOX AND INSTALL SHORING AS REQUIRED TO COMPLY WITH FEDERAL, STATE, AND LOCAL LAWS AND CODES.
2. IF UNSUITABLE MATERIAL IS FOUND, UNDERCUT AS DIRECTED BY THE ENGINEER AND BACKFILL WITH SUITABLE MATERIAL TO BOTTOM OF BEDDING ELEVATION.
3. KEEP EXCAVATINGS DRY AND FREE OF WATER. INTERCEPT AND DIVERT SURFACE DRAINAGE AWAY FROM EXCAVATIONS. DEWATER ANY PRECIPITATION AND SUBSURFACE WATER FROM EXCAVATIONS.
4. DO NOT ADVANCE TRENCHING OPERATIONS MORE THAN 200 FEET AHEAD OF COMPLETED PIPELINE.
5. ALL TRENCHES WITHIN PAVED AREAS SHALL BE BACKFILLED WITH FULL DEPTH PA DOT NO. 2A COARSE AGGREGATE.

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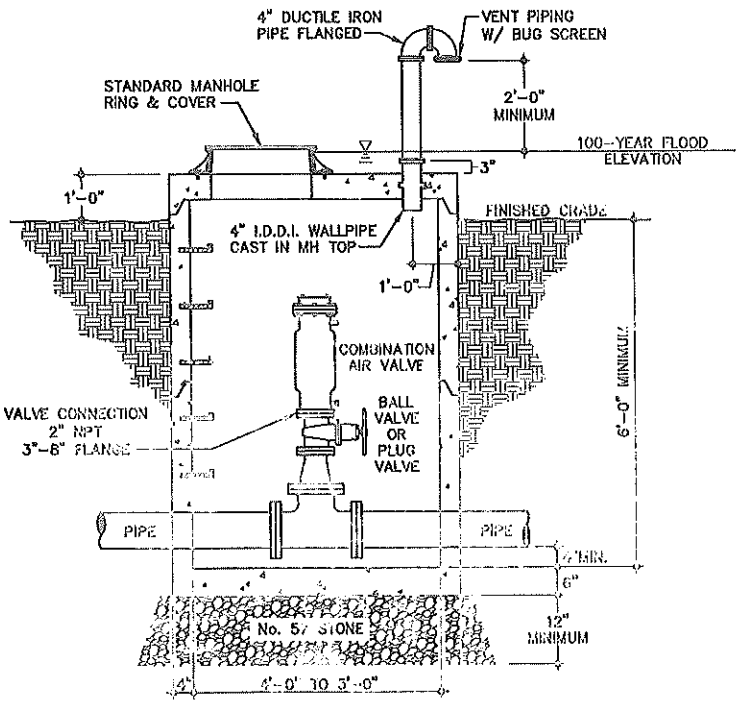
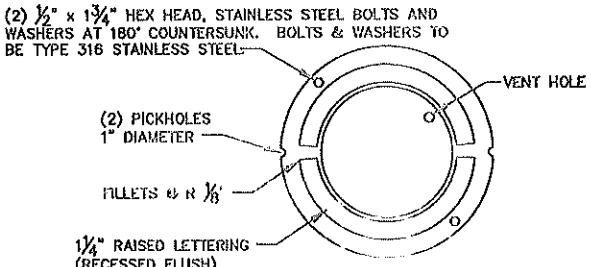
| | |
|---|---|
| TYPICAL SANITARY PIPE TRENCH & BACKFILL | DATE: 12/11/2023 |
| | REVISED: |
| | SCALE: N.T.S. |
| SALISBURY TOWNSHIP | SHEET: SAN-13 |

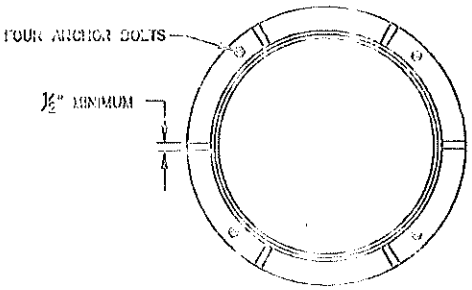



COVER TOP VIEW

RING & COVER SPECIFICATIONS:
1. CLASS 35 GREY IRON.
2. COMPLIES WITH ASTM A48 CL35B.
3. ALL LETTERING SHALL BE CLEAN, CRISP, AND CLEARLY LEGIBLE.
4. DOMESTICALLY MADE AND MANUFACTURED IN THE USA.

| MINIMUM WEIGHTS | |
|---|---|
| RING | 180 |
| COVER | 120 |
| TOTAL | 300 |




RING TOP VIEW

NOTES:

1. TEE FITTING AND ISOLATION VALVE TO BE SAME SIZE AS AIR VALVE.
2. ALL PIPING AND FITTINGS, IN THE MANHOLE, SHALL BE PROTECTO 401 LINED OR FBE COATED.
3. MANHOLE INTERIOR SHALL BE COATED WITH 100-mils OF AN APPROVED EPOXY COATING.
4. MANHOLE STEPS SHALL BE PLACED 12" ON CENTER.

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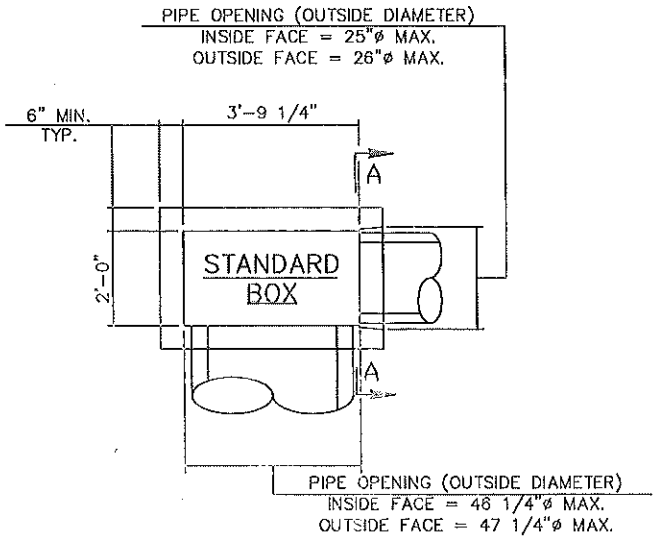
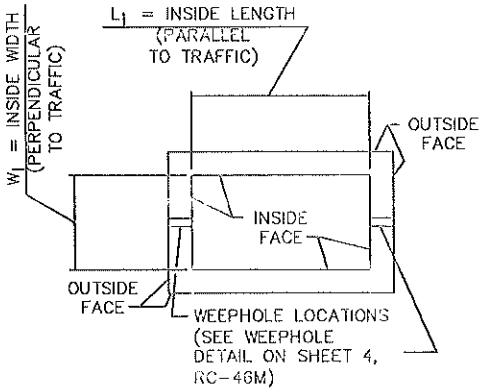
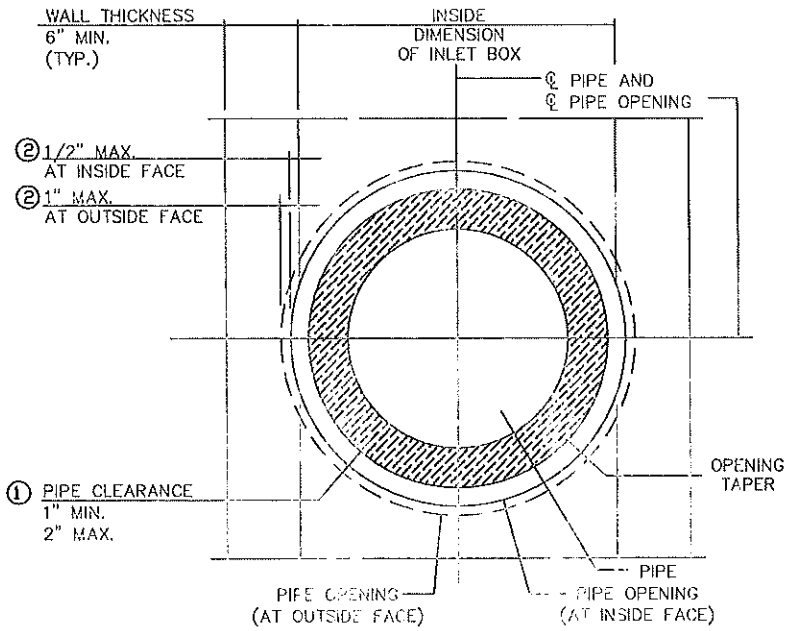
| | |
|---|---|
| STANDARD COMBINATION AIR VALVE MANHOLE | DATE: 12/11/2023 |
| | REVISED: |
| | SCALE: N.T.S. |
| SALISBURY TOWNSHIP | SHEET: SAN-14 |




## INLET BOX SCHEMATIC




## SECTION A-A
(STANDARD INLET BOX ONLY)

### LEGEND
OUTSIDE FACE - OUTSIDE FACE OF INLET BOX WALL
INSIDE FACE - INSIDE FACE OF INLET BOX WALL

### NOTES:
1. FOR ADDITIONAL NOTES, SEE SHEETS 1-3, OF PENNDOT PUBLICATION RC-46M.

2. FOR PIPE LOCATION AND PIPE OPENING NOTES, SEE SHEET 2, OF PENNDOT PUBLICATION RC-46.M.

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# INLET BOX

SALISBURY TOWNSHIP

| | |
|---|---|
| DATE: | 12/11/2023 |
| REVISED: | |
| SCALE: | N.T.S. |
| SHEET: | STM-01 |